AMKASYN
Parameter description
KW-R06

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AMKmotion
MEMBER OF THE ARBURG FAMILY

Imprint

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Version:

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Change	**Letter symbol**
Changes are shown in the full documentation. See document Parameter description, Part no. 203704)	LeS

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Reservation: We reserve the right to modify the content of the documentation as well as the delivery options for the product.

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For fast and reliable troubleshooting, you can help us by informing our Customer Service about the following:

- Type plate data for each unit
- Software version
- Device configuration and application
- Type of fault/problem and suspected cause
- Diagnostic messages (error messages)

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Conventions

Depiction	Meaning
	This symbol indicates passages in the text that deserve your particular attention.
0x	0x followed by a hexadecimal number, e.g. 0x500A
'Name'	e.g.: Call up the 'Delete PLC program' function.
	Diagnostic messages, e.g. 2311 "motor encoder"
IDxxxxx.y	xxxxx: Parameter number y: Bit number e.g. ID32773.14

Content

1 For your safety

1.1 Presenting safety messages

Any safety information is configured as follows:

⚠ SIGNAL WORD	
	**Type and source of risk** Consequence(s) of non-observance **Steps to prevent:** • ...

1.2 Class of hazard

Safety and warning messages are graduated into classes of hazard (according to ANSI Z535). The class of hazard defines the potential risk of harm and is described by a single word, if the safety information is ignored. The signal word is followed by a safety alert symbol (ISO 3864, DIN EN ISO 7010). In accordance with ANSI Z535, the following signal words are used to define the class of hazard.

Safety alert symbol and signal word	Class of hazard and its meaning
⚠ DANGER	DANGER indicates a hazardous situation which, if not avoided, **will** result in death or serious injury
⚠ WARNING	WARNING indicates a hazardous situation which, if not avoided, **could** result in death or serious injury
⚠ CAUTION	CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, **could** result in minor or moderate injury
NOTICE	NOTICE is used to address preventions to avoid material damage, but not related to personal injury.

1.3 Safety symbols used

Safety symbol	Meaning
	Generic warning!

1.4 Always to be observed!

⚠ WARNING	
	**Hazard due to changing parameters!** The incorrect entering of parameters into the controller card significantly influences the drive system characteristics and creates an increased risk of accidents and damages! **Steps to prevent:** • Parameters may not be modified by the machine operator unless consultation takes place with the machine manufacturer. • Change parameters only if you are sure of the meanings and the consequences. If you are unsure, read the parameter documentation or ask the manufacturer or supplier.

2 Parameter by groups

System parameters

Parameter-ID	Name
ID265	'Language'
ID32795	'Source UE'
ID32796	'Source RF'
ID32813	'Parameter set assignment 1'
ID32821	'Password'
ID32882	'Slot assignment'
ID32901	'Global service bits'
ID32913	'Clear error'
ID32942	'Service control'
ID33170	'IPO mode'
ID33730	'System booting'

Motor parameters

Parameter-ID	Name
ID109	'Motor peak current'
ID111	'Motor nominal current IN'
ID113	'Maximum speed'
ID114	'Overload limit motor'
ID116	'Resolution motor encoder'
ID141	'Motor type'
ID310	'Overload motor'
ID312	'Warning overtemperature motor'
ID32768	'Nominal motor voltage'
ID32769	'Magnetising current'
ID32770	'Magnetising current 1'
ID32771	'Nominal torque'
ID32772	'Nominal velocity'
ID32774	'Rotor time constant'
ID32775	'Pole number motor'
ID32776	'Sine encoder period'
ID32827	'Magnetising current feedback'
ID32831	'Commutation angle'
ID32832	'Encoder signal S2'
ID32833	'Encoder signal S1'
ID32834	'Torque current feedback'
ID32841	'Encoder list motor'
ID32842	'Encoder list customer'
ID32920	'Overload time motor'
ID32934	'Pulse encoder period'
ID32935	'Voltage standstill'
ID32953	'Encoder type'
ID32959	'Offset resolver'
ID32960	'Input motor encoder gear'
ID32961	'Output motor encoder gear'

Parameter-ID	Name
ID33102	'Display overload motor'
ID33142	'Commutation valid'
ID33149	'Saturation current'
ID33150	'Brake torque'
ID33151	'Maximal angular deviation of encoder-sensorless'
ID33181	'Actual current Ia'
ID33182	'Actual current Ib'
ID33183	'Voltage Ua'
ID33184	'Voltage Ub'
ID33185	'Magnetizing current feedback '
ID33186	'Torque current feedback'
ID34045	'Inductance path D'
ID34046	'Inductance path Q'
ID34050	'Current path Q integral-action time TN'
ID34052	'Current path D integral-action time TN'
ID34094	'Rise time SWC'
ID34095	'Final value SWC'
ID34096	'Standstill current motor'
ID34099	'Delay time SWC'
ID34148	'Voltage control proportional gain KP'
ID34149	'Voltage control integrating time TN'
ID34151	'Current path Q proportional gain KP'
ID34152	'Current path D proportional gain KP'
ID34153	'Maximum speed motor'
ID34160	'Part number motor'
ID34161	'Production date motor'
ID34162	'Serial number motor'
ID34164	'Terminal resistance'
ID34165	'Holding torque brake'
ID34166	'Temperature sensor motor'
ID34167	'Terminal Inductance'
ID34168	'Time maximum current motor'
ID34174	'SWK monitoring'
ID34177	'Lower threshold current adaption'
ID34178	'Upper threshold current adaption'
ID34179	'Gradient path Q proportional gain'
ID34180	'Gradient path Q integral-action time'
ID34184	'Starting current SL'
ID34185	'Resistance rotor'
ID34186	'Inductance stator'
ID34187	'Inductance rotor'
ID34188	'Main inductance'
ID34212	'Voltage path Q'
ID34213	'Voltage path D'
ID34231	'Feed forward control voltage path Q'
ID34232	'Feed forward control voltage path D'
ID34233	'Phase resistance'
ID34234	'Voltage constant Ke'
ID34235	'Increase motor voltage'
ID34243	'Offset commutation'
ID34265	'Encoder ratio'

Parameter-ID	Name
ID34297	'Encoder type 2'

Operation mode parameters

Parameter-ID	Name
ID32800	'AMK main operating mode'
ID32801	'AMK secondary operating mode 1'
ID32802	'AMK secondary operating mode 2'
ID32803	'AMK secondary operating mode 3'
ID32804	'AMK secondary operating mode 4'
ID32805	'AMK secondary operating mode 5'
ID32806	'AMK secondary operating mode 6'
ID32807	'AMK digital torque control'
ID32808	'AMK position control'
ID32809	'AMK digital speed control'

Torque parameters

Parameter-ID	Name
ID80	'Torque command value'
ID81	'Additive torque command value'
ID82	'Positive torque limit'
ID83	'Negative torque limit'
ID84	'Torque feedback value'
ID85	'Torque polarity'
ID92	'Bipolar torque limit'
ID126	'Torque threshold'
ID333	'Message torque: actual value ≥ threshold'
ID334	'Message torque: actual value ≥ limit'
ID530	'Clamping torque'
ID32777	'Torque relative to 10V at A1'
ID32835	'Torque command value internal'
ID32915	'Sum of additive torques'
ID32916	'Cyclic filter'
ID32986	'Derating factor'
ID32987	'Threshold derating'
ID32989	'Torque filter time'
ID33113	'Torque setpoint at controller'
ID34221	'Friction torque'
ID34222	'Friction torque linear'
ID34223	'Holding torque'
ID34224	'Inertia'
ID34225	'Mode feed forward control'
ID34226	'List load model'
ID34281	'Current setpoint ISQ'
ID34282	'Current setpoint ISD'
ID34283	'Commutation angle'
ID34298	'Torque feedback filter'
ID34301	'Torque setpoint filter input'
ID34302	'Torque setpoint filter output'

Velocity parameters

Parameter-ID	Name
ID36	'Velocity command value'
ID37	'Additive velocity command value'
ID38	'Positive velocity limit'
ID39	'Negative velocity limit'
ID40	'Velocity feedback value'
ID43	'Velocity polarity'
ID91	'Bipolar velocity limit'
ID100	'Speed control proportional gain KP'
ID101	'Integral-action time speed control TN'
ID102	'Differentiating time speed control TD'
ID108	'Feedrate override'
ID124	'Zero velocity window'
ID125	'Velocity threshold'
ID156	'Velocity feedback value 2'
ID157	'Velocity window'
ID209	'Lower adaption limit'
ID210	'Upper adaption limit'
ID211	'Proportional gain adaption'
ID212	'Integral-action time adaption'
ID296	'Velocity feedforward gain'
ID330	'Message speed: actual value = setpoint'
ID331	'Message speed: actual value < minimal value'
ID332	'Message speed: actual value < threshold'
ID335	'Message speed: setpoint > limit'
ID348	'Acceleration feedforward gain'
ID392	'Velocity feedback filter'
ID32778	'Speed relative to 10V at A1'
ID32779	'Speed offset for A1'
ID32780	'Acceleration ramp'
ID32781	'Deceleration ramp'
ID32782	'Deceleration ramp RF inactive'
ID32823	'Velocity control command after ramp'
ID32891	'Internal velocity command value'
ID32914	'Sum of additive velocities'
ID32928	'Time filter 1'
ID32929	'Time filter 2'
ID32932	'Barrier frequency'
ID32933	'Bandwidth'
ID32991	'U/f startup'
ID33141	'U/f input filter'
ID33174	'Damping factor position'
ID34183	'Velocity threshold SL'
ID34189	'Rotor flux proportional gain'
ID34190	'Rotor flux integral-action time'
ID34191	'Velocity acquisition propotional gain'
ID34192	'Velocity acquisition integral-action time'
ID34228	'Angle feed forward SL'

Parameter-ID	Name
ID34229	'Sliding factor SL'
ID34238	'List IR filter'
ID34239	'V/F integrator stop'
ID34299	'Velocity setpoint in control'
ID34300	'Velocity actual value in control'

Position parameters

Parameter-ID	Name
ID49	'Positive position limit'
ID50	'Negative position limit'
ID55	'Closed loop polarity'
ID103	'Modulo value'
ID104	'Position loop factor KV'
ID115	'Position feedback type'
ID117	'Resolution external position feedback system'
ID121	'Load gear input revolution'
ID122	'Load gear output revolution'
ID123	'Feed constant'
ID159	'Excess error'
ID32824	'Following distance'
ID32826	'Following error compensation value'
ID32894	'Position command value filter'
ID32895	'Position control differenting time'
ID32922	'Residual distance erase window'
ID32958	'Commant value 1 cycle'
ID34182	'Limit position increment'

Positioning parameters

Parameter-ID	Name
ID41	'Homing velocity'
ID42	'Homing acceleration'
ID47	'Position command value'
ID51	'Position feedback value'
ID52	'Home reference position 1'
ID53	'Position feedback value 2'
ID57	'In position window'
ID136	'Positive acceleration'
ID137	'Negative acceleration'
ID147	'Homing parameter'
ID150	'Homing offset 1'
ID153	'Spindle angle position'
ID154	'Spindle positioning parameter'
ID169	'Probe control parameter'
ID173	'Marker position A'
ID175	'Displacement parameter 1'
ID180	'Spindle position relative offset'
ID189	'Following distance'
ID193	'Positioning jerk'

Parameter-ID	Name
ID194	'Acceleration setpoint'
ID222	'Spindle position speed'
ID258	'Target position'
ID259	'Positioning velocity'
ID260	'Positioning acceleration'
ID336	'Message in position'
ID359	'Positioning deceleration'
ID378	'Absolute encoder range 1'
ID400	'Home switch'
ID430	'Active target position'
ID437	'Positioning status'
ID32896	'Derating factor'
ID32926	'AMK homing cycle parameter'
ID32936	'Window'
ID32940	'High homing velocity'
ID32956	'Additional acceleration value'
ID32990	'NK shift'
ID33098	'Increase position value'
ID33104	'Position feedback modulo'
ID34070	'Home signal distance'
ID34074	'Homing Counter 1'
ID34075	'Actual Counter 1'
ID34076	'Homing Counter 2'
ID34077	'Actual Counter 2'
ID34286	'Time stop drive cmd'

Synchronous control parameters

Parameter-ID	Name
ID228	'Synchron position window'
ID32892	'Synchronous setpoint pulses divider'
ID32893	'Synchronous setpoint pulses multiplier'
ID32952	'At synchronous speed window'

Binary inputs assignment

Parameter-ID	Name
ID32873	'Address input port 1'
ID32874	'Port 1 Bit 0'
ID32875	'Port 1 Bit 1'
ID32876	'Port 1 Bit 2'
ID32877	'Port 1 Bit 3'
ID32878	'Port 1 Bit 4'
ID32879	'Port 1 Bit 5'
ID32880	'Port 1 Bit 6'
ID32881	'Port 1 Bit 7'
ID32968	'Address input port 2'
ID32969	'Port 2 Bit 0'
ID32970	'Port 2 Bit 1'
ID32971	'Port 2 Bit 2'

Parameter-ID	Name
ID32972	'Port 2 Bit 3'
ID32973	'Port 2 Bit 4'
ID32974	'Port 2 Bit 5'
ID32975	'Port 2 Bit 6'
ID32976	'Port 2 Bit 7'
ID32977	'Address input port 3'
ID32978	'Port 3 Bit 0'
ID32979	'Port 3 Bit 1'
ID32980	'Port 3 Bit 2'
ID32981	'Port 3 Bit 3'
ID33175	'List glitch filter time'
ID34100	'Binary input word'
ID34101	'Binary input word 1'
ID34102	'Binary input word 2'
ID34304	'Communication input word'
ID34816	'Communication output word'

Binary outputs assignment

Parameter-ID	Name
ID32846	'Address output port 1'
ID32847	'Port 1 Bit 0'
ID32848	'Port 1 Bit 1'
ID32849	'Port 1 Bit 2'
ID32850	'Port 1 Bit 3'
ID32851	'Port 1 Bit 4'
ID32852	'Port 1 Bit 5'
ID32853	'Port 1 Bit 6'
ID32854	'Port 1 Bit 7'
ID32855	'Address output port 2'
ID32856	'Port 2 Bit 0'
ID32857	'Port 2 Bit 1'
ID32858	'Port 2 Bit 2'
ID32859	'Port 2 Bit 3'
ID32860	'Port 2 Bit 4'
ID32861	'Port 2 Bit 5'
ID32862	'Port 2 Bit 6'
ID32863	'Port 2 Bit 7'
ID32864	'Address output port 3'
ID32865	'Port 3 Bit 0'
ID32866	'Port 3 Bit 1'
ID32867	'Port 3 Bit 2'
ID32868	'Port 3 Bit 3'
ID34120	'Binary output word'
ID34121	'Binary output word 1'
ID34122	'Binary output word 2'
ID34200	'Bit mask port 1'
ID34201	'Bit mask port 2'
ID34202	'Bit mask port 3'
ID35328	'Communication input double word'
ID35584	'Communication output double word'

Analog outputs assignment

Parameter-ID	Name
ID32897	'Analog Input A1'
ID32898	'Analog Input A2'
ID34037	'Offset analog input 1'
ID34038	'Offset analog input 2'

Inverter parameters

Parameter-ID	Name
ID110	'Converter peak current'
ID112	'Converter nominal current'
ID140	'Inverter type'
ID158	'Power threshold'
ID206	'Drive on delay time'
ID207	'Drive off delay time'
ID311	'Warning overtemperature inverter'
ID313	'Warning cooler'
ID337	'Message power: actual value ≥ threshold'
ID380	'DC-bus voltage'
ID384	'Temperature internal'
ID32828	'Current feedback phase U'
ID32829	'Current feedback phase V'
ID32830	'Current feedback phase W'
ID32836	'DC bus voltage'
ID32837	'DC bus voltage monitoring'
ID32999	'Overload limit inverter'
ID33100	'Actual power value'
ID33101	'Display overload inverter'
ID33116	'Temperature internal'
ID33117	'Temperature external'
ID33171	'Active power (electrical)'
ID33172	'Reactive power (electrical)'
ID33187	'Actual current value phase U'
ID33188	'Actual current value phase V'
ID33189	'Actual current value phase W'
ID33304	'Motion service switch'
ID33911	'SIWL setpoint'
ID34048	'PWM frequency'
ID34055	'EF type'
ID34199	'Actual power value bipolar'
ID34203	'Voltage at 25 degrees'
ID34204	'Voltage at 75 degrees'
ID34205	'Voltage at 125 degrees'
ID34215	'Temperature IGBT'
ID34250	'SIWL source'
ID34251	'Line counts SIWL output'
ID34252	'Offset position index'
ID34253	'SIWL factor'
ID34254	'SIWL divisor'

Parameter-ID	Name
ID34255	'SIWL modulo IN'
ID34256	'Filter observer'
ID34257	'SIWL control'
ID34258	'SIWL status'
ID34259	'Maximum scanning frequency'
ID34260	'Line counts SIWL input'
ID34266	'Voltage reserve'
ID34303	'DC-bus monitor upper limit'

Special applications

Parameter-ID	Name
ID32798	'User list 1'
ID33145	'OSC channel 1'
ID33146	'OSC channel 2'
ID33147	'OSC channel 3'
ID33148	'OSC channel 4'
ID34039	'OSC Control'
ID34040	'OSC configuration list'
ID34041	'OSC actual values'
ID34042	'OSC data list'
ID34043	'TG Control'
ID34044	'TG configuration list'
ID34090	'User list 2'
ID34217	'AMK Test 1'
ID34218	'AMK Test 2'
ID34219	'AMK Test 3'
ID34220	'AMK Test 4'
ID34284	'OSC container length'

SERCOS drive specific

Parameter-ID	Name
ID6	'Drive telegram start time'
ID7	'Feedback acquisition start time'
ID8	'Command valid time (T3)'
ID11	'Status class 1-errors'
ID12	'Status class 2-warnings'
ID13	'Status class 3-messages'
ID15	'Telegram types parameter'
ID16	'Configuration list AT'
ID18	'Operational data list communication phase 2'
ID19	'Operational data list communication phase 3'
ID20	'Operational data list communication phase 4'
ID21	'Invalid data list communication phase 2'
ID22	'Invalid data list communication phase 3'
ID23	'Invalid data list communication phase 4'
ID24	'Configuration list MDT'
ID25	'All command data list'
ID28	'MST error counter'

Parameter-ID	Name
ID29	'MDT error counter'
ID32	'Primary operating mode'
ID33	'Secondary operating mode 1'
ID34	'Secondary operating mode 2'
ID35	'Secondary operating mode 3'
ID89	'Transmission time MDT (T2)'
ID96	'Slave identifier (SLKN)'
ID97	'Diagnostic mask status class 2'
ID98	'Diagnostic mask status class 3'
ID99	'Diagnosis reset status class 1'
ID129	'Manufacturer status class 1'
ID134	'Master control word'
ID135	'Drive status word'
ID142	'Application type'
ID143	'SERCOS interface version'
ID148	'Drive homing cycle command'
ID149	'Cmd position stop'
ID170	'Command probe cycle'
ID181	'Diagnosis manufacturer class 2'
ID182	'Diagnosis manufacturer status'
ID185	'Length data set AT'
ID186	'Length data set MDT'
ID187	'List of data AT'
ID188	'List of data MDT'
ID191	'CMD reset homing point'
ID216	'Switch parameter set command'
ID217	'Preselect parameter set command'
ID219	'ID-no. list for parameter sets'
ID254	'Actual parameter set'
ID262	'Initial program load command'
ID263	'Cmd load data'
ID264	'Cmd save data'
ID284	'Operation mode 4'
ID285	'Operation mode 5'
ID286	'Operation mode 6'
ID287	'Operation mode 7'
ID301	'Allocation control bit 1'
ID303	'Allocation control bit 2'
ID305	'Allocation status bit 1'
ID307	'Allocation status bit 2'
ID403	'Status actual position value'
ID405	'Probe 1 enable'
ID406	'Probe 2 enable'
ID409	'Probe 1 positive latch'
ID410	'Probe 1 negative latch'
ID411	'Probe 2 positive latch'
ID412	'Probe 2 negative latch'
ID447	'Command Set absolute position procedure'
ID32941	'SERCOS service'

General parameters

Parameter-ID	Name
ID1	'NC cycle time'
ID2	'SERCOS cycle time'
ID17	'ID-no. list all operational data'
ID26	'Configuration status bits'
ID30	'Software version'
ID95	'Diagnosis [ASCII text]'
ID130	'Probe value 1 positive edge'
ID131	'Probe value 1 negative edge'
ID132	'Probe value 2 positive edge'
ID133	'Probe value 2 negative edge'
ID144	'Status word'
ID179	'Probe status'
ID192	'List backup data'
ID269	'ID memory mode'
ID270	'Temporary parameter list'
ID326	'Parameter checksum'
ID390	'Diagnostic number'
ID398	'List status bits'
ID478	'Hardware limit switch status'
ID532	'Hardware limit switch configuration'
ID32773	'Service bits'
ID32840	'Diagnostic list'
ID32887	'Park position'
ID32888	'Park velocity'
ID32924	'Operation mode change parameter'
ID32938	'Customer variable 1'
ID32943	'Warning time'
ID32944	'SYADR'
ID32948	'Message 4x32'
ID32992	'Dead time compensation 1'
ID32993	'Dead time compensation 2'
ID32996	'Data signification'
ID33076	'Second period'
ID33143	'Communication monitoring'
ID33144	'Timeout communication monitoring'
ID33300	'Motion test 1'
ID33301	'Motion test 2'
ID33302	'Motion test 3'
ID33303	'Motion test 4'
ID34000	'Variable 0'
ID34001	'Variable 1'
ID34002	'Variable 2'
ID34003	'Variable 3'
ID34004	'Variable 4'
ID34005	'Variable 5'
ID34006	'Variable 6'
ID34007	'Variable 7'

Parameter-ID	Name
ID34008	'Variable 8'
ID34009	'Variable 9'
ID34010	'Variable 10'
ID34011	'Variable 11'
ID34012	'Variable 12'
ID34013	'Variable 13'
ID34014	'Variable 14'
ID34015	'Variable 15'
ID34016	'Variable 16'
ID34017	'Variable 17'
ID34018	'Variable 18'
ID34019	'Variable 19'
ID34047	'Dead time compensation measuring 1'
ID34053	'ID transfer'
ID34060	'List SEEP 1'
ID34061	'List SEEP 2'
ID34062	'Fault statistics'
ID34063	'Time meter power'
ID34071	'System name'
ID34072	'Data set name'
ID34088	'Event trace'
ID34146	'Memory address'
ID34147	'Memory data'
ID34154	'Start marker'
ID34155	'Mark window'
ID34157	'Dead time compensation measure'
ID34171	'Event filter'
ID34193	'Nominal current external component'
ID34194	'Peak current external component'
ID34195	'Peak current time external component'
ID34196	'Treshold external component'
ID34197	'Display external component'
ID34206	'Product code'
ID34210	'Dead time compensation measure 2'
ID34227	'Motion control bits'
ID34240	'AM command list'
ID34241	'AM status list'
ID34242	'AM Status'
ID34261	'Customer variable 2'
ID34262	'Motor encoder database image'
ID34273	'Osci 1'
ID34274	'Osci 2'
ID34275	'Osci 3'
ID34276	'Osci 4'
ID34277	'Osci 5'
ID34278	'Osci 6'
ID34279	'Osci 7'
ID34280	'Osci 8'
ID34285	'Motion data list'

Scaling parameters

Parameter-ID	Name
ID44	'Velocity scaling data'
ID76	'Position scaling data'
ID86	'Torque scaling data'
ID34073	'Scaling parameters'

Communication parameters

Parameter-ID	Name
ID34023	'BUS address participant'
ID34024	'BUS transmit rate'
ID34025	'BUS mode'
ID34026	'BUS mode attribute'
ID34027	'BUS failure character'
ID34028	'BUS output rate'
ID34036	'CCB-File'
ID34142	'Node list'
ID34230	'List Bus'

3 Parameter descriptions

ID1 'NC cycle time'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	Device-specific values
Signed:	NO	**Max. value:**	Device-specific values
Format:	DEC		
List:	NO		

Values for KW-R06 /

Default value:	1000
Min. value:	0.250 ms
Max. value:	20.000 ms

The 'NC cycle time' defines at what intervals a controller must give 32 bit setpoints via the data interface.

For active fine interpolation in positioning control for 32 bit position setpoints, the number of fine interpolation cycles is calculated within a 'SERCOS cycle time' depending on the 'NC cycle time':

Number of fine interpolation cycles within a 'SERCOS cycle time' = 'NC cycle time'/250 µs

The fine interpolation (FIPO) is switched on in parameter ID32800 'AMK main operating mode'.

32 bit position setpoints are then correctly processed if the following condition is met:
ID1 'NC cycle time' = ID2 'SERCOS cycle time'

16 bit position setpoints (pulse encoder input) are then correctly processed if the following condition is met:
ID1 'NC cycle time' = ID2 'SERCOS cycle time' = ID32958 'Commant value 1 cycle'

ID2 'SERCOS cycle time'

Sphere of action:	Device-specific values	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	Device-specific values
Signed:	NO	**Max. value:**	Device-specific values
Format:	DEC		
List:	NO		

Values for KW-R06 /

Sphere of action:	GLOBAL
Min. value:	0.250 ms
Max. value:	20.000 ms

The 'SERCOS cycle time'defines the intervals in which cyclical data is sent and received.

The master synchronises all of the participants in the network by synchronising the 'SERCOS cycle time' of the slaves with each other.

The following condition must be met if 32 bit position setpoints are processed:
ID1 'NC cycle time' = ID2 'SERCOS cycle time'

The following condition must be met if 16 bit position setpoints (pulse encoder input) are processed:
ID1 'NC cycle time' = ID2 'SERCOS cycle time' = ID32958 'Commant value 1 cycle'

ID6 'Drive telegram start time'

Reserved for AMK internal use!

ID7 'Feedback acquisition start time'

Reserved for AMK internal use!

ID8 'Command valid time (T3)'

Reserved for AMK internal use!

ID11 'Status class 1-errors'

Sphere of action:	FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If an error of the 'Status class 1-errors' is detected in the drive, an error-bit is set in ID11 'Status class 1-errors' and bit 13 in ID135 'Drive status word'. 'Status class 1-errors' and bit 13 in ID135 'Drive status word' can only be reset if there is no longer any error and the command ID99 'Diagnosis reset status class 1' was successfully executed.

Before the controller enable RF is withdrawn internally, the drive attempts to brake the motor to a stop in a regulated manner. If braking cannot take place, the controller enable RF is withdrawn and the motor runs out to stop.

Construction ID11 'Status class 1-errors'

Bit no.	Condition	Meaning
0	0	No error
	1	Error present: • Motor overload shutdown The I^2t-monitor motor must be activated in ID32773 'Service bits' Bit 14. • Configuration of the temperature model is faulty (have SEEP data checked by AMK Service). • IGBT temperature greater than the limit temperature specified for the device (have SEEP data checked by AMK Service).
1	0	No error
	1	Error present: Overtemperature of the converter, shutdown The parameter 'Temperature internal' is longer than the 'Warning time' above the specified threshold value for the device (SEEP device).
2	0	No error
	1	Error present: Overtemperature of the motor, shutdown 'Temperature external' is above the threshold value according to ID34166 'Warning time' longer than ID32943 allows 'Temperature sensor motor'. If the value in ID34166 = 0, then the limit value is 140°C.
3	0	Reserved
	1	Reserved
4	0	No error
	1	Error present: Supply voltage 24 VDC error

Bit no.	Condition	Meaning
5	0	No error
	1	Error present: Error in the encoder signal feedback, e.g. break in the encoder cable or encoder error.
6	0	Reserved
	1	Reserved
7	0	No error
	1	Error present: Converter overcurrent An unacceptably high converter current was detected, e.g. due to short-circuit or earth contact.
8	0	No error
	1	Error present: DC bus overvoltage The DC voltage in the DC bus has exceeded the permissible threshold value.
9-10	0	Reserved
	1	Reserved
11	0	No error
	1	Error present: Excessive control deviation The difference between the position setpoint and actual position value (ID189 'Following distance') is greater than ID159 'Excess error'.
12	0	No error
	1	Error present: Communications error
13	0	Reserved
	1	Reserved  The message that the position threshold value is exceeded according to ID49 and ID50 is only available in ID182 'Diagnosis manufacturer status' Bit 0.
14	0	Reserved
	1	Reserved
15	0	No error
	1	Manufacturer-specific error present: Siehe ID129 'Manufacturer status class 1' auf Seite 83.

ID12 'Status class 2-warnings'

Sphere of action:	FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

Setting or resetting a warning in 'Status class 2-warnings' is shown in ID135 'Drive status word' bit 12.

Bit 12 in ID135 is deleted after ID12 has been read via the service channel.

With ID97 'Diagnostic mask status class 2', warnings can be masked out, which means that the masked out warnings have no effect on bit 12 in ID135. The masking out has no impact on the display of the warnings in ID12.

Construction ID12 'Status class 2-warnings'

Bit no.	Condition	Meaning
0	0	no warning
	1	Warning present: ID310 'Overload motor'
1	0	no warning
	1	Warning present: ID311 'Warning overtemperature inverter' 'Temperature internal' is above the threshold value specified for the device (have SEEP data checked by AMK Service).
2	0	no warning
	1	Warning present: ID312 'Warning overtemperature motor' 'Temperature external' is above the threshold value according to ID34166 'Temperature sensor motor'.  If the value in ID34166 = 0, then the limit value is 140°C.
3-14	0	Reserved
	1	Reserved
15	0	no warning
	1	Manufacturer-specific warning present: Siehe ID181 'Diagnosis manufacturer class 2' auf Seite 99.

ID13 'Status class 3-messages'

Sphere of action:	FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

Setting or resetting a message in the 'Status class 3-messages' is shown in ID135 'Drive status word' bit 11.

Bit 11 in ID135 is deleted after ID13 has been read via the service channel.

With ID98 'Diagnostic mask status class 3', warnings can be masked out, which means that the masked out warnings have no effect on bit 11 in ID135. The masking out has no impact on the display of the warnings in ID13.

Construction ID13 'Status class 3-messages'

Bit no.	Condition	Meaning
0	0	Message inactive
	1	Message active: $n_{actual} = n_{set}$, see ID330
1	0	Message inactive
	1	Message active: $n_{actual} = 0$, see ID331
2	0	Message inactive
	1	Message active: $\|n_{actual}\| < \|n_x\|$, see ID332
3	0	Message inactive
	1	Message active: $\|Md\| \geq \|Md_x\|$, see ID333

Bit no.	Condition	Meaning
4	0	Message inactive
	1	Message active: $\|Md\| \geq \|Md_{Limit}\|$, see ID334
5	0	Message inactive
	1	Message active: $\|n_{set}\| > \|n_{Limit}\|$, see ID335
6	0	Message inactive
	1	Message active: In position, see ID336
7	0	Message inactive
	1	Message active: $\|P\| \geq \|P_x\|$, see ID337
8-14	0	Reserved
	1	Reserved
15	0	Message inactive
	1	Manufacturer-specific message active: Siehe ID182 'Diagnosis manufacturer status' auf Seite 99.

ID15 'Telegram types parameter'

Sphere of action:	Device-specific values	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	7
Format:	DEC		
List:	NO		

Values for KW-R06 /

Default value:	6
Sphere of action:	DRIVE

In 'Telegram types parameter', you can select between preferred telegrams and configured telegrams.

The specified type of telegram is activated in the master and in the slave starting from communication phase 3.

Construction ID15 'Telegram types parameter'

Bit no.	Condition Bit 2 Bit 1 Bit 0 (LSB)	Meaning	
		MDT (cyclical target values)	AT (cyclical actual values)
0-2	000	Preferred telegram 0 No cyclical data	Preferred telegram 0 No cyclical data
	001	Preferred telegram 1 Data field 1: ID80 'Torque command value'	Preferred telegram 1 No cyclical data
	010	Preferred telegram 2 Data field 1: ID36 'Velocity command value'	Preferred telegram 2 Data field 1: ID40 'Velocity feedback value'
	011	Preferred telegram 3 Data field 1: ID36 'Velocity command value'	Preferred telegram 3 Data field 1: ID51 'Position feedback value'
	100	Preferred telegram 4 Data field 1: ID47 'Position command value'	Preferred telegram 4 Data field 1: ID51 'Position feedback value'
	101	Preferred telegram 5 Data field 1: ID47 'Position command value' Data field 2: ID36 'Velocity command value'	Preferred telegram 5 Data field 1: ID51 'Position feedback value' Data field 2: ID40 'Velocity feedback value'
	110	Preferred telegram 6 Data field 1: ID36 'Velocity command value'	Preferred telegram 6 No cyclical data
	111	Configured telegram Siehe ID24 'Configuration list MDT' auf Seite 38.	Configured telegram Siehe ID16 'Configuration list AT' auf Seite 34.
3-15	0	Reserved	Reserved
	1	Reserved	Reserved

ID16 'Configuration list AT'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Maximum list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Maximum list length: 40

The 'Configuration list AT' defines what parameters are cyclically transferred into the drive telegram (AT) if in ID15 'Telegram types parameter' 'configured telegram' is selected. The configurable parameters are listed in 'List of data AT' ID187 .

Configuration ID16 'Configuration list AT'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	2 x z	List head: Maximum list length without list head [byte]
2		1st parameter number
3		2nd parameter number
...	...	...
z+1		zth parameter number

z = Maximum list length

ID17 'ID-no. list all operational data'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte/element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	Device-specific values
List:	YES	**Maximum list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Default value:	477 (current list length)
Current list length:*	477
Maximum list length:	477

All of the parameters that support a device are listed in the 'ID-no. list all operational data'. The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

Configuration ID17 'ID-no. list all operational data'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	2 x z	List head: Maximum list length without list head [byte]
2	1	ID1
3	2	ID2
...	...	...
z+1		

z = Maximum list length

ID18 'Operational data list communication phase 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Maximum list length:***	6

* The list length is the number of usage data elements without 4 byte head elements.

All parameters are stored in the 'Operational data list communication phase 2' that must be transferred in the second communications phase. The processing of this list is the prerequisite to switch to the communications phase 3.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

Configuration ID18 'Operational data list communication phase 2'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [x byte]** **(x = n elements x 2 byte / element)**
1	**12**	**List head: Maximum list length without list head [byte]**
2		1st parameter
3		2nd parameter
4		3rd parameter
...	...	...

ID19 'Operational data list communication phase 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	0

* The list length is the number of usage data elements without 4 byte head elements.

All parameters are stored in the 'Operational data list communication phase 3' that must be transferred in the third communications phase. The processing of this list is the prerequisite to switch to the communications phase 4.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

No parameters are transferred in the communication phase 3 so that the 'Operational data list communication phase 3' is empty.

Configuration ID19 'Operational data list communication phase 3'

List element	Content	Meaning
0	0	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	0	List head: Maximum list length without list head [byte]
-	-	-

ID20 'Operational data list communication phase 4'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	60

* The list length is the number of usage data elements without 4 byte head elements.

All parameters are stored in the 'Operational data list communication phase 4' that can be changed online in the communication phase 4.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

No parameters are transferred in the communication phase 4 so that the 'Operational data list communication phase 4' is empty.

Configuration ID20 'Operational data list communication phase 4'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	120	List head: Maximum list length without list head [byte]
-	-	-

ID21 'Invalid data list communication phase 2'

Sphere of action:	FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	8

* The list length is the number of usage data elements without 4 byte head elements.

The parameters entered in the list 'Invalid data list communication phase 2' are recognized as invalid during the changeover command from the communication phase 2 to communication phase 3. The changeover command is automatically generated within the device.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

Configuration ID21 'Invalid data list communication phase 2'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	16	List head: Maximum list length without list head [byte]
2		1st parameter
3		2nd parameter
4		3rd parameter
...	...	...
9		8th parameter

ID22 'Invalid data list communication phase 3'

Sphere of action:	FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	8

* The list length is the number of usage data elements without 4 byte head elements.

The parameters entered in the list 'Invalid data list communication phase 3' are recognised as invalid during the changeover command from the communication phase 3 to communication phase 4. The changeover command is automatically generated within the device.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

Configuration ID22 'Invalid data list communication phase 3'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	16	List head: Maximum list length without list head [byte]
2		1st parameter
3		2nd parameter
4		3rd parameter
...	...	...
9		8th parameter

ID23 'Invalid data list communication phase 4'

Sphere of action:	FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	8

* The list length is the number of usage data elements without 4 byte head elements.

The parameters entered in the list 'Invalid data list communication phase 4' are recognised as invalid during the changeover in the communication phase 4.

The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.

Configuration ID23 'Invalid data list communication phase 4'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	16	List head: Maximum list length without list head [byte]
2		1st parameter
3		2nd parameter
4		3rd parameter
...	...	...
9		8th parameter

ID24 'Configuration list MDT'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Maximum list length: 40

The 'Configuration list MDT' defines what parameters are cyclically transferred into the master data telegram (MDT) if 'Telegram types parameter' 'configured telegram' is selected in ID15. The configurable parameters are listed in ID188.

Configuration ID24 'Configuration list MDT'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	2 x z	List head: Maximum list length without list head [byte]
2		1st parameter
3		2nd parameter
4		3rd parameter
...	...	...
z+1		z^{the} parameter

z = Maximum list length

ID25 'All command data list'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	Current list length:*	-
List:	YES	Maximum list length:*	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Maximum list length: 12

The 'All command data list' contains all supported commands. The elements 0 and 1 of the list are head information (current and maximum list length). The first command is in element 2.

Configuration ID25 'All command data list'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)**
1	**24**	**List head: Maximum list length without list head [byte]**
2		1st command
3		2nd command
4		3rd command
...	...	...
13		12th parameter

ID26 'Configuration status bits'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Maximum list length:***	16

* The list length is the number of usage data elements without 4 byte head elements.

The list 'Configuration status bits' configures a maximum of 16 real-time bit messages (application specific) that are issued in ID144 'Status word'.

Configuration ID26 'Configuration status bits'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	32	List head: Maximum list length without list head [byte]
2	e.g. 33029	Freely configurable status bit 0, e.g. system-ready message, SRM
3	e.g. 330	Freely configurable status bit 1, e.g. 'Message speed: actual value = setpoint'
4	e.g. 336	Freely configurable status bit 2, e.g. 'Message in position'
5	e.g. ...	Freely configurable status bit 3
6		Freely configurable status bit 4
7		Freely configurable status bit 5
8		Freely configurable status bit 6
9		Freely configurable status bit 7
10		Freely configurable status bit 8
11		Freely configurable status bit 9
12		Freely configurable status bit 10
13		Freely configurable status bit 11
14		Freely configurable status bit 12
15		Freely configurable status bit 13
16		Freely configurable status bit 14
17		Freely configurable status bit 15

Configurable status bits: Siehe 'ID398 'List status bits'' auf Seite 122.

ID28 'MST error counter'

Sphere of action:	FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65.000
Format:	DEC		
List:	NO		

The 'MST error counter' counts all of the invalid master synchronization telegrams (MST) in the communication phases 3 and 4 up to the maximal tolerated value (ID34026 instance 1) + 1. If more MST fail consecutively than parametrized in ID34026 instance 1, the following MST failures will no longer be counted. The counting ends with the value 65,000, which means that for a highly distorted transfer, the MST error counter has a constant value of 65.000 after a long time.

ID34027 has no effect to ID28.

Example 1:

ID34026 instance 1 = 0 (default)

ID28 = 1 + 1 = 2 (maximal value of fail MST consecutively)

Example 2:

ID34026 instance 1 = 10

ID28 = 10 + 1 = 11 (maximal value of fail MST consecutively)

ID29 'MDT error counter'

Reserved for AMK internal use!

ID30 'Software version'

Sphere of action:	Device-specific values	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Sphere of action:	INSTANCE / FORMAL
Max. list length:	20

ID30 is a ASCII list with 20-byte user data, which clearly identifies each firmware.

Configuration ID30'Software version'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 1 byte / element)
1	20	List head: Maximum list length without list head [byte]
2	e.g.: K	Device e.g.: KW
3	e.g.: W	
4	e.g.:	
5	LZ	Space
6	e.g.: 2	Version e.g.: 200
7	e.g.: 0	
8	e.g.: 0	
9	LZ	Space
10	e.g.: 0	Year e.g.: 01
11	e.g.: 1	
12	e.g.: 4	Week e.g.: 40
13	e.g.: 0	
14	LZ	Space
15	e.g.: 0	AMK parts no. e.g.: 023988
16	e.g.: 2	
17	e.g.: 3	
18	e.g.: 9	
19	e.g.: 8	
20	e.g.: 8	
21	0	

* The list length is the number of usage data elements without 4 byte head elements.

Instance	Controller	Software version (firmware)	Designation code
0	KW-R06	Controller module	GGG_vvv_yyww_tttttt
	KW-R07		
	KW-R16		
	KW-R17		
	KW-R24 / KW-R24-R		
	KW-R25 / KW-R26		
	KW-R27		
	iX / iC		
	ihXT		
	iDT5		
1	KW-R06	Module in option slot	PC2_vvv_yyww_tttttt
	KW-R07		
	KW-R16	-	-
	KW-R17	-	-
	KW-R24 / KW-R24-R	-	-
	KW-R25 / KW-R26	-	-
	KW-R27	-	-
	iX / iC	-	-
	ihXT	-	-
	iDT5	-	-
2	KW-R06	Monitor P1 (and safety board if present)	MON_vvv_S_vvv_tttttt
	KW-R07		
	KW-R16		
	KW-R17		
	KW-R24 / KW-R24-R		
	KW-R25 / KW-R26		
	KW-R27		
	iX / iC		
	ihXT		
	iDT5		
3	KW-R06	FPGA and motion controller software P2	FPG_vvv_P2_vvvvv
	KW-R07		
	KW-R16		
	KW-R17		
	KW-R24 / KW-R24-R		
	KW-R25 / KW-R26		
	KW-R27		
	iX / iC		
	ihXT		
	iDT5		

Key

GGG: Device:
FPG: FPGA version
MON: Monitor
S: Safety Firmware
P1: Communication Controller (Net x)
P2 Motion Controller: SVN number
vvv Version
yyww Year/week
tttttt AMK parts no.

ID32 'Primary operating mode'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID32 'Primary operating mode' is activated when the main operating mode is selected in ID134 'Master control word' of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID32 'Primary operating mode'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID32 are converted internally to ID32800 'AMK main operating mode'.

ID33 'Secondary operating mode 1'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID33 'Secondary operating mode 1' is activated when the secondary operating mode 1 is selected in the control word of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID33 'Secondary operating mode 1'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID33 are converted internally to ID32801 'AMK secondary operating mode 1'.

ID34 'Secondary operating mode 2'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID34 'Secondary operating mode 2' is activated when the secondary operating mode 2 is selected in the control word of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID34 'Secondary operating mode 2'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID34 are converted internally to ID32802 'AMK secondary operating mode 2'.

ID35 'Secondary operating mode 3'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID35 'Secondary operating mode 3' is activated when the secondary operating mode 3 is selected in the control word of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID35 'Secondary operating mode 3'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID35 are converted internally to ID32803 'AMK secondary operating mode 3'.

ID36 'Velocity command value'

Sphere of action:	DRIVE	**Default value:**	10000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-100000.0 1/min
Signed:	YES	**Max. value:**	100000.0 1/min
Format:	DEC		
List:	NO		

In the speed control operating mode, the controller cyclically writes the speed setpoint values in ID36 according to ID2 'SERCOS cycle time'.

ID37 'Additive velocity command value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-100000.0 1/min
Signed:	YES	**Max. value:**	100000.0 1/min
Format:	DEC		
List:	NO		

The 'Additive velocity command value' is added with ID36 'Velocity command value'.

This parameter is used by the following functions:

'Speed feed-forward control'

'Load model'

ID38 'Positive velocity limit'

Sphere of action:	DRIVE	**Default value:**	50000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	YES	**Max. value:**	10000.0 1/min
Format:	DEC		
List:	NO		

ID38 limits the speed setpoint value in the positive rotational direction. If a larger speed setpoint is specified than defined in ID38, the real-time bit ID335 'Message speed: setpoint > limit' is set.

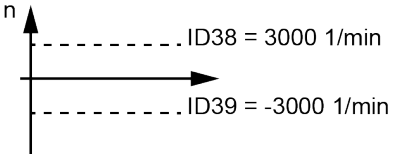
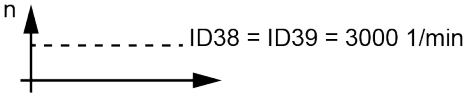
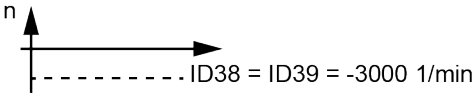
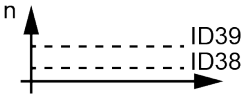
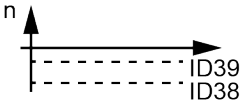
The precision is limited to |1 min^{-1}|.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID91 'Bipolar velocity limit' auf Seite 69.

If ID91 'Bipolar velocity limit' is configured, this takes priority over ID38'Positive velocity limit' and ID39 'Negative velocity limit'.

Examples of speed setpoint limits (ID38, ID39)

Parameterization	Active operation mode	Drive behavior
Bipolar limits, e.g., +/- 3000 1/min 	Position control	Position control with speeds within the parameterized limits, e.g. -3000 bis +3000 1/min
Equal limits, e.g. 3000 1/min 	Position control	Speed control to the parameterized speed setpoint limit, e.g. 3000 1/min
Equal limits, e.g. -3000 1/min 	Position control	Speed control to the parameterized speed setpoint limit, e.g. -3000 1/min
Invalid parameterization! ID39 > ID38 	Position control	**DANGER** Uncontrolled motor movements! The motor goes through! The inverter switched off the motor from the speed ID113 x 1,25 without current.
Invalid parameterization! ID39 > ID38 	Position control	**DANGER** Uncontrolled motor movements! The motor goes through! The inverter switched off the motor from the speed ID113 x 1,25 without current.

ID39 'Negative velocity limit'

Sphere of action:	DRIVE	**Default value:**	-50000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-10000.0 1/min
Signed:	YES	**Max. value:**	0 1/min
Format:	DEC		
List:	NO		

ID39 limits the speed setpoint in the negative rotational direction. If a larger speed setpoint (amount) is specified than defined in ID39, the real-time bit ID335 'Message speed: setpoint > limit' is set.

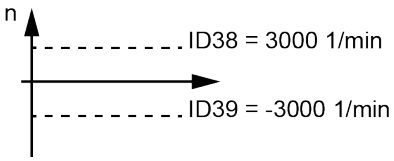
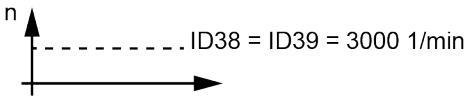
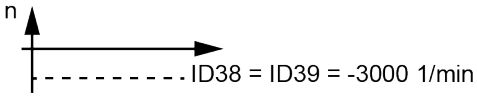
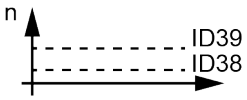
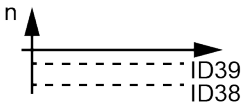
The precision is limited to $|1\ min^{-1}|$.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID91 'Bipolar velocity limit' auf Seite 69.

If ID91 'Bipolar velocity limit' is configured, this takes priority over ID38 'Positive velocity limit' and ID39 'Negative velocity limit'.

Examples of speed setpoint limits (ID38, ID39)

Parameterization	Active operation mode	Drive behavior
Bipolar limits, e.g., +/- 3000 1/min 	Position control	Position control with speeds within the parameterized limits, e.g. -3000 bis +3000 1/min
Equal limits, e.g. 3000 1/min 	Position control	Speed control to the parameterized speed setpoint limit, e.g. 3000 1/min
Equal limits, e.g. -3000 1/min 	Position control	Speed control to the parameterized speed setpoint limit, e.g. -3000 1/min
Invalid parameterization! ID39 > ID38 	Position control	**DANGER** Uncontrolled motor movements! The motor goes through! The inverter switched off the motor from the speed ID113 x 1,25 without current.
Invalid parameterization! ID39 > ID38 	Position control	**DANGER** Uncontrolled motor movements! The motor goes through! The inverter switched off the motor from the speed ID113 x 1,25 without current.

ID40 'Velocity feedback value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-100000.0 1/min
Signed:	YES	**Max. value:**	100000.0 1/min
Format:	DEC		
List:	NO		

ID40 contains the actual speed value of the speed encoder according to ID32953 'Encoder type'. The actual speed value can be cyclically evaluated by the controller according to ID2 'SERCOS cycle time' or can be transferred via the service channel.

In 'open loop' applications, ID40 shows the actual speed value that is calculated from the rotating field.

ID41 'Homing velocity'

Sphere of action:	DRIVE	**Default value:**	1000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	1 1/min
Signed:	NO	**Max. value:**	10000.0 1/min
Format:	DEC		
List:	NO		

ID41 sets the speed setpoint for the command ID148 'Drive homing cycle command'.

ID42 'Homing acceleration'

Sphere of action:	DRIVE	**Default value:**	100000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	1 U/s^2
Signed:	NO	**Max. value:**	60000 U/s^2
Format:	DEC		
List:	NO		

The 'Homing acceleration' acts at command ID148 'Drive homing cycle command'.

Siehe ID32941 'SERCOS service' auf Seite 180.

ID43 'Velocity polarity'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	7
Format:	BIN		
List:	NO		

In ID43 , the polarities of the speeds can be switched based on the application. The polarities are not switched within, but rather outside (at the input and output) of a controlled section.

A positive setpoint and positive polarity result in a right hand rotation with a view of the motor shaft (A-bearing side) for rotary motors.

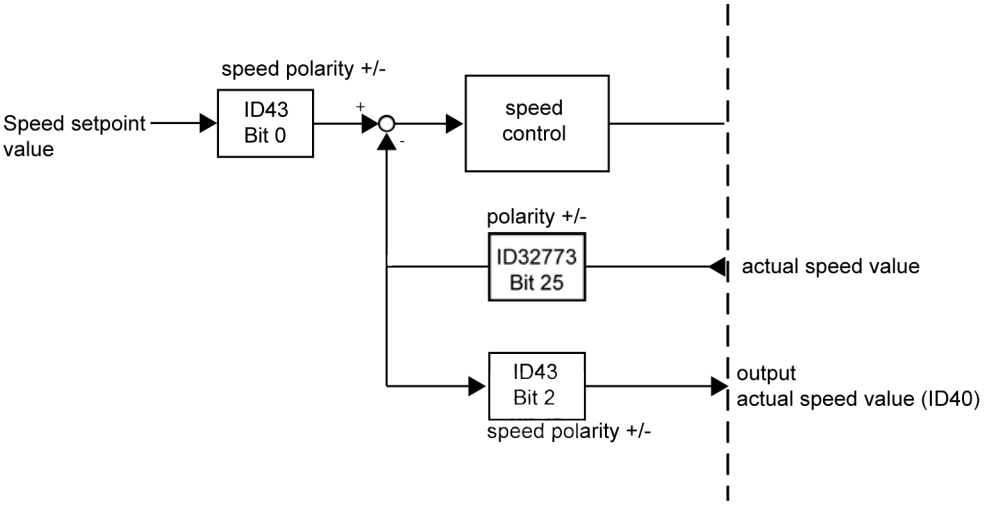
Configuration ID43 'Velocity polarity'

Bit no.	Condition	Meaning
0	0	ID36 'Velocity command value', positive polarity
	1	ID36 'Velocity command value' negative polarity
1	0	ID37 'Additive velocity command value', positive polarity
	1	ID37 'Additive velocity command value', negative polarity

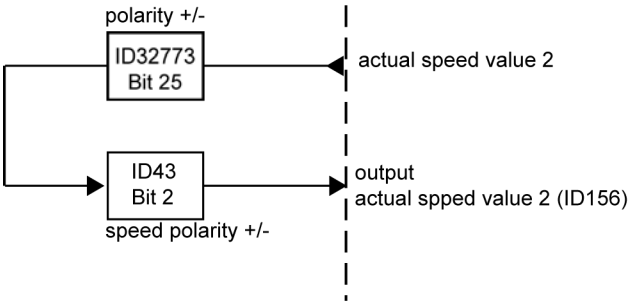
Bit no.	Condition	Meaning
2	0	ID40 'Velocity feedback value' , ID156 'Velocity feedback value 2' positive polarity Does not act on the control loop, but rather on the display ID40 and ID156! ID32773 'Service bits' Bit 25 = 1 can be set so that the polarity of the actual speed value acts on the closed loop control.
	1	ID40 'Velocity feedback value', ID156 'Velocity feedback value 2' negative polarity Does not act on the control loop, but rather on the display ID40 and ID156! ID32773 'Service bits' Bit 25 = 1 can be set so that the polarity of the actual speed value acts on the closed loop control.
3-15	0	Reserved
	1	Reserved

Do you want to reverse the direction of the motor rotation without interfering with the control structure?
Siehe ID32773 'Service bits' auf Seite 131.

Effect of the speed polarity



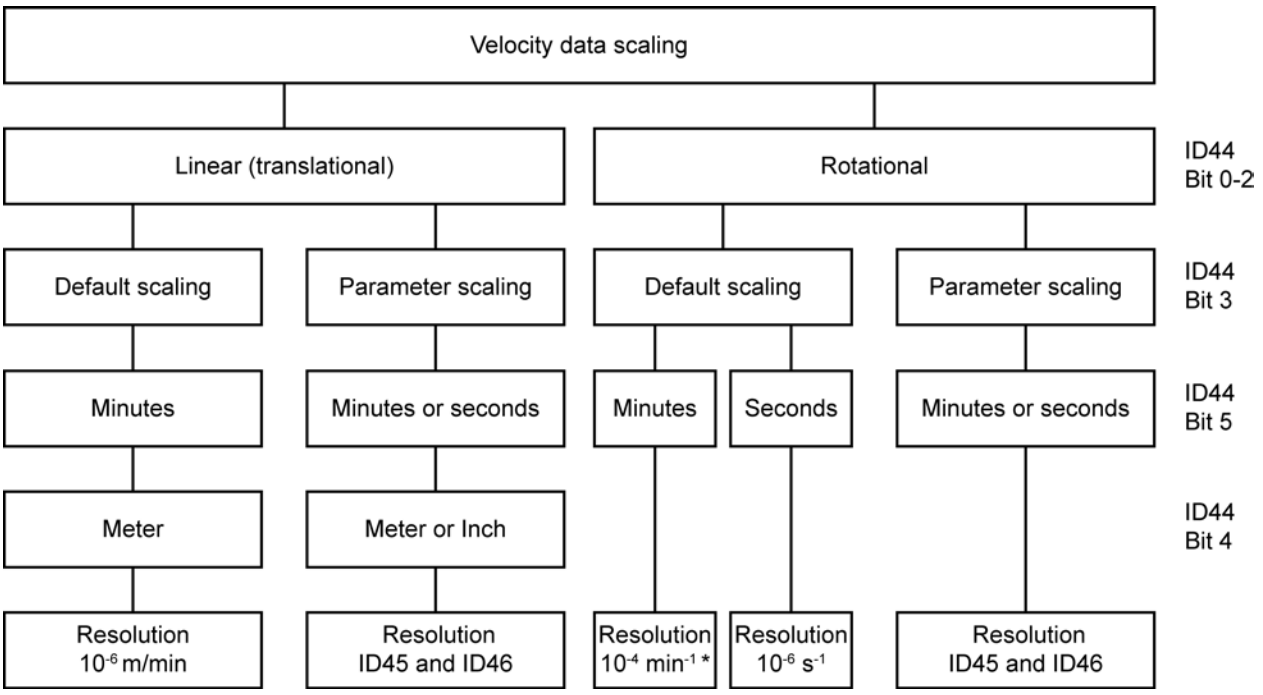
If a second encoder is selected in ID34297 'Encoder type 2', the speed polarity also has an effect on its actual speed value.



ID44 'Velocity scaling data'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0010
Access:	READING / WRITING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The scaling type of velocity data is set by ID44 'Velocity scaling data'



* Default setting: Default scaling, rotational 0.0001 1/min

Configuration ID44 'Velocity scaling data'

Bit no.	Condition	Meaning
0-1	00 (LSB)	Reserved
	01	Linear scaling
	10	Rotational scaling (default scaling)
2	0	Reserved
	1	Reserved
3	0	Default scaling
	1	Parameter scaling
4	0	Dimensional unit for linear scaling: • Meter [m] Dimensional unit for rotational scaling: • Revolutions
	1	Dimensional unit for linear scaling: • Inch [in]
5	0	Time unit: Minute [min]
	1	Time unit: Seconds [s]
6	0	Data relation to the motor shaft
	1	Reserved
7-15	0	Reserved
	1	Reserved

The set scaling of the velocity data refers to all following parameters:

ID36	'Velocity command value'	ID157	'Velocity window'
ID37	'Additive velocity command value'	ID222	'Spindle position speed'
ID38	'Positive velocity limit'	ID259	'Positioning velocity'
ID39	'Negative velocity limit'	ID32778	'Speed relative to 10V at A1'
ID40	'Velocity feedback value'	ID32779	'Speed offset for A1'
ID41	'Homing velocity'	ID32823	'Velocity control command after ramp'
ID91	'Bipolar velocity limit'	ID32891	'Internal velocity command value'
ID124	'Zero velocity window'	ID32914	'Sum of additive velocities'
ID125	'Velocity threshold'	ID32940	'High homing velocity'
ID156	'Velocity feedback value 2'	ID34183	'Velocity threshold SL'

This parameter is used by the following function:
'Scaling'

ID47 'Position command value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

In the position control operating mode, the controller cyclically writes the position setpoint values in ID47 according ID2 'SERCOS cycle time'.

ID49 'Positive position limit'

Sphere of action:	DRIVE	**Default value:**	2147483647
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID49 describes the maximum traverse distance in the positive direction. The 'Positive position limit' is only active if the command ID148 'Drive homing cycle command' was successfully carried out. Siehe ID403 'Status actual position value' auf Seite 122.

If the 'Positive position limit' is exceeded, the exceedance is displayed in ID13 'Status class 3-messages' bit 15, ID182 'Diagnosis manufacturer status' bit 7 and via the real-time bit (code 33015 '|ID51 'Position feedback value'| > |ID49 'Positive position limit'|').

Real-time bit messages do not create an axis stop! No error status is generated. The master controller must evaluate the real-time bit message and initiate appropriate responses,
e. g. stop the drive in a controlled manner!

ID50 'Negative position limit'

Sphere of action:	DRIVE	**Default value:**	-2147483648
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID50 describes the maximum traverse distance in the negative direction. The 'Negative position limit' is only active if the command ID148 'Drive homing cycle command' was successfully carried out. Siehe ID403 'Status actual position value' auf Seite 122.

If the 'Negative position limit' is fallen below, the shortfall is displayed in ID13 'Status class 3-messages' bit 15, ID182 'Diagnosis manufacturer status' bit 0 and via the real-time bit (code 33013 '|ID51 'Position feedback value'| > |ID50 'Negative position limit'|').

Real-time bit messages do not create an axis stop! No error status is generated. The master controller must evaluate the real-time bit message and initiate appropriate responses, e.g. stop the drive in a controlled manner!

ID51 'Position feedback value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	NO	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID51 contains the actual position of the actual position encoder according to ID32953 'Encoder type'. The position value can be cyclically evaluated by the control system according to ID2 'SERCOS cycle time' or be transferred via the service channel.

ID52 'Home reference position 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

The setpoint 'Home reference position 1' describes the distance between the machine zero point and the homing point relative to the actual position encoder. When homing, the actual position value according ID51 'Position feedback value' is calculated from the parameters ID52, ID150 'Homing offset 1' and ID173 'Marker position A'.

ID53 'Position feedback value 2'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

If a second encoder is selected in ID34297 'Encoder type 2', ID53 shows the actual position of the second encoder.

ID55 'Closed loop polarity'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	15
Format:	BIN		
List:	NO		

With the 'Closed loop polarity', the polarities of the position data can be inverted. The polarities are not switched within, but rather outside (at the input and output) of a controlled section.

A positive setpoint and positive polarity result in a right hand rotation with a view of the motor shaft (A-bearing side) for rotary motors. The actual position is shown positively. With a positive setpoint and negative polarity, the motor rotates to the left and the actual position is shown positively.

Do you want to reverse the direction of the motor rotation without interfering with the control structure?
Siehe ID32773 'Service bits' auf Seite 131.

Configuration ID55 'Closed loop polarity'

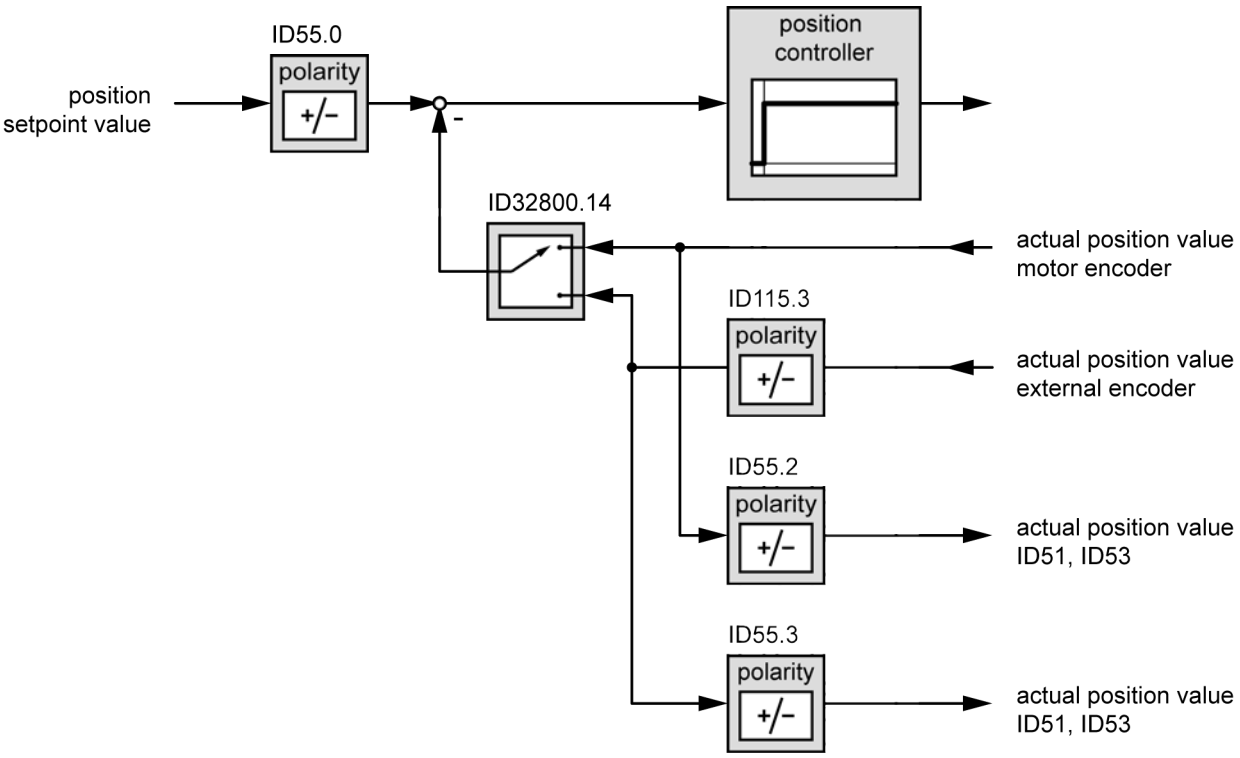
Bit no.	Condition	Meaning
0	0	Position setpoint, positive polarity
	1	Position setpoint, negative polarity
1	0	Reserved
	1	Reserved
2	0	Actual position value of the motor encoder, positive polarity
	1	Actual position value of the motor encoder, negative polarity
3	0	Actual position value of the external encoder, positive polarity
	1	Actual position value of the external encoder, negative polarity
4-15		Reserved

Setpoints and actual values must always be defined equally in pairs, otherwise the closed loop switches from 'negative feedback' to 'positive feedback.'

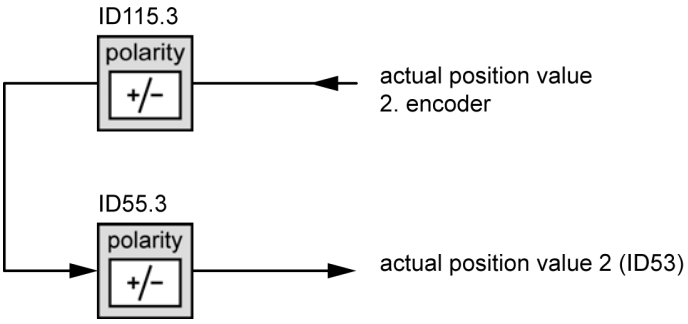
Only the following bit combinations are permissible:

0000h positive polarity, independent of the actual position encoder
0005h negative polarity, actual position encoder = motor encoder
0009h negative polarity, actual position encoder = external encoder

Effect of the position polarity



If a second encoder is selected in ID34297 'Encoder type 2', the position polarity also has an effect on its actual position.



ID57 'In position window'

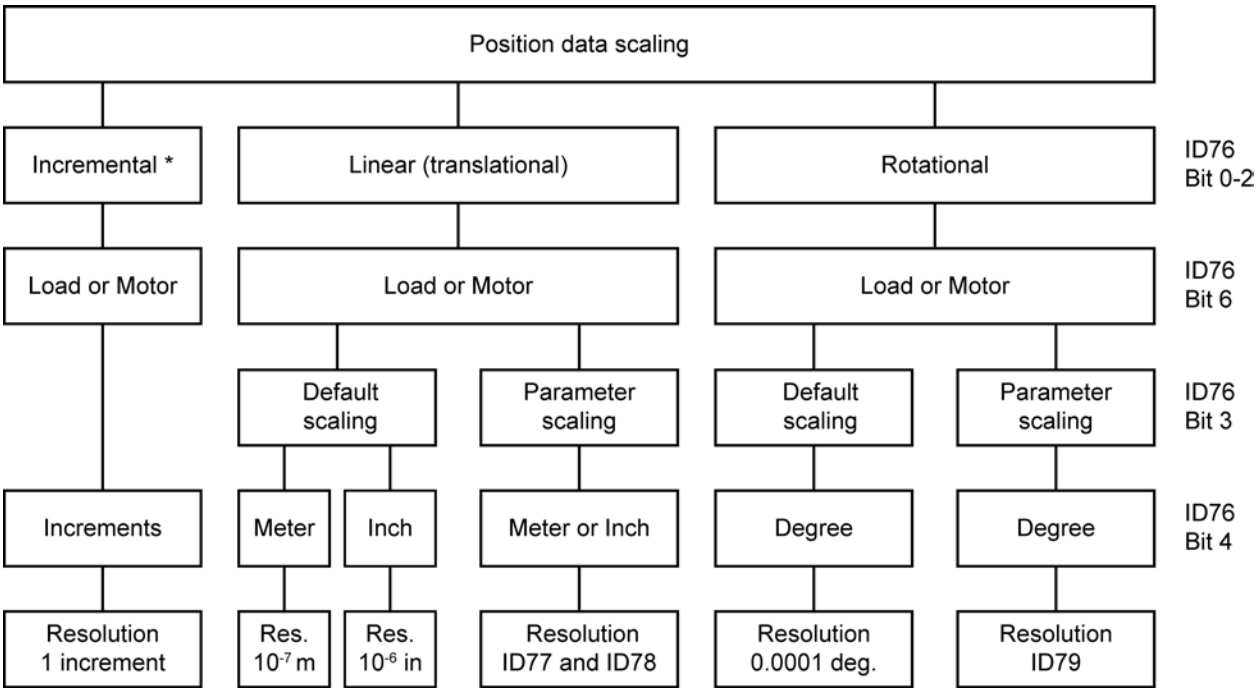
Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	0 Increments
Signed:	NO	**Max. value:**	65535 Increments
Format:	DEC		
List:	NO		

If the difference between the position setpoint value and actual position value is smaller (amount) than the value in ID57 'In position window' ($|x_{set} - x_{actual}| < ID57$), the real-time bit is set in ID336 'Message in position'.

ID76 'Position scaling data'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	255
Format:	BIN		
List:	NO		

The scaling type of position data is set by parameter ID76 'Position scaling data'



* Default setting: Default scaling, incremental

Configuration ID76 'Position scaling data'

Bit no.	Condition	Meaning
0-1	00 (LSB)	Incremental scaling (default scaling)
	01	Linear scaling
	10	Rotational scaling
2	0	Reserved
	1	Reserved
3	0	Scaling type: Default scaling
	1	Scaling type: Parameter scaling
4	0	Dimensional unit for linear scaling: • Meter [m] Dimensional unit for rotational scaling: • Angular degree
	1	Dimensional unit for linear scaling: • Inch [in]
5	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
6	0	Data relation to the motor shaft
	1	Data relation to the load (ID121 'Load gear input revolution'and ID122 'Load gear output revolution' are included in the calculation)
7	0	Absolute processing format
	1	Modulo processing format (ID103 'Modulo value')
8-15	0	Reserved
	1	Reserved

The set scaling of the position data refers to all following parameters:

ID47	'Position command value'	ID175	'Displacement parameter 1'
ID49	'Positive position limit'	ID180	'Spindle position relative offset'
ID50	'Negative position limit'	ID189	'Following distance'
ID51	'Position feedback value'	ID228	'Synchron position window'
ID52	'Home reference position 1'	ID258	'Target position'
ID57	'In position window'	ID32824	'Following distance'
ID103	'Modulo value'	ID32826	'Following error compensation value'
ID130	'Probe value 1 positive edge'	ID32922	'Residual distance erase window'
ID131	'Probe value 1 negative edge'	ID32952	'At synchronous speed window'
ID150	'Homing offset 1'	ID33098	'Increase position value'
ID153	'Spindle angle position'	ID33104	'Position feedback modulo'
ID173	'Marker position A'	ID34070	'Home signal distance'

This parameter is used by the following function:
'Scaling'

ID80 'Torque command value'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	% M_N
Data length:	2 byte	**Min. value:**	-1000.0 %M_N
Signed:	YES	**Max. value:**	1000.0 %M_N
Format:	DEC		
List:	NO		

In the torque control operating mode, the controller cyclically writes the torque setpoint value in ID80 according to ID2 'SERCOS cycle time'.

Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

ID81 'Additive torque command value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%M_N
Data length:	2 byte	**Min. value:**	-3000 %M_N
Signed:	YES	**Max. value:**	+3000 %M_N
Format:	DEC		
List:	NO		

The 'Additive torque command value' is added with ID80 'Torque command value'.

This parameter is used by the following function:
'Load model'

ID82 'Positive torque limit'

Sphere of action:	DRIVE	**Default value:**	1200
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	-3000 $\%M_N$
Signed:	YES	**Max. value:**	3000 $\%M_N$
Format:	DEC		
List:	NO		

The 'Positive torque limit' limits the maximum torque in the positive direction. It must be possible for the drive to realise the entered values.

The following applies for calculating the maximum possible limits:

Legend:

IDxx:	ID82 or ID83
ID110:	'Converter peak current'
ID111:	'Motor nominal current IN'
ID32769:	'Magnetising current'

For synchronous motors ID32769 must be set to 0 in the calculation formula!

If the specified torque setpoint requires a higher torque than the torque limit permits, the real-time bit ID334 'Message torque: actual value ≥ limit' '$|Md| \geq |Md_{Limit}|$' is set.
Siehe ID13 'Status class 3-messages' auf Seite 32.

If ID92 'Bipolar torque limit' is configured, this takes priority over ID82 'Positive torque limit' and ID83 'Negative torque limit'.

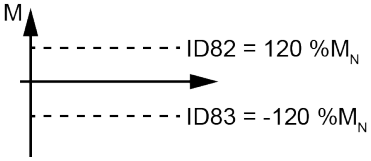
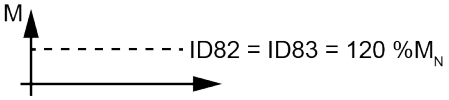
Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

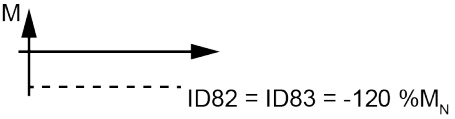
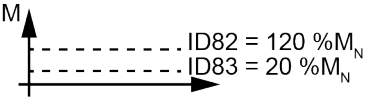
If 'torque limiting via analogue input A2' is selected in ID32800 'AMK main operating mode'0x2221/1'AMK main operation mode' , the larger limit value from ID82 and ID83 limits the maximum torque if 10 V DC are present at the analogue input A2. The analogue input voltage at A2 is evaluated quantitatively.

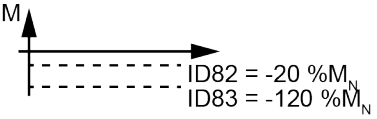
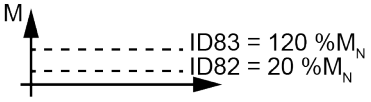
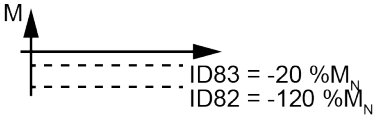
Example:
ID82 = 100 %
ID83 = 120 % (10 V DC at A2 correspond to a torque limit of 120 % M_N (ID32771 'Nominal torque' x 1.2)).

Siehe ID32800 'AMK main operating mode' auf Seite 141.

Examples of torque setpoint limits (ID82, ID83)

Parameterization	Active operation mode	Drive behavior
Bipolar limits, e.g. +/- 120 $\%M_N$  	Position control or speed control	Position control or speed control with torque within the parameterized limits e.g. -120 $\%M_N$ bis +120 $\%M_N$
Equal limits, e.g. +120 $\%M_N$  	Position control or speed control	Torque control (current control) to the parameterized torque setpoint limit, e.g. +120 $\%M_N$ **DANGER** Unexpected acceleration of the motor shaft! The motor goes through! The inverter switches off the motor from the speed ID113 x 1,25 without current. If the torque limits do not allow torque in both directions of rotation, the motor will apply a constant torque regardless of the setpoint according to the set limit. Without load, the motor will accelerate at the current limit with 120% M_N until the turn-off speed n > 1.25 x ID113 is reached and coasts with error message. The drive can only control if the limits allow torques in the positive and negative directions of rotation (bipolar torque limits).

Parameterization	Active operation mode	Drive behavior
Equal limits, e.g. -120 %M_N M  	Position control or speed control	Torque control (current control) to the parameterized torque setpoint limit, e.g. -120 %M_N **DANGER** Unexpected acceleration of the motor shaft! The motor goes through! The inverter switches off the motor from the speed ID113 x 1,25 without current. If the torque limits do not allow torque in both directions of rotation, the motor will apply a constant torque regardless of the setpoint according to the set limit. Without load, the motor will accelerate at the current limit with -120% M_N until the turn-off speed n > 1.25 x ID113 is reached and coasts with error message. The drive can only control if the limits allow torques in the positive and negative directions of rotation (bipolar torque limits).
Unequal limits, both positive, e.g. +20 bis +120 %M_N M  	Position control or speed control	Position control or speed control with torque within the parameterized limits, e.g. +20 %M_N bis +120 %M_N With these settings, the drive can only be controlled to a limited extent because torque is only permitted in one direction of movement. In addition, if the limits are set so that the torque setpoint 0 Nm is outside the set limits, the drive is always subjected to a non-zero torque in controlled operation. With RF withdrawal, the drive automatically switches to the speed control mode with speed setpoint 0 Nm, but can not brake because the set torque limits do not allow braking torque. It would coast down if 0 Nm lies within the parameterized limits. If the limits exclude the torque setpoint 0 Nm, the drive is subjected to the torque of the lower limit value during RF removal and a speed not equal to zero will be arise.

Parameterization	Active operation mode	Drive behavior
Unequal limits, both negative, e.g. -20 bis -120 $\%M_N$ 	Position control or speed control	Position control or speed control with torque within the parameterized limits, e.g. -20 $\%M_N$ to -120 $\%M_N$ With these settings, the drive can only be controlled to a limited extent because torque is only permitted in one direction of movement. In addition, if the limits are set so that the torque setpoint 0 Nm is outside the set limits, the drive is always subjected to a non-zero torque in controlled operation. With RF withdrawal, the drive automatically switches to the speed control mode with speed setpoint 0 Nm, but can not brake because the set torque limits do not allow braking torque. It would coast down if 0 Nm lies within the parameterized limits. If the limits exclude the torque setpoint 0 Nm, the drive is subjected to the torque of the lower limit value during RF removal and a speed not equal to zero will be arise.
Invalid parameterization! ID83 > ID82 	Position control	The controller enable (RF) will be withdrawl and the diagnosis message error 1313 'ID82 less then ID83' is generated.
Invalid parameterization! ID83 > ID82 	Position control	The controller enable (RF) will be withdrawl and the diagnosis message error 1313 'ID82 less then ID83' is generated.

ID83 'Negative torque limit'

Sphere of action:	DRIVE	**Default value:**	-1200
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	% M_N
Data length:	2 byte	**Min. value:**	-3000 $\%M_N$
Signed:	YES	**Max. value:**	3000 $\%M_N$
Format:	DEC		
List:	NO		

The 'Negative torque limit' limits the maximum torque in the negative direction. It must be possible for the drive to realise the entered values.

The following applies for calculating the maximum possible limits:

Legend:

IDxx:	ID82 or ID83
ID110:	'Converter peak current'
ID111:	'Motor nominal current IN'
ID32769:	'Magnetising current'

For synchronous motors ID32769 must be set to 0 in the calculation formula!

If the specified torque setpoint requires a higher torque than the torque limit permits, the real-time bit ID334 'Message torque: actual value ≥ limit' '|Md| ≥ $|Md_{Limit}|$' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.

If ID92 'Bipolar torque limit' is configured, this takes priority over ID82 'Positive torque limit' and ID83 'Negative torque limit'.

Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

If 'torque limiting via analogue input A2' is selected in ID32800 'AMK main operating mode'0x2221/1'AMK main operation mode' , the larger limit value from ID82 and ID83 limits the maximum torque if 10 V DC are present at the analogue input A2. The analogue input voltage at A2 is evaluated quantitatively.

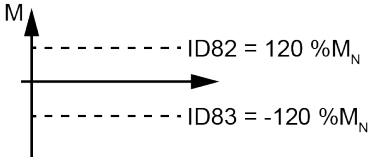
Example:

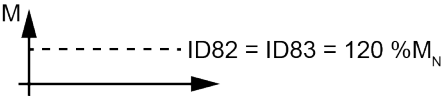
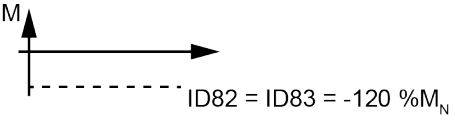
ID82 = 100 %

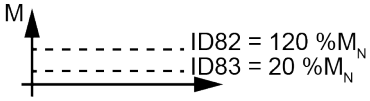
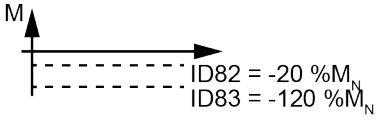
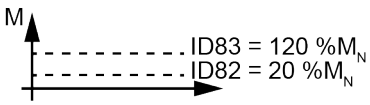
ID83 = 120 % (10 V DC at A2 correspond to a torque limit of 120 % M_N (ID32771 'Nominal torque' x 1.2)).

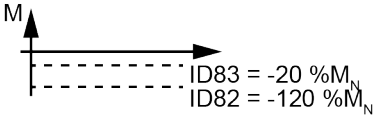
Siehe ID32800 'AMK main operating mode' auf Seite 141.

Examples of torque setpoint limits (ID82, ID83)

Parameterization	Active operation mode	Drive behavior
Bipolar limits, e.g. +/- 120 %M_N 	Position control or speed control	Position control or speed control with torque within the parameterized limits e.g. -120 %M_N bis +120 %M_N

Parameterization	Active operation mode	Drive behavior
Equal limits, e.g. +120 %M_N M  	Position control or speed control	Torque control (current control) to the parameterized torque setpoint limit, e.g. +120 %M_N **⚠DANGER** Unexpected acceleration of the motor shaft! The motor goes through! The inverter switches off the motor from the speed ID113 x 1,25 without current. If the torque limits do not allow torque in both directions of rotation, the motor will apply a constant torque regardless of the setpoint according to the set limit. Without load, the motor will accelerate at the current limit with 120% M_N until the turn-off speed n > 1.25 x ID113 is reached and coasts with error message. The drive can only control if the limits allow torques in the positive and negative directions of rotation (bipolar torque limits).
Equal limits, e.g. -120 %M_N M  	Position control or speed control	Torque control (current control) to the parameterized torque setpoint limit, e.g. -120 %M_N **⚠DANGER** Unexpected acceleration of the motor shaft! The motor goes through! The inverter switches off the motor from the speed ID113 x 1,25 without current. If the torque limits do not allow torque in both directions of rotation, the motor will apply a constant torque regardless of the setpoint according to the set limit. Without load, the motor will accelerate at the current limit with -120% M_N until the turn-off speed n > 1.25 x ID113 is reached and coasts with error message. The drive can only control if the limits allow torques in the positive and negative directions of rotation (bipolar torque limits).

Parameterization	Active operation mode	Drive behavior
Unequal limits, both positive, e.g. +20 bis +120 $\%M_N$ 	Position control or speed control	Position control or speed control with torque within the parameterized limits, e.g. +20 $\%M_N$ bis +120 $\%M_N$ With these settings, the drive can only be controlled to a limited extent because torque is only permitted in one direction of movement. In addition, if the limits are set so that the torque setpoint 0 Nm is outside the set limits, the drive is always subjected to a non-zero torque in controlled operation. With RF withdrawal, the drive automatically switches to the speed control mode with speed setpoint 0 Nm, but can not brake because the set torque limits do not allow braking torque. It would coast down if 0 Nm lies within the parameterized limits. If the limits exclude the torque setpoint 0 Nm, the drive is subjected to the torque of the lower limit value during RF removal and a speed not equal to zero will be arise.
Unequal limits, both negative, e.g. -20 bis -120 $\%M_N$ 	Position control or speed control	Position control or speed control with torque within the parameterized limits, e.g. -20 $\%M_N$ to -120 $\%M_N$ With these settings, the drive can only be controlled to a limited extent because torque is only permitted in one direction of movement. In addition, if the limits are set so that the torque setpoint 0 Nm is outside the set limits, the drive is always subjected to a non-zero torque in controlled operation. With RF withdrawal, the drive automatically switches to the speed control mode with speed setpoint 0 Nm, but can not brake because the set torque limits do not allow braking torque. It would coast down if 0 Nm lies within the parameterized limits. If the limits exclude the torque setpoint 0 Nm, the drive is subjected to the torque of the lower limit value during RF removal and a speed not equal to zero will be arise.
Invalid parameterization! ID83 > ID82 	Position control	The controller enable (RF) will be withdrawl and the diagnosis message error 1313 'ID82 less then ID83' is generated.

Parameterization	Active operation mode	Drive behavior
Invalid parameterization! ID83 > ID82 	Position control	The controller enable (RF) will be withdrawl and the diagnosis message error 1313 'ID82 less then ID83' is generated.

ID84 'Torque feedback value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	% M_N
Data length:	2 byte	**Min. value:**	-3000.0 % M_N
Signed:	YES	**Max. value:**	3000.0 % M_N
Format:	DEC		
List:	NO		

ID84 contains the actual torque value and can be cyclically evaluated by the controller or transferred via the service channel. The actual torque is proportional to the actual current value.

Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

ID85 'Torque polarity'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	7
Format:	BIN		
List:	NO		

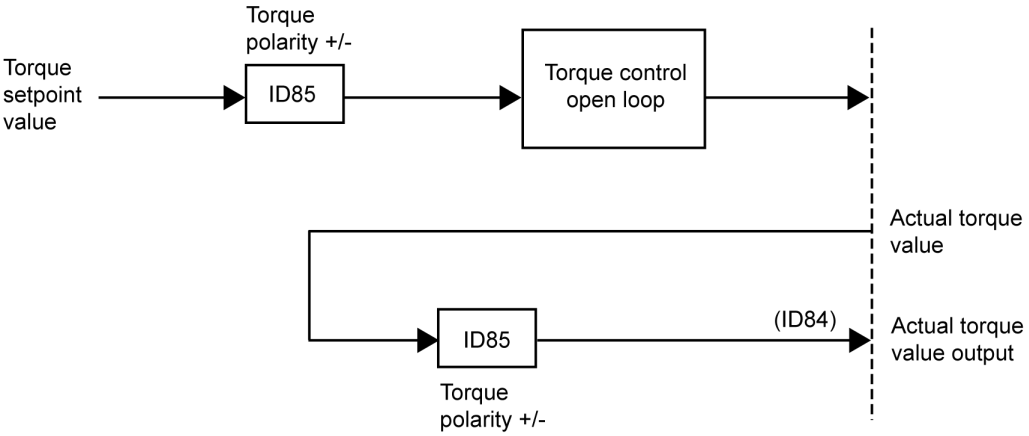
With the 'Torque polarity', the polarities of the torque data can be inverted. The polarities are not switched within, but rather outside (at the input and output) of a controlled section.

A positive setpoint and positive polarity result in a right hand rotation with a view of the motor shaft (A-bearing side) for rotary motors.

Configuration ID85 'Torque polarity'

Bit no.	Condition	Meaning
0	0	ID80 'Torque command value', positive polarity
	1	ID80 'Torque command value', negative polarity
1	0	ID81 'Additive torque command value', positive polarity
	1	ID81 'Additive torque command value', negative polarity
2	0	ID84 'Torque feedback value', positive polarity
	1	ID84 'Torque feedback value', negative polarity
3-15	0	Reserved
	1	Reserved

Effect of the torque polarity

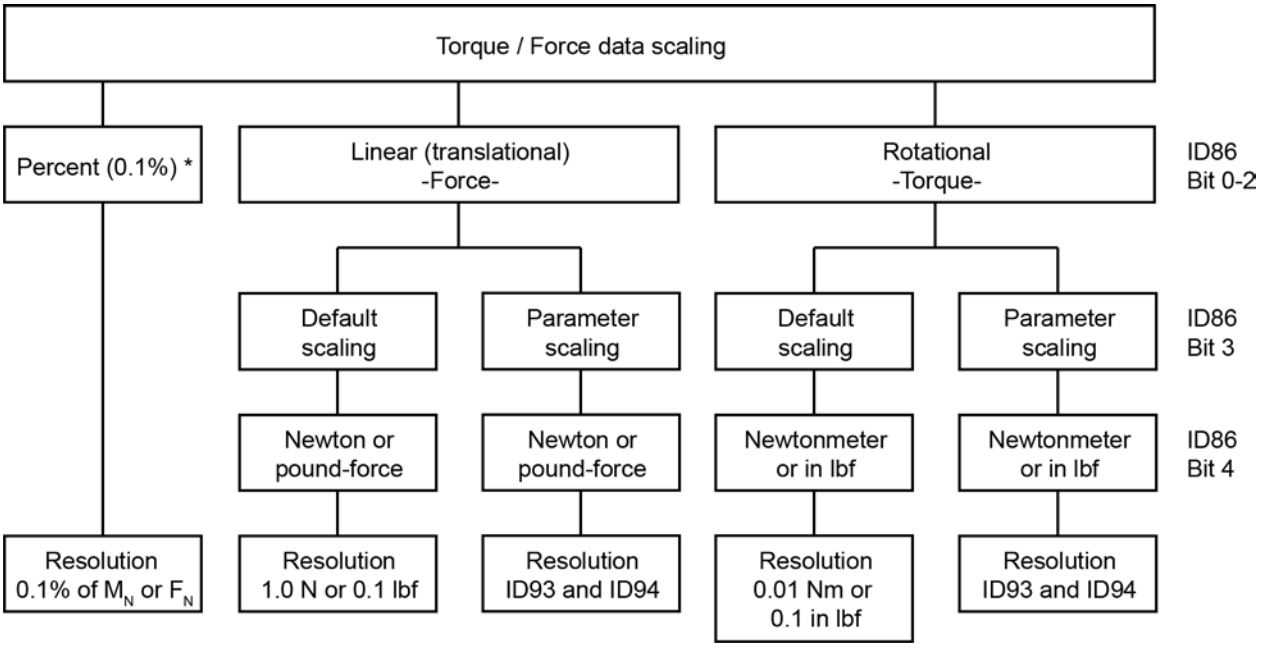


Do you want to reverse the direction of the motor rotation without interfering with the control structure?
Siehe ID32773 'Service bits' auf Seite 131.

ID86 'Torque scaling data'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The scaling type of torque- / force data is set by parameter 'Torque scaling data'.



* Default setting: Default scaling, percentage 0.1 %M_N

Configuration ID86 'Torque scaling data'

Bit no.	Condition	Meaning
0-1	00 (LSB)	Percentage scaling (0.1 %M_N) (default scaling)
	01	Linear scaling (force)
	10	Rotational scaling (torque)
2	0	Reserved
	1	Reserved
3	0	Default scaling
	1	Parameter scaling
4	0	Unit for linear scaling: • Newton [N] Unit for rotational scaling: • Newtonmeter [0.01 Nm]
	1	Unit for linear scaling: • Pound-force [0.1 lbf] Unit for rotational scaling: • Inch pound-force [0.1 in lbf]
5	0	Reserved
	1	Reserved
6	0	Data relation to the motor shaft
	1	Reserved
7-15	0	Reserved
	1	Reserved

The set scaling of the torque data refers to all following parameters:

ID80	'Torque command value'	ID126	'Torque threshold'
ID81	'Additive torque command value'	ID530	'Clamping torque'
ID82	'Positive torque limit'	ID32776	'Sine encoder period'
ID83	'Negative torque limit'	ID32835	'Torque command value internal'
ID84	'Torque feedback value'	ID32915	'Sum of additive torques'
ID92	'Bipolar torque limit'	ID33113	'Torque setpoint at controller'

This parameter is used by the following function:
'Scaling'

ID89 'Transmission time MDT (T2)'

Sphere of action:	GLOBAL	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.000 ms
Signed:	NO	**Max. value:**	65.535 ms
Format:	DEC		
List:	NO		

ID89 defines the start of transmission of the master data telegram after the end of the master synchronisation telegram. The time of transmission of the master data telegram is communicated to the slave by the master in the communication phase 2 and is activated in both starting in the communication phase 3.

ID91 'Bipolar velocity limit'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

The 'Bipolar velocity limit' describes the maximum permissible rotation speeds symmetrically in both directions. If a larger speed setpoint value is specified than defined in ID91, the real-time bit ID335 is set 'Message speed: setpoint > limit'. The precision is limited to |1 min^{-1}|.

Siehe ID13 'Status class 3-messages' auf Seite 32.

The following applies after switching on the device:

ID91 = ID38 'Positive velocity limit'

If ID91 'Bipolar velocity limit' is configured, this takes priority over ID38 'Positive velocity limit' and ID39 'Negative velocity limit'.

ID92 'Bipolar torque limit'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	0 $\%M_N$
Signed:	NO	**Max. value:**	3000 $\%M_N$
Format:	DEC		
List:	NO		

The 'Bipolar torque limit' describes the maximum permissible torque symmetrically in both directions. If the specified torque setpoint requires a higher torque than the torque limit permits, the real-time bit ID334 'Message torque: actual value ≥ limit' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.

The following applies after switching on the device:

ID92 = ID82 'Positive torque limit'

If ID92 'Bipolar torque limit' is configured, this takes priority over ID82 'Positive torque limit' and ID83 'Negative torque limit'.

Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

ID95 'Diagnosis [ASCII text]'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte (element)	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Max. list length: 1280

In the 'Diagnosis [ASCII text]', the drive's current relevant operating mode is displayed as a diagnostic number and plain text. The completion of the plain text message is marked with the symbol '\0'.

Configuration ID95 'Diagnosis [ASCII text]' example for the error message 2320 EF inactive

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)
1	z	List head: Maximum list length without list head [byte]
2	e.g. 2	Diagnostic number (MSB)
3	e.g. 3	Diagnostic number
4	e.g. 2	Diagnostic number
5	e.g. 0	Diagnostic number (LSB)
6	e.g. 0	Reserved
7	e.g. 0	Reserved
8	e.g. E	Plain text
9	e.g. F	Plain text
10		Plain text
11	e.g. I	Plain text
12	e.g. N	Plain text
13	e.g. A	Plain text
14	e.g. K	Plain text
15	e.g. T	Plain text
16	e.g. I	Plain text
17	e.g. V	Plain text
...	...	...
n	\0	End of the plain text message

ID96 'Slave identifier (SLKN)'

Sphere of action:	DRIVE	**Default value:**	0101
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65278
Format:	HEX		
List:	NO		

During the initialisation, it is necessary to know the affiliations of physical slaves to the drives that they operate for the optimal automatic time slot calculation by the master. The master can request this information from the drive in the communication phase 2. Using the respective entry, the master detects whether additional drives are present on the same physical slave.

Valid participant addresses are the decimal values of 1 to 254 according to the hexadecimal values 0x01 to 0xFE

<table>
<tr><td>High byte</td><td>Own drive address</td><td>Here is the participant address of the participant himself.</td></tr>
<tr><td>Low byte</td><td>Next drive address</td><td>Here is the participant address of the next higher participant. If the current participant is the one with the highest participant address, then the lowest participant address of the connected participant is entered.
Example: 3 Slave participant
<table>
<tr><th colspan="2">SLKN participant 3</th><th colspan="2">SLKN participant 5</th><th colspan="2">SLKN participant 8</th></tr>
<tr><td>03</td><td>05</td><td>05</td><td>08</td><td>08</td><td>03</td></tr>
</table>
If there are no other slave participants, the individual participant address is entered.
Example: 1 Slave participant
<table>
<tr><th colspan="2">SLKN participant 3</th></tr>
<tr><td>03</td><td>03</td></tr>
</table>
</td></tr>
</table>

ID97 'Diagnostic mask status class 2'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	BIN		
List:	NO		

With the mask, ID12 'Status class 2-warnings' can be masked. If the condition of a masked bit changes, the bit 12 will not be set in ID135 'Drive status word'. Bits in ID12 are set or not set independent of the masking.

Bit no.	Condition	Meaning
0 - 15	0	Warning is masked, bit 12 not set in ID135
	1	Warning is not masked

ID98 'Diagnostic mask status class 3'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	BIN		
List:	NO		

With the mask, warnings of ID13 'Status class 3-messages' can be masked. If the condition of a masked bit changes, the bit 11 will not be set to ID135 'Drive status word'. Bits in ID13 are set or not set independent of the masking.

Bit no.	Condition	Meaning
0 - 15	0	Warning is masked, bit 11 not set in ID135
	1	Warning is not masked

ID99 'Diagnosis reset status class 1'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000

Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	BIN		
List:	NO		

The command 'Diagnosis reset status class 1' deletes the error bits in ID11 'Status class 1-errors' and ID129 'Manufacturer status class 1' if the cause of the error has been rectified during the command call-up. The command also causes an internal error clearing in the device.

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

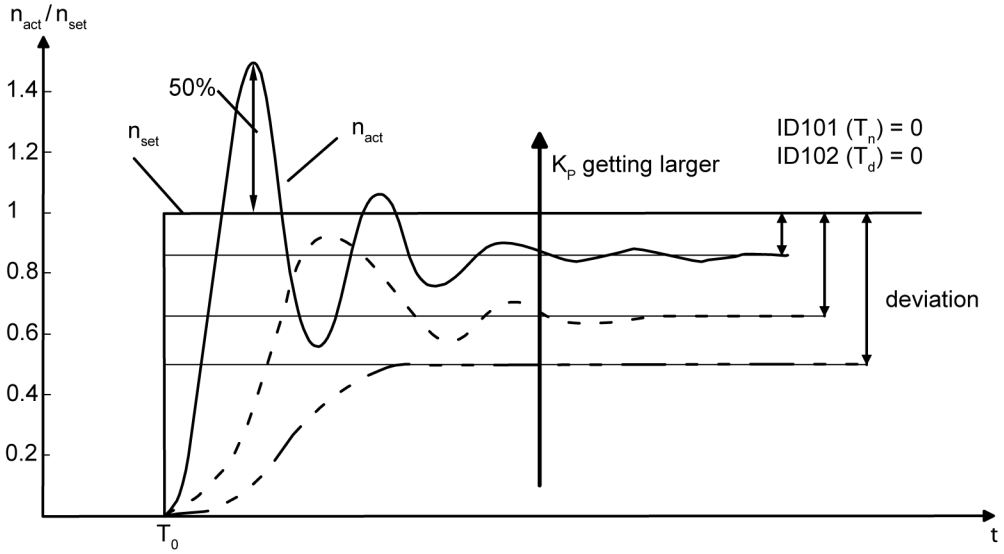
After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

ID100 'Speed control proportional gain KP'

Sphere of action:	DRIVE	**Default value:**	200
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	1
Signed:	NO	**Max. value:**	30000
Format:	DEC		
List:	NO		

The ID100 'Speed control proportional gain KP' of the speed controller must be optimised for the application.

Transfer function of the speed controller circuit, effect ID100 'Speed control proportional gain KP' (K_P)



Course of the actual speed of the speed controller circuit for an erratic change of the speed setpoint depending on KP (ID100).

Formula: Parameter dependencies ID100

Condition :1 ≤ kpdzl ≤ 32767

Formula: Torque dependency

Legend:

kpdzl:	internal system factor
ID100 :	'Speed control proportional gain KP'
ID110:	'Converter peak current'
ID111:	'Motor nominal current IN'
ID32769:	'Magnetising current' (Only with asynchronous motor, with synchronous motor = 0)
ID32771:	'Nominal torque'
Δn:	Speed controller input variable $\Delta n = n_{set} - n_{actual}$

ID101 'Integral-action time speed control TN'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	3000.0 ms
Format:	DEC		
List:	NO		

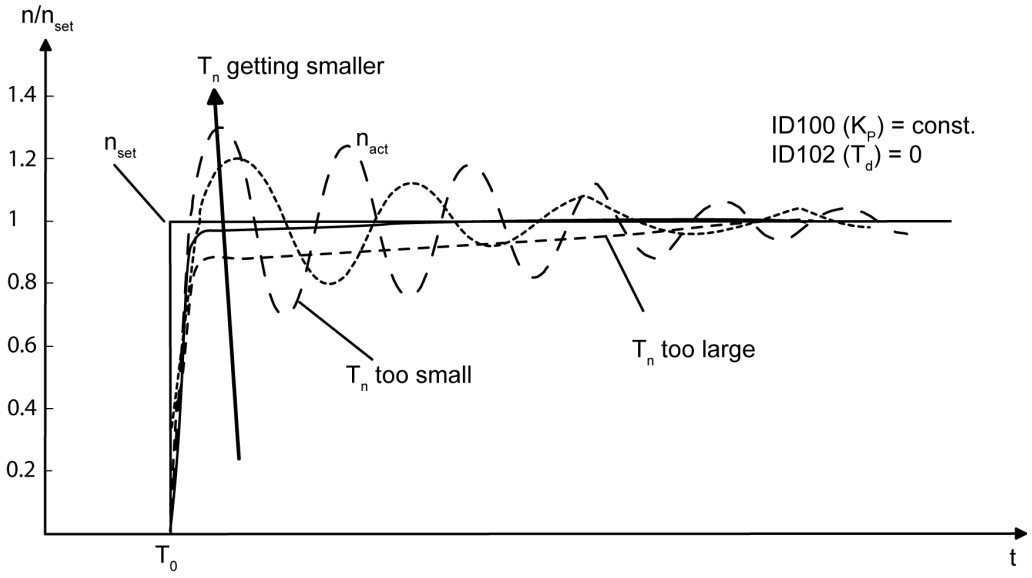
The ID101 'Integral-action time speed control TN' (integral portion) of the speed controller must be optimised by the user.

With the integral portion in the controller, the control deviation resulting from the P-controller is compensated for.

With ID101 = 0 ms, the reset time, i.e. the integral part of the speed controller, is ineffective. The speed controller then works as a pure P-controller.

The following figure shows the course of the actual speed of the speed controller circuit for an erratic change of the speed setpoint depending on ID101 'Integral-action time speed control TN'.

Transfer function of the speed controller circuit, effect ID101 'Integral-action time speed control TN' (T_n)



Formula: Parameter dependency ID101

Condition:1 ≤ kidzl ≤ 32767

Legend:

kidzl:	internal system factor
ID100 :	'Speed control proportional gain KP'
ID101 :	'Integral-action time speed control TN'
ID110:	'Converter peak current'
ID111:	'Motor nominal current IN'
ID32769:	'Magnetising current' (Only with asynchronous motor, with synchronous motor = 0)

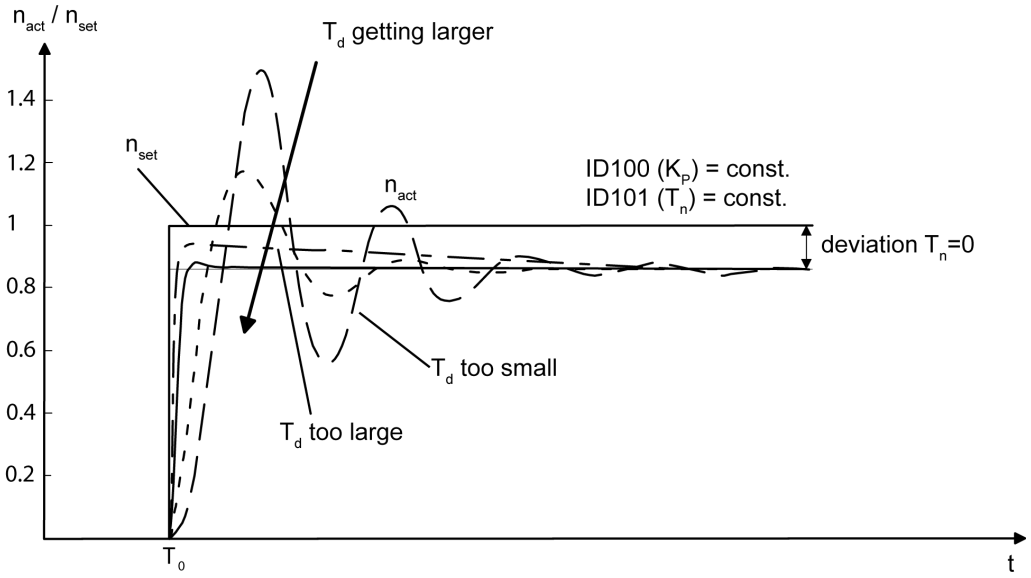
ID102 'Differentiating time speed control TD'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	3276.7 ms
Format:	DEC		
List:	NO		

The 'Differentiating time speed control TD' (differential portion) of the speed controller must be optimised by the user. The D-portion works as an attenuator in the PID controller. With ID102 = 0, the differential portion in the speed controller is ineffective.

The following figure shows the course of the actual speed value of the speed control loop for an erratic change of the speed setpoint depending on ID102.

Transfer function of the speed controller circuit, effect ID102 'Differentiating time speed control TD' (T_d)



Formula: dependencies

kddzl = ID102 x kpdzl

Condition: 1 ≤ kddzl ≤ 32767

Legend:

kddzl:	internal system factor
kpdzl:	internal system factor

Siehe ID100 'Speed control proportional gain KP' auf Seite 72.

ID103 'Modulo value'

Sphere of action:	DRIVE	**Default value:**	20000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	1 Increments
Signed:	NO	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

The modulo value function must not be set and used in conjunction with Q- and Y-encoder.

The modulo value defines the end value of position data in modulo format. Values that are processed by modulo are between zero and the modulo end value. If the modulo end value is reached, the position data runs over and start at '0'. A linear relationship results in a serrated-form position data curve.

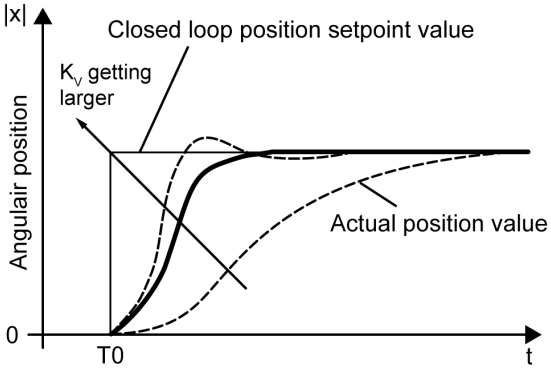
Siehe ID76 'Position scaling data' auf Seite 57.
Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID104 'Position loop factor KV'

Sphere of action:	DRIVE	**Default value:**	400
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	20
Signed:	NO	**Max. value:**	30000
Format:	DEC		
List:	NO		

Proportional gain K_V of the P-position controller. The following figure shows the course of the actual position value for an erratic change of the position setpoint.

Transfer function of the position control loop, effect ID104 'Position loop factor KV'



The following conditions are to be met:

Formula: System-internal limitation of the position controller gain K_V

LA = Factor position resolution (depends on encoder)

Motor encoder as an actual position encoder:
LA = ID116 'Resolution motor encoder'

Rotary external encoder:

Formula: Factor position resolution for external actual position encoder

ID117 'Resolution external position feedback system' (number of strokes per revolution)
ID122 'Load gear output revolution'
ID121 'Load gear input revolution'

ID108 'Feedrate override'

Sphere of action:	GLOBAL	**Default value:**	10000
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID108 'Feedrate override' only works in the operating mode "interpolation" and will be charged with ID259 'Positioning velocity'.

ID109 'Motor peak current'

Sphere of action:	DRIVE	**Default value:**	5000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.00 A
Signed:	NO	**Max. value:**	1000.00 A
Format:	DEC		
List:	NO		

The 'Motor peak current' is only to be entered then if it is specified in the AMK motor data sheet. ID109 is only effective if ID34167 'Terminal Inductance' is ≠ 0.

The i^2t-monitor motor must be activated in ID32773 'Service bits' Bit 14 .

ID110 'Converter peak current'

Sphere of action:	GLOBAL	**Default value:**	20000
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.000 A
Signed:	NO	**Max. value:**	1000.000 A
Format:	DEC		
List:	NO		

The maximum current of the converter is set by the factory in the SEEP of the converter and is transferred from the SEEP to the ID110 of the controller card during the initial system start-up. The value is read-only. Any input is ineffective. The 'Converter peak current' is the current limit of the converter and limits the maximum torque of the motor from the perspective of the converter.

ID111 'Motor nominal current IN'

Sphere of action:	DRIVE	**Default value:**	2500
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.000 A
Signed:	NO	**Max. value:**	1000.000 A
Format:	DEC		
List:	NO		

The 'Motor nominal current IN' is used as a reference size for all torque data and may amount to a maximum of 80 % of the ID110 'Converter peak current' (ID111 ≤ ID110 × 80 %). Der 'Motor nominal current IN' is on the motor type plate and in the motor data sheet.

ID112 'Converter nominal current'

Sphere of action:	GLOBAL	**Default value:**	2500
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.00 A
Signed:	NO	**Max. value:**	1000.00 A
Format:	DEC		
List:	NO		

The 'Converter nominal current' is the permissible continuous current of the converter and is transferred from the SEEP to the ID112 of the controller card during the initial system start-up. The value is read-only. Any input is ineffective.

ID113 'Maximum speed'

Sphere of action:	DRIVE	**Default value:**	60000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	1 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

NOTICE	
Material Damage!	**Material damage from high speeds!** ID113 must be set so that the input speed value plus 25% does not cause any damage in the process.

If the actual speed value increases to the value in ID113 x 1.25, the output stage is automatically internally blocked and the motor runs down. The user must set the value for ID113 depending on the process without exceeding the motor's maximum speed in the process. For sine encoders, the limit frequency at the sine encoder input may not be exceeded. The limit frequency for the sine encoder input can be found in the respective device description.

Formula: Determination of n_{max} for sine encoder input

Example:

Encoder division ID32776 = 1024 (I-encoder) limit frequency at the sine encoder input = 200 kHz

Observe the manufacturer's specified maximum encoder speed!

ID114 'Overload limit motor'

Sphere of action:	DRIVE	**Default value:**	500
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	0.0 %
Signed:	NO	**Max. value:**	6553.5 %
Format:	DEC		
List:	NO		

'Overload limit motor' specifies when the 2359 'Motor overload warning' warning is issued. If the i^2t motor overload reaches an overload value of 100% (ID33102 'Display overload motor'), the error message 2360 'Motor overload error' is issued, the drive is shut down (deceleration according to ID32782 'Deceleration ramp RF inactive') and controller enable '(RF) is withdrawn.

Siehe ID111 'Motor nominal current IN' auf Seite 77.

ID310 is issued simultaneously with the warning. If the value in ID114 is fallen below again, ID310 is reset until the value is exceeded again.

Siehe ID398 'List status bits' auf Seite 122.

The i^2t motor monitoring is only effective if it was activated via ID32773 'Service bits' bit 14 = 1.

ID115 'Position feedback type'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	BIN		
List:	NO		

ID115 'Position feedback type' sets the control direction of an external actual position encoder. The parameter is only effective if an external position encoder is selected in ID32800 'AMK main operating mode' bit 14 and bit 15.

Configuration ID115 'Position feedback type'

Bit no.	Condition	Meaning
0	0	Rotational encoder
	1	Linear encoder
1	0	Reserved
	1	Reserved
2	0	Reserved
	1	Reserved
3	0	Direction of movement not inverted
	1	Direction of movement inverted
4-15	0	Reserved
	1	Reserved

ID116 'Resolution motor encoder'

Sphere of action:	DRIVE	**Default value:**	20480
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	200 Increments
Signed:	NO	**Max. value:**	33554432 Increments
Format:	DEC		
List:	NO		

The 'Resolution motor encoder' sets the internal position resolution per motor revolution in an application-specific manner. This value is related to the actual position detection with the motor encoder (ID32800, ID32953).

At analog encoder evaluation of sine and cosine signals, the incoming signals in the inverter are first converted into square-wave signals and the edges are evaluated (factor 4). In addition, the sine wave and the cosine signal are recorded analogously and from this the analogue angle (arctan) is determined within a sinus period. With this angle, the resolution can be increased by the factor PV (position refinement). Each quarter period is subdivided into a maximum of 2048 measuring steps, thereby refining the position.

Formula: Determination of the motor encoder resolution for sine encoders (I-type encoder)

ID116 = 4 x ID32776 x PV

PV = position refinement = (1 ... 2048, integer!)

ID32776 'Sine encoder period'

Example:

ID32776 = 50 (type plate), PV = 100 selected

ID116 = 20000 incr./motor revolution

Formula: Determination of the motor encoder resolution for resolvers

ID116 = 4 x 128 x PV

PV = position refinement = 1 ... 2048, integer!

Formula: Determination of the motor encoder resolution for pulse encoders (square-wave pulse)

ID116 = 4 x ID32934

ID32934 'Pulse encoder period'

Formula: Motor encoder resolution for the use of absolute encoders (S-, T-, E-, F-, U-, V-type encoder)

ID116 = 4 x ID32776 x PV

PV = position refinement = 1 ... 2048, integer!

ID32776 'Sine encoder period'

Example:

ID32776 = 1024 (type plate), PV = 20 selected

ID116 = 81920 incr./motor revolution

Formula: Motor encoder resolution for the use of absolute encoders (P-, Q-, Y-type encoder)

ID116 = PV x MPU/2048

PV = position refinement = 1, 2, 3 ... integer!

MPU = determine the MPU value from the nameplate or from the motor data sheet:

Periodes / revolution (data sheet or type plate)	MPU (measuring steps / revolution - digital resolution)	ID116 example value
16 P./Rev.	262144 Inkrements	ID116 = 262144, with PV = 2048
32 P./Rev.	524288 Inkrements	ID116 = 524288, with PV = 2048

A position refinement factor of 2048 corresponds to the real resolution of the encoder.

If required, you can use higher values to adapt the encoder resolution to the application.
A position refinement factor > 2048 does not improve the resolution of the encoder system.

ID117 'Resolution external position feedback system'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	0 Increments
Signed:	NO	**Max. value:**	4294967295 Increments
Format:	DEC		
List:	NO		

The parameter only works with an external actual position encoder and defines the internal position resolution. The pulse / stroke number can be found in the external encoder's data sheet. The parameter is used to calculate the K_V factor effective in the P position controller.

The use of an external actual position encoder must be specified in ID32800 'AMK main operating mode'.

If an external actual position encoder is selected in an operating mode, the actual position is generally formed from this encoder signal in all position-controlled operating modes.

Formula: Determination of the resolution for an external sine encoder

ID117 = 4 x ID32776 x PV

PV = position refinement = (1 ... 2048, integer!)

ID32776 'Sine encoder period'

Example:

ID32776 = 1000 (type plate), PV = 5 selected

ID117 = 20000 incr./motor revolution

Formula: Determination of the resolution for resolvers

ID117 = 4 x 128 x PV

PV = position refinement = 1 ... 2048, integer!

Formula: Determination of the resolution for an external measuring system with square-wave pulse output

(two square-wave signals phase-shifted by 90 degrees)

ID117 = 4 x ID32934 (pulse encoder division)

ID32934 'Pulse encoder period'

Formula: Encoder resolution for absolute encoders (S, T, E, F, U, V encoder)

ID117 = 4 x ID32776 x PV

PV = position refinement = 1 ... 2048, integer!

ID32776 'Sine encoder period'

Formula: Encoder resolution for absolute encoders (P, Q encoder)

ID117 = PV × MPU/2048

PV = position refinement = 1 ... 2048, integer!

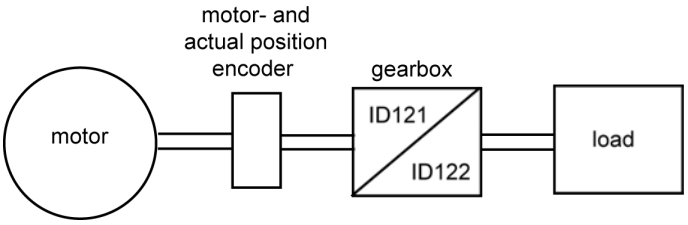
The type of external actual position encoder has to be defined in ID32953 'Encoder type'.

ID121 'Load gear input revolution'

Sphere of action:	DRIVE	**Default value:**	10
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Revolutions
Data length:	4 byte	**Min. value:**	1 revolution
Signed:	NO	**Max. value:**	30,000 revolutions
Format:	DEC		
List:	NO		

The drive factors ID121 'Load gear input revolution' and ID122 'Load gear output revolution' only function in the position control operating mode when a mechanical drive is present between the motor shaft and the load.

Arrangement



Example:

ID121 = 3

ID122 = 2

3 motor revolutions cause 2 revolutions on the load.

Formula: Transmission ratio:

Among other things, the transmission ratio of the drive is used to calculate the K_V factor effective in the P position controller.

Position setpoint and actual position values are only offset with the drive factors ID121 and ID122 when 'data relation to the load' is selected in ID76 'Position scaling data' and actual position source of the motor encoder is selected in ID32800 'AMK main operating mode'.

This parameter is used by the following function:

'Scaling'

ID122 'Load gear output revolution'

Sphere of action:	DRIVE	**Default value:**	10
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Revolutions
Data length:	4 byte	**Min. value:**	1 revolution
Signed:	NO	**Max. value:**	30,000 revolutions
Format:	DEC		
List:	NO		

Siehe ID121 'Load gear input revolution' auf Seite 81.

This parameter is used by the following function:
'Scaling'

ID123 'Feed constant'

Sphere of action:	DRIVE	**Default value:**	100000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	mm/U
Data length:	4 byte	**Min. value:**	0.0000 mm/U
Signed:	NO	**Max. value:**	429496.7295 mm/U
Format:	DEC		
List:	NO		

The 'Feed constant' describes the correlation of a rotational movement that is converted into a linear movement via a spindle system. The feed constant specifies the distance travelled by a motor revolution.
For linear motors, the pole period [mm] from the linear motor data sheet is to be entered in ID123.

Example:
Spindle system with 10 mm spindle pitch
ID123 = 100000
The distance of the feed screw for each motor revolution is 10 mm.

This parameter is used by the following function:
'Scaling'

ID124 'Zero velocity window'

Sphere of action:	DRIVE	**Default value:**	500000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	60000 1/min
Format:	DEC		
List:	NO		

If the amount of the actual speed value within the standstill window $|n_{actual}|$ < ID124, the real-time bit will be set $n_{actual} < n_{min}$ (ID331 'Message speed: actual value < minimal value').
Siehe ID13 'Status class 3-messages' auf Seite 32.

ID125 'Velocity threshold'

Sphere of action:	DRIVE	**Default value:**	10000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

If the amount of the actual speed value (ID40) is below the speed threshold n_x (ID125), the real-time bit is set ID332 'Message speed: actual value < threshold'.

Siehe ID13 'Status class 3-messages' auf Seite 32.

ID126 'Torque threshold'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	0 $\%M_N$
Signed:	NO	**Max. value:**	1000 $\%M_N$
Format:	DEC		
List:	NO		

If the amount of the actual torque value (ID84) exceeds the torque threshold n_x (ID126), the real-time bit is set ID333 'Message torque: actual value ≥ threshold'.

Siehe ID13 'Status class 3-messages' auf Seite 32.

ID129 'Manufacturer status class 1'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The error messages in ID11 'Status class 1-errors' are supplemented through ID129 by manufacturer-specific errors. The bit 15 in ID11 is set when a manufacturer-specific error has occurred according to ID129.

The following parameters are available for the evaluation of the diagnostic message:

- ID95 'Diagnosis [ASCII text]'
- ID390 'Diagnostic number'
- ID32840 'Diagnostic list'
- ID34088 'Event trace'

The manufacturer-specific error in ID11 bit 15 is first cleared again once no manufacturer-specific error is present in ID129 and the command ID99 'Diagnosis reset status class 1' has been received via the service channel.

Configuration ID129 'Manufacturer status class 1'

Bit no.	Condition	Meaning
0 (LSB)	0	No error
	1	Fatal system error
1	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
2	0	No error
	1	Error in the 'control' basic module drive control, e.g. error during encoder tuning, error during internal setting of controller enable RF
3	0	Reserved
	1	Reserved
4	0	No error
	1	'Other' basic module system error, e.g. error during internal data access, error during internal memory access
5	0	No error
	1	Configuration error, e.g. parameterisation violates framework conditions
6	0	Reserved
	1	Reserved
7	0	No error
	1	Fieldbus error (ID34027 'BUS failure character' = 2)
8	0	No error
	1	'Option' system error An error has occurred in the software or hardware of an optional component or the Ethernet bus connection.
9	0	No error
	1	Description is identical with bit 8
10-15 (MSB)	0	Reserved
	1	Reserved

ID130 'Probe value 1 positive edge'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

A positive edge at the probe input 1 stores the actual position value. The stored actual position value can be read at a later time by a PLC.

This parameter is used by the following functions:

'Probe function pulse encoder with touch probe signal'

'Probe function actual position encoder with SERCOS interface'

ID131 'Probe value 1 negative edge'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

A negative edge at the probe input 1 stores the actual position value. The stored actual position value can be read at a later time by a PLC.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID132 'Probe value 2 positive edge'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

A positive edge at the probe input 2 stores the actual position value. The stored actual position value can be read at a later time by a PLC.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID133 'Probe value 2 negative edge'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

A negative edge at the probe input 2 stores the actual position value. The stored actual position value can be read at a later time by a PLC.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID134 'Master control word'

Sphere of action:	DRIVE	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Master control word' can be read via the service channel.

Regardless of how ID32795 'Source UE' and ID32796 'Source RF' are parameterised, bit 14 and bit 15 in ID134 must be set to 1, otherwise setpoints will not be processed.

Configuration ID134 'Master control word'

Bit no.	Condition	Meaning
0 (LSB)	0	Master Toggle Bit
	1	Master Toggle Bit
1	0	Reserved
	1	Reserved
2	0	Reserved
	1	Reserved
3	0	Reserved
	1	Reserved
4	0	Reserved
	1	Reserved
5	0	Reserved
	1	Reserved
6	0	Real-time control bit 1 (Siehe ID301 'Allocation control bit 1' auf Seite 115.)
	1	Real time control bit 1 (Siehe ID301 'Allocation control bit 1' auf Seite 115.)
7	0	Real-time control bit 2 (Siehe ID303 'Allocation control bit 2' auf Seite 115.)
	1	Real-time control bit 2 (Siehe ID303 'Allocation control bit 2' auf Seite 115.)
11, 9, 8	000	Main operating mode acc. ID32, ID32800
	001	Secondary operating mode 1 acc. ID33, ID32801
	010	Secondary operating mode 2 acc. ID34, ID32802
	011	Secondary operating mode 3 acc. ID35, ID32803
	100	Secondary operating mode 4 acc. ID284, ID32804
	101	Secondary operating mode 5 acc. ID285, ID32805
	110	Secondary operating mode 6 acc. ID286, ID32806
	111	Secondary operating mode 7 acc. ID287, ID32807
10	0	Reserved
	1	Reserved
12	0	Reserved
	1	Reserved
13	0	Interpolator 'Halt', operates in the operating mode 'Interpolation' after SERCOS see ID32ff or ID32800ff Bit 24 = 1
	1	Enable = 1 The enable bit must be set in order to comply with the SoE specification

Bit no.	Condition	Meaning
14	0	1 --> 0 edge: no drive enable, instantaneous torque shutdown, independent of bit 15 DC bus ON (UE) is withdrawn internally. If a KE(N,S) is connected to the ACC bus, a command is sent to the KE(N,S).  Prerequisite: ID32795 'Source UE' = 5
	1	0 --> 1 edge: Drive enabled UE is internally enabled. If a KE(N,S) is connected to the ACC bus, a command is sent to the KE(N,S).  Prerequisite: ID32795 'Source UE' = 5
15 (MSB)	0	1 --> 0 edge: Drive off Controller enable (RF) is internally withdrawn after it has been attempted to brake the drive acc. ID32782 'Deceleration ramp RF inactive'.  Prerequisite: ID32796 'Source RF' = 5
	1	0 --> 1 edge: Drive on Controller enable (RF) is enabled, preconditioned bit 14 = 1  Prerequisite: ID32796 'Source RF' = 5  The controller enable can only be enabled (0 -- > 1 edge to bit 15) if no command is active at this drive.

ID135 'Drive status word'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Drive status word' can be read via the service channel.

Configuration 'Drive status word'

Bit no.	Condition	Meaning
0-2	0	Reserved
	1	Reserved
3	0	Status command values processing, drive ignores setpoint values
	1	Status command values processing, drive follows setpoint values
4	0	Reserved
	1	Reserved
6	0	Real-time status bit 1 (Siehe ID305 'Allocation status bit 1' auf Seite 115.)
	1	Real-time status bit 1 (Siehe ID305 'Allocation status bit 1' auf Seite 115.)

Bit no.	Condition	Meaning
7	0	Real-time status bit 2 (Siehe ID307 'Allocation status bit 2' auf Seite 116.)
	1	Real-time status bit 2 (Siehe ID307 'Allocation status bit 2' auf Seite 116.)
8-10	000	Main operating mode active
	001	Secondary operating mode 1 active
	010	Secondary operating mode 2 active
	011	Secondary operating mode 3 active
	100	Secondary operating mode 4 active
	101	Secondary operating mode 5 active
	110	Secondary operating mode 6 active
	111	Secondary operating mode 7 active
11	0	No bit message active in ID13 'Status class 3-messages'
	1	Bit message in ID13 'Status class 3-messages' is active
12	0	No bit message active in ID12 'Status class 2-warnings'
	1	Bit message in ID12 'Status class 2-warnings' is active
13	0	No bit message active in ID11 'Status class 1-errors'
	1	Bit message in ID11 'Status class 1-errors' is active
14-15	00	Drive not ready for power-up, drive in an error condition according to ID11 'Status class 1-errors' (SBM=0)
	01	Drive ready for power-up (SBM = 1)
	10	Power ON, drive torque-free (QUE)
	11	Drive in closed loop control mode (QRF)

ID136 'Positive acceleration'

Sphere of action:	DRIVE	**Default value:**	100000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	1 U/s^2
Signed:	NO	**Max. value:**	60000 U/s^2
Format:	DEC		
List:	NO		

The positive acceleration is an input variable of the internal interpolator and defines the linear part of the positive acceleration for drive-controlled positioning. The acceleration values may not exceed the maximum possible physical acceleration of the drive (current limiting in the inverter).

This parameter is used by the following functions:

'Internal drive interpolator'

'Drive moves into parking position'

ID137 'Negative acceleration'

Sphere of action:	DRIVE	**Default value:**	-100000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	-60000 U/s^2
Signed:	YES	**Max. value:**	-1 U/s^2
Format:	DEC		
List:	NO		

The negative acceleration is an input variable of the internal interpolator and defines the linear part of the negative acceleration for drive-controlled positioning. The acceleration values may not exceed the maximum possible physical acceleration of the drive (current limiting in the inverter).

This parameter is used by the following functions:
'Internal drive interpolator'
'Drive moves into parking position'

ID140 'Inverter type'

Sphere of action:	DRIVE	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	12

* The list length is the number of usage data elements without 4 byte head elements.

The name of the control device from the SEEP is shown in ID140.

Configuration ID140 'Inverter type' for the example KW 2

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)
1	12	List head: Maximum list length without list head [byte]
2	e.g. K	Name of the closed loop control device
3	e.g. W	Name of the closed loop control device
4	e.g.	Name of the closed loop control device
5	e.g. 2	Name of the closed loop control device
6	e.g.	Name of the closed loop control device
7	e.g.	Name of the closed loop control device
8	e.g.	Name of the closed loop control device
9	e.g.	Name of the closed loop control device
10	e.g.	Name of the closed loop control device
11	e.g.	Name of the closed loop control device
12	e.g.	Name of the closed loop control device
13	e.g.	Name of the closed loop control device

ID141 'Motor type'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	20

* The list length is the number of usage data elements without 4 byte head elements.

The motor name can be stored in ID141. For example, the motor name is entered if a motor is selected from the motor database in AIPEX PRO.

Configuration ID141 'Motor type' for the example motor DT4-1-10-E00

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)

List element	Content	Meaning
1	20	List head: Maximum list length without list head [byte]
2	e.g. D	Motor type code
3	e.g. T	Motor type code
4	e.g. 4	Motor type code
5	e.g. -	Motor type code
6	e.g. 1	Motor type code
7	e.g. -	Motor type code
8	e.g. 1	Motor type code
9	e.g. 0	Motor type code
10	e.g. -	Motor type code
11	e.g. E	Motor type code
12	e.g. O	Motor type code
13	e.g. O	Motor type code
...	...	...
21		Motor type code

ID142 'Application type'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	16

* The list length is the number of usage data elements without 4 byte head elements.

The type of application can be described and stored in ID142. This parameter can be freely set by the customer.

Configuration ID142 'Application type'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)
1	16	List head: Maximum list length without list head [byte]
2	e.g. A	User-specific content ...
3	e.g. B	
4	e.g. W	
5	e.g. I	
6	e.g. C	
7	e.g. K	
8	e.g. L	
9	e.g. E	
10	e.g. R	
11	e.g. -	
12	e.g. 3	
...	...	
17	...	

ID143 'SERCOS interface version'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	1 byte	**Min. value:**	0.250 ms
Signed:	NO	**Max. value:**	20.000 ms
Format:	ASCII	**Current list length:***	-
List:	YES	**Max. list length:***	8

* The list length is the number of usage data elements without 4 byte head elements.

The version of the SERCOS Interface specification is available in ID143.

Configuration ID143 'SERCOS interface version'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)
1	8	List head: Maximum list length without list head [byte]
2	e.g.: V	
3	e.g.: 0	
4	e.g.: 1	
5	e.g.: .	
6	e.g.: 0	
7	e.g.: 2	
8		
9		

ID144 'Status word'

Sphere of action:	FORMAL	**Default value:**	0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

ID144 'Status word' shows the status of a maximum of 16 real-time bit messages. The status word content can be configured via ID26 'Configuration status bits' in an application-specific manner. With the help of ID144 'Status word', the configured signals are transmitted in real-time from the drive to the controller. For this purpose, ID144 'Status word' must be incorporated into the drive telegram as a cyclical date.

Siehe ID16 'Configuration list AT' auf Seite 34.
Siehe ID26 'Configuration status bits' auf Seite 39.

ID147 'Homing parameter'

Sphere of action:	DRIVE	**Default value:**	1000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The 'Homing parameter' defines the process of the homing cycle command (ID148).

AMK-specific extensions to the homing cycle command: Siehe ID32926 'AMK homing cycle parameter' auf Seite 177.

Configuration ID147 'Homing parameter'

Bit no.	Condition	Meaning
0 (LSB)	0	Positive homing direction (clockwise rotation when looking at the A-bearing side motor shaft)
	1	Negative homing direction (counter-clockwise rotation when looking at the A-bearing side motor shaft)
1	0	Homing mark is the positive edge of the homing switch (cam)
	1	Homing mark is the negative edge of the homing switch (cam)
2	0	Homing switch (cam) connected to the controller Parameter changes will only have an effect after power off/on.
	1	Homing switch (cam) connected to the drive Parameter changes will only have an effect after power off/on.
3	0	Reserved
	1	Reserved
4	0	Reserved
	1	Reserved
5	0	Homing cycle with cam evaluation
	1	Homing cycle without cam evaluation (homing only to the homing mark (zero pulse) of the actual position encoder)
6	0	Homing cycle with encoder homing mark (zero pulse) evaluation after reaching the homing switch (cam)
	1	Homing cycle without encoder homing mark (zero pulse) evaluation. Homing switch (cam) is also the homing mark.
7	0	Drive stops after homing at any position. After the homing mark is recognised the drive brakes down until standstill and keeps this position. The controller must start at this position. The drive will not move back to the recognized homing point.
	1	The drive stops on the homing point after homing (encoder homing mark (Zero pulse) + ID150) by consideration of ID52. After the homing mark is recognized the drive brakes until standstill, reverses and moves back to the position where the homing mark was recognized.
8	0	Reserved
	1	Reserved
9	0	Homing cycle without hardware limit switch evaluation
	1	Homing cycle with hardware limit switch evaluation The hardware limit switch is handled like a cam. For configuration its necessary to set Bit 5 = 1, Bit 10 = 0 and Bit 15 = 0.
10	0	Homing cycle to fixed stop: inactive
	1	Homing cycle to fixed stop: active: A defined torque peak according ID530 effects that the drive changed the direction of rotation. The homing mark is the 1st zero pulse after the change of rotation.
11-14	0	Reserved
	1	Reserved
15 (MSB)	0	Bit string active according to ID147, ID32926 is not supported
	1	ID147 bit 0 and bit 1 active, ID32926 active

ID148 'Drive homing cycle command'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

When invoking the command 'Drive homing cycle command' via the controller, the drive automatically switches to the internal drive position control mode according to ID32808 'AMK position control' and accelerates according to ID136 'Positive acceleration' to the velocity according to ID41 'Homing velocity'. The bit 0 in ID403 'Status actual position value' is cleared. The settings under ID147 'Homing parameter' and ID32926 'AMK homing cycle parameter' are valid. Changes to the cyclical setpoints are ignored during the active command.

After traversing the position encoder homing mark, the drive brakes according to ID137 'Negative acceleration' until coming to a standstill. The command is successfully carried out once the drive stops and the actual position value is relative to the reference point (ID403 'Status actual position value' is set). The controller reads out the drive's position setpoint (ID47) via the service channel and sets its setpoint value system to this position setpoint. Then the controller clears the command and the drive follows the setpoints of the controller.

The command interruption causes the actual position value not to be guided to the position encoder homing mark. ID403 'Status actual position value' is not set.

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

ID149 'Cmd position stop'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The command 'Cmd position stop' causes all controller monitoring to be switched off that would lead to an error message in ID11 'Status class 1-errors' when the drive is blocked by the fixed stop. The controller monitoring is switched off for all operating modes, regardless of which operating mode the drive is in. The sequence of the command 'Cmd position stop' is identical in the position control and speed control operating modes. The fixed stop is considered reached if the 'Clamping torque' (ID530) for the time period 'Time stop drive cmd' (ID34286) is met or exceeded.

When the following condition is met:

current torque Md ≥ ID530 'Clamping torque'

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete

Read value	Meaning
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

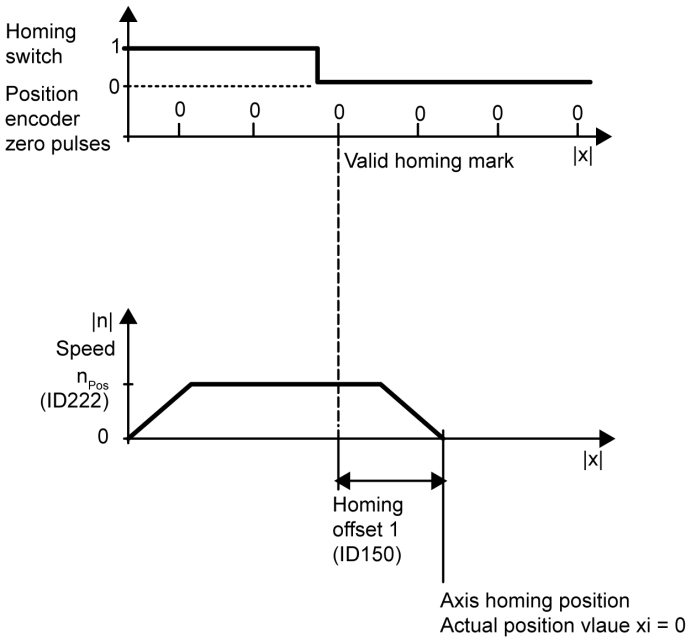
If the command is complete, the controller monitoring is activated again.

ID150 'Homing offset 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID150 defines an offset between the valid encoder homing mark and the desired zero position of the axis for the homing cycle. In this position, the internal position counter is set to '0'. For multi-turn absolute encoders, ID150 'Homing offset 1' is added to the read actual position value with the proper sign.

Homing offset and zero pulses of the position encoder



ID153 'Spindle angle position'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	21474483647 Increments
Format:	DEC		
List:	NO		

ID153 defines the absolute position at a homing cycle. The 'Spindle angle position' refers to the actual position value xi=0 while considering ID150 'Homing offset 1'. After the drive has reached the homing point and has zeroed its actual position value, it moves to the 'Spindle angle position' and shows this value as an actual position value.

This parameter has no effect for multi-turn absolute encoders.

ID154 'Spindle positioning parameter'

Reserved for AMK internal use!

ID156 'Velocity feedback value 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-100000.0 1/min
Signed:	YES	**Max. value:**	100000.0 1/min
Format:	DEC		
List:	NO		

The 'Velocity feedback value 2' is the actual speed value for the second encoder system.

Siehe ID34297 'Encoder type 2' auf Seite 264.

ID157 'Velocity window'

Sphere of action:	DRIVE	**Default value:**	1000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	1 1/min
Signed:	NO	**Max. value:**	60000 1/min
Format:	DEC		
List:	NO		

If the amount of the difference between the speed setpoint and actual speed value is smaller than ID157, the real-time bit ID330 'Message speed: actual value = setpoint' is set.

Speed setpoint:	ID36 'Velocity command value' + ID37 'Additive velocity command value' + internal speed control with feedforeward value.
Actual speed value:	ID40 'Velocity feedback value'

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.
Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID158 'Power threshold'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	W
Data length:	4 byte	**Min. value:**	1 W
Signed:	YES / NO	**Max. value:**	1000000 W
Format:	DEC		
List:	NO		

If the specified power of the inverter exceeds the value specified in ID158, the real-time bit ID337 'Message power: actual value ≥ threshold' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID159 'Excess error'

Sphere of action:	DRIVE	**Default value:**	1000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	0 Increments
Signed:	NO	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

If the difference between the position setpoint and the actual position value (following error) is larger than the value in ID159 'Excess error', the controller release for the drive is withdrawn, the motor runs down, the SBM status is reset and the diagnostic message 2318 'Control deviation' is issued.

The maximum computational following error (SA) of a feed drive results from:

With ID123 'Feed constant' and ID116 'Resolution motor encoder' or ID117 'Resolution external position feedback system' the following error is converted from [mm] to [Incr.]:

The maximum computational following error (SA) of a rotary drive results from:

ID169 'Probe control parameter'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With ID169 'Probe control parameter' determines whether the positive or the negative edge at the measurement input 1 or 2 is evaluated.

Configuration ID169 'Probe control parameter'

Bit no.	Condition	Meaning
0-1	--	**Edge evaluation touch probe input 1**
	00	No evaluation
	01	Positive edge at the touch probe input 1 is evaluated
	10	Negative edge at the touch probe input 1 is evaluated
2-3	--	**Edge evaluation touch probe input 1**
	00	No evaluation
	01	Positive edge at the touch probe input 2 is evaluated
	10	Negative edge at the touch probe input 2 is evaluated
4-15	0	Reserved
	1	Reserved

Only 1 edge evaluation must be activated per measuring input. Selecting positive AND negative edge is not allowed.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID170 'Command probe cycle'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With the command 'Command probe cycle' the 'Probe function actual position encoder with SERCOS interface' is started.
With this command a single measuring and a multiple, real-time measurement of actual positions is possible by using real-time bits
Start:
The 'Command probe cycle' is started by the value 0x3 is written into the parameter.
Status:
Read the parameter to get the status of the command.

Read value	Meaning
0x0	Basic state, no command active
0x7	'Probe function actual position encoder with SERCOS interface' active
0xF	Command completed with error

Stop:
The command is stopped or an error (status 0xF) cleared by the value 0x0 is written into the parameter

This parameter is used by the following function:
'Probe function actual position encoder with SERCOS interface'

ID173 'Marker position A'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES / NO	**Max. value:**	2147483648 Increments
Format:	DEC		
List:	NO		

The current actual position value is stored in the 'Marker position A', where the homing mark is detected for the homing cycle. This position value is available via ID173 for possible additional processing. Depending on the settings in ID32926 'AMK homing cycle parameter', the cam (NK) or the encoder zero pulse (NIP) is evaluated as homing mark.
When homing with cam signal (without an encoder zero pulse evaluation), the actual position value is entered where the cam signal is detected by the system. When homing with cams and an encoder zero pulse, the actual position value is stored where the zero pulse is detected.

ID175 'Displacement parameter 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-

Format:	DEC
List:	NO

ID175 affects during the command ID447 'Command Set absolute position procedure' and stores the difference between the old and the new actual value which are calculated by the drive.

ID179 'Probe status'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With active 'Probe function actual position encoder with SERCOS interface' the status bits will be set if a corresponding edge will be detected at a corresponding measurement input.

ID179 bit 0-1 is reset as soon as the following conditions change:

- ID405 'Probe 1 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

ID179 bit 2-3 is reset as soon as the following conditions change:

- ID406 'Probe 2 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

Configuration ID179 'Probe status'

Bit no.	Condition	Meaning
0	0	'Probe 1 positive latch' not detected (identical ID409)
	1	'Probe 1 positive latch' (identical ID409)
1	0	'Probe 1 negative latch' not detected (identical ID410)
	1	'Probe 1 negative latch' (identical ID410)
2	0	'Probe 2 positive latch' not detected (identical ID411)
	1	'Probe 2 positive latch' (identical ID411)
3	0	'Probe 2 negative latch' not detected (identical ID412)
	1	'Probe 2 negative latch' (identical ID412)
4-15	0	Reserved
	1	Reserved

This parameter is used by the following function:
'Probe function actual position encoder with SERCOS interface'

ID180 'Spindle position relative offset'

Reserved for AMK internal use!

ID181 'Diagnosis manufacturer class 2'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The error messages in ID12 'Status class 2-warnings' are supplemented through ID181 by manufacturer-specific warnings. The bit 15 in ID11 is set if a manufacturer-specific warning is set or cleared according to ID181.

The following parameters are available for the evaluation of the diagnostic message:

- ID95 'Diagnosis [ASCII text]'
- ID390 'Diagnostic number'
- ID32840 'Diagnostic list'
- ID34088 'Event trace'

The manufacturer-specific warning in ID12 bit 15 is first cleared again once the ID181 is read via the service channel. Bit 12 in ID135 'Drive status word' is not changed in the process.

Configuration ID181 'Diagnosis manufacturer class 2'

Bit no.	Condition	Meaning
0	0	Reserved
	1	Reserved
1	0	no warning
	1	Warning for 'control' basic module, e.g. overload warning for motor / converter
2	0	Reserved
	1	Reserved
3	0	no warning
	1	Warning for 'other' basic module, e.g. warning for a parameter set changeover, warning for internal data access
4-5	0	Reserved
	1	Reserved
6	0	No warning
	1	A warning or error has occurred in the slave participant fieldbus.
7	0	No warning
	1	Fieldbus warning (ID34027 'BUS failure character' = 1)
8	0	No warning
	1	Cooling warning Siehe ID313 'Warning cooler' auf Seite 117.
9-15	0	Reserved
	1	Reserved

ID182 'Diagnosis manufacturer status'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The messages in ID13 'Status class 3-messages' are supplemented through ID182 by manufacturer-specific messages. The bit 15 in ID13 is set if a manufacturer-specific warning is set or cleared according to ID182.

The following parameters are available for the evaluation of the diagnostic message:

- ID95 'Diagnosis [ASCII text]'
- ID390 'Diagnostic number'
- ID32840 'Diagnostic list'
- ID34088 'Event trace'

The manufacturer-specific message in ID12 bit 15 is first cleared again once the ID182 is read via the service channel. Bit 11 in ID135 'Drive status word' is not changed in the process.

Configuration ID182 'Diagnosis manufacturer status'

Bit no.	Condition	Meaning
0	0	Message inactive
	1	Message active: Position threshold value negatively exceeded. |ID51 'Position feedback value'| > |ID50 'Negative position limit'| Siehe ID398 'List status bits' auf Seite 122.
1-6	0	Reserved
	1	Reserved
7	0	Message inactive
	1	Message active: Position threshold value positively exceeded. |ID51 'Position feedback value'| > |ID49 'Positive position limit'| Siehe ID398 'List status bits' auf Seite 122.
8	0	Message inactive
	1	Message active: homing point known
9	0	Message inactive
	1	Message active: acknowledgement, that the control bit 'controller enable (RF)' was set
10	0	Message inactive
	1	Message active: Acknowledgement controller enable
11	0	Message inactive
	1	Message active: acknowledgement, that the control bit DC bus ON (UE) was set
12	0	Message inactive
	1	Message active: Acknowledgement DC bus ON (QUE)
13	0	Message inactive
	1	Message active: Warning present
14	0	Message inactive
	1	Message active: Error present
15	0	Message inactive
	1	Message active: System ready message (SBM)

ID185 'Length data set AT'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Byte
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Default value: 32

ID185 indicates the maximum length in byte that can be processed in the configured data set of the AT drive telegram.

Siehe ID15 'Telegram types parameter' auf Seite 33.

ID186 'Length data set MDT'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Default value: 32

ID186 indicates the maximum length in byte that can be processed in the configured data set of the master data telegram MDT.
Siehe ID15 'Telegram types parameter' auf Seite 33.

ID187 'List of data AT'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	YES / NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	37

* The list length is the number of usage data elements without 4 byte head elements.

All parameters that can be cyclically transferred in the drive telegram (AT) are in the 'List of data AT'.
The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.
Siehe ID16 'Configuration list AT' auf Seite 34.

Configuration ID187 'List of data AT'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	74	List head: Maximum list length without list head [byte]
2		
3		
...	...	...
38		

ID188 'List of data MDT'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	49

* The list length is the number of usage data elements without 4 byte head elements.

All parameters that can be cyclically transferred in the master data telegram (MDT) are in the 'List of data MDT'.
The elements 0 and 1 of the list are head information (current and maximum list length). The first parameter is in the element 2.
Siehe ID24 'Configuration list MDT' auf Seite 38..

Configuration ID188 'List of data MDT'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	98	List head: Maximum list length without list head [byte]
2		
3		
...	...	...
50		

ID189 'Following distance'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

The difference between the position setpoint and the actual position value is shown as a follow error (control deviation of the position controller) in ID189 in the position control operating mode.

The following applies:

Position setpoint: ID47 'Position command value' + internal interpolator (IPO) + pulse encoder input
Actual position value: ID51 'Position feedback value'

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID191 'CMD reset homing point'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the command "CMD reset homing point" is set, the drive clears the bit in ID403. The command is finished when the bit 'Status actual position value' is set to 0.

ID192 'List backup data'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	Created at run time

* The list length is the number of usage data elements without 4 byte head elements.

The 'List backup data' contains all ID numbers that can be stored permanently in the system. A controller can evaluate this list to create backup copies of the parameter set.

ID193 'Positioning jerk'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	U/s^3
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID193 'Positioning jerk' only works in the operating mode "interpolation" and is specified to the interpolator as the setpoint.

ID194 'Acceleration setpoint'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Acceleration setpoint' effects in the drive feed-forward function and can be set by a controller.

This parameter is used by the following functions:
'Load model'
'Scaling'

ID206 'Drive on delay time'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	6553.5 ms
Format:	DEC		
List:	NO		

The 'Drive on delay time' defines the time between the output signal for controlling the motor holding brake and the acknowledgement controller enable (QRF) (brake opens).

This parameter is used by the following function:
'Controlling motor holding brake'

ID207 'Drive off delay time'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	6553.5 ms
Format:	DEC		
List:	NO		

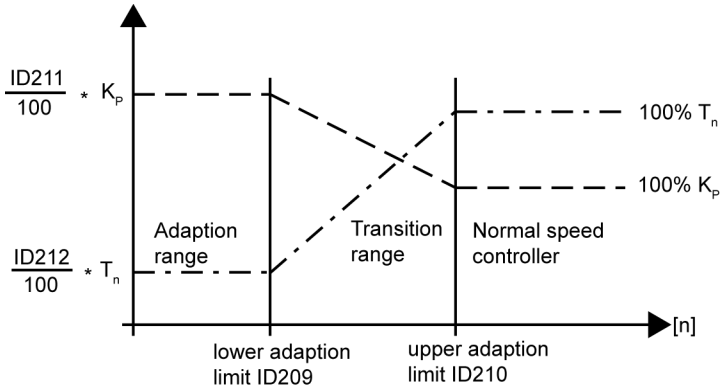
The 'Drive off delay time' defines the time between the output signal for controlling the motor holding brake and the dropout of the acknowledgement controller enable (QRF) (brake is applied).

This parameter is used by the following function:
'Controlling motor holding brake'

ID209 'Lower adaption limit'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

In the area between the lower and upper adaptation limit, the adaptive control parameters ID211 'Proportional gain adaption' and ID212 'Integral-action time adaption' are linearly adapted to the standard control parameters ID100 'Speed control proportional gain KP' and ID101 'Integral-action time speed control TN', i.e. the control behaviour in this area changes independently of the actual speed value if ID209 is smaller than ID210. Nothing is adapted if ID209 is the same as ID210.



Below the lower adaptation limit, K_P and T_n work according to ID211 and ID212 and above the upper adaptation limit K_P and T_n work according to ID100 and ID101. Linear adaptation takes place in between.

ID210 'Upper adaption limit'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

Siehe ID209 'Lower adaption limit' auf Seite 104.

ID211 'Proportional gain adaption'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	0 %
Signed:	NO	**Max. value:**	500 %
Format:	DEC		
List:	NO		

Siehe ID209 'Lower adaption limit' auf Seite 104.

ID212 'Integral-action time adaption'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	0 %
Signed:	NO	**Max. value:**	500 %
Format:	DEC		
List:	NO		

Siehe ID209 'Lower adaption limit' auf Seite 104.

ID216 'Switch parameter set command'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The command 'Switch parameter set command' changes to the parameter set, which is entered in ID217 'Preselect parameter set command'.

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

ID217 'Preselect parameter set command'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	3
Format:	BIN		
List:	NO		

In ID217, the parameter set is entered in which the switch takes place with the command ID216 'Switch parameter set command'.

ID219 'ID-no. list for parameter sets'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	194

* The list length is the number of usage data elements without byte head elements.

The 'ID-no. list for parameter sets' lists all parameters that are affected by the switch with the command ID216 'Switch parameter set command', i.e. that can have other values in each parameter set.

Configuration ID219 'ID-no. list for parameter sets'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	388	List head: Maximum list length without list head [byte]
2		ID no.
3		ID no.
4		ID no.
...	...	...
195		ID no.

ID222 'Spindle position speed'

Reserved for AMK internal use!

ID228 'Synchron position window'

Reserved for AMK internal use!

ID254 'Actual parameter set'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	3
Format:	BIN		
List:	NO		

The number of the currently active parameter set can be read in ID254.

ID258 'Target position'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID258 'Target position' only works in the operating mode "interpolation" and acts as a 'Target position' for the internal interpolator.

Follow these steps in sequence before you switch on controller enable (RF):

1. Match the ID258 to the actual value. Matching the setpoint with the actual value is necessary as the axis otherwise moves to the last set value.
2. Set the controller enable (RF).

The drive is in an error state. Follow these steps in sequence:

1. Execute the command 'Clear error'.
2. Match the ID258 to the actual value. Matching the setpoint with the actual value is necessary as the axis otherwise moves to the last set value.
3. Set the controller enable (RF).

ID259 'Positioning velocity'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID259 'Positioning velocity' only works in the operating mode "interpolation" and acts as reference speed for the internal interpolator.

ID260 'Positioning acceleration'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID260 'Positioning acceleration' only works in the operating mode 'interpolation' and acts as positive acceleration for the internal interpolator.

ID262 'Initial program load command'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The initial program loading command resets all remanent stored parameters (also list parameters) which are not read-only (also list parameters) to the default value (factory setting).

All user-specific lists and settings are cleared!

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

ID263 'Cmd load data'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The command 'Cmd load data' carries out a system start-up* where the remanent saved parameter values are read and effective. Parameters that were previously changed temporarily are reset to the remanent stored value.

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

*This system start-up only carries out the previously described actions and may not be confused with the functionality ID33730 'System booting'.

ID264 'Cmd save data'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The command 'Cmd save data' writes the currently effective parameter values of all parameters of ID192 'List backup data' in the remanent storage.

Commands are started by the function code 0x3 being written in the parameter.

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

ID265 'Language'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	2
Format:	HEX		
List:	NO		

ID265 defines the language of the parameter and diagnosis texts. The system must be re-started again if the language is changed.

Available languages:

0: German (default)
1: English
2: French

ID269 'ID memory mode'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The memory mode determines whether subsequent parameter changes are to be handled temporarily or remanent. It is therefore possible via fieldbus to directly influence process parameters by ID transfer.

Configuration ID269 'ID memory mode']

Bit no.	Condition	Meaning
0	0	Parameter changes are only effective and resident after a system start-up.
	1	Parameter changes to parameters from ID270 'Temporary parameter list' have a direct effect in the process without another system start-up through, for example, mains OFF / ON. The changes are temporarily valid until the next system start-up (not saved remanent).  All parameters that are not temporarily changeable are always treated remanent, regardless of the settings in ID269.
1-15	0	Reserved
	1	Reserved

ID270 'Temporary parameter list'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	74
List:	YES	**Max. list length:***	74

* The list length is the number of usage data elements without 4 byte head elements.

The 'Temporary parameter list' contains all parameters that are effective immediately after the change in the process without the system start-up. The changes are effective until the next system start-up.

Configuration ID270 'Temporary parameter list'

List element	Content	Meaning
0	148	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	148	List head: Maximum list length without list head [byte]
2	e.g. 36	ID-no. of the first temporarily changeable parameter
3	e.g. 38	ID-no. of the second temporarily changeable parameter
...	...	...
75	e.g. 34257	ID-no. of the 74th temporarily changeable parameter

ID284 'Operation mode 4'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID284 'Operation mode 4' is activated when bit 8, 9 and 10 are selected in ID134 'Master control word' of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID284 'Operation mode 4'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID284 are converted internally to ID32804 'AMK secondary operating mode 4'.

ID285 'Operation mode 5'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID285 'Operation mode 5' is activated when bit 8, 9 and 10 are selected in ID134 'Master control word' of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID285 'Operation mode 5'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID285 are converted internally to ID32805 'AMK secondary operating mode 5'.

ID286 'Operation mode 6'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID286 'Operation mode 6' is activated when bit 8, 9 and 10 are selected in ID134 'Master control word' of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID286 'Operation mode 6'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID286 are converted internally to ID32806 'AMK secondary operating mode 6'.

ID287 'Operation mode 7'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The operating mode specified in ID287 'Operation mode 7' is activated when bit 8, 9 and 10 are selected in ID134 'Master control word' of the master data telegram.

The active operating mode is acknowledged in ID135 'Drive status word' bit 8 to bit 10.

Configuration ID287 'Operation mode 7'

Bit no.	Condition	Meaning
0-4	0 0000 (Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 (LSB))	No operating mode defined
	0 0001	Torque control
	0 0010	Speed control
	0 0011	Position control with actual position value from the motor encoder
	0 0100	Position control with actual position value from the external encoder
	0 0101	Position control with actual position value from the motor encoder + external encoder
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Position control with actual position value from the motor encoder and following error compensation
	0 1100	Position control with actual position value from the external encoder and following error compensation
	0 1101	Position control with actual position value from the motor encoder + external encoder and following error compensation
	0 1110	Reserved
	1 0011	Interpolation with actual position value from the motor encoder
	1 0100	Interpolation with actual position value from the external encoder
5-13	-	Reserved
14	0	Cyclical setpoint specification
	1	Ignore cyclical setpoint specification (specification via the service channel through writing parameters, e.g. ID36 'Velocity command value')
15	0	Operating mode according to SoE
	1	Reserved

The operating mode settings in ID287 are converted internally to D32807 'AMK digital torque control'.

ID296 'Velocity feedforward gain'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The speed feed forward is effective in the 'position control with following error compensation' operating mode (ID3280x Bit 9 = 1) and reduces the speed-dependent following error.

This parameter is used by the following function:
'Following error compensation (SAK)'

ID301 'Allocation control bit 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The ID number of the signal is written in ID301 in order to assign the real-time control bit 1 in ID134 'Master control word'.

ID303 'Allocation control bit 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The ID number of the signal is written in ID303 in order to assign the real-time control bit 2 in ID134 'Master control word'.

ID305 'Allocation status bit 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The ID number of the signal is written in ID305 in order to assign the real-time status bit 1 in ID135 'Drive status word'.

ID307 'Allocation status bit 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The ID number of the signal is written in ID307 in order to assign the real-time status bit 2 in ID135 'Drive status word'.

ID310 'Overload motor'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With this parameter, the 'Overload motor' warning is assigned an identification number. The warning can be assigned to a real-time bit.

Siehe ID305 'Allocation status bit 1' auf Seite 115.
Siehe ID12 'Status class 2-warnings' auf Seite 31.
Siehe ID114 'Overload limit motor' auf Seite 78.

ID311 'Warning overtemperature inverter'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With this parameter, the 'Warning overtemperature inverter' warning is assigned an identification number. The warning can be assigned to a real-time bit.

Siehe ID305 'Allocation status bit 1' auf Seite 115.
Siehe ID12 'Status class 2-warnings' auf Seite 31.

ID312 'Warning overtemperature motor'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With this parameter, the 'Warning overtemperature motor' warning is assigned an identification number. The warning can be assigned to a real-time bit.

Siehe ID305 'Allocation status bit 1' auf Seite 115.
Siehe ID12 'Status class 2-warnings' auf Seite 31.

ID313 'Warning cooler'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With this parameter, the 'Warning cooler' warning is assigned an identification number. The warning can be assigned to a real-time bit. The diagnostic message 1073 'Cooling Air Temperature Warning' is generated and the code 33021 is set, which can be issued to a binary output.

Siehe ID305 'Allocation status bit 1' auf Seite 115.
Siehe ID181 'Diagnosis manufacturer class 2' auf Seite 99.

ID326 'Parameter checksum'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

If the parameter 'Parameter checksum' is read via the service channel, a checksum is formed via all of the parameters listed in ID192 'List backup data'. A controller can detect whether the data set was changed by comparing the checksum in the system start-up.s ist ein Informationsbaustein

ID330 'Message speed: actual value = setpoint'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of the difference between the speed setpoint and actual speed value is less than ID157 'Velocity window', the real-time bit ID330 'Message speed: actual value = setpoint' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID331 'Message speed: actual value < minimal value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of ID40 'Velocity feedback value' is < ID124 'Zero velocity window', the real-time bit ID331 'Message speed: actual value < minimal value' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID332 'Message speed: actual value < threshold'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of ID40 'Velocity feedback value' is < ID125 'Velocity threshold', the real-time bit ID332 'Message speed: actual value < threshold' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID333 'Message torque: actual value ≥ threshold'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of ID84 'Torque feedback value' is ≥ ID126 'Torque threshold', the real-time bit ID333 'Message torque: actual value ≥ threshold' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.
Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID334 'Message torque: actual value ≥ limit'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of ID84 'Torque feedback value' is ≥ ID82 'Positive torque limit', ID83 'Negative torque limit' or ID92 'Bipolar torque limit', the real-time bit ID334 'Message torque: actual value ≥ limit' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID335 'Message speed: setpoint > limit'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If ID36 'Velocity command value' is > ID38 'Positive velocity limit', ID39 'Negative velocity limit'or ID91 'Bipolar velocity limit', the real-time bit ID335 'Message speed: setpoint > limit' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID336 'Message in position'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the amount of the difference between the position setpoint and actual position value is less than ID57 'In position window', the real-time bit is set in ID336 'Message in position'.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID337 'Message power: actual value ≥ threshold'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

If the specified power of the inverter ≥ ID158, the real-time bit ID337 'Message power: actual value ≥ threshold' is set.

Siehe ID13 'Status class 3-messages' auf Seite 32.

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID348 'Acceleration feedforward gain'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The acceleration feedforward is effective in the 'position control with follow error compensation' operating mode (ID3280x bit 9 = 1) and reduces the follow-error for positive or negative acceleration.

This parameter is used by the following function:
'Following error compensation (SAK)'

ID359 'Positioning deceleration'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	U/s^2
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID359 'Positioning deceleration' only works in the operating mode "interpolation" and acts as negative acceleration for the internal interpolator.

ID378 'Absolute encoder range 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Absolute encoder range 1' shows the maximum displayable working area of the absolute encoder in relation to ID116 'Resolution motor encoder'.

ID380 'DC-bus voltage'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	4096
Format:	DEC		
List:	NO		

Siehe ID32836 'DC bus voltage' auf Seite 154.

ID384 'Temperature internal'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	°C
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID33116 'Temperature internal' auf Seite 200.

ID390 'Diagnostic number'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

If a diagnostic message appears (warning or error), the diagnostic number is written in ID390. The first occurred event (warning or error) is always entered. A warning message is not overwritten by a subsequent error message.

An existing entry in ID390 is cleared by the command ID99 'Diagnosis reset status class 1' or 'Clear error.'

ID392 'Velocity feedback filter'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	µs
Data length:	2 byte	**Min. value:**	0 µs
Signed:	YES / NO	**Max. value:**	5000 µs
Format:	DEC		
List:	NO		

The 'Velocity feedback filter' works as a mean value filter in the actual speed value feedback and influences the control and display value ID40 'Velocity feedback value'.

Example:

With a setpoint cycle time of 500 µs and the actual value detection in 62.5 µs, the actual speed value is formed as a mean value over 8 values.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID398 'List status bits'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	-

* The list length is the number of usage data elements without 4 byte head elements.

All parameters and codes that are contained in the 'List status bits' can be configured as a real-time or status bit, e.g. in the parameters ID26 'Configuration status bits' and ID144 'Status word' or be assigned to a binary output.

Siehe 'Codes for the configuration of the binary outputs' auf Seite 269.

Configuration ID398 'List status bits'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	x	List head: Maximum list length without list head [byte]
2		Supported status bits
3		Supported status bits
...	...	...
n		

ID400 'Home switch'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

ID400 shows the switching status of the external homing switch (cam). If the cam is detected, ID400 is set to the value 1. For homing with a cam evaluation, the function code 400 must be assigned to a binary input.

Code 32905 is equivalent to code 400 and can alternatively be assigned to a binary input.

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID403 'Status actual position value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

Following successful homing cycle, bit 0 is set in ID403 (homing point known) and the controller is shown that all actual position values refer to the homing point.

Bit 0 in ID403 is reset in the following cases:

- Drive loses the reference to the machine zero point
- Command ID148 'Drive homing cycle command' is invoked
- Command ID191 'CMD reset homing point' is invoked

Siehe ID305 'Allocation status bit 1' auf Seite 115.

ID405 'Probe 1 enable'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

For each measurement, the release must be reset in ID405 with a 0-1 edge in bit 0.

The release can be assigned to a real-time control bit in ID134 'Master control word'.

This parameter is used by the following function:

'Probe function actual position encoder with SERCOS interface'

ID406 'Probe 2 enable'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

For each measurement, the release must be reset in ID406 with a 0-1 edge in bit 0.

The release can be assigned to a real-time control bit in ID134 'Master control word'.

This parameter is used by the following function:

'Probe function actual position encoder with SERCOS interface'

ID409 'Probe 1 positive latch'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With active 'Probe function actual position encoder with SERCOS interface' bit 0 is set with the positive edge at the measurement input 1 in ID409 and entered the measured value in ID130.

The state 'Probe 1 positive latch' can be assigned to a real-time status bit in ID135 'Drive status word'.

ID409 bit 0 is reset as soon as the following conditions change:

- ID405 'Probe 1 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

ID409 bit 0 is identical to ID179 'Probe status' bit 0.

This parameter is used by the following function:
'Probe function actual position encoder with SERCOS interface'

ID410 'Probe 1 negative latch'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With active 'Probe function actual position encoder with SERCOS interface' bit 0 is set with the negative edge at the measurement input 1 in ID410 and entered the measured value in ID131.
The state 'Probe 1 negative latch' can be assigned to a real-time status bit in ID135 'Drive status word'.

ID410 bit 0 is reset as soon as the following conditions change:

- ID405 'Probe 1 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

ID410 bit 0 is identical to ID179 'Probe status' bit 1.

This parameter is used by the following function:
'Probe function actual position encoder with SERCOS interface'

ID411 'Probe 2 positive latch'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With active 'Probe function actual position encoder with SERCOS interface' bit 0 is set with the positive edge at the measurement input 2 in ID411 and entered the measured value in ID132.
The state 'Probe 2 positive latch' can be assigned to a real-time status bit in ID135 'Drive status word'.

ID411 bit 0 is reset as soon as the following conditions change:

- ID406 'Probe 2 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

ID411 bit 0 is identical to ID179 'Probe status' bit 2.

This parameter is used by the following function:
'Probe function actual position encoder with SERCOS interface'

ID412 'Probe 2 negative latch'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

With active 'Probe function actual position encoder with SERCOS interface' bit 0 is set with the negative edge at the measurement input 2 in ID412 and entered the measured value in ID133.

The state 'Probe 2 negative latch' can be assigned to a real-time status bit in ID135 'Drive status word'.

ID412 bit 0 is reset as soon as the following conditions change:

- ID406 'Probe 2 enable' is reset (1 → 0)
- 'Probe function actual position encoder with SERCOS interface' is deactivated with ID170 'Command probe cycle' (command 0x0)

ID412 bit 0 is identical to ID179 'Probe status' bit 3.

This parameter is used by the following function:

'Probe function actual position encoder with SERCOS interface'

ID430 'Active target position'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID430 'Active target position' only works in the operating mode "interpolation" and gives the active target position of the internal interpolator.

The setpoint value from ID258 'Target position' is displayed again (mirrored) at ID430.

ID437 'Positioning status'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	-
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

ID437 'Positioning status' only works in the operating mode 'interpolation' and gives the actual status of the positioning.

Configuration ID437 'Positioning status'

Bit no.	Condition	Meaning
0 (LSB)	0	Interpolator has not reached the target position
	1	Interpolator has reached the target position

Bit no.	Condition	Meaning
1	0	Actual position value outside ID57 'In position window'
	1	Actual position value within ID57 'In position window'
2	0	Reserved
	1	Reserved
3	0	Interpolator not halted
	1	Interpolator with ID134 'Master control word' Bit 13 = 1 halted
4	0	No constant velocity
	1	Constant velocity
5	0	Drive doesn’t accelerate
	1	Drive accelerates
6	0	Drive doesn’t decelerate
	1	Drive decelerates
7 - 12	0	Reserved
	1	Reserved
13	0	Warning positioning velocity ID38 'Positive velocity limit' ID39 'Negative velocity limit' Positioning velocity within position limit values
	1	Positioning velocity outside of position limit values
14	0	Warning target position ID49 'Positive position limit' ID50 'Negative position limit' Target position within position limit values
	1	Target position outside of position limit values
15	0	Reserved
	1	Reserved

ID447 'Command Set absolute position procedure'

Reserved for AMK internal use!

ID478 'Hardware limit switch status'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

ID478 shows the status of the limit switches. The limit switches can be configured via binary inputs (code 33940, 33941) or at homing cycle (ID147 bit 9).

Configuration ID478 'Hardware limit switch status'

Bit no.	Condition	Meaning
0 (LSB)	0	Hardware limit switch positive low (0 VDC)
	1	Hardware limit switch positive high (24 VDC)

Bit no.	Condition	Meaning
1	0	Hardware limit switch negative low (0 VDC)
	1	Hardware limit switch negative high (24 VDC)
2-15	0	Reserved
	1	Reserved

ID530 'Clamping torque'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	% M_N
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Clamping torque' is effective with the command ID149 'Cmd position stop'. Siehe ID149 'Cmd position stop' auf Seite 93.

ID532 'Hardware limit switch configuration'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The function hardware limit switch is configured by ID532. This function is available in speed control, if it is configured by binary input (code 33940,33941) or at the function homing cycle (ID147 Bit 9).

Configuration ID532 'Hardware limit switch configuration'

Bit no.	Condition	Meaning
0 (LSB)	0	Both hardware limit switches are not inverted
	1	Both hardware limit switches are inverted
1	0	Both hardware limit switches are disabled (signals are not evaluated)
	1	Both hardware limit switches are enabled (signals are evaluated)
2	0	The activation of the hardware limit switch generates the diagnosis message 2366 as an error message During homing cycle this monitoring is switched off as long as homing cycle is still active.
	1	The activation of the hardware limit switch generates the diagnosis message 2366 as an warning message During homing cycle this monitoring is switched off as long as homing cycle is still active.
3-15	0	Reserved
	1	Reserved

ID32768 'Nominal motor voltage'

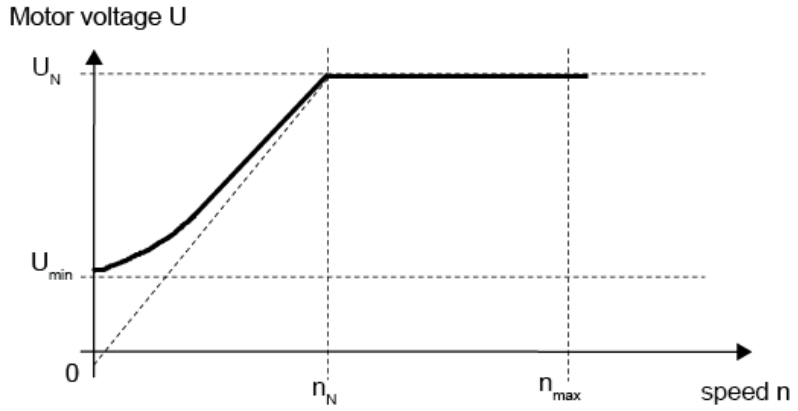
Sphere of action:	DRIVE	**Default value:**	3500
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.0 V
Signed:	NO	**Max. value:**	1000.0 V
Format:	DEC		
List:	NO		

ID32768 describes the motor voltage for the speed n ≤ nominal speed in the voltage / frequency control operating mode and is to be taken from the respective type plate or data sheet of the motor. The voltage / frequency control operating mode is activated in ID32953 'Encoder type'.

Note that the ramp times in ID32780 'Acceleration ramp', ID32781 'Deceleration ramp' and ID32782 'Deceleration ramp RF inactive' may not be less than the physically achievable speed ramps of the system.

Siehe ID32991 'U/f startup' auf Seite 195.

Depiction: U = f(n) in voltage / frequency control



U_N: ID32768 'Nominal motor voltage'

U_{min}: ID32935 'Voltage standstill'

n_N: ID32772 'Nominal velocity'

n_{max}: ID00113 'Maximum speed'

ID32769 'Magnetising current'

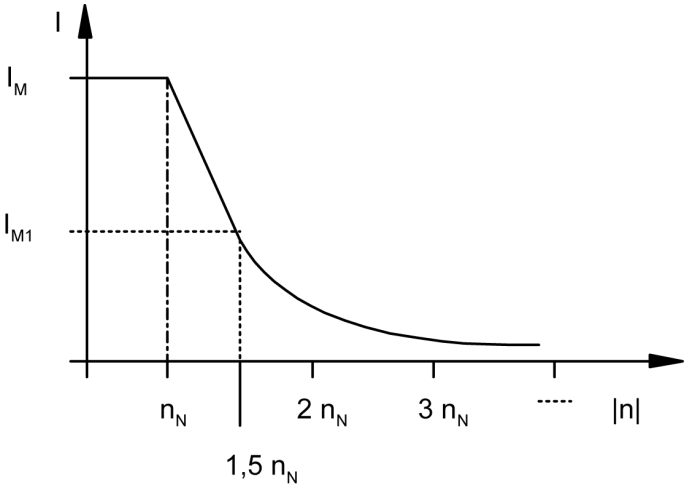
Sphere of action:	DRIVE	**Default value:**	1500
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.00 A
Signed:	NO	**Max. value:**	1000.00 A
Format:	DEC		
List:	NO		

The values of the magnetising current depend on the motor and are to be taken from the respective type plate or data sheet of the motor. The motor used is to be defined in ID32953 'Encoder type'.

Asynchronous motor

The magnetising current is the flux-forming component of the motor current in asynchronous motors. The magnetising current is constant up until the nominal speed and is automatically reduced for speeds greater than the nominal speed (field weakening).

Correction of the magnetising current characteristic for asynchronous motors



Synchronous motor without field weakening

Synchronous motors without field weakening are only operable up to the nominal speed.
ID32769 is ineffective for synchronous motors.

Field weakening synchronous motor

Field weakening synchronous motors can also be operated well above the nominal speed. For field weakening synchronous motors, ID32769 indicates the maximum field weakening current above the nominal speed. For field weakening synchronous motors, the voltage controller must also be configured in ID34148 'Voltage control proportional gain KP' and ID34149 'Voltage control integrating time TN'.

NOTICE	
Material Damage!	**Material damage from excessive DC bus voltage!** If the PWM is blocked in the case of an error with synchronous motors that are operated in field weakening, the still rotating motor induces a voltage that is higher than that of the supplying DC bus. Due to the induced voltage, a current flows into the DC bus via the free-wheeling diodes in the inverter so that the voltage in the DC bus may rise above the permissible value and can therefore destroy the power supply. **Steps to prevent:** • Ensure that the current regeneration of the power supply is active. • Use an appropriately sized brake resistor at the feed-in.

Asynchronous motor with voltage control

Enter ID32769 'Magnetising current' from the motor data sheet. In the field weakening area, the magnetising current is automatically set internally in the device.

ID32770 'Magnetising current 1'

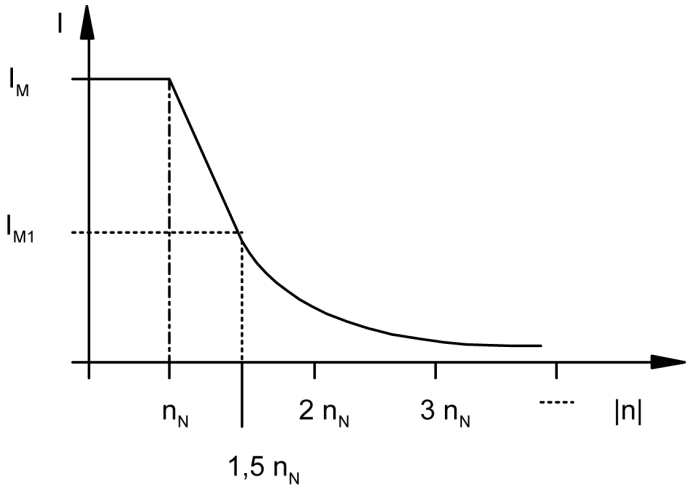
Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.00 A
Signed:	NO	**Max. value:**	1000.00 A
Format:	DEC		
List:	NO		

The values of the magnetising current depend on the motor and are to be taken from the respective type plate or data sheet of the motor. The motor used is to be defined in ID32953 'Encoder type'.

Asynchronous motors

If no specification is available for the magnetising current, set the value to 50 % x ID32769 'Magnetising current'.
A correction of the magnetising current characteristic is performed in the field weakening area. The magnetising current is linearly reduced from IM to IM1 according ID32769 and ID32770 between the nominal speed (ID32772) and the speed 1.5-times the nominal speed. For speeds greater than 1.5-times the nominal speed, the magnetising current is proportionately reduced to 1/n.

Correction of the magnetising current characteristic for asynchronous motors



If ID32770 = ID32769 or ID32770 = 0 is set, the correction is eliminated and the magnetising current is proportionately reduced to 1/n for speeds above the nominal speed.

Synchronous motor without field weakening

Synchronous motors without field weakening are only operable up to the nominal speed.
ID32770 is ineffective for synchronous motors.

Field weakening synchronous motor

Field weakening synchronous motors can also be operated well above the nominal speed. For field weakening synchronous motors, ID32770 indicates the minimum field weakening current, which acts in the basic speed range up to the nominal speed.
For field weakening synchronous motors, the voltage controller must also be configured in ID34148 'Voltage control proportional gain KP' and ID34149 'Voltage control integrating time TN'.

NOTICE	
Material Damage!	**Material damage from excessive DC bus voltage!** If the PWM is blocked in the case of an error with synchronous motors that are operated in field weakening, the still rotating motor induces a voltage that is higher than that of the supplying DC bus. Due to the induced voltage, a current flows into the DC bus via the free-wheeling diodes in the inverter so that the voltage in the DC bus may rise above the permissible value and can therefore destroy the power supply. **Steps to prevent:** • Ensure that the current regeneration of the power supply is active. • Use an appropriately sized brake resistor at the feed-in.

Asynchronous motor with voltage control

ID32770 has no significance with this motor model

ID32771 'Nominal torque'

Sphere of action:	DRIVE	**Default value:**	20
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	Nm
Data length:	2 byte	**Min. value:**	0.0 Nm
Signed:	NO	**Max. value:**	2000.0 Nm
Format:	DEC		
List:	NO		

The nominal torque depends on the motor and is to be taken from the respective type plate or data sheet of the motor.

ID32772 'Nominal velocity'

Sphere of action:	DRIVE	**Default value:**	30000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	10 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

The nominal speed depends on the motor and is to be taken from the respective type plate or data sheet of the motor.

The nominal velocity refers to a nominal motor voltage of 350 VAC.
If the nominal voltage is different, adjust the nominal voltage to 350 VAC.

Example third-party engine
Nominal voltage U_N = 400 VAC
Nominal velocity n_N = 1750 1/min

ID32772 'Nominal velocity' = 1750 1/min / 400 VAC x 350 VAC
ID32772 'Nominal velocity' = 1400 1/min

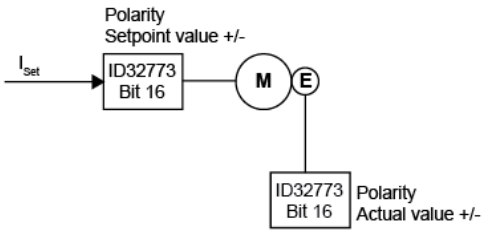
ID32773 'Service bits'

Sphere of action:	DRIVE	**Default value:**	0001 0000 0000 0101 (LSB)
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

Configuration ID32773 'Service bits'

Bit no.	Condition	Meaning
0	0	Monitoring of the sine encoder and resolver signals inactive
	1	Monitoring of the sine encoder and resolver signals active The minimum and maximum level of sine and cosine tracks are monitored. In case of error the diagnostic message 2311 'Encoder signal' is generated.
1	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
2	0	Motor deceleration control with RF withdrawal inactive
	1	Motor deceleration control with RF withdrawal When braking the motor, no acceleration may be detected by the system, otherwise it is immediately de-energised with the diagnostic message 2339 'Ramp down error'
3	0	Reserved
	1	Reserved
4	0	Reserved
	1	Reserved
5	0	Operating mode after RF withdrawal (operating mode from before RF withdrawal is retained) When resetting the controller enable, the drive switches to the operating mode that was active before the RF withdrawal, provided no system booting has taken place in the meantime. A system booting is triggered, for example, by the "Clear error" function in the absence of a system ready message or by a parameter change in the database. A system booting generally switches the drive to the 'AMK main operating mode' (ID32800).
	1	Operating mode after RF withdrawal (digital speed control with setpoint zero) When resetting the controller enable, the drive switches to the "digital speed control with setpoint zero" operating mode (system-internal automatic operating mode change).
6-12	0	Reserved
	1	Reserved
13	0	Monitoring acknowledgment, motor holding brake inactive
	1	Monitoring acknowledgment of motor holding brake (for brakes with acknowledgment bit) This parameter is used by the following function: 'Controlling motor holding brake'
14	0	i^2t monitoring of motor inactive
	1	i^2t monitoring of motor If the value in ID114 'Overload limit motor'is exceeded, the warning message 2359 'Motor overload warning' is generated and warning bit code 33074 'Collective warning' and ID11 is set. As soon as ID33102 'Display overload motor' = 100 % is reached, the controller enable is withdrawn internally, the drive is braked according to ID32782 'Deceleration ramp RF inactive' until coming to a standstill, the acknowledgement QRF is set to zero and the error message 2360 'Motor overload error' is generated. Siehe 'ID109 'Motor peak current'' auf Seite 76. Siehe 'ID34168 'Time maximum current motor'' auf Seite 238. Formula for calculating the overload time t_x with a current I_x:
15	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
16	0	With the positive setpoint, the motor rotates clockwise when looking at the motor shaft (A-bearing side)
	1	Rotational direction of the motor is negated In order to invert the rotational direction without having to change the coordinate representation of setpoint and actual values, the polarity of the setpoint and actual values is inverted by setting bit 16 = 1.  With an absolute encoder, the actual position value results with a set negation bit: Actual position value = MaxPos - Pos MaxPos: Absolute range of the encoder, e.g. 4096 rotations Pos: current position of the encoder
17	0	Low-movement software commutation with breakaway inactive
	1	Low-movement software commutation with breakaway active Bit 17 is only active if bit 28 = 1 is set. Before the Low-movement software communication is executed according to the description in bit 28, the drive moves clockwise for 1 round (breakaway for adhered axes)
18	0	Reduced DC bus voltage increase inactive
	1	Reduced DC bus voltage increase When braking the motor, the torque is automatically reduced so that the shutdown threshold of the DC bus voltage is not reached and the error message 1059 'DC bus overvoltage' is not generated. In the U/f control the slope of the speed ramp is changed linear depending on the DC bus voltage. The derating increases linear beginning at a DC bus voltage of 650 VDC. Up from 780 VDC bus level the ramp is stopped completely.
19	0	Reserved
	1	Reserved
20	0	Reserved
	1	Drive is braking if $n_{act} > n_{set}$ If the actual speed value exceeds the value in ID125 'Velocity threshold'the controller enable is switched off drive internal and the drive is braking according ID32782 'Deceleration ramp RF inactive' until standstill. The diagnosis message 2326 is generated.
21	0	Reserved
	1	Drive coasts down if $n_{act} > n_{set}$ If the actual speed value exceeds the value in ID125 'Velocity threshold' the controller enable is switched off drive internal and the drive coasts down. The diagnosis message 2326 is generated.
22-24	0	Reserved
	1	Reserved
25	0	Inversion of the actual speed value inactive
	1	Inversion of the actual speed value The inverted actual speed value is not only used for the display, but also for the speed control. Siehe ID43 'Velocity polarity' auf Seite 50.

Bit no.	Condition	Meaning
26	0	Voltage feedforward inactive for synchronous machines
	1	Voltage feedforward active for synchronous machines The voltage feedforward in synchronous machines improves the dynamic properties and can be switched on independently of the application. Relevant parameters: (from the motor data sheet) ID34045 'Inductance path D' ID34046 'Inductance path Q' ID34233 'Phase resistance' ID34234 'Voltage constant Ke'
27	0	Reserved
	1	Reserved
28	0	Software commutation (The axis must be able to move freely! This function can not be used for hanging axes with load.) (maximal movement of ±0.5 x pole period (distance between two poles) possible) The software commutation establishes for synchronous motors a relationship between the rotor position and the coordinate system of the motor model. The software commutation function controls the current of the motors phases depending on the actual rotor position. The calculation of the phase currents is done by an algorithm which is implemented in the firmware, wherefore it is called software commutation. Related parameters: ID34094 'Rise time SWC' ID34095 'Final value SWC' ID34099 'Delay time SWC' ID34174 'SWK monitoring' In case of failure the diagnosis message 2362 'Error Commutation Motor' will be generated.
	1	Low-movement software commutation active (The axis must be able to move freely! This function can not be used for hanging axes with load.) The maximal movement is reduced around 90 % to the software commutation in Bit 28 = 0. Related parameters: ID34094 'Rise time SWC' ID34095 'Final value SWC' ID34099 'Delay time SWC' In case of failure the diagnosis message 2362 'Error Commutation Motor' will be generated.
29	0	Dynamic braking at encoder failure inactive
	1	Dynamic braking at encoder failure active (Function only for synchronous motors) Parallel to encoder evaluation the rotor position is determined sensorless. At encoder failure the motor is not running down but will be braked down in torque operation mode with the torque value entered in ID33150 'Brake torque'. If ID33150 = 0 the motor is braked down in speed operation mode according ID32782 'Deceleration ramp RF inactive'. With ID33151 'Maximal angular deviation of encoder-sensorless' the sensorless evaluated rotor angle can be monitored.
30	0	Overcurrent switch off (Default) If the drive detects an overcurrent the output stage will be locked immediately, the drive coasts down even if only a short pulse with overcurrent appeared. The devices are short-circuit-proof. The diagnosis message 2334 'System diagnostics: Output terminal overcurrent' is generated.
	1	Error tolerant overcurrent switch off The error tolerant overcurrent switch off should avoid from immediately switch off and cost down of the drive. If the drive detects an overcurrent, the output stage is switched off immediately for 0.5 ms and switched on again afterwards. Case 1: If the drive detects within 5 ms an overcurrent once again a shortcut is assumed and the output stage is switched off immediately. The drive coasts down. Case 2: If no overcurrent is detected for min. 5 ms the drive brakes automatically according to ID32782 'Deceleration ramp RF inactive' until standstill. The diagnosis message 2334 'System diagnostics: Output terminal overcurrent' is generated.
31	0	Reserved for AMK internal use!
	1	Reserved for AMK internal use!

ID32774 'Rotor time constant'

Sphere of action:	DRIVE	**Default value:**	360
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	s
Data length:	2 byte	**Min. value:**	0.005 s
Signed:	NO	**Max. value:**	1.500 s
Format:	DEC		
List:	NO		

The rotor time constant T_R is to be taken from the type plate or data sheet of the motor. The rotor time constant is the electrical time constant of the rotor. For synchronous motors (motor types DT, DTK, DP, DS...), the value 0.01 must be entered in ID32774.

ID32775 'Pole number motor'

Sphere of action:	DRIVE	**Default value:**	4
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	2
Signed:	NO	**Max. value:**	400
Format:	DEC		
List:	NO		

The 'Pole number motor' describes the poles of a motor and is to be taken from the type plate or data sheet of the motor.

⚠ WARNING

Risk of injury from uncontrolled movements of the motor shaft

If the number of motor poles is entered incorrectly, the motor is not controllable and can carry out uncontrolled movements as soon as the controller enable is set!

Steps to prevent:

- Check the entered number of motor poles before setting the controller enable.
- Takes precautionary measures to ensure that no persons are in the total possible range of movement of the motor when the controller enable is set for the first time after the input of the 'Pole number motor'.

ID32776 'Sine encoder period'

Sphere of action:	DRIVE	**Default value:**	1024
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	8
Signed:	NO	**Max. value:**	64000
Format:	DEC		
List:	NO		

The 'Sine encoder period' is to be taken from the type plate and data sheet of the motor or the encoder and gives the number of sine periods per rotation of the encoder, which is connected to the sine encoder input connection X131.

For linear motors, the number of sine periods per pole period must be entered in ID32776.

If the sine encoder division is entered incorrectly, the motor is not controllable and can carry out uncontrolled movements as soon as the controller enable is set!

EnDat encoder:

1st Linear measuring stick type: LC481, LC483

For EnDat linear measuring sticks, ID32776 must be calculated from the encoder's signal periods and ID123 according to the following relationship:

Example:

ID123 = 24 mm (linear motor pole period from the linear motor data sheet)
Signal period (encoder) = 16 µm (encoder data sheet)
PV (position refinement factor = 100 (see ID116 / ID117)

ID32776 = 1500 signal periods / pole period
ID116 = 600000 increments / pole period

Special cases:

1. ID32776 is smaller than the minimum value:
   e. g.: ID123 = 5 mm, signal period = 1 mm --> ID32776 = 5
2. The distance between the two pole pairs is not to be divided by the length of the signal period without a remainder.
   e. g. ID123 = 24 mm, signal period = 5 mm --> ID32776 = 4.8

Solution:

ID123 refers to ID32775 'Pole number motor'. This is assuming that the 'Pole number motor' in the aforementioned special case was 2. For the solution approach, ID123 should not be based on ID32775 = 2, but rather on, e.g., ID32775 =20. The pole period in ID123 must also be multiplied by a factor of 10 because of the motor with the assumed number of poles by a factor of 10.

1. ID123 = 5 * 10 = 50 mm (instead of 5 mm), signal period = 1 mm --> ID32776 = 50
2. ID123 = 24 * 10 =240 mm (instead of 24 mm), signal period = 5 mm --> ID32776 = 48

ID32777 'Torque relative to 10V at A1'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	0 $\%M_N$
Signed:	YES	**Max. value:**	1000 $\%M_N$
Format:	DEC		
List:	NO		

ID32777 scales the torque setpoint at the analogue input A1 of the converter in the torque control operating mode. The input value in % refers to ID32771 'Nominal torque'. The scaling has an accuracy of approximately ±10 % and applies to the basic speed area up to the nominal speed. Above the nominal speed, the real torque decreases inversely proportionately to the speed. The voltage setpoint ±10 V is digitised with a resolution of 12 bits (based on 10 V).

Formula: Torque with 10 V voltage setpoint at input A1

Legend:

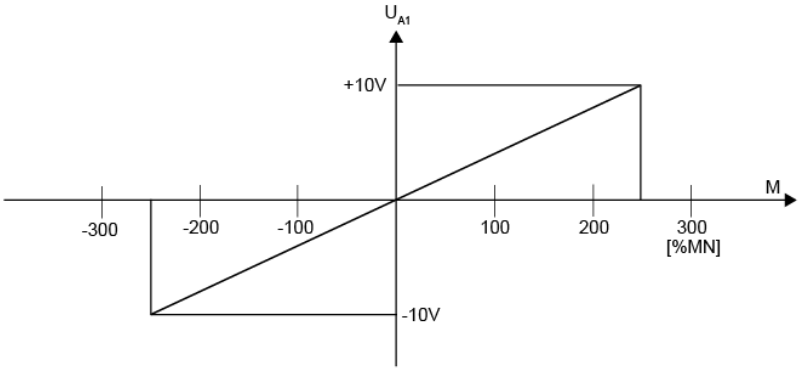
kidzl:	internal system factor
ID110:	'Converter peak current'
ID111:	'Motor nominal current IN'
ID32769:	'Magnetising current'

Example:

ID32777 = 250 $\%M_N$, with 10 V input voltage at A1 (U_{A1})

Formula: Exemplary calculation for torque determination

Torque depending on the input voltage to A1



ID32778 'Speed relative to 10V at A1'

Sphere of action:	DRIVE	**Default value:**	30000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	YES	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

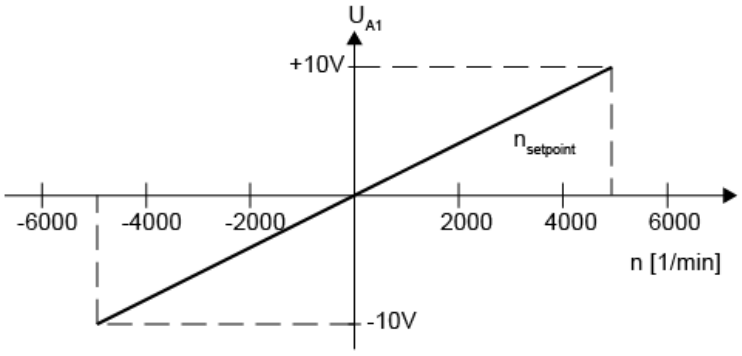
ID32778 sets the speed end value with 10 V input voltage at the analogue input A1. The voltage setpoint ±10 V is digitised with a resolution of 12 bits (based on 10 V).

Example

With 10 V setpoint, the motor should turn with 5,000 min-1. ID32778 = 5000

Formula: Exemplary calculation of the speed with 10V at A1, ID32778

Speed depending on the input voltage to A1



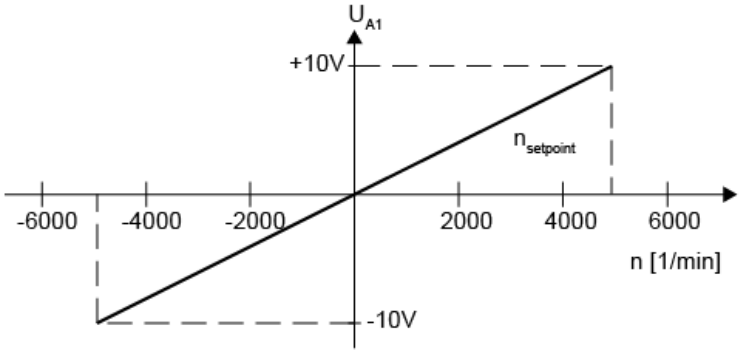
ID32779 'Speed offset for A1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	YES	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-100.0000 1/min
Signed:	YES	**Max. value:**	100.0000 1/min
Format:	DEC		
List:	NO		

In the operating mode 'analogue speed control,' ID32779offers the possibility of compensating for the drift of the analogue input to zero (speed '0' is absolutely impossible!).

A corrective value unequal to '0' in ID32779 will be constantly added to the analogue speed setpoint with the proper sign. The change of the offset therefore causes a shift of the straight line on the voltage axis (U_{A1}), not a change of the slope of the line.

Speed depending on the input voltage to A1



With ID34037 'Offset analog input 1'and ID34038 'Offset analog input 2', the offset of the analogue inputs can be set independently of the operating mode.

ID32780 'Acceleration ramp'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	4 byte	**Min. value:**	1 ms
Signed:	YES	**Max. value:**	1200000 ms
Format:	DEC		
List:	NO		

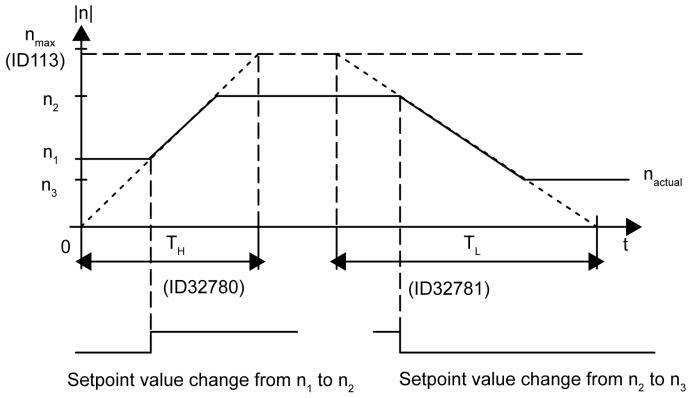
This parameter is only effective in the speed control operating mode (with analogue or digital setpoint).

By setting bit 6 = 1 in the operating mode parameter (ID32800ff), a ramp generator (acceleration / deceleration) acts on the speed controller input. The entered times apply for acceleration and deceleration between the speed 0 U/min and ±ID113 'Maximum speed'.

The following figure shows the effect of the acceleration and deceleration time parameters. The following applies to the speed setpoint specification:

$|n_2| > |n_1|$ →acceleration ramp
$|n_3| < |n_2|$ →deceleration ramp

Acceleration and deceleration times refer to the maximum speed



ID32781 'Deceleration ramp'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	4 byte	**Min. value:**	1 ms
Signed:	NO	**Max. value:**	1200000 ms
Format:	DEC		
List:	NO		

This parameter is only effective in the speed control operating mode (with analogue or digital setpoint).

By setting bit 6 = 1 in the operating mode parameter (ID32800ff), a ramp generator (acceleration / deceleration) acts on the speed controller input. The entered times apply for acceleration and deceleration between the speed 0 U/min and ±ID113 'Maximum speed'.

The figure in ID32780 shows the effect of the acceleration and deceleration time parameters.

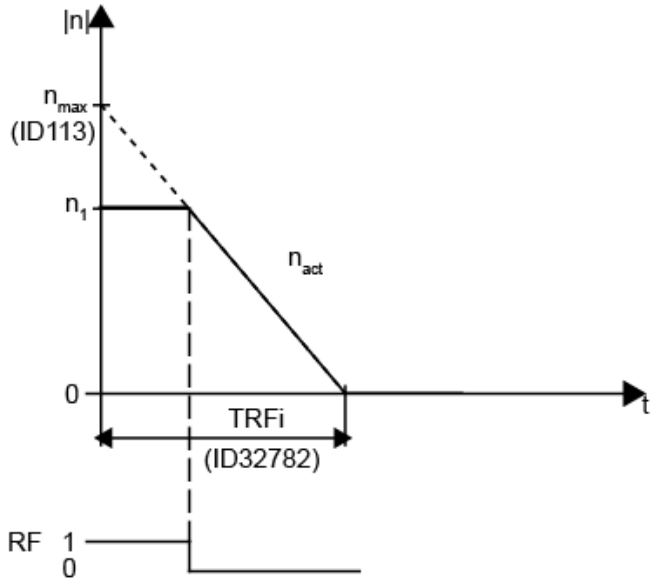
Siehe ID32780 'Acceleration ramp' auf Seite 138.

ID32782 'Deceleration ramp RF inactive'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	ms
Data length:	4 byte	**Min. value:**	1 ms
Signed:	NO	**Max. value:**	1200000 ms
Format:	DEC		
List:	NO		

When removing the controller enable, the motor is braked to a standstill according to the ramp ID32782 'Deceleration ramp RF inactive' and then is torque-free. The time entered is valid for deceleration from maximum speed (ID113) to speed 0.

Deceleration time for RF inactive



TRFi: Deceleration time RF inactive (ID32782)

ID32795 'Source UE'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

For devices with an external main contactor, the source of the 'DC bus on' signal (UE) must be set via ID32795. The following sources are possible:

Code	Designation	Description
0	UE via binary input	UE is configured for a binary input on the basic device. If this input is set, the UE control signal in the device is triggered and the DC bus is charged.
5	UE via fieldbus	UE is expected via fieldbus ACC bus: mapping via wDeviceControl EtherCAT: See ID134 'Master control word' bit 14
25	UE via fieldbus AND-linked with the binary input UE	like code 5 but AND-linked with the binary input UE

Changes in ID32795 'Source UE' are first effective with the next system start-up (mains OFF / ON). The command ID33730 'System booting' is not sufficient.

If a KE(N,S) is connected to the ACC bus interface of the controller card, the command 'DC bus ON' is sent to the KE(N,S) to switch on the DC bus.

ID32796 'Source RF'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32796 determines the source for the signal 'controller enable' (RF).

Code	Designation	Description
0	Controller enable (RF) via binary input	Controller enable is configured for a binary input on the basic device. If this input is set, the RF control signal in the device is triggered.
5	Controller enable via EtherCAT	The RF signal is expected via the EtherCAT interface. Siehe ID134 'Master control word' auf Seite 86.
25	RF via EtherCAT AND-linked with the binary input RF	like code 5 but AND-linked with the binary input RF

Changes in ID32796 'Source RF' are first effective with the next system start-up (mains OFF / ON).

The controller enable can be automatically removed within the system in the case of an error or, if available, from the functional safety.

ID32798 'User list 1'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX	**Current list length:***	0
List:	YES	**Max. list length:***	254

* The list length is the number of usage data elements without 4 byte head elements.

The 'User list 1' is a data set in the remanent memory area that is freely available to the user.

Configuration ID32798 'User list 1''User list 1'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	508	List head: Maximum list length without list head [byte]
2		
3		
4		
...		
255		

ID32800 'AMK main operating mode'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

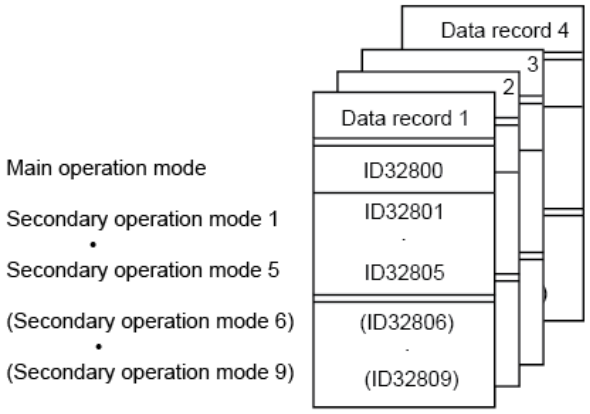
Default value: 003C0041

In every parameter set, the freely configurable operating mode ID32800 'AMK main operating mode' and the 5 secondary operating modes ID32801 'AMK secondary operating mode 1' to ID32805 are available for application-specific use. Use ID134 'Master control word' to switch between modes.

The secondary operating modes ID32806 'AMK secondary operating mode 6' to ID32809 'AMK digital speed control' are pre-configured at the factory and may not be changed by the user, because the drive-controlled movement functions, such as homing cycle, deceleration after controller enable removal, are only properly executed if the factory setting is maintained.

After mains ON and an activated controller enable, the 'AMK main operating mode' is active. The last used operating mode is always active after a system booting by ID33730 or the command 'Clear Error' and activated controller enable.

Parameter organisation in data sets (a data set corresponds to a parameter set)



Configuration ID32800 - ID32809 'AMK operating modes'

High word			Low word	
Bit 31				Bit 0 (LSB)
0 0 0 0	**X X X X**	**X X X X X X X X**	X X X X X X X X	X X X X X X X X
reserved	**Advanced operating mode**	**Setpoint source**	Operating mode, extensions, options	

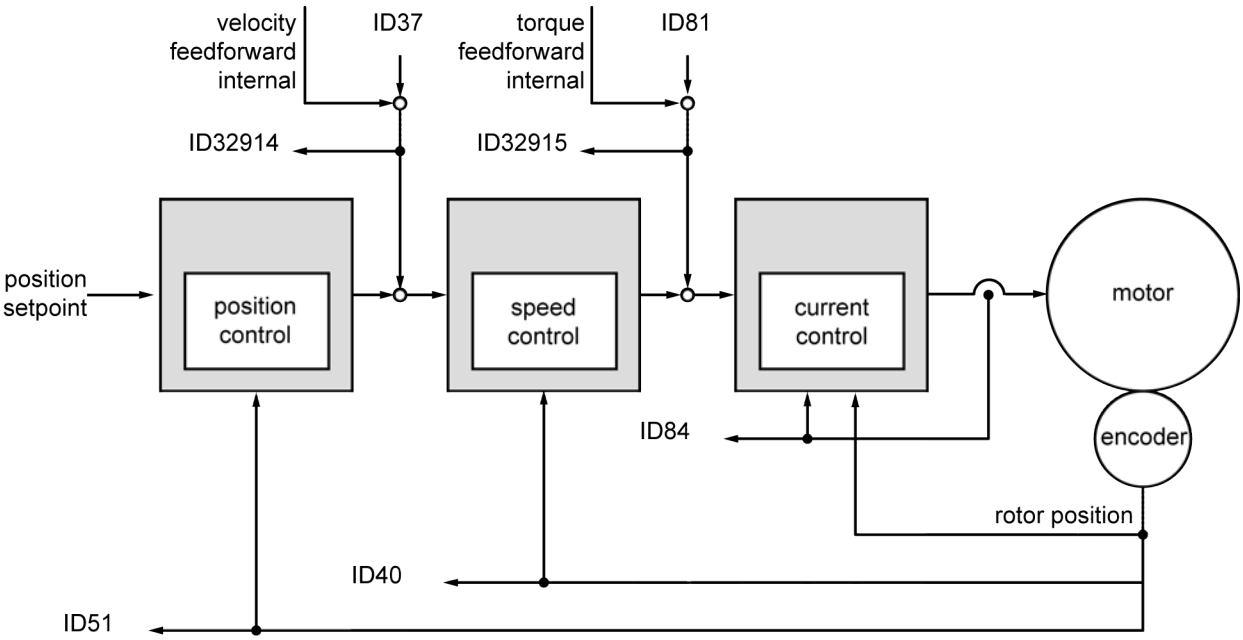
Meaning of the bits ID32800 - ID32809

Bit no.	Condition	Meaning
0-3	0x0	No operating mode defined
	0x1	Reserved
	0x2	Torque control
	0x3	Speed control
	0x4	Position control
	0x5	Parallel connection of the servo controller (operating mode for the slave)
	0x6	Reserved
	0x7	Reserved
4	0	Torque limiting per ID82, ID83, (ID92)
	1	Torque limiting per analogue input A2
5	0	Reserved
	1	Reserved
6	0	Setpoint ramp inactive
	1	Setpoint ramp in the speed control operating mode (ID32780, ID32781) active
7	0	Speed fine interpolator (FIPO) inactive
	1	Speed fine interpolator (FIPO) in the speed control operating mode inactive (does not work with analogue setpoint setting!) The speed fine interpolator supplies 1 speed setpoint/250µs, synchronised to ID2 'SERCOS cycle time'.
8	0	Position controller type P-controller
	1	Reserved
9 [2)]	0	Following error compensation (SAK) inactive
	1	Following error compensation in the position control operating mode for setpoints via ID47 and setpoints from the drive-internal interpolator
10 [1)]	0	Position fine interpolator (FIPO) inactive
	1	Position fine interpolator (FIPO) active in the position control operating mode The position fine interpolator supplies 1 position setpoint/250µs, synchronised to ID2 'SERCOS cycle time'.

Bit no.	Condition	Meaning
11 [2]	0	Following error compensation (SAK) inactive
	1	Active following error compensation in the position control operating mode for setpoints via pulse encoder input
12	0	Reserved
	1	Reserved
13	0	Modulo value is formed from the active actual position value source (see bit 14).
	1	Modulo value is formed according to ID103.
14	0	Actual position value source of motor encoder ID32953 'Encoder type', ID116 'Resolution motor encoder'  The actual position value source must be set in the ID32800'AMK main operating mode' and automatically applies for the operating modes.
	1	The actual position value source of the external encoder ID32953 'Encoder type', ID117 'Resolution external position feedback system', ID115 'Position feedback type', gear ratio ID121 'Load gear input revolution', ID122 'Load gear output revolution' is taken into consideration  The actual position value source must be set in the ID32800 'AMK main operating mode' and automatically applies for all operating modes. Bit 14 is not evaluated if a second. encoder is selected in ID34297 'Encoder type 2'.
15	0	Reserved
	1	Reserved
16-23	0x01	Analogue input A1 (Speed control)
	0x03	Pulse encoder input
	0x3C 0x41	Cyclical setpoint setting via real-time Ethernet • ID36 'Velocity command value' • ID47 'Position command value' • ID80 'Torque command value' Plus the feed forward values via real-time Ethernet • ID37 'Additive velocity command value' • ID81 'Additive torque command value' Pulse encoder input
	0x44	Internal interpolator
	0x48	Reserved for AMK internal use: Setpoint setting through internal modules
24-27	0x00	Default operating mode
	0x01	Interpolation with internal interpolator according to SERCOS
28-31	0	Reserved
	1	Reserved

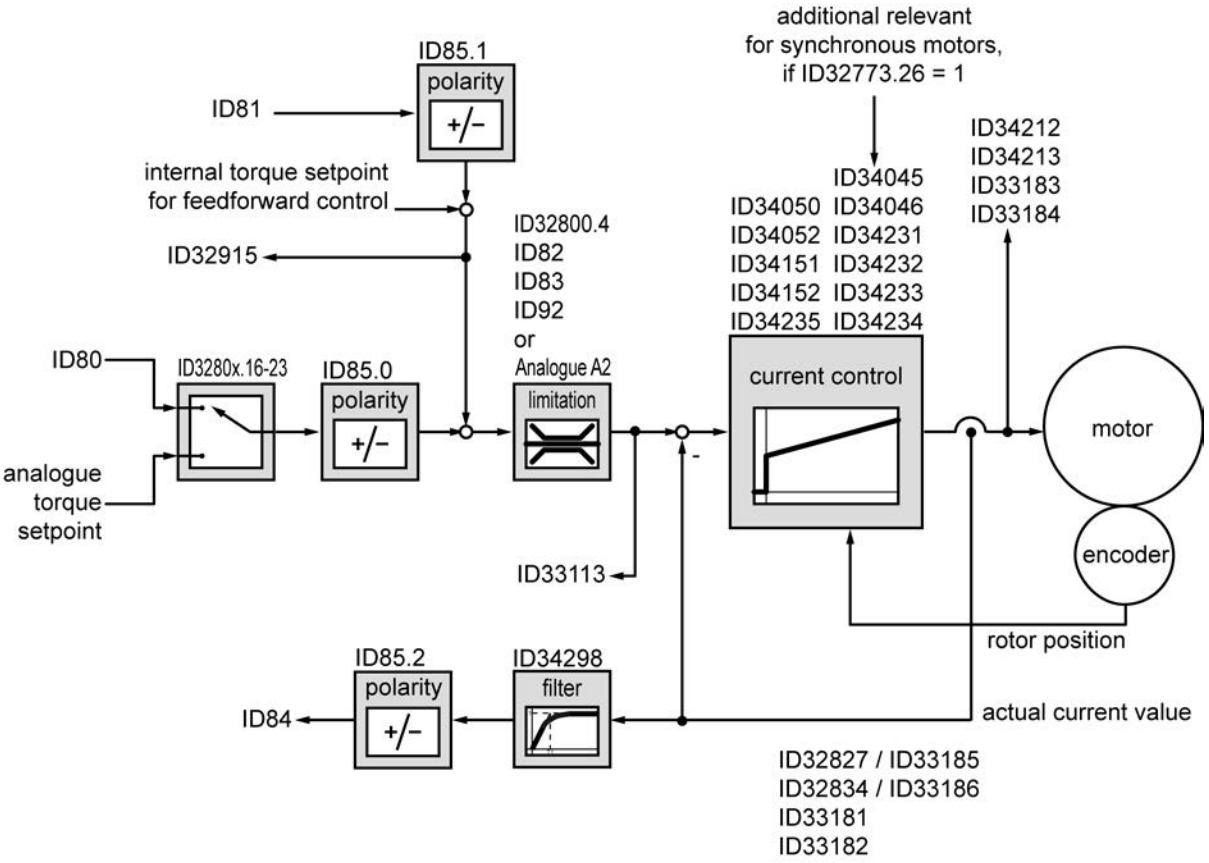
1) This parameter is used by the following function:
'Fine interpolator position (FIPO)'
2) This parameter is used by the following function:
'Following error compensation (SAK)'

3.0.1 Overview control loops



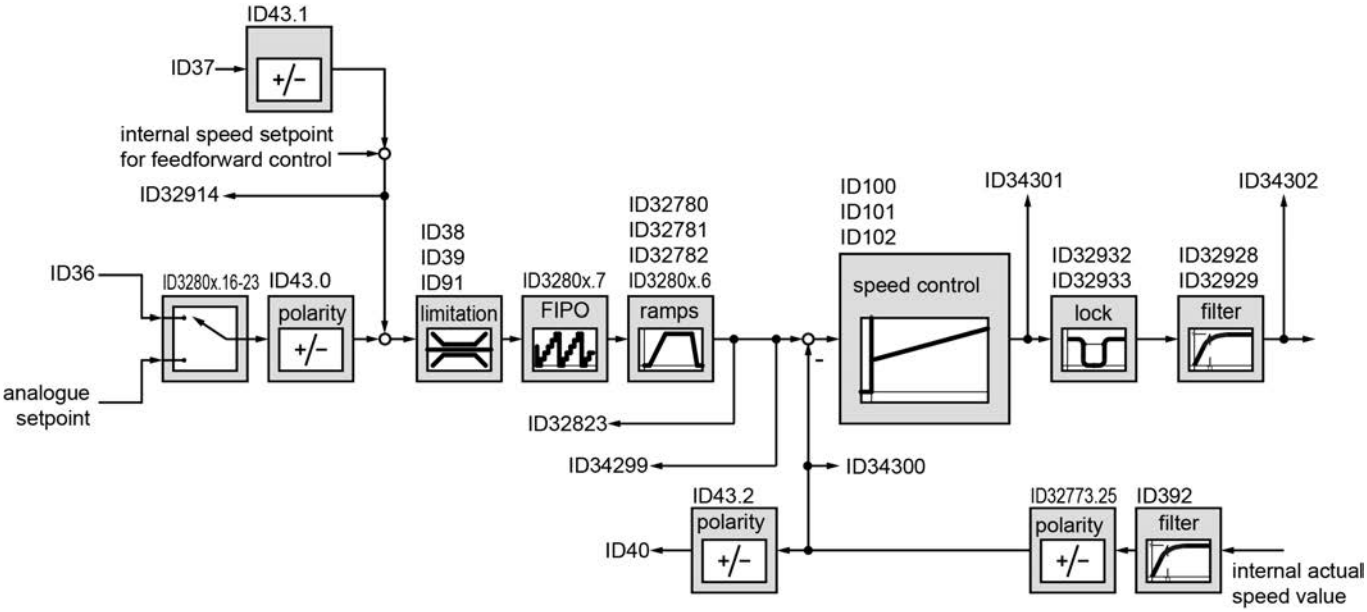
ID37	'Additive velocity command value'	ID84	'Torque feedback value'
ID40	'Velocity feedback value'	ID32914	'Sum of additive velocities'
ID51	'Position feedback value'	ID32915	'Sum of additive torques'
ID81	'Additive torque command value'		

Torque control and current controller



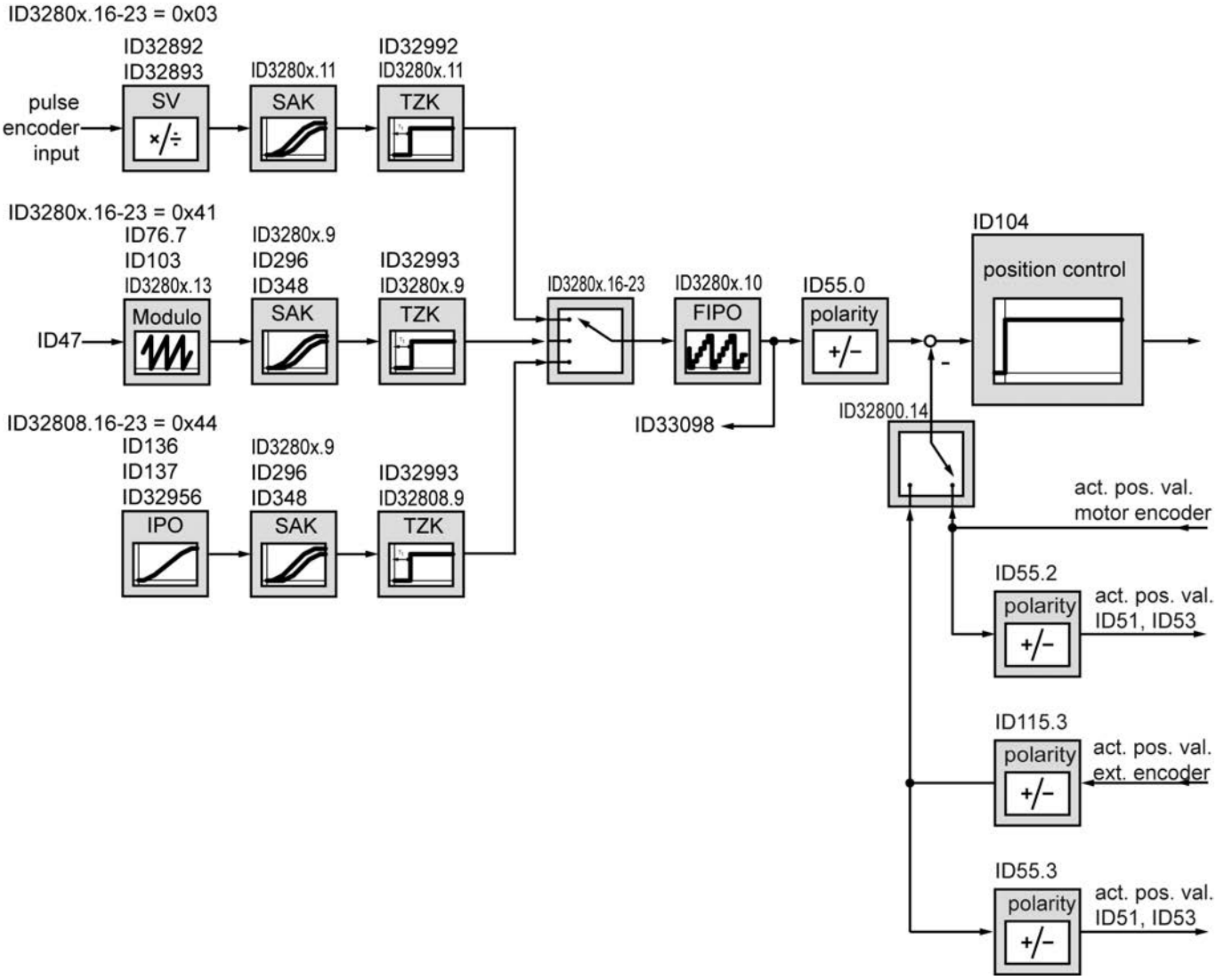
ID80	'Torque command value'
ID81	'Additive torque command value'
ID82	'Positive torque limit'
ID83	'Negative torque limit'
ID84	'Torque feedback value'
ID85	'Torque polarity'
ID92	'Bipolar torque limit'
ID32773	'Service bits'
ID32827	'Magnetising current feedback'
ID32834	'Torque current feedback'
ID32915	'Sum of additive torques'
ID33113	'Torque setpoint at controller'
ID33181	'Actual current Ia'
ID33182	'Actual current Ib'
ID33183	'Voltage Ua'
ID33184	'Voltage Ub'
ID33185	'Magnetizing current feedback '
ID33186	'Torque current feedback'
ID34045	'Inductance path D'
ID34046	'Inductance path Q'
ID34050	'Current path Q integral-action time TN'
ID34052	'Current path D integral-action time TN'
ID34151	'Current path Q proportional gain KP'
ID34152	'Current path D proportional gain KP'
ID34212	'Voltage path Q'
ID34213	'Voltage path D'
ID34231	'Feed forward control voltage path Q'
ID34232	'Feed forward control voltage path D'
ID34233	'Phase resistance'
ID34234	'Voltage constant Ke'
ID34235	'Increase motor voltage'
ID34298	'Torque feedback filter'

Speed control with digital or analogue setpoint



ID36	'Velocity command value'	ID32781	'Deceleration ramp'
ID37	'Additive velocity command value'	ID32782	'Deceleration ramp RF inactive'
ID38	'Positive velocity limit'	ID32800	'AMK main operating mode'
ID39	'Negative velocity limit'	ID32823	'Velocity control command after ramp'
ID40	'Velocity feedback value'	ID32914	'Sum of additive velocities'
ID43	'Velocity polarity'	ID32928	'Time filter 1'
ID91	'Bipolar velocity limit'	ID32929	'Time filter 2'
ID100	'Speed control proportional gain KP'	ID32932	'Barrier frequency'
ID101	'Integral-action time speed control TN'	ID32933	'Bandwidth'
ID102	'Differentiating time speed control TD'	ID34299	'Velocity setpoint in control'
ID392	'Velocity feedback filter'	ID34300	'Velocity actual value in control'
ID32773	'Service bits'	ID34301	'Torque setpoint filter input'
ID32780	'Acceleration ramp'	ID34302	'Torque setpoint filter output'

Position control



ID47	'Position command value'
ID51	'Position feedback value'
ID53	'Position feedback value 2'
ID55	'Closed loop polarity'
ID76	'Position scaling data'
ID103	'Modulo value'
ID104	'Position loop factor KV'
ID115	'Position feedback type'
ID136	'Positive acceleration'
ID137	'Negative acceleration'
ID296	'Velocity feedforward gain'
ID348	'Acceleration feedforward gain'
ID32800	'AMK main operating mode'
ID32808	'AMK position control'
ID32892	'Synchronous setpoint pulses divider'
ID32893	'Synchronous setpoint pulses multiplier'
ID32956	'Additional acceleration value'
ID32992	'Dead time compensation 1'
ID32993	'Dead time compensation 2'
ID33098	'Increase position value'
ID33104	'Position feedback modulo'

ID32801 'AMK secondary operating mode 1'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32802 'AMK secondary operating mode 2'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32803 'AMK secondary operating mode 3'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32804 'AMK secondary operating mode 4'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32805 'AMK secondary operating mode 5'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32806 'AMK secondary operating mode 6'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Default value: 003C0043

The secondary operating modes ID32806 'AMK secondary operating mode 6' to ID32809 'AMK digital speed control' are pre-configured at the factory and may not be changed by the user, because the drive-controlled movement functions, such as homing cycle, deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32807 'AMK digital torque control'

Sphere of action:	DRIVE	**Default value:**	00480002
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The secondary operating modes ID32806 'AMK secondary operating mode 6' to ID32809 'AMK digital speed control' are pre-configured at the factory and may not be changed by the user, because the drive-controlled movement functions, such as as homing cycle, deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32808 'AMK position control'

Sphere of action:	DRIVE	**Default value:**	00440404
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The secondary operating modes ID32806 'AMK secondary operating mode 6' to ID32809 'AMK digital speed control' are pre-configured at the factory and may not be changed by the user, because the drive-controlled movement functions, such as as homing cycle, deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32809 'AMK digital speed control'

Sphere of action:	DRIVE	**Default value:**	00480043
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The secondary operating modes ID32806 'AMK secondary operating mode 6' to ID32809 'AMK digital speed control' are pre-configured at the factory and may not be changed by the user, because the drive-controlled movement functions, such as as homing cycle, deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32813 'Parameter set assignment 1'

Sphere of action:	GLOBAL	**Default value:**	03 02 01 00
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The parameter set assignment defines a main parameter set and 3 alternative parameter sets. The parameter sets can be switched with ID216 'Switch parameter set command' and ID217 'Preselect parameter set command'.

Default setting: ID32813 = 0x 03 02 01 00

The following applies:

Data set number 0x00 Main parameter set

Data set number 0x01: 1st alternative parameter set

Data set number 0x02: 2nd alternative parameter set

Data set number 0x03: 3rd alternative parameter set

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32821 'Password'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

If a password is entered that deviates from the default value, parameters can only be accessed as read-only with the PC software 'AipexLite.exe.' In order to be able to write parameters, the password must be entered in advance. The password protection does not work for the PC software 'AIPEX PRO.'

ID32823 'Velocity control command after ramp'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32824 'Following distance'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID32824 shows the same content as ID189 'Following distance'.

ID32826 'Following error compensation value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648 Increments
Signed:	YES	**Max. value:**	2147483647 Increments
Format:	DEC		
List:	NO		

ID32826 shows the compensation value (pre-control value) for the active following error compensation (ID3280x 'AMK operating modes' Bit 9 = 1).

ID32827 'Magnetising current feedback'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	-1000.0 A
Signed:	YES	**Max. value:**	1000.0 A
Format:	DEC		
List:	NO		

ID32827 shows the actual value of the magnetising current (isd).

ID32828 'Current feedback phase U'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	YES / NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32828 shows the actual current value of the motor phase U.

ID32829 'Current feedback phase V'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	YES / NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32829 shows the actual current value of the motor phase V.

ID32830 'Current feedback phase W'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	YES / NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32830 shows the actual current value of the motor phase W.

ID32831 'Commutation angle'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65536
Format:	DEC		
List:	NO		

ID32831 shows continuously the commutation angle.

ID32832 'Encoder signal S2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	mV
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32832 displays the value of the analog encoder track S2.

ID32833 'Encoder signal S1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	mV
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32833 displays the value of the analog encoder track S1.

ID32834 'Torque current feedback'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	-1000.0 A
Signed:	YES	**Max. value:**	1000.0 A
Format:	DEC		
List:	NO		

ID32834 displays the actual value of the current which is responsible for the active torque.

ID32835 'Torque command value internal'

Reserved for AMK internal use!

ID32836 'DC bus voltage'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0 V
Signed:	NO	**Max. value:**	4096 V
Format:	DEC		
List:	NO		

ID32836 displays the actual value of the DC bus voltage.

ID32837 'DC bus voltage monitoring'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID32837 defines the lower permissible voltage for the DC bus.

A device-specific value is to be entered in the SEEP memory at the factory for the DC bus voltage monitoring. (Typically 385 VDC)

The following applies:

ID32837 = 0 (The factory-set, device-specific value is the voltage for which the DC bus voltage is monitored.)

ID32837 ≠ 0 (The entered value is the voltage [0.1 V] for which the DC bus voltage is monitored.)

The controller enable can only be switched on if the current DC bus voltage is higher than the value in ID32837. The DC bus voltage is monitored during the active controller enable.

ID32840 'Diagnostic list'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Max. list length: 1120

The 'Diagnostic list' contains all of the diagnostic messages that a device generates. In addition, the error messages of the connected bus slaves are saved in the devices that are configured as bus masters if they were transferred from the bus slaves to the master. The assignment of a diagnostic message to the participants is ensured through the bus participant address (element 2). The command 'Clear error' or mains on / off clears the entries in the diagnostic list.

Every diagnostic message fills the structure 'ERROR STRUCT,' as shown in table 'Configuration ID32840' element 2 to 15. The first diagnostic message is entered in ID32840 in element 2-15, the second diagnostic message in element 16-29 and so on. The current list length depends on the number of generated diagnostic messages.

Configuration ID32840 'Diagnostic list'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	2 x z	List head: Maximum list length without list head [byte]
2	2 byte	Bus participant address of the reporting participant
3	2 byte	4-digit diagnostic number
4	2 byte	Function number (module)
5	2 byte	Error classification (class)
6	4 byte	Error code
7		
8	4 byte	Error additional info 1
9		
10	4 byte	Error additional info 2
11		
12	4 byte	Error additional info 3
13		
14	4 byte	Time allocation (system time)
15		
...	...	...
z+1		

z = Maximum list length

ID32841 'Encoder list motor'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	37

* The list length is the number of usage data elements without 4 byte head elements.

In encoders with an internal memory, AMK saves motor parameters at the factory. The 'Encoder list motor' specifies which parameters are saved in the encoder and cannot be changed by the user.

The parameters listed in 'Encoder list motor' are only read in the following cases and overwrite the current values in the parameter set:

- Initially loaded systems
  It is checked during the system booting whether the motor parameters listed in ID32841 correspond to their initially loaded values (ID34160 'Part number motor' is ignored). Only when the motor parameters from the 'Encoder list motor' have their initially loaded values will the parameter values be read from the encoder and overwrite the originally loaded values in all parameter sets.

Configuration ID32841 'Encoder list motor'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	74	List head: Maximum list length without list head [byte]
2		
3		
...		
38	...	...

ID32842 'Encoder list customer'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	64

* The list length is the number of usage data elements without 4 byte head elements.

The 'Encoder list customer' determines which of the user's parameter values are saved in the encoder database. The list can be freely configured, whereby only those parameters may be entered whose values can be changed. The entry of parameters with a non-changeable value leads to an error message when saving in the system. The usable memory capacity for the user data in the encoder is 60 words. The sum of all data from the 'user encoder list' may not exceed this memory capacity, otherwise the diagnostic message 2310 'Encoder communication' info 15 is generated. The number of parameters that can be saved depends on the parameter characteristics.

After the parameters have been written in the encoder, mains off / on must be carried out.

The user data is automatically loaded after the motor data for initial system loading and overwrites this.

Example:

ID no.	Designation	Parameter set	Value	Size	Scale	Content
111	'Motor nominal current IN'	0	5.50 A	2 words	0.001 A	5500
116	'Resolution motor encoder'	3	65536	2 words	Increments	65536
82	'Positive torque limit'	2	100 % MN	1 word	0.1 % M_N	1000
83	'Negative torque limit'	1	100 % MN	1 word	0.1 % M_N	1000
32780	'Acceleration ramp'	1	2000 ms	2 words	0.1 ms	20000
32781	'Deceleration ramp'	3	1000 ms	2 words	0.1 ms	10000

Configuration ID32842 'Encoder list customer' for example

List element	Content	Meaning
0	24	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	128	List head: Maximum list length without list head [byte]
2	111	ID no. from example
3	0	Parameter set
4	116	ID no. from example
5	3	Parameter set
6	82	ID no. from example
7	2	Parameter set
8	83	ID no. from example
9	1	Parameter set
10	32780	ID no. from example
11	1	Parameter set
12	32781	ID no. from example
13	3	Parameter set
...	0	-
65	0	-

Encoder memory configuration for example

Memory capacity	Content
Word 1	ID111 + parameter set 0
Word 2 and 3	5500
Word 4	ID116 + parameter set 3
Word 5 and 6	65536
Word 7	ID82 + parameter set 2
Word 8	1000
Word 9	ID83 + parameter set 1
Word 10	1000
Word 11	ID32780 + parameter set 1
Word 12 and 13	20000
Word 14	ID32781 + parameter set 3
Word 15	10000

Siehe ID32901 'Global service bits' auf Seite 171.

ID32846 'Address output port 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32846, the binary outputs are assigned to parameters,e. g. 8 binary outputs on the option card KW-EA2. With the parameters, the binary outputs can be assigned real-time bit messages of the inverter of the plc user-program. If the hardware used does not have physical binary outputs, the output ports can be read and written by the controller as virtual outputs.

Structure and use of the output port 1 - function assignment via parameter - controller can read the image and evaluate status

'Address output port 1'	Binary output[1)]	Function assignment[2)]	Image[3)]
552	A1	ID32847	ID34121 Bit 0
	A2	ID32848	ID34121 Bit 1
	A3	ID32849	ID34121 Bit 2
	A4	ID32850	ID34121 Bit 3
	A5	ID32851	ID34121 Bit 4
	A6	ID32852	ID34121 Bit 5
	A7	ID32853	ID34121 Bit 6
	A8	ID32854	ID34121 Bit 7

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read the statuses of the 'virtual binary outputs.'
2) Real-time bits can be assigned to the binary outputs:
   Siehe Codes for the configuration of the binary outputs auf Seite 269.
   The statuses of the binary outputs are, if available, issued via the binary outputs on the hardware side.
3) A controller can read the statuses of the binary outputs by accessing and reading the parameter ID34121.

Structure and use of the output port 1 - Controller can set outputs by writing the image

'Address output port 1'	Binary output[1)]	Function assignment[2)]	Image[3)]
0	A1	ID32847 = 0	ID34121 Bit 0
	A2	ID32848 = 0	ID34121 Bit 1
	A3	ID32849 = 0	ID34121 Bit 2
	A4	ID32850 = 0	ID34121 Bit 3
	A5	ID32851 = 0	ID34121 Bit 4
	A6	ID32852 = 0	ID34121 Bit 5
	A7	ID32853 = 0	ID34121 Bit 6
	A8	ID32854 = 0	ID34121 Bit 7

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read and write the memory capacities as 'virtual binary outputs.'
2) No real-time bits may be assigned to the binary outputs, because only the controller has reading and writing access to the binary outputs.
3) A controller can read and write the statuses of binary outputs with ID34121 'Binary output word 1'.

ID32847 'Port 1 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32848 'Port 1 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32849 'Port 1 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32850 'Port 1 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32851 'Port 1 Bit 4'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32852 'Port 1 Bit 5'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32853 'Port 1 Bit 6'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32854 'Port 1 Bit 7'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32855 'Address output port 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32855, physical binary outputs are assigned parameters. With the parameters, the binary outputs can be assigned real-time bit messages of the inverter of the plc user-program. If the hardware used does not have physical binary outputs, the output ports can be read and written by the controller as virtual outputs.

Structure and use of the output port - function assignment via parameter - controller can read the image and evaluate status

'Address output port 2'	Binary output[1)]	Function assignment[2)]	Image[3)]
553	A1	ID32856	ID34121 Bit 8
	A2	ID32857	ID34121 Bit 9
	A3	ID32858	ID34121 Bit 10
	A4	ID32859	ID34121 Bit 11
	A5	ID32860	ID34121 Bit 12
	A6	ID32861	ID34121 Bit 13
	A7	ID32862	ID34121 Bit 14
	A8	ID32863	ID34121 Bit 15

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read the statuses of the 'virtual binary outputs.'
2) Real-time bits can be assigned to the binary outputs:
   Siehe Codes for the configuration of the binary outputs auf Seite 269.
   The statuses of the binary outputs are, if available, issued via the binary outputs on the hardware side.
3) A controller can read the statuses of the binary outputs by accessing and reading the parameter ID34121.

Structure and use of the output port 1 - Controller can set outputs by writing the image

'Address output port 2'	Binary output[1)]	Function assignment[2)]	Image[3)]
0	A1	ID32856 = 0	ID34121 Bit 8
	A2	ID32857 = 0	ID34121 Bit 9
	A3	ID32858 = 0	ID34121 Bit 10
	A4	ID32859 = 0	ID34121 Bit 11
	A5	ID32860 = 0	ID34121 Bit 12
	A6	ID32861 = 0	ID34121 Bit 13
	A7	ID32862 = 0	ID34121 Bit 14
	A8	ID32863 = 0	ID34121 Bit 15

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read and write the memory capacities as 'virtual binary outputs.'
2) No real-time bits may be assigned to the binary outputs, because only the controller has reading and writing access to the binary outputs.
3) A controller can read and write the statuses of binary outputs with ID34121 'Binary output word 1'.

ID32856 'Port 2 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32857 'Port 2 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32858 'Port 2 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32859 'Port 2 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32860 'Port 2 Bit 4'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32861 'Port 2 Bit 5'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32862 'Port 2 Bit 6'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32863 'Port 2 Bit 7'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32846 'Address output port 1' auf Seite 158.

ID32864 'Address output port 3'

Sphere of action:	GLOBAL	**Default value:**	544
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32864, the standard binary outputs are assigned parameters. With the parameters, the physical binary outputs can be assigned real-time bit messages or messages of the plc user program.

Structure and use of the output port - function assignment via parameter - controller can read the image and evaluate status

ID32864 'Address output port 3'	Binary output[1)]	Function assignment[2)]	Image[3)]
544	BA1	ID32865	ID34120 Bit 0
	BA2	ID32866	ID34120 Bit 1
	BA3	ID32867	ID34120 Bit 2
	BA4	ID32868	ID34120 Bit 3

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read the statuses of the 'virtual binary outputs'.
2) Real-time bits can be assigned to the binary outputs:
   Siehe Codes for the configuration of the binary outputs auf Seite 269.
   The statuses of the binary outputs are, if available, issued via the binary outputs on the hardware side.
3) A controller can read the statuses of the binary outputs by accessing and reading the parameter ID34120 'Binary output word'.

Structure and use of the output port 3 - Controller can set outputs by writing the image

ID32864 'Address output port 3'	Binary output[1)]	Function assignment[2)]	Image[3)]
0	BA1	ID32865 = 0	ID34120 Bit 0
	BA2	ID32866 = 0	ID34120 Bit 1
	BA3	ID32867 = 0	ID34120 Bit 2
	BA4	ID32868 = 0	ID34120 Bit 3

1) The availability of physical binary outputs depends on the hardware used. If no physical binary outputs are available, the controller can read and write the memory capacities as 'virtual binary outputs.'
2) No real-time bits may be assigned to the binary outputs, because only the controller has reading and writing access to the binary outputs.
3) A controller can read and write the statuses of binary outputs with ID34120 'Binary output word'.

ID32865 'Port 3 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Binary output default value:	33031 (QRF)

Siehe ID398 'List status bits' auf Seite 122.

Siehe ID32864 'Address output port 3' auf Seite 164.

ID32866 'Port 3 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Binary output default value:	33029 (SRM)

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32864 'Address output port 3' auf Seite 164.

ID32867 'Port 3 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Default value:	33052 (triggering motor brake)

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32864 'Address output port 3' auf Seite 164.

ID32868 'Port 3 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID398 'List status bits' auf Seite 122.
Siehe ID32864 'Address output port 3' auf Seite 164.

ID32873 'Address input port 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32873, the binary inputs are assigned parameters, e.g. 12 binary inputs on the option card KW-EA2. With the parameters, functions of the inverter or the plc user program can be assigned to the binary inputs. If the hardware used does not have physical binary inputs, the input ports can be read and written by the controller as virtual inputs.

Structure and use of the input port 1 - function assignment via parameter - controller can read the image and evaluate status

ID32873	Binary input[1)]	Function assignment[2)]	Image[3)]
40	E1	ID32874	ID34101 Bit 0
	E2	ID32875	ID34101 Bit 1
	E3	ID32876	ID34101 Bit 2
	E4	ID32877	ID34101 Bit 3
	E5	ID32878	ID34101 Bit 4
	E6	ID32879	ID34101 Bit 5
	E7	ID32880	ID34101 Bit 6
	E8	ID32881	ID34101 Bit 7

1) The availability of physical binary inputs depends on the hardware used.
2) Functions can be assigned to the binary inputs:
Siehe Codes for the configuration of the binary inputs auf Seite 271.
3) A controller can read the statuses of binary inputs with ID34101 'Binary input word 1'.

Structure and use of the input port 1 - Controller can set inputs by writing the image

ID32873	Binary input[1)]	Function assignment[2)]	Image
0	E1	ID32847 = 0	ID34101 Bit 0
	E2	ID32848 = 0	ID34101 Bit 1
	E3	ID32849 = 0	ID34101 Bit 2
	E4	ID32850 = 0	ID34101 Bit 3
	E5	ID32851 = 0	ID34101 Bit 4
	E6	ID32852 = 0	ID34101 Bit 5
	E7	ID32853 = 0	ID34101 Bit 6
	E8	ID32854 = 0	ID34101 Bit 7

1) The availability of physical binary inputs depends on the hardware used. If no physical binary inputs are available, the controller can read and write the memory capacities as 'virtual binary inputs.'
2) Functions can be assigned to the binary inputs:
Siehe Codes for the configuration of the binary inputs auf Seite 271.
If the binary input can be set by the controller without the inverter triggering a configured function, the value 0 must be assigned to the respective input. The controller accesses the binary inputs reading or writing via ID34101.
3) A controller can read and write the statuses of binary inputs with ID34101 'Binary input word 1'.

ID32874 'Port 1 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 0) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32875 'Port 1 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 1) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32876 'Port 1 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 2) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32877 'Port 1 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 3) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32878 'Port 1 Bit 4'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 4) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32879 'Port 1 Bit 5'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 5) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32880 'Port 1 Bit 6'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 6) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32881 'Port 1 Bit 7'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 1 (bit 7) and the status of the input can be evaluated via the plc. ID32873 'Address input port 1' determines which binary inputs the input port maps.

Siehe ID32873 'Address input port 1' auf Seite 166.

ID32882 'Slot assignment'

Reserved for AMK internal use!

ID32887 'Park position'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

Park position where the drive will move to in case of bus failure, if ID34027 = 0x3 is parameterized.

This parameter is used by the following function:
'Drive moves into parking position'

ID32888 'Park velocity'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

Velocity to drive into the park position in case of bus failure and ID34027 = 0x3 is parameterized.

This parameter is used by the following function:
'Drive moves into parking position'

ID32891 'Internal velocity command value'

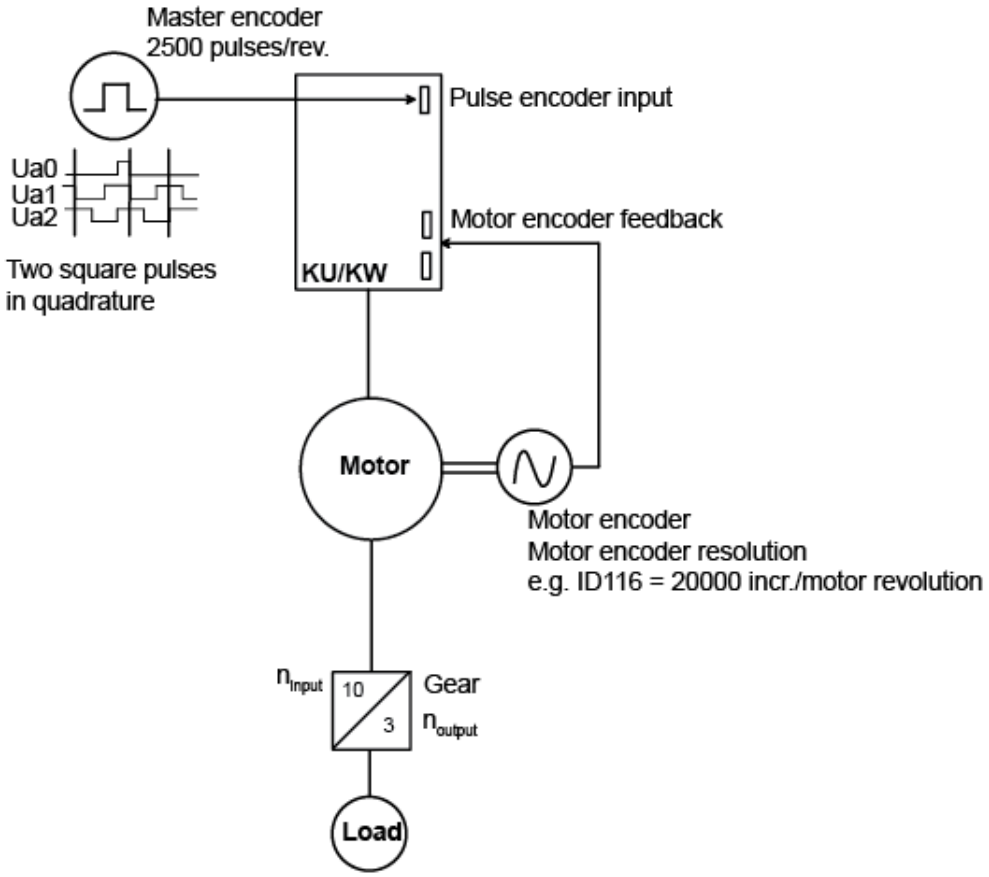
Reserved for AMK internal use!

ID32892 'Synchronous setpoint pulses divider'

Sphere of action:	DRIVE	**Default value:**	655360
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	4 byte	**Min. value:**	1
Signed:	NO	**Max. value:**	2147483647
Format:	DEC		
List:	NO		

ID32892 and ID32893 'Synchronous setpoint pulses multiplier' work with the setpoint source 0x3 (pulse encoder input) in the position control operating mode. The position setpoints are calculated with the factors, thus the ratio between the incoming increments (master encoder, connected to the pulse encoder input) and the motor (slave axis) can be changed.

Example: Synchronous operation between a slave axis and a square-wave encoder as a master at the pulse encoder input



Demand: 1 revolution of the master encoder should cause 1 revolution of the load of the slave axis.

Master encoder:	The setpoint source (master encoder) provides 2,500 pulses per revolution at the pulse encoder input.
Slave axis:	The internal resolution of the actual position value source (here ID116 'Resolution motor encoder') is 20,000 increments per machine revolution. A gear reduction ratio of i=10:3 acts between the motor and the load.

The encoder pulses at the pulse encoder input are evaluated four times in the control card, whereby [encoder pulse number at the pulse encoder input x4] act as setpoint increments in the slave axis.

Formula: Determination of the values for setpoint divider and multiplier

The setpoint factors are therefore to be parameterised as follows:

Setpoint multiplier (numerator): ID32893 = 20
Setpoint divider (denominator): ID32892 = 3

ID32893 'Synchronous setpoint pulses multiplier'

Sphere of action:	DRIVE	**Default value:**	655360
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID32892 'Synchronous setpoint pulses divider' auf Seite 170.

ID32894 'Position command value filter'

Reserved for AMK internal use!

ID32895 'Position control differenting time'

Reserved for AMK internal use!

ID32896 'Internal position command value'

Reserved for AMK internal use!

ID32897 'Analog Input A1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-10.00 V
Signed:	YES	**Max. value:**	10.00 V
Format:	DEC		
List:	NO		

ID32897 indicates the analogue voltage at the analogue input A1 of the controller card and can be read via an external controller.

ID32898 'Analog Input A2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-10.00 V
Signed:	YES	**Max. value:**	10.00 V
Format:	DEC		
List:	NO		

ID32898 indicates the analogue voltage at the analogue input A2 of the controller card and can be read via an external controller.

ID32901 'Global service bits'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-

Format: BIN
List: NO

Values for KW-R06 /
Default value: 0000 0010 0100 0000 (LSB)

Configuration ID32901 'Global service bits'

Bit no.	Condition	Meaning
0	0	Reserved
	1	Reserved
1	0	Reserved
	1	Reserved
2	0	Reserved
	1	Reserved
3	0	Reserved
	1	Reserved
4	0	Reserved
	1	Reserved
5	0	Reserved
	1	Reserved
6	0	Encoder database inactive
	1	Encoder database active Siehe ID32841 'Encoder list motor' auf Seite 156. Siehe ID32842 'Encoder list customer' auf Seite 156.
7	0	Monitoring connection at binary output BA3 regarding cable breakage inactive
	1	Monitoring connection at binary output BA3 (e.g. motor holding brake) regarding cable breakage active A test current is generated on the output BA3 at low condition (BA3 = 0) to exclude cable breakage. Only after an edge change a fault is outputted. In high condition (BA3 = 1) the current is monitored to ≠ 0. If one of these conditions failed the error message 1100 is generated. This parameter is used by the following function: 'Controlling motor holding brake'
8	0	Reserved
	1	Reserved
9	0	If the existing hardware does not support the temperature model, the error message 2321 'System diagnostics: IGBT monitoring' info 1 = 3 is suppressed. The temperature model takes care of the heat sink and the IGBT temperature
	1	If the existing hardware does not support the temperature model, an error message 2321 'System diagnostics: IGBT monitoring' info 1 = 3 is generated.
10	0	Reserved
	1	Reserved
11	0	Reserved
	1	Reserved
12	0	Liquid-cooled inverter (switch-off temperature of device rear wall according to SEEP value)
	1	Air-cooled inverter (Coldplate design with external air cooling) Switch-off temperature of device rear wall according to SEEP value + 15 °C (not active for -F devices with integrated air-cooling)

Bit no.	Condition	Meaning
13	0	Generate diagnostic message 1100 'System diagnostics: Short-circuit / overload digital outputs' in the event of a fault Requirement: ID32901 Bit 7 = 1
	1	Do not display the diagnostic message 1100 'System diagnostics: Short-circuit / overload digital outputs' Requirement: Motor holding brake is not connected to BA3 or cable breakage Monitoring of cable breakage is active (ID32901 bit 7 = 1) Motor holding brake is not activated (BA3 = 0)  In event of a fault the diagnostic message 1100 'System diagnostics: Short-circuit / overload digital outputs' is generated if: Motor holding brake is not connected to BA3 or cable breakage Monitoring of cable breakage is active (ID32901 bit 7 = 1) Motor holding brake is not activated **(BA3 = 1)**
14	0	Reserved
	1	Reserved
15	0	Reserved
	1	Reserved for AMK internal use! Special function
16	0	Reserved
	1	Reserved
17	0	Harmonised time scheme at real-time communication: The actual values and the setpoint values of the fieldbus are scanned at PGT time (DC signal).
	1	The time scheme at real-time communication is compatible with the firmware versions < AER5-6 V1.10 2012/51 (204395)
18-32	0	Reserved
	1	Reserved

ID32913 'Clear error'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	1
Format:	HEX		
List:	NO		

The command 'Clear error' is started if the value 0x1 is written in ID32913 and causes an error message to be reset. If the cause of the error is remedied, the system changes to the error-free state (SBM = 1).

The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

The command is completed after the status is 0x3 or 0xF.

ID32914 'Sum of additive velocities'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	-214748.4 1/min
Signed:	YES	**Max. value:**	214748.4 1/min
Format:	DEC		
List:	NO		

The display value ID32914 'Sum of additive velocities' shows the sum from ID37 'Additive velocity command value' and the internal speed feedforward values.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32915 'Sum of additive torques'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	% M_N
Data length:	2 byte	**Min. value:**	-3276.8 %M_N
Signed:	YES	**Max. value:**	3276.7 %M_N
Format:	DEC		
List:	NO		

The display value ID32915 'Sum of additive torques' shows the sum from ID81 'Additive torque command value' and the internal speed feedforward values.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID32916 'Cyclic filter'

Sphere of action:	GLOBAL	**Default value:**	00
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX	**Current list length:***	0
List:	YES	**Max. list length:***	16

* The list length is the number of usage data elements without 4 byte head elements.

ID32916 'Cyclic filter' works in the speed control and position control operating modes.

Configuration ID32916 'Cyclic filter'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	32	List head: Maximum list length without list head [byte]
2		Percentage scaling [0.1 %M_N]
3		Sensitivity [0.1 %M_N]
4		Offset display [1)]
5		n. harmonic (e.g. number of poles of the motor)

List element	Content	Meaning
6		Sine proportion of the n. harmonic 1)
7		Cosine proportion of the n. harmonic 1)
8		m. harmonic (e.g. harmonics per motor revolution)
9		Sine proportion of the m. harmonic 1)
10		Cosine proportion of the m. harmonic 1)
11		Reserved
12		Reserved
13		Reserved
14		Reserved
15		Reserved
16		Reserved
17		Reserved

1) Is currently not operated

ID32920 'Overload time motor'

Sphere of action:	DRIVE	**Default value:**	50
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	s
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

For new applications, the I^2t monitoring motor must be parameterised with the parameters ID109 and ID34168. ID32920 'Overload time motor' exists for compatibility reasons.

ID32920 is only effective if ID34168 'Time maximum current motor' = ID109 = 0.

The I^2t-monitoring motor is adjusted to the motor's thermal time constant with ID32920. The motor manufacturer's specifications apply for the thermal time constant. The monitoring must be activated with ID32773 bit 14 = 1.

ID32920 describes the maximum time t in seconds with which the motor may be operated with 2-times the nominal current.

If the motor overload time in the data sheet is not based on 2-times the nominal current, the setting for ID32920 results as follows:

Formula: Setting value for ID32920

Example 1:

The motor may be operated 20 seconds with 1.5-times the nominal current. How is ID32920 to be set?

Formula: Setting at 1.5-times the nominal current for 20 seconds

If the setting value for ID32920 has been determined, the following formula can be used to calculate the permissible operating time of the motor with any common overcurrent ratio.

For $i > I_N$, the following correlation applies for the permissible operating time t of the motor.

Formula: Permissible operating time of the motor for any overcurrent

t: Permissible operating time
i: Actual current (overcurrent)
I_N: ID111 'Motor nominal current IN'

Example 2:

ID32920 = 2 seconds. How long may the motor be operated at 1.2-times the nominal current?

Formula: Permissible operating time at 1.2-times the nominal current, ID114 = 50%

The motor may consequently be operated for 13.6 seconds at 1.2-times the nominal current.

In the event of an overload (overload threshold according to ID114), the warning message 2359 'Motor overload warning' is generated as soon as half of the previously calculated time t has expired.

As long as this warning message is present, the user has the option of responding to the overload.

After the motor overload time t has expired, the motor overload display (ID33102) reaches the value 100% and the error message 2360 'Motor overload error' is generated.

ID32922 'Residual distance erase window'

Sphere of action:	DRIVE	**Default value:**	100000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

If an axis is moved manually with an inactive controller enable, this change of position produces a position control deviation. With controller enable ON, an internal decision takes place (regardless of the content in ID32922) regarding whether the position control deviation is cleared or whether the position control deviation is again compensated for by a balancing movement:

|position control deviation| ≤ ID32922: The position control deviation is reduced by a return movement.

|position control deviation| > ID32922: The position control deviation is cleared (without axis movement).

ID32924 'Operation mode change parameter'

Reserved for AMK internal use!

ID32926 'AMK homing cycle parameter'

Sphere of action:	DRIVE	**Default value:**	0000 1000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The 'AMK homing cycle parameter' defines AMK-specific extensions of the reference run command according to ID147 'Homing parameter'.

Configuration ID32926 'AMK homing cycle parameter'

Bit no.	Condition	Meaning
0 - 7	0	Reserved
	1	Reserved
8	0	Drive movement for the homing cycle via setpoints from the internal interpolator
	1	Drive movement for the homing cycle via the setpoint setting through a controller (external interpolation).
9	0	Homing cycle on fixed stop inactive
	1	Homing cycle on fixed stop: Reverse of rotational direction triggered by a defined torque peak after ID126, evaluation of the 1th encoder homing mark (zero pulse) after the directional rotation reverse.
10	0	The actual position value is set to zero upon detection of the homing mark
	1	The actual position value is not set to zero upon detection of the homing mark
11	0	Homing cycle with cam evaluation
	1	Homing cycle without cam evaluation (referencing only to the homing mark (zero pulse) of the current actual position value encoder)
12	0	**Cam arrangement** Linear cam: If the axis is on the cam, a move is made away from the cam against the homing direction (ID147, bit 0). If the axis is moved away from the cam signal, the direction of movement is reversed and again moved in the direction of the cam until the cam signal is active. The axis is homed.
	1	Rotation cam: If the axis is on the cam, rotation and homing always continues in the homing direction until the next cam.
13	0	**Encoder homing mark evaluation (zero pulse)** Homing cycle with encoder homing mark evaluation (zero pulse) after reaching the homing switch (cam)
	1	Homing cycle without encoder homing mark evaluation (zero pulse). The homing switch (cam) provides the homing mark at the same time.
14	0	**Cam type (valid for bit 12 = 0)** Pulse cam cam clearance speed according to ID41 'Homing velocity'
	1	Range cam, cam clearance speed according to ID32940 'High homing velocity'
15		Reserved

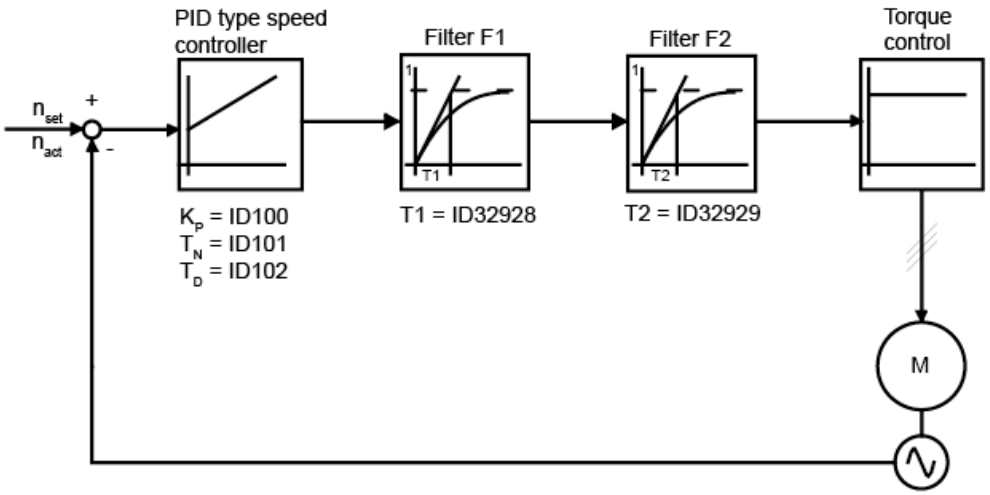
ID32928 'Time filter 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	2000.0 ms
Format:	DEC		
List:	NO		

ID32928 'Time filter 1' and ID32929 'Time filter 2' define the filter time constants for two freely programmable PT_1 torque filters F1 and F2. The filters are arranged in line at the output of the speed controller. The use of the filter times, which are adapted to the system, stabilises the control loop and therefore allows, among other things, a higher closed-loop gain K_P. The filters are used, for example, in controlling inert masses. Values between 0.2 ms and 1 ms have been proven depending on the application.

The value 0 in ID32928 and ID32929 'Time filter 2' annuls the effect of the filters.

PT_1 filter model



The 3dB cut-off frequencies are:

und

The closed-loop gain of the control loop is reduced from the frequency f1 by 6 dB/octave and from f2 by 12 dB/octave (with f1 < f2).

ID32929 'Time filter 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	2000.0 ms
Format:	DEC		
List:	NO		

Siehe ID32928 'Time filter 1' auf Seite 177.

ID32932 'Barrier frequency'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Hz
Data length:	2 byte	**Min. value:**	0 Hz
Signed:	NO	**Max. value:**	4000 Hz
Format:	DEC		
List:	NO		

For structural reasons, the operation of machines can lead to resonant frequencies. In order to be able to filter out these frequencies, a configurable band filter is offered at the output of the speed controller (area 40 Hz to 2 kHz).

If a non-zero value is written in ID32932, the filter is active and the entered value defines the cut-off frequency of the band filter.

The bandwidth of the band filter is set in ID32933.

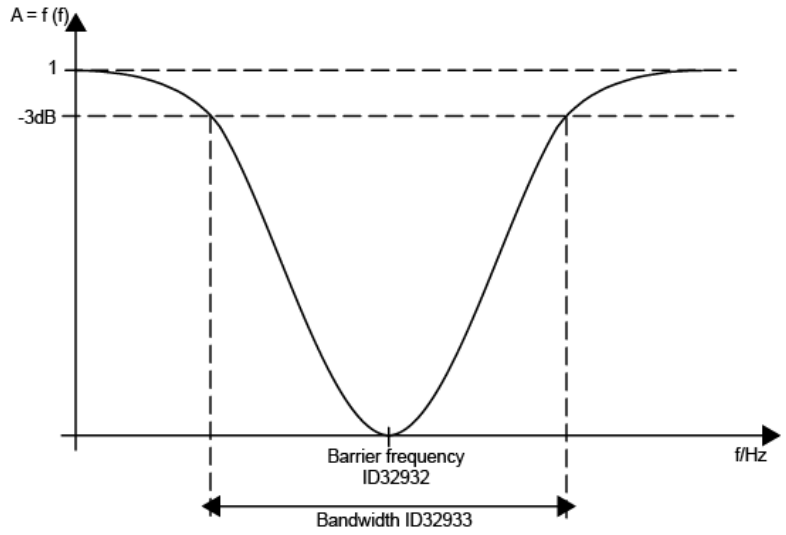
ID32933 'Bandwidth'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Hz
Data length:	2 byte	**Min. value:**	0 Hz
Signed:	NO	**Max. value:**	200 Hz
Format:	DEC		
List:	NO		

ID32933 marks the 3dB bandwidth of the filter configured in ID32932.

If, for example, the resonance frequency of a machine is at 800Hz (ID32932 'Barrier frequency' = 800Hz) and the bandwidth is parameterised with 100Hz (ID32933 'Bandwidth' = 100Hz), frequencies of 800Hz ±50 Hz will be filtered out at the output of the speed controller.

Forward characteristic of the band filter



ID32934 'Pulse encoder period'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	32 Increments
Signed:	NO	**Max. value:**	1000000 Increments
Format:	DEC		
List:	NO		

The 'Pulse encoder period' is to be derived from the type plate (or data sheet) of the motor or the encoder. The 'Pulse encoder period' gives the number of strokes per revolution of the pulse encoder, which is connected to the square-wave pulse encoder input. When using linear motors, ID32934 must contain the number of strokes per pole period.

ID32935 'Voltage standstill'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.0 V
Signed:	NO	**Max. value:**	1000.0 V
Format:	DEC		
List:	NO		

The 'Voltage standstill' describes the motor voltage for the speed n=0 (standstill) in the voltage / frequency control operating mode (U/f-control). This operating mode is activated in ID32953 'Encoder type'.

Siehe ID32991 'U/f startup' auf Seite 195.

ID32936 'Window'

Reserved for AMK internal use!

ID32938 'Customer variable 1'

Sphere of action:	DRIVE	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

This variable is available as a free memory location and can be used per parameter set in an application-specific manner.

ID32940 'High homing velocity'

Sphere of action:	DRIVE	**Default value:**	10000000
Access:	READING / WRITING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	0 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

During the homing cycle command with 'range cams' cam evaluation, the 'High homing velocity' sets the speed at which the drive moved away from the cam signal in the opposite direction of the cam signal if the homing cycle is started and the drive is on the cam. If the drive is moved away from the cam, the drive reverses and homes with ID41 'Homing velocity'.

Siehe ID32926 'AMK homing cycle parameter' auf Seite 177.

ID32941 'SERCOS service'

Sphere of action:	GLOBAL	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		

List: NO

Configuration ID32941 'SERCOS service'

Bit no.	Condition	Meaning
0-4	0	Reserved
	1	Reserved
5	0	SERCOS AMK mode (default) Homing cycle acceleration according to ID136 / ID137, (D42 does not effect!)
	1	SERCOS standard mode Homing cycle acceleration according ID42 active
2-31	0	Reserved
	1	Reserved

For SERCOS III devices ID32941 bit 5 is set to 1 by default.

ID32942 'Service control'

Reserved for AMK internal use!

ID32943 'Warning time'

Sphere of action:	GLOBAL	**Default value:**	400
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	s
Data length:	2 byte	**Min. value:**	0.0 s
Signed:	NO	**Max. value:**	60.0 s
Format:	DEC		
List:	NO		

The 'Warning time' is the time between a warning message and a subsequent error message that shuts down the device.
Siehe ID33116 'Temperature internal' auf Seite 200.
Siehe ID33117 'Temperature external' auf Seite 200.

The 'Warning time' works with:
Warning message 2350 'Device temperature warning', followed by the error message 2346 'Converter temperature error'
Warning message 2351 'Motor temperature warning', followed by the error message 2347 'Motor temperature error'

If ID32943 = 0, a warning time of 4 seconds is considered internally.

ID32944 'SYADR'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

ID32944 allows controller access to participants who are connected in subordinate networks (routeing). Parameters can be read and written with the access.

Example:

An EtherCAT network consists of an EtherCAT controller and several EtherCAT slave participants (compact inverter KW). A compact power supply KE is connected via the ACC bus interface to the compact inverter, which is configured as an ACC bus master. Using ID32944, the EtherCAT master controller can access the KE by routeing the data via the KW with the ACC bus master interface.

Configuration ID32944 'SYADR'

Bit no.	Meaning
0-7 (Byte 0)	Sub address, addressing of a device that is operated on a controller card as an ACC bus slave participant.
8-15 (Byte 1)	Base address, addressing of a device on the fieldbus of a controller to which the drive is connected (e.g. KWs) (EtherCAT)
16-23 (Byte 2)	Res address, selection of the drive bus by the controller (1 = EtherCAT, 0 = ACC bus)
24-31 (Byte 3)	CC address, addressing of the routeing between controllers

Example 1:

A5 controller as EtherCAT master, 1 additional A5 controller as EtherCAT slave with the participant address 8, 1 KW with the participant address 3 to the A5 (slave) controller, 1 KE with the participant address 33 on the KW

Routeing of A5 (master) to the KE: 0x08010321

Example 2:

A5 controller as EtherCAT master, 1 IDT4 with the participant address 6 to the ACC bus interface of the A5 controller

Routeing of A5 (master) to the IDT4: 0x00000600

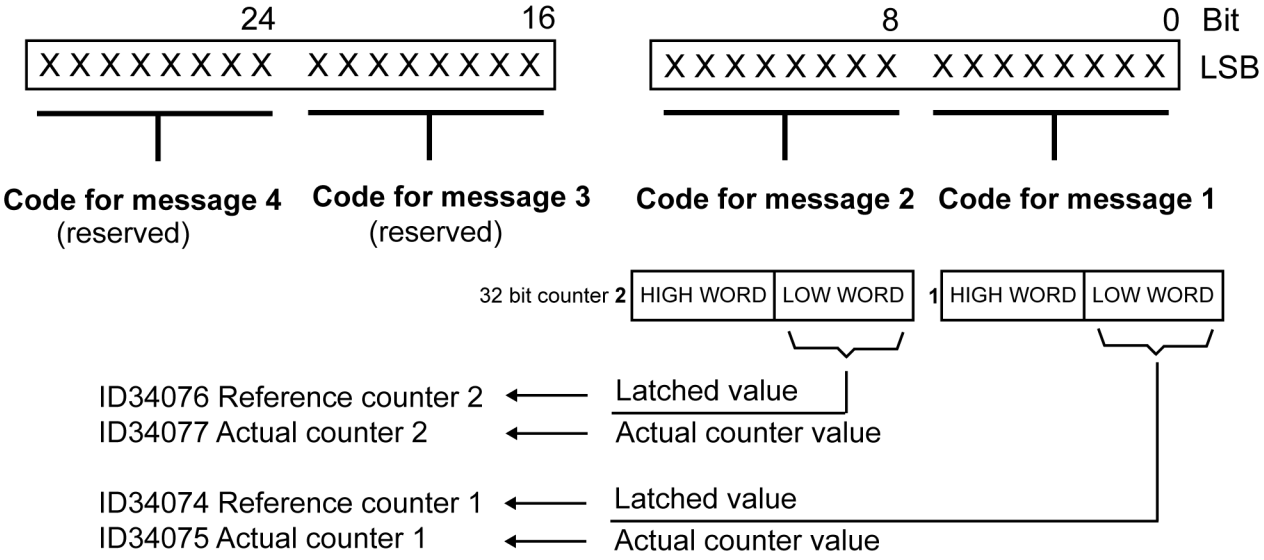
ID32948 'Message 4x32'

Sphere of action:	GLOBAL	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Measurement functions can be configured with ID32948.

Configuration ID32948 'Message 4x32'

Code	Designation	Description
0x00	No function	No function
0x03	Pulse encoder input: Zero pulse stores the current counter reading as a reference counter	'Probe function pulse encoder with homing mark'
0x23	Pulse encoder input: Edge at the binary input stores the current counter reading as a reference counter	'Probe function pulse encoder with touch probe signal'
0x24	Actual position value according to ID32953: Edge at the binary input stores the current actual position value as a reference counter	'Probe function actual position encoder with touch probe signal'



This parameter is used by the following functions:
'Probe function pulse encoder with homing mark'
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'

ID32952 'At synchronous speed window'

Sphere of action:	DRIVE	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

In the position control operating mode, the real-time bit is set 'position synchronously' if the amount of the position control difference in the drive is less than or equal to the window according to ID32952.
|position control difference| ≤ ID32952 → Position synchronous
Position control difference = position setpoint – actual position value

ID32953 'Encoder type'

Sphere of action:	DRIVE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

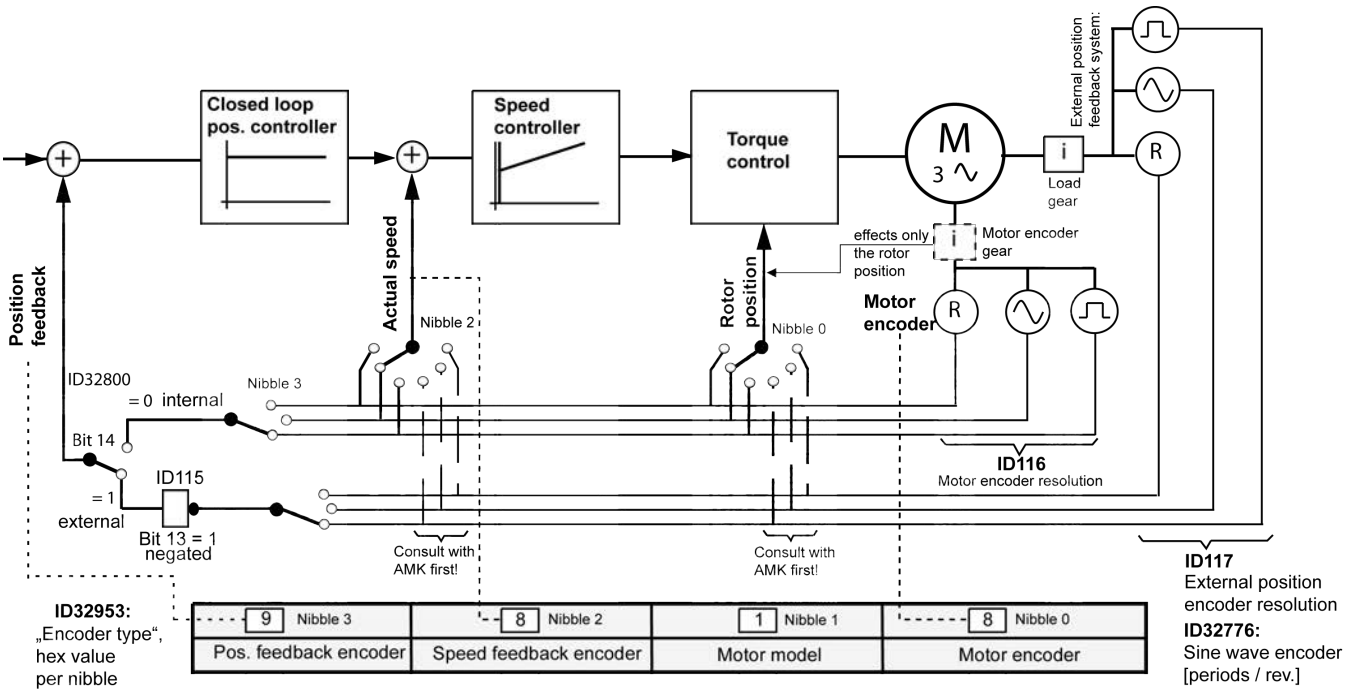
Default value: 0000

ID32953 defines the type of motor and the actual value encoder for the different control loops and is to be derived from the respective type plate or data sheet of the motor. The encoder for the feedback of the actual speed value and the actual position value can be defined independently of the motor encoder.

An external encoder / second encoder can either be selected in ID32800 bit 14 or in ID34297 'Encoder type 2'.

Siehe ID34297 'Encoder type 2' auf Seite 264.

Configuration option for motor, speed and position encoder



Example: Synchronous motor with resolver as motor encoder and for speed feedback, square wave encoder for position feedback (external position measuring system, ID32800, Bit 14 = 1)
ID32953: „9 8 1 8“ (hex) or „**9 0 1 8“** (hex)

Motor encoder	Bit 0-3 (Nibble 0)	Motor encoder (rotor position for the commutation)
Motor model	Bit 4-7 (Nibble 1)	Asynchronous motor, synchronous motor, U/f operation, ...
Speed encoder	Bit 8-11 (Nibble 2)	Speed encoder (to form the actual speed value)
Position encoder	Bit 12-15 (Nibble 3)	Position encoder (to form the actual position value)

Configuration ID32953 'Encoder type'

Bit no.	Condition	Meaning
0-3 **Motor encoder** (Nibble 0)	0x0	I encoder
	0x1	H encoder, connected to the resolver input
	0x2	T, V encoder [1) 2)]
	0x3	Reserved
	0x4	Reserved
	0x5	I encoder
	0x6	Reserved
	0x7	S, U encoder [2)]
	0x8	Resolver
	0x9	Square wave pulse encoder
	0xA	E or F encoder Linear encoder LC183 and LC483
	0xB	Reserved
	0xC	P or Q encoder
	0xD	Reserved

Bit no.	Condition	Meaning
4-7 **Motor model** (Nibble 1)	0x0	Asynchronous motor
	0x1	Non-field weakening synchronous motor
	0x2	U/f control
	0x3	Field weakening synchronous motor
	0x5	Sensorless operation of an asynchronous motor (Nibble 0 has to be set to the value 0)
	0x6	Asynchronous motor with voltage control (control of the magnetising current)
8-11 **Speed encoder** (Nibble 2)	0x0	like motor encoder
	0x1	H encoder, connected to the resolver input
	0x2	T, V encoder [1) 2)]
	0x3	Reserved
	0x4	Reserved
	0x5	I encoder
	0x6	Reserved
	0x7	S, U encoder [2)]
	0x8	Resolver
	0x9	Square wave pulse encoder
	0xA	E or F encoder (Linear encoder LC183 and LC483)
	0xB	Reserved
	0xC	P or Q encoder
12-15 **Position encoder** (Nibble 3)	0x0	like motor encoder
	0x1	H encoder, connected to the resolver input
	0x2	T, V encoder [1) 2)]
	0x3	Reserved
	0x4	Reserved
	0x5	I encoder
	0x6	Reserved
	0x7	S, U encoder [2)]
	0x8	Resolver
	0x9	Square wave pulse encoder
	0xA	E or F encoder (Linear encoder LC183 and LC483)
	0xB	Reserved
	0xC	P or Q encoder

1) Also applies for the linear scale "LinCoder L230" from the company Sick/Stegmann with the Hiperface interface.
2) When switching on the power supply, or when doing a homing cycle, the encoder must not turn because the digital position is read twice and plausibility checked. If the difference between both read positions is out of the internal defined range, the diagnosis message 2310 'Encoder communication' info 1 = 7 is issued.

Encoder evaluation

E-, F-encoder:

The encoder evaluation (type E / F) is a combination of analogue and digital evaluation. The absolute value is generated in the encoder after mains on and send to the inverter via EnDat 2.1 protocol. The absolute value is evaluated in the inverter only once, during operation only the SIN/COS tracks are evaluated for the motor control. The multiturn encoder (type F) not need a homing. For singleturn encoder (type E) a homing cycle must be executed to built a relation between the machine position and the encoder signal. The necessary homing mark is built in the drive controller.

In addition to the absolute value, the E and F encoders deliver the analog signals at the correct time and position to the absolute value.

During the absolute value evaluation in the inverter, in addition to the absolute value, the analog signals are evaluated in the correct time and position, thereby improving the accuracy of the absolute value.

.

H-encoder:

The Hall encoder generates directly a SIN/COS signal with 1 period/revolution. Out of them the drive controller calculates the position angle of the rotor.

Per revolution the drive controller generates one homing mark to evaluate during the function homing cycle.

I-encoder:

The encoder evaluation (type I) is an analogue evaluation of the SIN/COS tracks and a homing signal.

The rotary rotor field of the permanent magnets of a synchronous motor is not aligned to the rotary stator rotary field. At synchronous motors with I-type encoder the alignment is done automatically with the function software commutation after the first switch on of the controller enable (RF) after mains on

.

The function software commutation automatically writes values in ID34174. As the function changes parameter values, the device will automatically startup the device at the next RF change. A device startup causes the temporarily changed parameter to be reset to its initial value. Temporary parameters must therefore be written cyclically or only after the software commutation function, followed by another RF change, on the application side.

P-, Q-encoder:

The encoder evaluation (type P / Q) is a complete digital evaluation. The absolute position is send via EnDat 2.1 commands cyclic synchronous from the encoder, triggered by the trigger signal (CLOCK) of the drive controller.

Any available SIN/COS signals are not evaluated!

R-encoder:

The evaluation electronic for the encoder signals scans the high frequency output signals of the encoder by an A/D converter at this time, where the exciter signal has his maximum. The scan cycle is known, because the evaluation electronic is generating also the exciter signal. The evaluation electronic scans the peak values of the encoder signal, in this way the exciter signal is eliminated. A SIN/COS signal with 1 period/revolution remains. Out of them the drive controller calculates the angle position of the rotor. To become a position relation between the machine and the encoder signals a homing cycle function must be executed. The necessary homing mark of the encoder (1/revolution) is built in the drive controller.

S-, T-, U-, V-encoder:

The encoder evaluation (type S / T / U / V) is a combination of analogue and digital evaluation. The absolute value is generated in the encoder after mains on and send to the inverter via Hiperface protocol. The absolute value is evaluated in the inverter only once, during operation only the SIN/COS tracks are evaluated for the motor control. The multiturn encoder (type T / V) not need a homing. For singleturn encoder (type S / U) a homing cycle must be executed to built a relation between the machine position and the encoder signal. The necessary homing mark of the encoder is built in the drive controller.

If 'AMK main operating mode' bit 14 = 1 (actual position value source of the external encoder) is active in ID32800, the external actual position value encoder (bit 12-15) must be configured mandatory. The setting 0x0 (like motor encoder) causes the pulse encoder input 0x9 to be automatically selected internally when ID32800 bit 14 = 1 is set. ID32800 bit 14 is only utilised if no second encoder is selected in ID34297 'Encoder type 2'.

Examples for the encoder configuration:

Application	ID32953 [hex]
Asynchronous motor with AMK I-encoder (motor encoder)	0x0000

Application	ID32953 [hex]
Synchronous motor with resolver (motor encoder)	0x0018
Synchronous motor with resolver as motor encoder (for commutation) and speed encoder and with external square-wave pulse encoder for the actual position value detection	0x9018 or 0x9818

The values for the following parameters are to be derived from the AMK motor data sheet:

Motor parameters:

ID109, ID111, ID32768, ID32769, ID32770, ID32771, ID32775, ID32776, ID32934, ID32953, ID32959, ID32960, ID32961, ID34164, ID34167, ID34234

Control parameters:

ID34050, ID34052, ID34148, ID34149, ID34151, ID34152, ID34235

ID32956 'Additional acceleration value'

Sphere of action:	DRIVE	**Default value:**	10
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	4
Signed:	NO	**Max. value:**	255
Format:	DEC		
List:	NO		

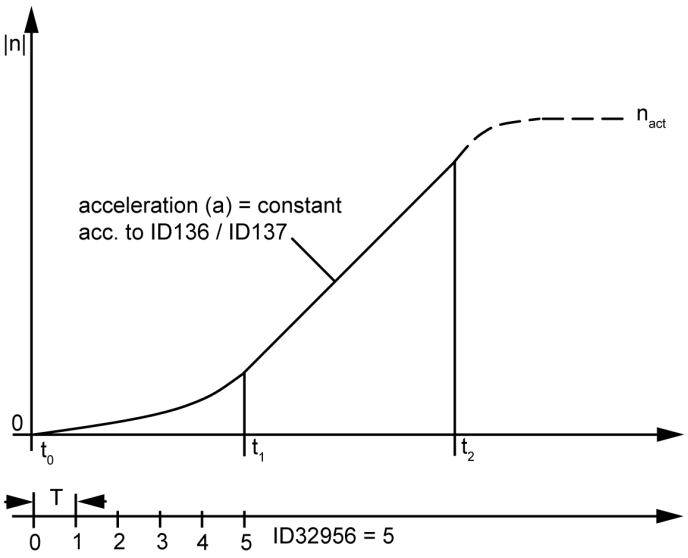
ID32956 works with the internal interpolator for drive-controlled positionings. The acceleration coefficient describes the number of interpolator cycles until reaching the constant acceleration according to ID136 'Positive acceleration' and ID137 'Negative acceleration'. The interpolator cycle time (Ti) is 1 ms. This results in the following time (T1) until the transition to the nominal acceleration :

Formula: Interpolator settling time to nominal acceleration

T1 = Ti x ID32956 with Ti = 1 ms (interpolator cycle time)

The acceleration that is realisable by the interpolator depends directly on the acceleration value (BB):

Velocity curve, acceleration coefficient



T = 1ms

Time	Meaning
$t_0 \leq t < t_1$	Smooth increase in acceleration to nominal acceleration (range of constant acceleration). The time period is determined by the acceleration coefficient.
$t_1 \leq t < t_2$	Constant acceleration according to ID136 'Positive acceleration' and ID137 'Negative acceleration'
$t_2 \leq t$	Smooth reduction of acceleration to zero. Mirror image trend currently $t_0 \leq t < t_1$.

ID32958 'Commant value 1 cycle'

Sphere of action:	DRIVE	**Default value:**	500
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES / NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.000 ms
Signed:	NO	**Max. value:**	65.535 ms
Format:	DEC		
List:	NO		

The time 'Commant value 1 cycle' defines the time intervals at which setpoints are sampled at the pulse encoder input and can be set as a multiple of 0.5 ms.

The following condition must be met if 16 bit position setpoints (pulse encoder input) are processed:
ID1 'NC cycle time' = ID2 'SERCOS cycle time' = ID32958 'Commant value 1 cycle'

ID32959 'Offset resolver'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	DEC		
List:	NO		

⚠ WARNING

Risk of injury from uncontrolled movements of the motor shaft

If the offset is entered incorrectly, the motor is not controllable and can carry out uncontrolled movements as soon as the controller enable is set!

With 'Initial program loading' the offset is reset to the default value of 0. A previously determined commutation offset is lost. There is no remanent storage in the encoder.

Steps to prevent:

- Check the entered offset before setting the controller enable.
- Takes precautionary measures to ensure that no persons are in the total possible range of movement of the motor when the controller enable is set for the first time after the input of the offset.

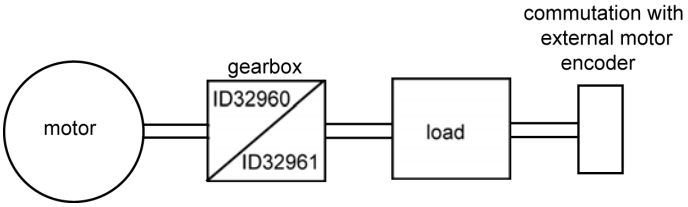
The value 'Offset resolver' adjusts the zero position of the resolver to a constructively determined field position of a synchronous motor (magnet pole). AMK rotation synchronous motors with resolvers are adjusted so that no offset resolver must be entered (ID32959 =0).
The value range 0 to 65535 corresponds to a mechanical revolution (360°) or a pole period with linear motors.
For linear motors, for example, it is not possible to mount the resolver in a defined position to the pole period.

ID32960 'Input motor encoder gear'

Sphere of action:	DRIVE	**Default value:**	1
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Revolutions
Data length:	2 byte	**Min. value:**	1 revolution
Signed:	NO	**Max. value:**	65535 revolutions
Format:	DEC		
List:	NO		

The gear ratio is parametrized in ID32960 'Input motor encoder gear' and ID32961 'Output motor encoder gear' if a motor encoder gear acts between the motor shaft and the motor encoder. The motor encoder gear ratio influences the commutation, but not the speed and position control.

Arrangement



The result of the following calculation must be in integers for synchronous motors, otherwise an error message will be generated. Positions after decimal points are permissible for asynchronous motors.

ID32961 'Output motor encoder gear'

Sphere of action:	DRIVE	**Default value:**	1
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Revolutions
Data length:	2 byte	**Min. value:**	1 revolution
Signed:	NO	**Max. value:**	65535 revolutions
Format:	DEC		
List:	NO		

Siehe ID32960 'Input motor encoder gear' auf Seite 189.

ID32968 'Address input port 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32968, the binary inputs are assigned parameters, e.g. 12 binary inputs on the option card KW-EA2. With the parameters, functions of the inverter or the plc user program can be assigned to the binary inputs. If the hardware used does not have physical binary inputs, the input ports can be read and written by the controller as virtual inputs.

**Structure and use of the input port 2 - function assignment via parameter -
controller can read the image and evaluate status**

ID32968	Binary input[1)]	Function assignment[2)]	Image[3)]
41	E1	ID32969	ID34101 Bit 8
	E2	ID32970	ID34101 Bit 9
	E3	ID32971	ID34101 Bit 10
	E4	ID32972	ID34101 Bit 11
	E5	ID32973	ID34101 Bit 12
	E6	ID32974	ID34101 Bit 13
	E7	ID32975	ID34101 Bit 14
	E8	ID32976	ID34101 Bit 15

1) The availability of physical binary inputs depends on the hardware used.
2) Functions can be assigned to the binary inputs:
Siehe Codes for the configuration of the binary inputs auf Seite 271.
3) A controller can read the statuses of binary inputs with ID34101 'Binary input word 1'.

**Structure and use of the input port 2 -
Controller can set inputs by writing the image**

ID32968	Binary input[1)]	Function assignment[2)]	Image[3)]
0	E1	ID32969 = 0	ID34101 Bit 8
	E2	ID32970 = 0	ID34101 Bit 9
	E3	ID32971 = 0	ID34101 Bit 10
	E4	ID32972 = 0	ID34101 Bit 11
	E5	ID32973 = 0	ID34101 Bit 12
	E6	ID32974 = 0	ID34101 Bit 13
	E7	ID32975 = 0	ID34101 Bit 14
	E8	ID32976 = 0	ID34101 Bit 15

1) The availability of physical binary inputs depends on the hardware used. If no physical binary inputs are available, the controller can read and write the memory capacities as 'virtual binary inputs.'
2) Functions can be assigned to the binary inputs:
Siehe Codes for the configuration of the binary inputs auf Seite 271.
If the binary input can be set by the controller without the inverter triggering a configured function, the value 0 must be assigned to the respective input. The controller accesses the binary inputs reading or writing via ID34101.
3) A controller can read and write the statuses of binary inputs with ID34101 'Binary input word 1'.

ID32969 'Port 2 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 0) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32970 'Port 2 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 1) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32971 'Port 2 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 2) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32972 'Port 2 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 3) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32973 'Port 2 Bit 4'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 4) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32974 'Port 2 Bit 5'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 5) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32975 'Port 2 Bit 6'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 6) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32976 'Port 2 Bit 7'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Binary input functions of the inverter can be assigned to the binary input port 2 (bit 7) and the status of the input can be evaluated via the plc. ID32968 'Address input port 2' determines which binary inputs the input port maps.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID32977 'Address input port 3'

Sphere of action:	GLOBAL	**Default value:**	32
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

With ID32977, the standard binary inputs are assigned parameters. With the parameters, the physical binary inputs can be assigned standard functions or functions of the plc user program.

Structure and use of the input port 3
Function assignment via parameters
Controller can read the image and evaluate status

ID32977	Binary input[1)]	Function assignment[2)]	Image[3)]
32	BE1	ID32978	ID34100 Bit 0
	BE2	ID32979	ID34100 Bit 1
	BE3	ID32980	ID34100 Bit 2
	BE4	ID32981	ID34100 Bit 3

1) The availability of physical binary inputs depends on the hardware used.
2) Functions can be assigned to the binary inputs:
Siehe Codes for the configuration of the binary inputs auf Seite 271.
3) A controller can read the statuses of binary inputs with ID34100 'Binary input word'.

ID32978 'Port 3 Bit 0'

Sphere of action:	GLOBAL	**Default value:**	32904
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Digital input default value:	32904 (RF)

Digital input functions of the converter can be assigned to the digital input port 3 (bit 0) and the status of the input can be evaluated via the plc. ID32977 'Address input port 3' determines which physical digital inputs the input port maps.

Siehe ID32977 'Address input port 3' auf Seite 193.

ID32979 'Port 3 Bit 1'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Digital input default value:	32913 (FL)

Digital input functions of the converter can be assigned to the digital input port 3 (bit 1) and the status of the input can be evaluated via the plc. ID32977 'Address input port 3' determines which physical digital inputs the input port maps.

Siehe ID32977 'Address input port 3' auf Seite 193.

ID32980 'Port 3 Bit 2'

Sphere of action:	GLOBAL	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Values for KW-R06 /

Digital input default value:	32905 (NK)

Digital input functions of the inverter can be assigned to the digital input port 3 (bit 2) and the status of the input can be evaluated via the plc. ID32977 'Address input port 3' determines which physical digital inputs the input port maps.

Siehe ID32977 'Address input port 3' auf Seite 193.

ID32981 'Port 3 Bit 3'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

Digital input functions of the inverter can be assigned to the digital input port 3 (bit 3) and the status of the input can be evaluated via the plc. ID32977 'Address input port 3' determines which physical digital inputs the input port maps.

Siehe ID32977 'Address input port 3' auf Seite 193.

ID32986 'Derating factor'

Reserved for AMK internal use!

ID32987 'Threshold derating'

Reserved for AMK internal use!

ID32989 'Torque filter time'

Reserved for AMK internal use!

ID32990 'NK shift'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	0 Increments
Signed:	NO	**Max. value:**	65535 Increments
Format:	DEC		
List:	NO		

The cam offset works with the homing cycle function.

See documentation Function descriptions (Part no. 203878).

ID32991 'U/f startup'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	0 %
Signed:	NO	**Max. value:**	100 %
Format:	DEC		
List:	NO		

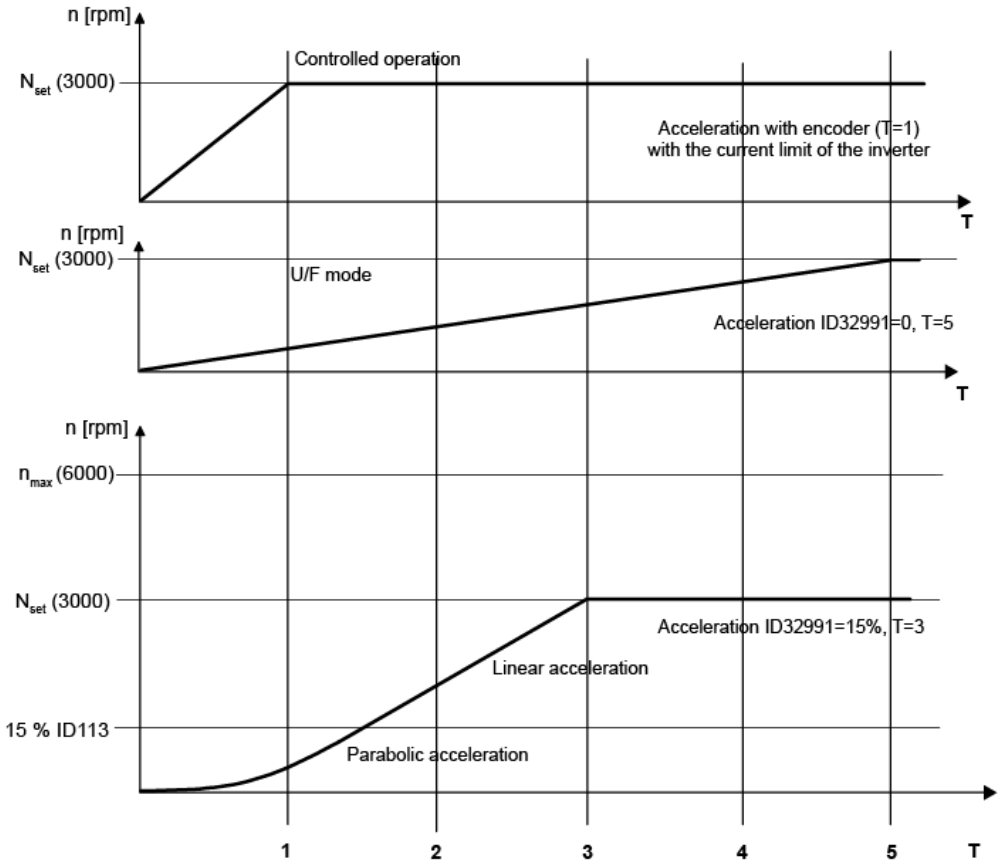
ID32991 works in the voltage / frequency control (V/f operation) when operating a motor. The U/f operation allows a speed-controlled motor operation without encoder feedback.

In V/f-operation mode, starting up from standstill can frequently cause a problem, because when the axis "breaks loose" a high current can flow that may cause an overload of the inverter (shutdown "short circuit").
To securely avoid the overload in the V/f-start up (without soft start), the velocity ramp must be set flatly during start up. A flat velocity ramp leads however to undynamic behaviour of the axis.

Using ID32991, you can start up in parabola form (soft start) in the lower speed range. As of the speed specified in ID32991 'U/f startup', acceleration is linear up to the nominal speed. The value to be entered in ID32991 is the relative speed in relation to ID113 'Maximum speed'. In the speed range from standstill to the speed according to ID32991 , start up is according to a parabola, and then linear according to ID32780 'Acceleration ramp'.

If the drive is not at standstill, then acceleration is immediately with the linear ramp (ID32780). ID124 'Zero velocity window' serves as the decision criterion for the standstill.

Startup behaviour in V/f operation



Controlled operation:
T=1 is the time with which the motor accelerates as quickly as possible in the controlled operation, limited by ID82 'Positive torque limit' and ID83 'Negative torque limit' The thereby resulting minimum startup time is determined by the motor and the employed inverter.

V/f operation with linear start:
During V/f operation with linear startup time, the startup needs to be adjusted by a factor of T=5.

V/f operation with soft start:
A time of T=3 is achieved by the parabola-formed startup.

Axis run-down:
The axis run-down is not influenced by ID32991 . It corresponds to a T=2 compared to the one in the regulated drive.

The effective acceleration time results as follows:

Operation

The specification of the setpoint frequency takes place via the speed setting in controlled operation. The setpoint source is set via the operating mode. The speed ramp according to ID32780, ID32781 and ID32782 is effective if it is activated in the operating mode (ID32800...) with bit 6. The ramp times may not be less than the physically achievable speed ramps of the system. Too steep of ramps lead to the message 2334 'System diagnostics: Output terminal overcurrent' or to the message 2321 'System diagnostics: IGBT monitoring'. The setpoint according to the ramp is shown as the actual speed value.

The following functions are ineffective during U/f operation:

- I^2t-monitoring for converter
- Torque limiting (ID82, ID83, ID92). The current limit is enabled up to the maximum converter current limit.
- Torque display
- Power display

The following parameters are relevant for the U/F operating mode:

Parameter	Designation	Description
ID32953	'Encoder type'	Motor model selection 0x0020 must be entered for U/f operation.

Parameter	Designation	Description
ID32935	'Voltage standstill'	Applied voltage at a standstill (frequency = 0) In this way, the voltage drop at the coil can be compensated for.
ID32768	'Nominal motor voltage'	Voltage at the nominal speed
ID32772	'Nominal velocity'	Until the 'Nominal velocity' is reached, the voltage is increased to 'Nominal motor voltage' (ID32768). For higher speeds, the voltage is kept constant.
ID32775	'Pole number motor'	Number of poles of the motor (type plate).
ID32780	'Acceleration ramp'	Time for the acceleration from a speed of zero to the maximum speed
ID32781	'Deceleration ramp'	Time for braking from the maximum speed to standstill
ID32782	'Deceleration ramp RF inactive'	Deceleration time for removal of the controller enable (controlled deceleration)
ID32991	'U/f startup'	Speed threshold for the transition from the parabolic arc start-up to a linear acceleration movement

ID32992 'Dead time compensation 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

In ID32992, the feedforward time can be set for the dead time compensation for 16 bit position setpoints (pulse encoder input).

The dead time compensation only works if the following error compensation (SAK) in ID32800 'AMK main operating mode' bit 11 = 1 is active.

This parameter is used by the following function:

'Following error compensation (SAK)'

ID32993 'Dead time compensation 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

In ID32993 'Dead time compensation 2', a feedforward time can be set for the dead time compensation for 32 bit position setpoints. The dead time compensation only works if the following error compensation (SAK) in ID32800 'AMK main operating mode' bit 9 = 1 is active.

This parameter is used by the following function:

'Following error compensation (SAK)'

ID32996 'Data signification'

Reserved for AMK internal use!

ID32999 'Overload limit inverter'

Sphere of action:	GLOBAL	**Default value:**	500
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The i^2t monitoring for the converter is always automatically active. The 'Overload limit inverter' determines when the 'device overload warning' is generated. At the same time as the warning, the real-time bit (code 33016) is generated. If the value in ID32999 is fallen below again, the real-time bit is reset until the value is exceeded again. Upcoming warnings can be cleared by the user. If the i^2t-monitoring (ID33101 'Display overload inverter') achieves an overload value of 100%, the error message 'device overload error' is generated.

2357 'Device overload warning'

2358 'Device overload error'

In the case of an error, the SBM is withdrawn and the drive coasts to a stop.

ID33076 'Second period'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33076 = 0 Output cycle = 1 second (1 second on, 1 second off)

ID33076 ≠ 0 Output cycle= value in ID33076 * 10 ms

ID33098 'Increase position value'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33098 specifies the 32 bit position growth per ID2 'SERCOS cycle time'.

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID33100 'Actual power value'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	W
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Actual power value' is a variable calculated from the actual torque value and actual speed value in the converter.

Formula: Active power of the motor

ID32771 'Nominal torque'
ID32772 'Nominal velocity'

ID33101 'Display overload inverter'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33101 shows the current overload of the converter according to i^2t-calculation.

ID33101 = 0: Converter works in nominal operation or below the nominal rating
ID33101 > 0: Converter works in the overload operation, shutdown at 100%

Siehe ID32999 'Overload limit inverter' auf Seite 198.

ID33102 'Display overload motor'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	YES / NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33102 shows the current overload of the motor according to I^2t-calculation.

ID33102 = 0: Motor works in nominal operation or below the nominal rating
ID33102 > 0: Motor works in the overload operation, shutdown at 100%

The I^2t-monitor motor must be activated in ID32773 'Service bits' Bit 14.

ID33104 'Position feedback modulo'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	0 Increments
Signed:	NO	**Max. value:**	4294967295 Increments
Format:	DEC		
List:	NO		

The modulo actual position value is between 0 and the modulo end value set in ID103 'Modulo value' and always has a positive sign.

Siehe ID103 'Modulo value' auf Seite 75.

ID33113 'Torque setpoint at controller'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID33116 'Temperature internal'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	°C
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33116 shows the temperature of the cold plate (heat sink of the IGBT and at the same time of the rear wall of the device). The triggering thresholds are device-specific, are set in the SEEP at the factory and cannot be changed by the user.

If critical temperatures occur for the devices, the warning 2350 'Device temperature warning' is generated as well as the error message 2346 'Converter temperature error' after the warning time[1)] (ID32943) has expired.

1) Siehe ID32943 'Warning time' auf Seite 181.

ID33117 'Temperature external'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	°C
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33117 indicates the temperature of a connected KTY temperature sensor (e.g. motor temperature sensor).

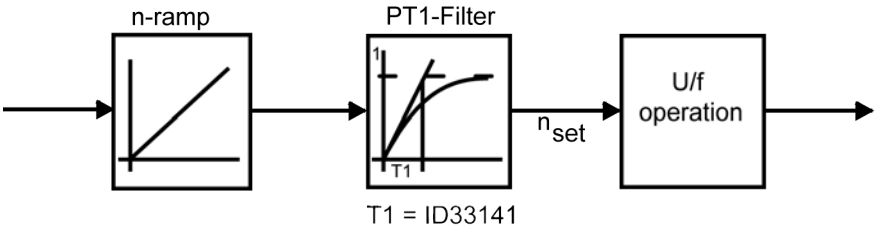
The temperature sensor type is defined in ID34166 'Temperature sensor motor'.

This paramerter must not be evaluated if a PTC temperature sensor is used.

ID33141 'U/f input filter'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	2000.0 ms
Format:	DEC		
List:	NO		

The 'U/f input filter' effects in the operation mode U/f control and configures the filter time of a PT1-Filter.



ID33142 'Commutation valid'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

The real-time bit 'Commutation valid' is set after the software commutation is executed successfully and a valid commutation angle is determined. The software commutation is not executed after RF is set, if the real-time bit 'Commutation valid' is still set. The real-time bit is reset at encoder error or power off.

ID33143 'Communication monitoring'

Reserved for AMK internal use!

ID33144 'Timeout communication monitoring'

Reserved for AMK internal use!

ID33145 'OSC channel 1'

Reserved for AMK internal use!

ID33146 'OSC channel 2'

Reserved for AMK internal use!

ID33147 'OSC channel 3'

Reserved for AMK internal use!

ID33148 'OSC channel 4'

Reserved for AMK internal use!

ID33149 'Saturation current'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	0.0 A
Signed:	NO	**Max. value:**	3000.0 A
Format:	DEC		
List:	NO		

This parameter recognises the saturation effects inside of a motor. The current is shown at which the line inductance L_s is decreased to 30 % of the initial value. If ID33149 = 0 L_s is accepted as a constant.

ID33150 'Brake torque'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	$\%M_N$
Data length:	2 byte	**Min. value:**	0.0 $\%M_N$
Signed:	NO	**Max. value:**	3000.0 $\%M_N$
Format:	DEC		
List:	NO		

If the sensorless calculation of the rotor position is active (ID32773 Bit 29) and the encoder becomes failure, the motor will be braked down in torque operation mode with the torque setpoint of ID33150. If ID33150 = 0, the motor will be braked down in speed operation mode according to ID32782.

To make sure that braking in speed control is working well, the speed controller gain, must not be set too strong. If the application requires a strong speed controller, the braking in torque control is preferred

Siehe ID32773 'Service bits' auf Seite 131.
Siehe ID32782 'Deceleration ramp RF inactive' auf Seite 139.

ID33151 'Maximal angular deviation of encoder-sensorless'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	°
Data length:	2 byte	**Min. value:**	0.0 °
Signed:	NO	**Max. value:**	180.0 °
Format:	DEC		
List:	NO		

ID33151 defines the maximum allowed deviation between the electrical rotor angle of the encoder and the sensorless calculated rotor angle.

ID33151 = 0:	The additional encoder monitoring is not active.
ID33151 > 0:	Is the actual deviation between the electrical rotor angle of the encoder and the sensorless calculated rotor angle higher than the value in ID33151, the error message 2365 'Error angle observer', Info1 = 1 is generated and the motor will be braked down according ID32782. Thereby the sensorless calculated rotor angle is used for the brake down control.

If the sensorless calculated rotor position is activated in ID32773 'Service bits' Bit 29, it can be used as additional monitoring of the encoder to detect encoder errors earlier.

Siehe ID32773 'Service bits' auf Seite 131.

ID33170 'IPO mode'

Reserved for AMK internal use!

ID33171 'Active power (electrical)'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	W
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33171 shows the electrical active power:
positive value = motor operation mode
negative value = generator operation mode

ID33172 'Reactive power (electrical)'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	var
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33172 shows the electrical reactive power (inductive or capacitive):
positive value = inductive consumer
negative value = capacitive consumer

ID33174 'Damping factor position'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	-500.0 %
Signed:	YES	**Max. value:**	500.0 %
Format:	DEC		
List:	NO		

On applications with inert masses, low-frequency control oscillations (following errors, actual speed value and torque) can occur. On possibility for damping these oscillations is a D term in the position controller

The D term is a component of the speed feed-forward controls and is not formed in the position controller. For successful damping, the oscillation of following errors and actual speed value must be in phase or offset by 180 °.

This parameter is used by the following function:
'D-term position controller, damping'

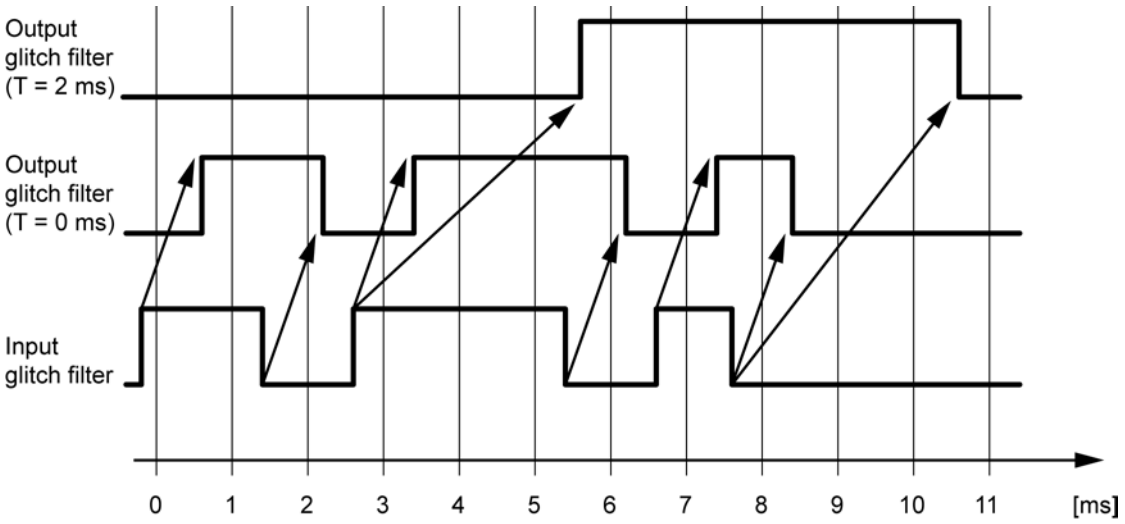
ID33175 'List glitch filter time'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte/element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Maximum list length:***	24

* The list length is the number of usage data elements without 4 byte head elements.

The glitch filter filters out misstate binary signals. For each input a time can be parameterized, how long the signal state must be constant before the signal will pass the filter and can be evaluated.

Example:
If the glitch filter time is parameterized to value 2, the signal state of this input must be constant at least 2 ms, before the signal will pass the filter and can be evaluated. If the input signal changes the state e.g. for 1 ms this signal change will not pass the glitch filter.



The glitch filter effects next behind the binary input for both directions. Positive and negative edge is not differentiated. For inputs parameterized as measuring inputs (probe function) the glitch filters have no function, no diagnosis message is generated.

Configuration ID33175 'List glitch filter time'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	2 x z	List head: Maximum list length without list head [byte]

List element	Content	Meaning
2	Adjustable glitch filter time for each binary input: range of values: 1-100 [ms]	BI 1 Port 3, binary input device 1)
3		BI 1 Port 3, binary input device 1)
4		BI 1 Port 3, binary input device 1)
5		BI 1 Port 3, binary input device 1)
6		BI 1 Port 3, binary input device 1)
7		Reserved
8		Reserved
9		Reserved
10		I1 port 1, binary input option 1)
11		I2 port 1, binary input option 1)
12		I3 port 1, binary input option 1)
13		I4 port 1, binary input option 1)
14		I5 port 1, binary input option 1)
15		I6 port 1, binary input option 1)
16		I7 port 1, binary input option 1)
17		I8 port 1, binary input option 1)
18		I9 port 1, binary input option 1)
19		I10 port 1, binary input option 1)
20		I11 port 1, binary input option 1)
21		I12 port 1, binary input option 1)
22		Reserved
23		Reserved
24		Reserved
25		Reserved

z = Maximum list length

1) The availability depends on the device type

ID33181 'Actual current Ia'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33181 displays the actual current value Ia. The current Ia is the a-component in the stator oriented coordinate system.

ID33182 'Actual current Ib'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33182 displays the actual current value Ib. The current Ib is the b-component in the stator oriented coordinate system.

ID33183 'Voltage Ua'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33183 displays the voltage Ua. The voltage Ua is the a-component in the stator oriented coordinate system.

ID33184 'Voltage Ub'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33184 displays the voltage Ub. The voltage Ub is the b-component in the stator oriented coordinate system.

ID33185 'Magnetizing current feedback '

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33185 displays the actual current value of the magnetizing current.

ID33186 'Torque current feedback'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33186 displays the actual current value of the torque current.

ID33187 'Actual current value phase U'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-

Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33187 displays the actual current value of phase U.

ID33188 'Actual current value phase V'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33188 displays the actual current value of phase V.

ID33189 'Actual current value phase W'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID33189 displays the actual current value of phase W.

ID33300 'Motion test 1'

Reserved for AMK internal use!

ID33301 'Motion test 2'

Reserved for AMK internal use!

ID33302 'Motion test 3'

Reserved for AMK internal use!

ID33303 'Motion test 4'

Reserved for AMK internal use!

ID33304 'Motion service switch'

Sphere of action:	DRIVE	**Default value:**	0000 0000 0000 0000 (LSB)
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	BIN		
List:	NO		

Configuration ID33304 'Motion service switch'

Bit no.	Condition	Meaning
0	0	Reserved
	1	Reserved
1	0	Advanced position increase monitor inactive
	1	Advanced position increase monitor aktive
2-31	0	Reserved
	1	Reserved

ID33730 'System booting'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

A system booting causes a re-calculation of the data management. Changed parameter values are active.
The command is started if the value 0x1 is written in the parameter.
The status of the command is displayed by the parameter being read.

Read value	Meaning
0x0	Basic state, no command active
0x3	Command complete
0x7	Command currently active
0xF	Command completed with error

The command is completed after the status is 0x3 or 0xF.

ID33911 'SIWL setpoint'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

If a PLC has been selected as SIWL source , the PLC input setpoint must be written to ID33911 'SIWL setpoint'.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34000 'Variable 0'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34001 'Variable 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34002 'Variable 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34003 'Variable 3'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34004 'Variable 4'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34005 'Variable 5'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34006 'Variable 6'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34007 'Variable 7'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34008 'Variable 8'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34009 'Variable 9'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34010 'Variable 10'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34011 'Variable 11'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34012 'Variable 12'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34013 'Variable 13'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34014 'Variable 14'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34015 'Variable 15'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34016 'Variable 16'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34017 'Variable 17'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34018 'Variable 18'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

ID34019 'Variable 19'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

This parameter can be used specific to the application in order to store data.

Profinet uses the content of ID34019 to generate the Identification & Maintenance data (I & M). If ID34019 = 0, the I & M data is generated according to an internal algorithm.

I & M data is used to describe devices and their properties. Part of the I & M data is a software version. The CODESYS application can specify a version that is transferred from the application software to ID34019 and to the Profinet Stack and built into the I & M data.

Example:

To represent version V3.10.1, ID34019 = 0x56030A01 must be written.

Byte 3: Prefix	Byte 2: Extended functions	Byte 1: Bug Fix	Byte 0: Internal change
"V" corresponds to 0x56			

Profinet must be informed of the change by changing the ID34019 with the FboSetNetControl () function.

Example:

```
IF NOT g_boCtrlDone THEN
        FboSetNetControl(uiAxis:=0, uiChannel:=2, uiControl:=1, uiMask:=1);
        g_boCtrlDone:= TRUE;
END_IF
```

ID34023 'BUS address participant'

Sphere of action:	INSTANCE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 / Default value:

Instance	Use	Interface	Default value	Meaning
0	ACC bus master	X137	1	Participant address 1
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0	No address assigned

ID34023 specifies the participant address in the bus system.

ID34024 'BUS transmit rate'

Sphere of action:	Device-specific values	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	0.00
Signed:	NO	**Max. value:**	Device-specific values
Format:	DEC		
List:	NO		

Values for KW-R06 / Sphere of action: INSTANCE

Default value:

Instance	Use	Interface	Default value	Meaning
0	ACC bus master	X137	0	1 MBit/s
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0	Slave supports the transmission rate of the master

Max. value: 99000.00

The bus transmission rate must be set the same for all participants of a fieldbus system!

Transmission rates for the ACC bus / CANopen interface

Value	Meaning
1000.00	1000 kBit/s = 1 MBit/s
800.00	800 kBit/s
500.00	500 kBit/s
250.00	250 kBit/s
125.00	125 kBit/s
50.00	50 kBit/s
20.00	20 kBit/s
10.00	10 kBit/s

ID34025 'BUS mode'

Sphere of action: INSTANCE
Access: READING / WRITING
Temporarily changeable: NO
Data length: 2 byte
Signed: NO
Format: HEX
List: NO

Default value: Device-specific values
Scale: 1
Unit: -
Min. value: -
Max. value: -

The 'BUS mode' defines the fieldbus-specific supported functionality.

Values for KW-R06 /

Default value:

Instance	Use	Interface	Default value	Meaning
0	ACC bus master	X137	0002	ACC bus master
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0000	Send and receive VARAN Frames

Bit 4	Meaning
= 0	Compatible bahavior
= 1	Optimized, thus 1 cycle less

Values for

Default value:

Instance	Use	Interface	Default value	Meaning
0	-	-	-	-
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0000	See table [1)]

1)

Bit	Value	Meaning
0	0	
	1	
1	0	
	1	
2	0	
	1	
3	0	
	1	
4	0	
	1	
5-14		Reserved
15	0	
	1	

ID34026 'BUS mode attribute'

Sphere of action:	INSTANCE	**Default value:**	Device-specific values
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 / Default value:

Instance	Use	Interface	Default value	Meaning
0	ACC bus master	X137	0000	see table
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0000	-

ID34026 'BUS mode attribute' defines the fieldbus-specific supported functionality.

Configuration ID34026 'BUS mode attribute'KW-R06 / - instance 0 - ACC bus master X137

Bit no.	Condition	Meaning
0-2	0	Reserved
	1	Reserved
3	0	Send hardware synchronisation cycle (master) Inactive
	1	Send hardware synchronisation cycle (master) Active
4	0	Monitoring of the ACC bus node by the NMT (network management) master after a restart All configured nodes must be present on the bus
	1	Absent nodes are not initialised
5	0	AMK service: PGT instead of the CANopen SYNC message COB-ID80 Synchronous messages are sent after receipt of the SYNC object COB-ID80.
	1	Synchronous messages are sent based on the hardware synchronisation signal. No SYNC object COB-ID80 is required.
6	0	No ACC bus initialisation after the command FL (clear error)
	1	Automatic ACC bus initialisation after the command FL (clear error)
7-8	0	Reserved
	1	Reserved

<table>
<tr><th>Bit no.</th><th>Condition</th><th>Meaning</th></tr>
<tr><td>9</td><td>0</td><td>During initialization monitors the master, if all configured slaves are available. If obligatory slaves are missing, the error message 2689 (configuration error) is generated.</td></tr>
<tr><td></td><td>1</td><td>The ACC bus master is waiting endless for connected slaves. Optional slaves on the ACC bus can be started later. The monitoring of obligatory slaves must be done in the application. The device with the ACC bus master interface can be reached and operate via EtherCAT even without connected ACC bus slaves. The EtherCAT communication is working independent of the ACC bus status.</td></tr>
<tr><td>10-11</td><td>0</td><td>Reserved</td></tr>
<tr><td></td><td>1</td><td>Reserved</td></tr>
<tr><td>12-15</td><td>0000
0001
0010
0011
0100
0101
0110
0111
1000
1001
1010
1011
1100
1101
1110
1111</td><td>NMT master booting delay (0000 = 0 seconds, 1111 = 15 seconds)
During the bus booting, the master can only detect devices that are in the 'pre-operational' status. Every slave switches to the pre-operational status following a successfully completed booting. The booting delay time in the master must be set so that the slave booting is completed before the master boots. The following table shows the booting times of various devices with various encoder types. The time from 24 V DC On until the 'pre-operational' status is achieved is measured.
<table>
<tr><th>Device:</th><th colspan="10">Booting times [s]</th></tr>
<tr><th>Encoder type</th><th>B</th><th>C</th><th>E</th><th>F</th><th>I</th><th>P</th><th>Q</th><th>R</th><th>S</th><th>T</th><th>Other</th></tr>
<tr><td>KW-R03, KU-R03</td><td>-</td><td>-</td><td>5</td><td>5</td><td>4</td><td>-</td><td>-</td><td>3</td><td>5</td><td>4</td><td>-</td></tr>
<tr><td>KW-R04</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>3</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>KWZ</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>9</td><td>9</td><td>9</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>IDT</td><td>9</td><td>9</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>KE, KES</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>5</td></tr>
</table>
After the delay time in the master has expired, the slave devices are switched to the 'operational' status by the master. The delay time to be set can be calculated as follows:
$T_{V,Master} > MAX(T_{H, Slave}) - T_{H,Master}$

$T_{V,Master}$: Master booting delay time
$T_{H,Slave}$: Slave booting time
$T_{H,Master}$: Master booting time</td></tr>
</table>

Adjustable tolerance at fail telegrams in the bus:

The monitoring of fail telegrams is complete inactive, if ID34027 'BUS failure character' instance 1 < 2 is parameterized

At fail telegram the position setpoint is interpolated further on with the last valid position increase or with the actual speed setpoint.

Configuration ID34026 'BUS mode attribute' -- instance 1 - EtherCAT slave X85 / X86

Bit no.	Condition	Meaning
0-7	0	Only 1 telegram failure (missing telegram) is tolerated before an error message is generated (default)
	1...255	Number of tolerated telegram failures (missing telegrams) before an error message is generated
8	0	Monitoring for telegram and synchronisation failure active, after 'operational' bus status is reached.
	1	Monitoring for telegram and synchronisation failure active, after QRF (for KW) / QUE (for KE) is reached
9-15	0	Reserved
	1	Reserved

Fail telegramms are counted in ID28 'MST error counter'.

ID34027 'BUS failure character'

Sphere of action:	INSTANCE	**Default value:**	2
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'BUS failure character' defines the behavior of a slave bus participant in the event of a failure of the fieldbus and affects with the following diagnostic messages:
ACC Bus: 2685,2686, 2691, 2693, 2694
EtherCAT / VARAN: 2561, 2595

The following error class is displayed:
ACC:128
EtherCAT / VARAN: 2048

Tolerance at fail telegrams: Siehe ID34026 'BUS mode attribute' auf Seite 216.

Configuration ID34027 'BUS failure character'

Code	Designation	Description
0	-	No response
1	-	Warning message
2	-	Error message, SBM is withdrawn The controller enable (RF) is withdrawn drive-internally error message is generated
3	-	Drive moves into parking position [1)]
11	-	At the binary output port 3, the bit mask is output according to ID34202 'Bit mask port 3'. The bit encoding for the output port 3 is masked in ID34202 'Bit mask port 3'. The controller enable is not withdrawn and the drive generates a warning message. Prerequisite: ID32864 'Address output port 3' = 0 ID32865 'Port 3 Bit 0' = 33942 ID32866 'Port 3 Bit 1' = 33942 ID32867 'Port 3 Bit 2' = 33942 The status of the binary outputs remains active until the error is cleared and the states will be overwritten by ID34120 'Binary output word'.
12	-	Same as code 11, but the drive generates an error message instead of a warning (SBM = 0).

1) This parameter is used by the following function:
'Drive moves into parking position'

ID34028 'BUS output rate'

Reserved for AMK internal use!

ID34036 'CCB-File'

Sphere of action:	INSTANCE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX	**Current list length:***	0
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Max. list length:* 16380

ID34036 contains the ACC bus configuration if the device has an ACC bus master interface.

Configuration ID34036 'CCB-File'-

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 1 byte / element)
1	z	List head: Maximum list length without list head [byte]
2		
3		
...	...	...
z+1		

z = Maximum list length

Instance reference

Instance	Use	Interface
0	ACC bus master	X137

ID34037 'Offset analog input 1'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES / NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-10.00 V
Signed:	YES	**Max. value:**	10.00 V
Format:	DEC		
List:	NO		

The 'Offset analog input 1' compensates for the offset error of the analogue input circuit, regardless of the active operating mode. ID34037 is added to the analogue input voltage 1.

ID34038 'Offset analog input 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	V
Data length:	2 byte	**Min. value:**	-10.00 V
Signed:	YES	**Max. value:**	10.00 V
Format:	DEC		
List:	NO		

The 'Offset analog input 2' compensates for the offset error of the analogue input circuit, regardless of the active operating mode. ID34038 is added to the analogue input voltage 2.

ID34039 'OSC Control'

Reserved for AMK internal use!

ID34040 'OSC configuration list'

Reserved for AMK internal use!

ID34041 'OSC actual values'

Reserved for AMK internal use!

ID34042 'OSC data list'

Reserved for AMK internal use!

ID34043 'TG Control'

Reserved for AMK internal use!

ID34044 'TG configuration list'

Reserved for AMK internal use!

ID34045 'Inductance path D'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	mH
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34045 acts with the voltage feedforward in the current controller and on the model-based current controller. The value is specified in the motor data sheet.

ID34046 'Inductance path Q'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	mH
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34046 acts with the voltage feedforward in the current controller and on the model-based current controller. The value is specified in the motor data sheet.

ID34047 'Dead time compensation measuring 1'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES / NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.000 ms
Signed:	NO	**Max. value:**	32.767 ms
Format:	DEC		
List:	NO		

Dead times can be compensated for with this parameter due to, for example, sensors and input circuits in connection with the touch probe function at the binary input BE3. The measured value is corrected by the configured dead time.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID34048 'PWM frequency'

Sphere of action:	DRIVE	**Default value:**	8
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	kHz
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34048 sets the frequency of the PWM in the converter. Only 8 kHz PWM frequency is permissible for all devices.
Exception: additional 4 kHz for KW100, KW150 and KW200

ID34050 'Current path Q integral-action time TN'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	300.0 ms
Format:	DEC		
List:	NO		

ID34050 works in the current controller and is to be derived from the respective type plate or data sheet of the motor.
Siehe ID34177 'Lower threshold current adaption' auf Seite 240.

ID34052 'Current path D integral-action time TN'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	300.0 ms
Format:	DEC		
List:	NO		

ID34052 works in the current controller and is to be derived from the respective type plate or data sheet of the motor.

ID34053 'ID transfer'

Reserved for AMK internal use!

ID34055 'EF type'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34055 'EF type' indicates whether all conditions for monitoring the power output stage enable EF are met. For safety reasons, the content of ID34055 'EF type' must be read following the component exchange and evaluated to determine whether all of the conditions for the certified use of the EF logic are met.

Value range of ID34055 'EF type'

Code	Designation	Description
2		Not all of the conditions for using the certified EF logic in the device are met. The EF logic cannot be used.
4		All of the conditions in the device are met so that the EF logic guarantees the certified properties.

ID34060 'List SEEP 1'

Reserved for AMK internal use!

ID34061 'List SEEP 2'

Reserved for AMK internal use!

ID34062 'Fault statistics'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX	**Current list length:***	0
List:	YES	**Max. list length:***	8

* The list length is the number of usage data elements without 4 byte head elements.

The 'Fault statistics' is managed for the product's entire life cycle and is stored in the SEEP of the device.

Configuration ID34062 'Fault statistics'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [byte] (x = n elements x 2 byte(s) / element)**
1	**16**	**List head: Maximum list length without list head [byte]**
2	n	Mains
3	n	Brake transistor
4	n	Logic voltage
5	n	Overload i^2t
6	n	Encoder error
7	n	Earth contact, short-circuit
8	n	Device over-temperature
9	n	Motor / brake resistor over-temperature

n indicates how often this error has occurred

ID34063 'Time meter power'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	200000
Format:	DEC		
List:	NO		

ID34063 indicates the number of operating hours of the device. The value of the operating hour counter is stored in the device SEEP and remains preserved when replacing the controller module.

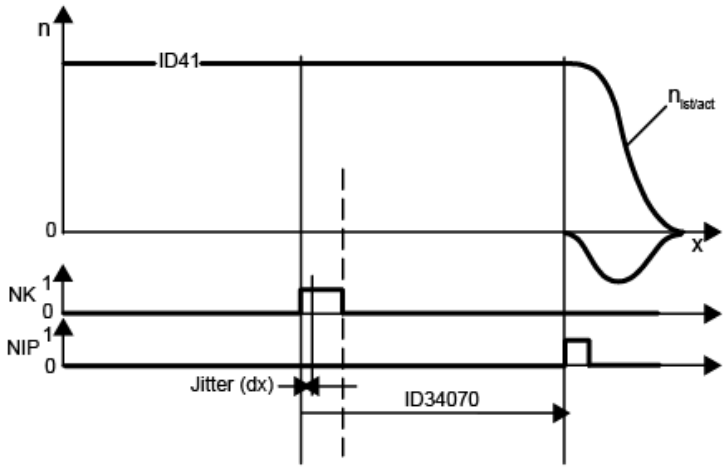
ID34070 'Home signal distance'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-2147483648
Signed:	YES	**Max. value:**	2147483647
Format:	DEC		
List:	NO		

After every homing cycle, the 'Home signal distance' indicates the distance between the encoder zero pulse and an external cam. ID34070 is cleared by the following results, i.e. set to the value 0:

- Homing cycle only for cam or encoder homing mark (zero pulse)
- System booting
- Parameter set change
- Command for resetting the homing point known (in preparation: ID191 homing point reset command)
- Every homing cycle completed with an error

Example: homing signal distance for homing cycle with cam and encoder homing mark (zero pulse evaluation), without 'Homing offset 1' (ID150 = 0).



Due to the discreet sampling of the cam signal, a blur (dx) results, whose size depends on the interpolator guide speed and the sampling time.

The value 0 in ID34070 signals an invalid value, i.e. a non-current homing signal distance.

Siehe ID32990 'NK shift' auf Seite 195.

ID34071 'System name'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	0
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Max. list lenght:* 16

Any name can be assigned to the device in ID34071. This may consist of a maximum of 16 / ASCII characters. The system name is used in the networked systems, e.g. for device identification.

Configuration ID34071 'System name'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 1 byte / element)
1	16 /	List head: Maximum list length without list head [byte]
2	e.g. A	1st character of the system name
3	e.g. n	2nd character of the system name
4	e.g. t	3rd character of the system name
5	e.g. r	4th character of the system name
6	e.g. i	5th character of the system name
7	e.g. e	6th character of the system name
8	e.g. b	7th character of the system name
9	e.g. 1	8th character of the system name
...	...	...
z+1		Last character of the system name

z = Maximum list length

ID34072 'Data set name'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	0
List:	YES	**Max. list length:***	16

* The list length is the number of usage data elements without 4 byte head elements.

In ID34072, any name with a maximum length of 16 ASCII characters can be assigned to the data set (all parameters of a device).

Configuration ID34072 'Data set name'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 1 byte / element)
1	16	List head: Maximum list length without list head [byte]
2	e.g. D	1st character of the data set name
3	e.g. o	2nd character of the data set name
4	e.g. k	3rd character of the data set name
5	e.g. u	4th character of the data set name
6	e.g. P	5th character of the data set name
7	e.g. r	6th character of the data set name
8	e.g. o	7th character of the data set name
9	e.g. j	8th character of the data set name
10	e.g. e	9th character of the data set name
11	e.g. k	10th character of the data set name
12	e.g. t	11th character of the data set name
...	...	...
17		16th character of the data set name

ID34073 'Scaling parameters'

Sphere of action:	GLOBAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	
Signed:	NO	**Max. value:**	
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	Created at run time

* The list length is the number of usage data elements without 4 byte head elements.

The list 'Scaling parameters' contains all parameters that must be set for an active weighting before writing a new data set in the drive.

ID34074 'Homing Counter 1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Homing Counter 1' stores the position information from ID34075 'Actual Counter 1' at the point where the homing signal occurs.

This parameter is used by the following functions:
'Probe function pulse encoder with homing mark'
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'

ID34075 'Actual Counter 1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Actual Counter 1' cyclically saves (each 250 µs) the position information.
The value of the actual counter hurry ID51 'Position feedback value' ahead. The actual counter is formed every 250 µs, the 'Position feedback value' one time each ID2 'SERCOS cycle time'.

This parameter is used by the following functions:
'Probe function pulse encoder with homing mark'
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'

ID34076 'Homing Counter 2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Homing Counter 2' stores the position information from ID34077 'Actual Counter 2' at the point where the homing signal occurs.

This parameter is used by the following functions:
'Probe function pulse encoder with homing mark'
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'

ID34077 'Actual Counter 2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Actual Counter 2' cyclically saves (each 250 µs) the position information.
The value of the actual counter hurry ID51 'Position feedback value' ahead. The actual counter is formed every 250 µs, the 'Position feedback value' one time each ID2 'SERCOS cycle time'.

This parameter is used by the following functions:
'Probe function pulse encoder with homing mark'
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'

ID34088 'Event trace'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	-
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	0
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /	
Max. list length:*	1280

The 'Event trace' is organized as the circular buffer. Every new entry overwrites the oldest entry. The newest entry is at the beginning of the list and the oldest event is at the end.
Every event block has the following structure:

- 18 byte time stamp
- 46 byte event text

Configuration ID34088 'Event trace'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [byte] (x = n elements x 1 byte / element)**
1	**2 x z**	**List head: Maximum list length without list head [byte]**
2		
3		
...		
z+1		

z = Maximum list length

Siehe 'ID34171 'Event filter'' auf Seite 238.

The 'Event trace' encompasses 20*64 byte blocks for 20 events. The time begins relative to the activation time of the device.
The following events are logged in the 'Event trace' with precise times:

- System booting
- Diagnostic messages
- Clear error

Example:
Time information:
'BSTD: 2:10:30' = 2 hours: 10 minutes: 30 seconds
Event text:
'Err:1049 Info: 0 Adr: 2 DC bus' or 'system booting'

ID34090 'User list 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX	**Current list length:***	0
List:	YES	**Max. list length:***	32

* The list length is the number of usage data elements without 4 byte head elements.

The 'User list 2' is a data set in the remanent memory area that is freely available to the user.

Configuration ID34090 'User list 2'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [byte] (x = n elements x 2 byte / element)**
1	**64**	**List head: Maximum list length without list head [byte]**
2		
3		
4		
...		
33		

ID34094 'Rise time SWC'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A/s
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34094 determines the slope of the current increase for the software commutation. The default value 0 corresponds to a current increase of $I_{N,Motor}$/200 ms. The system can start to vibrate for values greater than 200 ms.

ID34095 'Final value SWC'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34095 defines the end value of the current for the software commutation.

The software commutation is dependent on the motor encoder type used, primarily for linear motor use. When using linear distance measuring systems without an absolute value, it is not possible to determine the in-phase current of the motor windings from the encoder signals. In this case, it is achieved by means of the software commutation.

With the software commutation, the current increase as well as the current end value of the commutation current are important. For strong linear motors in highly dynamic applications, flatter current increases are usually necessary. It should also be possible to limit the commutation current to smaller values for the initial commissioning.
The current increase is determined via the parameter ID34094 and the current end value in ID34095.

Positive value in ID34095:

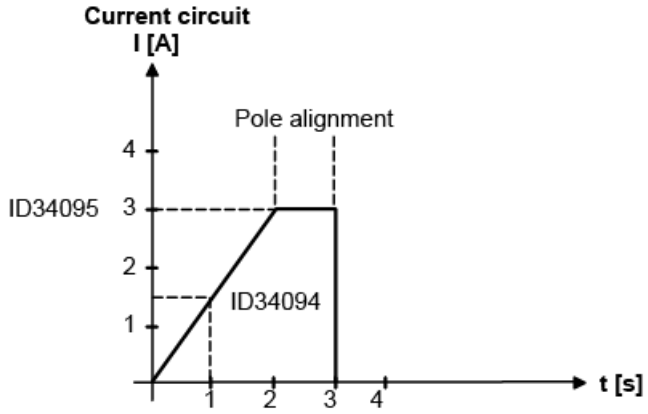
SW commutation according to the current increase and end value.

Negative value in ID34095 and ID32773 bit 28 = 0:

After the current increase, the current angle is shifted by ± 45° in order to 'break away' ironless linear motors from a position between two poles. This process requires an additional 2.5 seconds for the commutation time. The commutation time results from ID34094 'Rise time SWC'.

Example:

ID34094 'Rise time SWC' = 1.5 A/s
ID34095 'Final value SWC' = 3 A



ID34096 'Standstill current motor'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	A
Data length:	4 byte	**Min. value:**	0.00 A
Signed:	NO	**Max. value:**	1000.00 A
Format:	DEC		
List:	NO		

The 'Standstill current motor' is to be derived from the motor data sheet and works with the i^2t-monitoring of the motor.

ID34099 'Delay time SWC'

Sphere of action:	DRIVE	**Default value:**	0 (means 400 ms at ID32773 bit 28 = 0) (means 150 ms at ID32773 bit 28 = 1)
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0 ms
Signed:	NO	**Max. value:**	4000 ms
Format:	DEC		
List:	NO		

The 'Delay time SWC' indicates the time between the rotor alignment and the determination of the commutation position. When aligning the rotor, it may occur for larger motors that the rotor is still rotating when the commutation position is to be determined (overshooting over the setpoint position). Then an error message 2362 'Error Commutation Motor' is generated. With the 'Delay time SWC', the waiting time for determining the commutation position of the motor can be adjusted.

ID34100 'Binary input word'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Binary input word' is the image of the binary inputs of the input port 3 (ID32977 'Address input port 3').

Siehe ID32977 'Address input port 3' auf Seite 193.

ID34101 'Binary input word 1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Binary input word 1' is the image of the binary inputs of the input ports 1 and 2 (ID32873 'Address input port 1' and ID32968 'Address input port 2').

Siehe ID32873 'Address input port 1' auf Seite 166.

Siehe ID32968 'Address input port 2' auf Seite 189.

ID34102 'Binary input word 2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

ID34102 contains 'virtual' binary inputs for control via fieldbus. The inputs are not assigned to any hardware. The binary inputs can be set by the controller by writing ID34102 or the status can be read.

ID34120 'Binary output word'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Binary output word' is the image of the binary outputs from the output port 3 (ID32864 'Address output port 3').

Siehe ID32864 'Address output port 3' auf Seite 164.

ID34121 'Binary output word 1'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Binary output word 1' is the image of the binary outputs of the output ports 1 and 2 (ID32846 'Address output port 1' and ID32855 'Address output port 2').

Siehe ID32846 'Address output port 1' auf Seite 158.

Siehe ID32855 'Address output port 2' auf Seite 161.

ID34122 'Binary output word 2'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

ID34122 contains 'virtual' binary outputs for control via fieldbus. The outputs are not assigned to any hardware. The binary outputs can be set by the controller by writing ID34122 or the status can be read.

ID34142 'Node list'

Sphere of action:	INSTANCE / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC	**Current list length:***	0
List:	YES	**Max. list length:***	Device-specific values

* The list length is the number of usage data elements without 4 byte head elements.

Values for KW-R06 /

Max. list length:* 128

The node list is created in each bus master (ACC bus, EtherCAT) during the system booting. The node list includes all of the detected nodes of the network (regardless of the condition of the node).

The node list is updated online. Nodes that are no longer detectable are removed from the list immediately. Newly detected nodes are added to the list immediately. The list is in RAM and is formed at run time (no image in the permanent data base).

Procedure for CAN networks:

Mains ON:

Every participant sends a boot-up message during the start. The master creates the node list using the received boot-up messages. Node guarding monitors the presence of all participants that are entered in the node list.

Node guarding message:

If a node is no longer reachable by the master, it is removed from the list.
Boot-up message: Nodes are entered into the node list at the run time.

Configuration ID34142 'Node list'

List element	Content	Meaning
0	**x**	**List head: Current list length without list head [byte] (x = n elements x 1 byte / element)**
1	**z**	**List head: Maximum list length without list head [byte]**
2		Participant address 1 Participant
3		Participant address 2 Participant
4		Participant address 3 Participant
...		...
		Device type 1st Participant
		Device type 2nd Participant
		Device type 3rd Participant
...		...

z = Maximum list length

Appliance type	Code	String detection according to ID30
Undefined	0	
KE	1	KE
KW	2	KW, KWZ
AS, A4, A5, A6	3	AS, AS-C, A4S, A4D, A5S, A5D, A6S, A6D
KU	4	KU
Kx-PLC1	5	PLC1, PLC2
KWF	6	KWF
IDT4	7	IDT
Reserved	8	
Reserved	9	

Appliance type	Code	String detection according to ID30
Ext. WAGO I/O	10	
Ext. ...reserved	11	

Example: KW with IDT 4 and KE modules

1 KW, 2 IDT 4 motors (addresses 1, 2 and 3) and a KE module (address 33) are connected to the ACC bus.
The following list is delivered when reading the ID43142 instance 0.

actual length	max. length	Addresses				Types			
12	**132**	**1**	**2**	**3**	**33**	**2**	**7**	**7**	**1**
2 byte	2 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	1 byte

Instance	Use	Interface
0	ACC bus master	X137
1	EtherCAT slave	X85 (IN) / X86 (OUT)

ID34146 'Memory address'

Reserved for AMK internal use!

ID34147 'Memory data'

Reserved for AMK internal use!

ID34148 'Voltage control proportional gain KP'

Sphere of action:	DRIVE	**Default value:**	50
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES	**Unit:**	A/V
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The ID34148 'Voltage control proportional gain KP' and ID34149 'Voltage control integrating time TN' work for synchronous machines in field weakening and for asynchronous motors with voltage control. The values are motor-specific and are to be taken from the respective type plate or data sheet of the motor.

ID34149 'Voltage control integrating time TN'

Sphere of action:	DRIVE	**Default value:**	50
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.0 ms
Signed:	NO	**Max. value:**	300.0 ms
Format:	DEC		
List:	NO		

The ID34148 'Voltage control proportional gain KP' and ID34149 'Voltage control integrating time TN' work for synchronous machines in field weakening and for asynchronous motors with voltage control. The values are motor-specific and are to be taken from the respective type plate or data sheet of the motor.

ID34151 'Current path Q proportional gain KP'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	V/A
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34151 'Current path Q proportional gain KP' and ID34152 'Current path D proportional gain KP' work in the current controller and are to be derived from the respective type plate or data sheet of the motor. If no values are specified in the motor data sheet, the current controller values can be set manually or with the automatic current controller tuning.

Siehe ID34177 'Lower threshold current adaption' auf Seite 240.

ID34152 'Current path D proportional gain KP'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	V/A
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34151 'Current path Q proportional gain KP' and ID34152 'Current path D proportional gain KP' work in the current controller and are to be derived from the respective type plate or data sheet of the motor. If no values are specified in the motor data sheet, the current controller values can be set manually or with the automatic current controller tuning.

ID34153 'Maximum speed motor'

Sphere of action:	DRIVE	**Default value:**	1000000000
Access:	READING	**Scale:**	0.0001
Temporarily changeable:	NO	**Unit:**	1/min
Data length:	4 byte	**Min. value:**	1 1/min
Signed:	NO	**Max. value:**	100000 1/min
Format:	DEC		
List:	NO		

The 'Maximum speed motor' defines the speed that the motor can physically achieve and is specified in the motor's data sheet.

ID34154 'Start marker'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34154 works with the pulse width measurement function (ID169 'Probe control parameter') and indicates the start position of the window in which a valid printing mark must be located. This parameter must be re-specified for each mark by a higher-ranking controller.

ID34155 'Mark window'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES / NO	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34155 works with the pulse width measurement function (ID169 'Probe control parameter') and indicates the width of the window in which a valid printing mark must be located. The sign of the value determines the drive or mark search direction. This parameter must be re-specified for each mark by a higher-ranking controller.

ID34157 'Dead time compensation measure'

Reserved for AMK internal use!

ID34160 'Part number motor'

Sphere of action:	DRIVE	**Default value:**	-
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	1 byte / element	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	ASCII	**Current list length:***	0
List:	YES	**Max. list length:***	10

* The list length is the number of usage data elements without 4 byte head elements.

The 'Part number motor' can be entered in ID34160.

Configuration Aufbau ID34160 'Part number motor' for the example parts no. A1182AD

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 1 byte / element)
1	10	List head: Maximum list length without list head [byte]
2	e.g. A	1st position in the part number of the motor
3	e.g. 1	2nd position in the part number of the motor
4	e.g. 1	3rd position in the part number of the motor
5	e.g. 8	4th position in the part number of the motor
6	e.g. 2	5th position in the part number of the motor
7	e.g. A	6th position in the part number of the motor
8	e.g. D	7th position in the part number of the motor
9	0	8th position in the part number of the motor
10	0	9th position in the part number of the motor
11		10th position in the part number of the motor

ID34161 'Production date motor'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Production date motor' is assumed from the encoder database.
Format: jjww

ID34162 'Serial number motor'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Serial number motor' is assumed from the encoder database.

ID34164 'Terminal resistance'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	NO	**Unit:**	Ohm
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The terminal resistance (R_{tt}) is only relevant for synchronous motors and is to be derived from the respective type plate or data sheet of the motor.

ID34165 'Holding torque brake'

Reserved for AMK internal use!

ID34166 'Temperature sensor motor'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The connected temperature sensor is defined in ID34166.

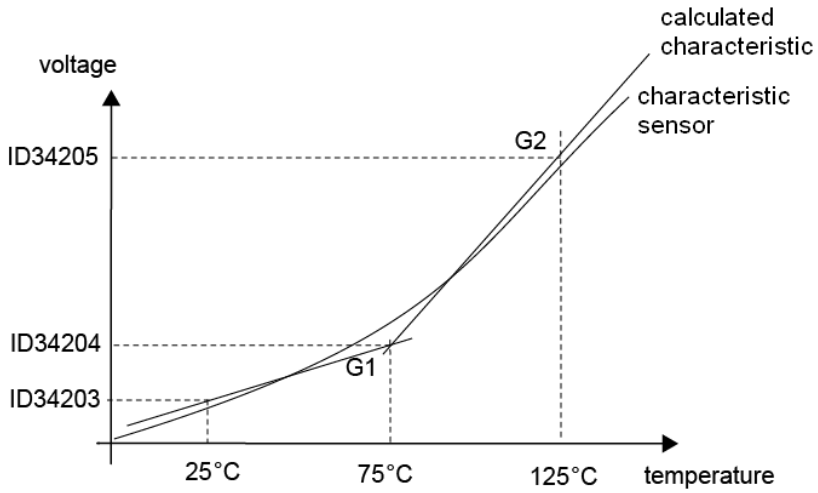
Input format

T T T	A	X	
		|	
		|	Sensor type:
		|	0: without
		|	1: THW [1] temperature sensor (bimetal switch)
		|	2: Reserved
		|	3: PTC [1]
		|	4: KTY 83 [2]
		|	5: KTY 84 with 825 ohm series resistor [2]
		|	6: KTY 84 [2]
		|	7: KW-R06 / Reserved
		|	8: Reserved
		|	9: User-defined [2]
	|	Number of sensors 0..9	
	Switch-off temperature 0..654 °C		

1) Shutdown at approximately 140 °C (value dependent on PTC / THW type)
NTC type is not supported
2) Shutdown at a maximum of 140 °C or at the specified shutdown temperature (TTT)

The temperature is determined using a characteristic curve. The characteristic curve is formed by 3 support points through which two lines are placed. The following values are stored in the firmware.

Type	Sensor	Voltage at 25 °C ID34203	Voltage at 75 °C ID34204	Voltage at 125 °C ID34205
4	KTY 83	1.250 V	1.781 V	2.421 V
5	KTY 84 with 825 ohm Series resistor	1.785 V	2.099 V	2.481 V
6	KTY 84	0.754 V	1.067 V	1.450 V
7	PT1000	1.371 V	1.613 V	1.849 V
9	User-defined	0.000 V	0.000 V	0.000 V



If the shutdown temperature is reached or exceeded, the warning 2351 'Motor temperature warning' is generated and, after the expired ID32943 'Warning time', the error message 2347 'Motor temperature error' is generated.

Siehe ID33117 'Temperature external' auf Seite 200.

ID34167 'Terminal Inductance'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	mH
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Terminal Inductance' (L_{tt}) is only relevant for synchronous motors and is to be derived from the respective type plate or data sheet of the motor. If ID34167 ≠ 0, ID109 'Motor peak current' works.

ID34168 'Time maximum current motor'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	s
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34168 determines how long a motor can be operated with the maximum current specified in ID109 'Motor peak current'. If ID34168 and ID109 do not equal 0, ID32920 'Overload time motor' is ineffective. The motor overload time is calculated internally from ID109 and ID34168.

The I^2t-monitor motor must be activated in ID32773 'Service bits' Bit 14.

For new applications, the I^2t monitoring motor must be parameterised with the parameters ID109 and ID34168.

ID34171 'Event filter'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Certain event classes can be filtered out with the 'Event filter'. Each event class is represented by a bit in ID34171. Bits that are assigned the value 1 in ID34171 are not registered in ID34088 'Event trace'.

The following event classes can be filtered out:

Configuration ID34171 'Event filter'

Bit no.	Condition	Meaning
0	0	'Error' event class is entered in ID34088 , e.g. error messages
	1	'Error' event class is not entered in ID34088 , e.g. error messages

Bit no.	Condition	Meaning
1	0	'Warning' event class is entered in ID34088 , e.g. warning messages
	1	'Warning' event class is not entered in ID34088 , e.g. warning messages
2	0	Reserved
	1	Reserved
3	0	Reserved
	1	Reserved
4	0	'Clear error' event class is entered in ID34088
	1	'Clear error' event class is not entered in ID34088
5	0	'System' event class is entered in ID34088 , e.g. power on, firmware update...
	1	'System' event class is not entered in ID34088 , e.g. power on, firmware update...
6	0	'External access' event class is entered in ID34088 , e.g. access to the parameter data or, for controllers, access to the file system via FTP
	1	'External access' event class is not entered in ID34088 , e.g. access to the parameter data or, for controllers, access to the file system via FTP
7-15	0	Reserved
	1	Reserved

Siehe ID34088 'Event trace' auf Seite 227.

ID34174 'SWK monitoring'

Sphere of action:	DRIVE	**Default value:**	Dependent on the list element
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte / element	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC	**Current list length:***	-
List:	YES	**Max. list length:***	18

* The list length is the number of usage data elements without 4 byte head elements.

Configuration ID34174 'SWK monitoring'

List element	Content	Meaning
0	x	List head: Current list length without list head [x byte] (x = n elements x 2 byte / element)
1	36	List head: Maximum list length without list head [byte]
2	130 (Default)	Maximum slope [%] 1)
3	90 (Default)	Minimum slope [%] 1) 2)
4	50 (Default)	Maximum offset to the setpoint [incr.] (absolute value)
5	50 (Default)	Maximum deviation [incr.] (absolute value)
6	0	Determined slope [%] 1)
7	0	Determined offset to the setpoint [incr.]
8	0	Determined deviation [incr.]
9	10 (Default)	Factor for the deflection [value 10 corresponds to the factor 1 = 100%]
10-19	-	Reserved

1) 100% corresponds to an slope of 1
2) If the minimum incline is equal to value 0, the incline and the direction of rotation is not monitored any longer.

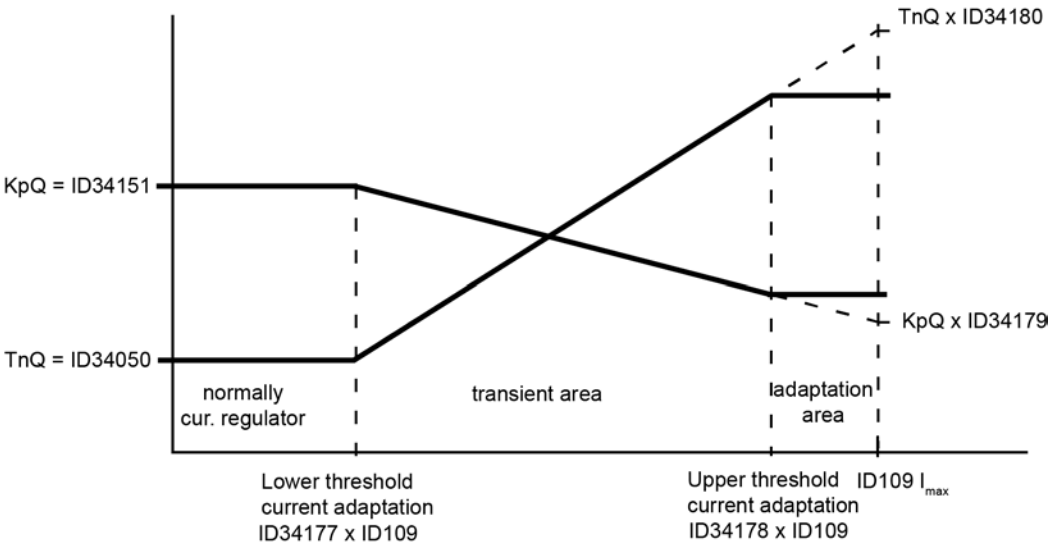
In the case of an error, the software commutation generates the diagnostic message 2362 'Error Commutation Motor'.

ID34177 'Lower threshold current adaption'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	1 %
Signed:	NO	**Max. value:**	100 %
Format:	DEC		
List:	NO		

ID34177 works in the current controller and is specified in the motor data sheet.

Adaption of the current control parameter



ID34178 'Upper threshold current adaption'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	0 %
Signed:	NO	**Max. value:**	100 %
Format:	DEC		
List:	NO		

ID34178 works in the current controller and is specified in the motor data sheet.

Siehe ID34177 'Lower threshold current adaption' auf Seite 240.

ID34179 'Gradient path Q proportional gain'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	1 %
Signed:	NO	**Max. value:**	100 %
Format:	DEC		
List:	NO		

ID34179 works in the current controller and is specified in the motor data sheet.

Siehe ID34177 'Lower threshold current adaption' auf Seite 240.

ID34180 'Gradient path Q integral-action time'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	%
Data length:	2 byte	**Min. value:**	100 %
Signed:	NO	**Max. value:**	400 %
Format:	DEC		
List:	NO		

ID34180 works in the current controller and is specified in the motor data sheet.

Siehe ID34177 'Lower threshold current adaption' auf Seite 240.

ID34182 'Limit position increment'

Sphere of action:	DRIVE	**Default value:**	2147483647
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34182 sets the maximum relative position increase of the 32-bit position setpoint for the position controller per ID2. If the relative position increase is larger than the value in ID34182, the diagnostic message 2333 'Position growth too large' is generated.

The relative position increase is the sum from the setpoint sources ID47 'Position command value' and the internal interpolator (IPO).

ID34183 'Velocity threshold SL'

Reserved for AMK internal use!

ID34184 'Starting current SL'

Reserved for AMK internal use!

ID34185 'Resistance rotor'

Reserved for AMK internal use!

ID34186 'Inductance stator'

Reserved for AMK internal use!

ID34187 'Inductance rotor'

Reserved for AMK internal use!

ID34188 'Main inductance'

Reserved for AMK internal use!

ID34189 'Rotor flux proportional gain'

Reserved for AMK internal use!

ID34190 'Rotor flux integral-action time'

Reserved for AMK internal use!

ID34191 'Velocity acquisition propotional gain'

Reserved for AMK internal use!

ID34192 'Velocity acquisition integral-action time'

Reserved for AMK internal use!

ID34193 'Nominal current external component'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The default value 0 means that internally the 'Nominal current external component' is set to equal to ID112 'Converter nominal current'.

The parameters ID34193 to ID34196 are the database of the i^2t-monitoring for external components, e.g. choke ALN45-SI and ALN60-SI or motor cable.

ID34194 'Peak current external component'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	A
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The default value 0 means that internally the 'Peak current external component' is set to equal to ID110 'Converter peak current'.

The parameters ID34193 to ID34196 form the database of the i^2t-monitoring for external components, e.g. choke ALN45-SI and ALN60-SI or motor cable.

ID34195 'Peak current time external component'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	s
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The default value 0 means that internally the 'Peak current time external component' is set to equal to 10s.

The parameters ID34193 to ID34196 form the database of the i^2t-monitoring for external components, e.g. choke ALN45-SI and ALN60-SI or motor cable.

ID34196 'Treshold external component'

Sphere of action:	GLOBAL	**Default value:**	500
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The default value 0 means that internally the 'Treshold external component' is set to 50 %.
The parameters ID34193 to ID34196 form the database of the i^2t-monitoring for external components, e.g. motor cable.

ID34197 'Display external component'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34197 'Display external component' indicates the current overload of the external component according to the I^2t-monitoring.

ID34197 = 0 : Nominal operation or below nominal operation

ID34197 > 0 : Overload operation, shutdown at 100% with the diagnostic message 1112 info 0: 'Overload error external component'.

ID34199 'Actual power value bipolar'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	W
Data length:	4 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34199 contains the signed actual power value

Motor-driven energy flow: positive sign

Generator-driven energy flow: negative sign

ID34200 'Bit mask port 1'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Bit mask port 1' masks bits of the binary output port 1. The masked bits are set depending on ID34027 'BUS failure character'.

Example:
ID34200 = 0x5 --> 0101 binary --> Output A1 and A3 are set, all others are not.

Prerequisite: ID32846 'Address output port 1' = 0

ID34201 'Bit mask port 2'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Bit mask port 2' masks bits of the binary output port 2. The masked bits are set depending on ID34027 'BUS failure character'.

Example:
ID34201 = 0x5 --> 0101 binary --> Output A1 and A3 are set, all others are not.

Prerequisite: ID32855 'Address output port 2' = 0

ID34202 'Bit mask port 3'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

The 'Bit mask port 3' masks bits of the binary output port 3. The masked bits are set depending on ID34027 'BUS failure character'.

Example:
ID34202 = 0x5 --> 0101 binary --> Output BA1 and BA3 are set.

Prerequisite:
ID32864 'Address output port 3' = 0
ID32865 'Port 3 Bit 0' = 0 (BA1)
ID32866 'Port 3 Bit 1' = 0 (BA2)
ID32867 'Port 3 Bit 2' = 0 (BA3)
ID32868 'Port 3 Bit 3' = 0 (BA4) ...

ID34203 'Voltage at 25 degrees'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.500 V
Signed:	NO	**Max. value:**	3.500 V
Format:	DEC		
List:	NO		

ID34203 is one of 3 support points that form the temperature characteristic curve of the motor temperature sensor.
ID34203 voltage at 25 °C = 1.25 mA * R(25 °C)
R(25 °C): Resistance of the temperature sensor at 25 °C

Siehe ID34166 'Temperature sensor motor' auf Seite 236.

ID34204 'Voltage at 75 degrees'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.500 V
Signed:	NO	**Max. value:**	3.500 V
Format:	DEC		
List:	NO		

ID34204 is one of 3 support points that form the temperature characteristic curve of the motor temperature sensor.
ID34204 voltage at 75 °C = 1.25 mA * R(75 °C)
R(75 °C): Resistance of the temperature sensor at 75 °C

Siehe ID34166 'Temperature sensor motor' auf Seite 236.

ID34205 'Voltage at 125 degrees'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.500 V
Signed:	NO	**Max. value:**	3.500 V
Format:	DEC		
List:	NO		

ID34205 is one of 3 support points that form the temperature characteristic curve of the motor temperature sensor.
ID34205 voltage at 125 °C = 1.25 mA * R(125 °C)
R(125 °C): Resistance of the temperature sensor at 125 °C

Siehe ID34166 'Temperature sensor motor' auf Seite 236.

ID34206 'Product code'

Reserved for AMK internal use!

ID34210 'Dead time compensation measure 2'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0.000 ms
Signed:	NO	**Max. value:**	32.767 ms
Format:	DEC		
List:	NO		

Dead times can be compensated for with this parameter due to, for example, sensors and input circuits in connection with the touch probe function at the binary input BE2. The measured value is corrected by the configured dead time.

This parameter is used by the following functions:
'Probe function pulse encoder with touch probe signal'
'Probe function actual position encoder with touch probe signal'
'Probe function actual position encoder with SERCOS interface'

ID34212 'Voltage path Q'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34212 indicates the current controller output voltage (effective value) in the Q-path.

ID34213 'Voltage path D'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34213 indicates the current controller output voltage (effective value) in the D-path.

ID34215 'Temperature IGBT'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	YES / NO	**Unit:**	°C
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34215 contains the IGBT temperature calculated from the temperature model.

ID34217 'AMK Test 1'

Reserved for AMK internal use!

ID34218 'AMK Test 2'

Reserved for AMK internal use!

ID34219 'AMK Test 3'

Reserved for AMK internal use!

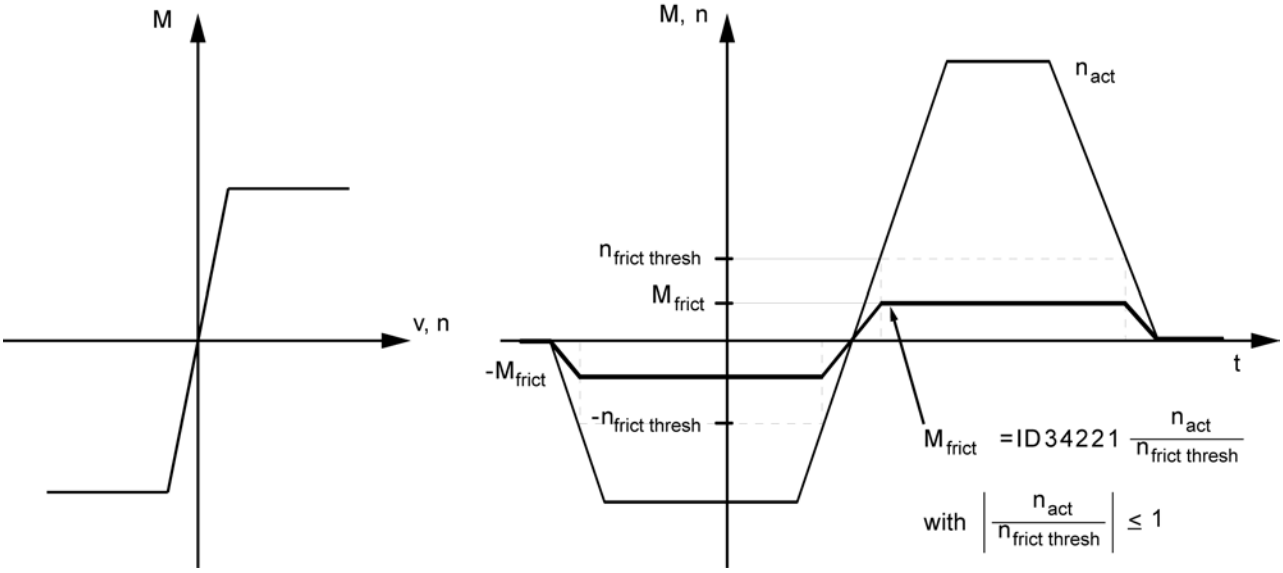
ID34220 'AMK Test 4'

Reserved for AMK internal use!

ID34221 'Friction torque'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	Nm
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The parameter 'Friction torque' represents a constant static friction. The torque is fed forward depending on the rotating direction.
The friction torque is fully effective at $n_{act} \geq n_{frict\ thresh}$.
Within the range $n_{act} < n_{frict\ thresh}$, the friction torque is linear.

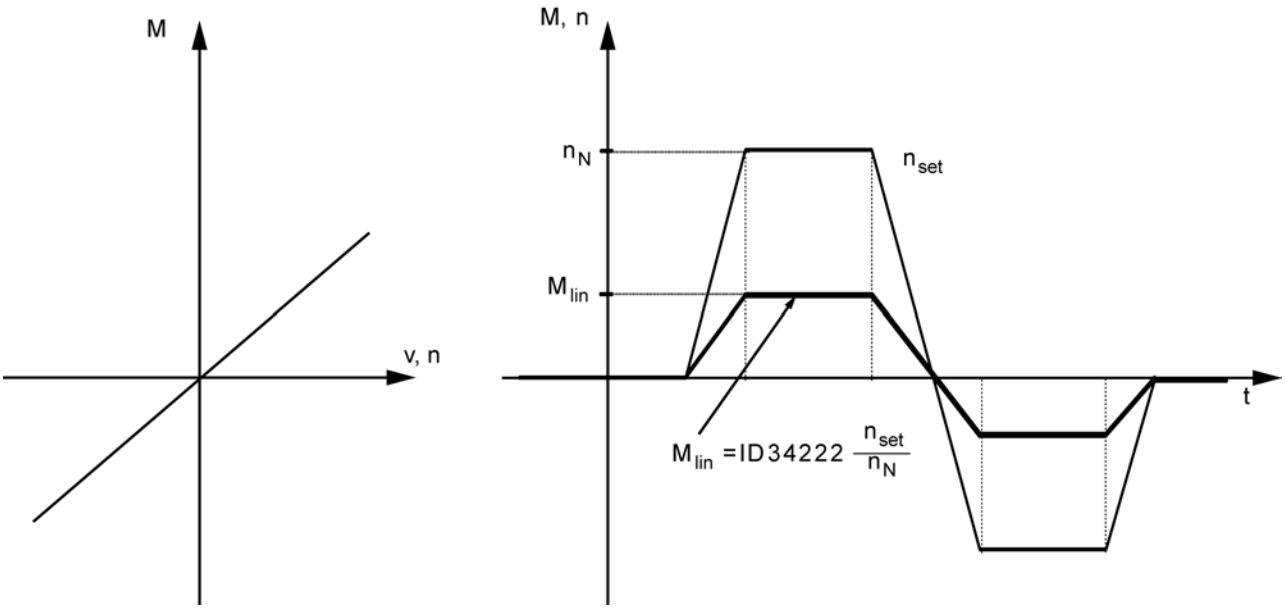


This parameter is used by the following function:
'Load model'

ID34222 'Friction torque linear'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.01
Temporarily changeable:	YES	**Unit:**	Nm
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The parameter 'Friction torque linear' represents a fluid friction. Fluid friction is the name of the friction which occurs with perfectly lubricated sliding surfaces. The friction is proportional to the speed with which the surfaces slide on each other.

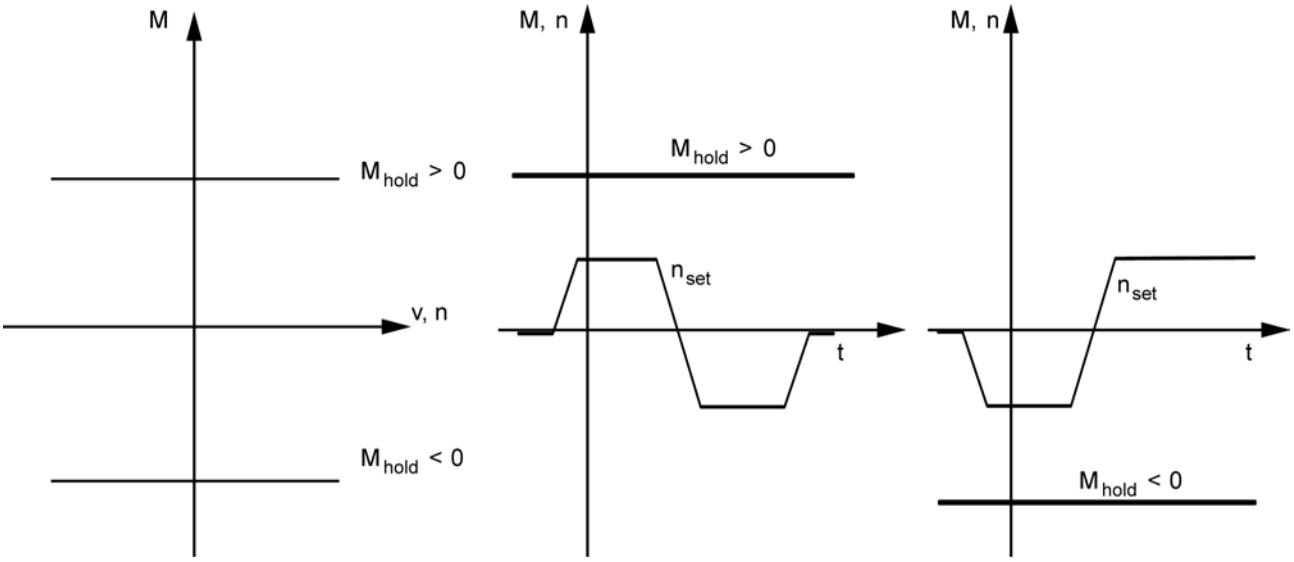


This parameter is used by the following function:
'Load model'

ID34223 'Holding torque'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	YES	**Unit:**	Nm
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

The parameter 'Holding torque' represents a holding torque, a hanging axle for example. The feed forward of the holding torque does not depend on the speed.

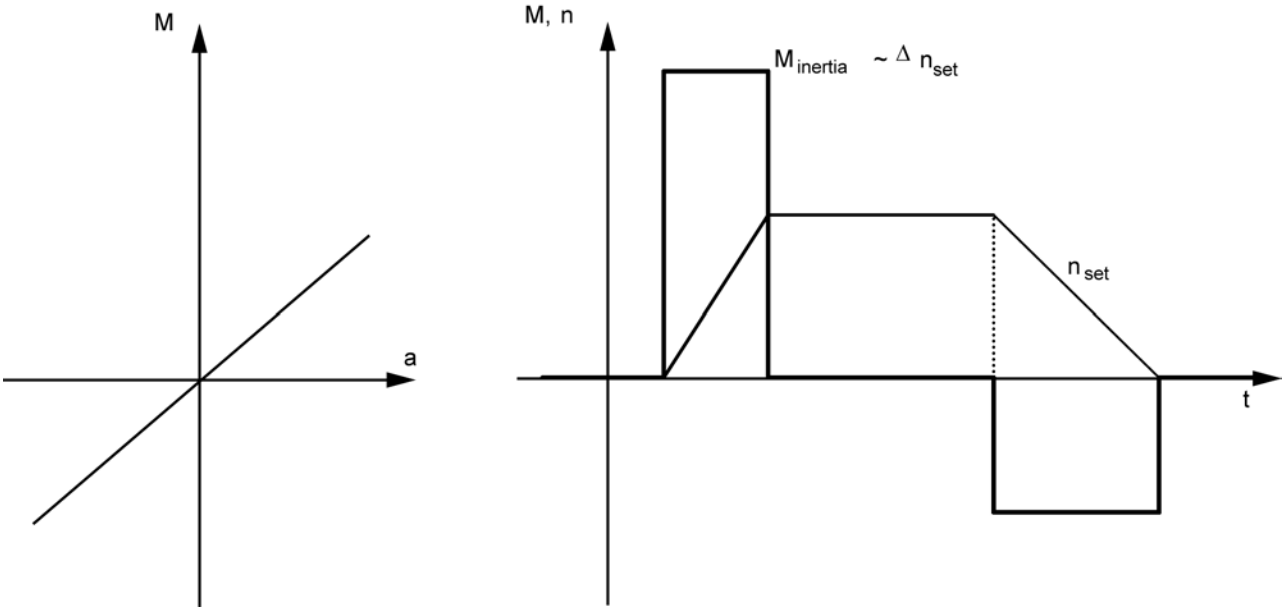


This parameter is used by the following function:
'Load model'

ID34224 'Inertia'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	YES	**Unit:**	$kgcm^2$
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The parameter 'Inertia' represents the motor inertia additional a moment of inertia mounted on the motor shaft.
Inertia takes effect during acceleration and deceleration.



This parameter is used by the following function:

'Load model'

ID34225 'Mode feed forward control'

Sphere of action:	DRIVE	**Default value:**	0x0000 0000 0000 0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	4294967295
Format:	BIN		
List:	NO		

Configuration ID34225 'Mode feed forward control'

Bit no.	Condition	Meaning
0 [2]	0	The acceleration feed-forward control values are calculated internally in the device
	1	The acceleration feed-forward control values are calculated externally by a controller and are written in ID81 'Additive torque command value' [1]
1 [2]	0	The speed feed-forward control values are calculated internally in the device
	1	The speed feed-forward control values are calculated externally by a controller and are written in ID37 'Additive velocity command value'
2 [2]	0	The acceleration feed-forward control values are calculated internally in the device
	1	The acceleration feed-forward control values are calculated externally by a controller and are written in ID194 'Acceleration setpoint'
3 [2]	0	Source for speed and acceleration feed-forward values: according parameter setting in bit 0-2
	1	Source for speed and acceleration feed-forward values: calculation via differentiation of the position setpoint values (ID47 'Position command value')
4 [3]	0	Source for speed feed-forward values: ID37 'Additive velocity command value'
	1	Source for speed feed-forward values: Differentiation of the position setpoints The following error compensation 'SAK' must be switched off (ID32800 Bit 9 = 0), otherwise the feed-forward acts twice!
5 [4]	0	ID33174 'Damping factor position' inactive
	1	ID33174 'Damping factor position' active
6-12	0	Reserved
	1	Reserved
13 [2]	0	Reserved
	1	Reserved
14 [2]	0	Reserved
	1	Reserved
15 [2]	0	Reserved
	1	Reserved
16 [2]	0	Load model active
	1	Load model inactive
17	0	Reserved
	1	Reserved
18	0	Automatic holding torque inactive
	1	Automatic holding torque active If the function 'Automatic holding torque' is active, the static holding torque from the function 'Load model' ID34223 'Holding torque' must be = 0, otherwise the feed-forward acts twice from the second setting of controller enable.
19	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
20-27	0	Reserved
	1	Reserved
28	0	Filter for displaying ID84 'Torque feedback value' active
	1	Filter for displaying ID84 'Torque feedback value' inactive
29-31	0	Reserved
	1	Reserved

1) Not for new applications. Use bit 2 = 1.
2) This parameter is used by the following function:
   'Load model'
3) This parameter is used by the following function:
   'D-term position controller, damping'
4) This parameter is used by the following function:
   'Speed feed-forward control'

ID34226 'List load model'

Reserved for AMK internal use!

ID34227 'Motion control bits'

Reserved for AMK internal use!

ID34228 'Angle feed forward SL'

Reserved for AMK internal use!

ID34229 'Sliding factor SL'

Reserved for AMK internal use!

ID34230 'List Bus'

Reserved for AMK internal use!

ID34231 'Feed forward control voltage path Q'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34231 shows the voltage feedforward value (Q-path) in the current controller.

ID34232 'Feed forward control voltage path D'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0
Access:	READING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	YES	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34232 shows the voltage feedforward value (D-path) in the current controller.

ID34233 'Phase resistance'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.001
Temporarily changeable:	NO	**Unit:**	Ohm
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34233 is the strand resistance of the motor coil and works in the current controller. If no strand resistance is specified in the motor data sheet, it can be calculated from the terminal resistance R_{tt} (ID34164):

Motor coil is interconnected in the star: $R_s = 0.5 \times R_{tt}$
Motor coil is interconnected in the triangle: $R_s = 1.5 \times R_{tt}$

ID34234 'Voltage constant Ke'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V/(1000 U/min)
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

The 'Voltage constant Ke' is to be taken from the respective type plate or data sheet of the motor.

ID34235 'Increase motor voltage'

Sphere of action:	DRIVE	**Default value:**	1155
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	100.0 %
Signed:	NO	**Max. value:**	150.0 %
Format:	DEC		
List:	NO		

With ID34235, the motor voltage at the PWM output can be limited or increased from 100% - 150% so that the superimposed control has enough control reserve to ensure a stable control. If too large a value is entered in ID34235, the control behaviour will become unstable and the drive switches off with an overcurrent error.

ID34235	Meaning
100 %	The output voltage is below the DC bus voltage so as to provide enough control reserve.
115.5%	The output voltage uses the entire voltage reserve for sufficiently robust control behaviour. Peak value voltage between the phases ($\hat{U}_L$) = DC bus voltage (U_Z)
115.5 - 150%	The PWM is overridden, the output voltage is distorted, a stable control behaviour cannot be guaranteed and must be assessed on the application side. Overcurrent shutdowns may occur.

ID34238 'List IR filter'

Reserved for AMK internal use!

ID34239 'V/F integrator stop'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	%
Data length:	2 byte	**Min. value:**	0 %
Signed:	NO	**Max. value:**	100 %
Format:	DEC		
List:	NO		

The 'V/F integrator stop' works with the function U/f operation (ID32953=0x20) and specifies a variable percentage value of the maximum current converter. If the adjustable percentage value of the maximum current converter is achieved, the speed curve is limited internally in the device, which will not be shut down with an error message (2334 'System diagnostics: Output terminal overcurrent' or 2321 'System diagnostics: IGBT monitoring'). The acceleration and deceleration times are extended by the internal limiting.

ID34239 = 0 no internal limiting

ID34239 = 100 Limiting from 100% ID110 'Converter peak current'

ID34240 'AM command list'

Reserved for AMK internal use! (MCE)

ID34241 'AM status list'

Reserved for AMK internal use! (MCE)

ID34242 'AM Status'

Reserved for AMK internal use! (MCE)

ID34243 'Offset commutation'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0
Temporarily changeable:	YES	**Unit:**	Increments
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	DEC		
List:	NO		

⚠ WARNING	
	**Risk of injury from uncontrolled movements of the motor shaft** If the offset is entered incorrectly, the motor is not controllable and can carry out uncontrolled movements as soon as the controller enable is set! With 'Initial program loading' the offset is reset to the default value of 0. A previously determined commutation offset is lost. There is no remanent storage in the encoder. **Steps to prevent:** • Check the entered offset before setting the controller enable. • Takes precautionary measures to ensure that no persons are in the total possible range of movement of the motor when the controller enable is set for the first time after the input of the offset.

The ID34243 'Offset commutation' is calculated in the run-up with the commutation angle stored in the encoder.
The 'Offset commutation' is added to the actual commutation angle of the encoder.
If the motor negation bit ID32773 'Service bits' bit 16 is set, the commutation offset is subtracted from the commutation angle.
Only positive values in the range 0 - 65535 [increments] can be specified as 'Offset commutation'.
The value 65535 corresponds to a displacement by one mechanical revolution of the motor (360°).

Areas of application:
Foreign motors where the determination of the commutation angle deviates from the method by AMK.
Advantage:
With 'Offset commutation', the commutation angle of the foreign motor can be adapted to the AMK inverter, without changing the manufacturer-specific value in the encoder.
The 'Offset commutation' works for the following encoder types EnDat and Hiperface (AMK designations E, F, S, T, P, Q, U, V).

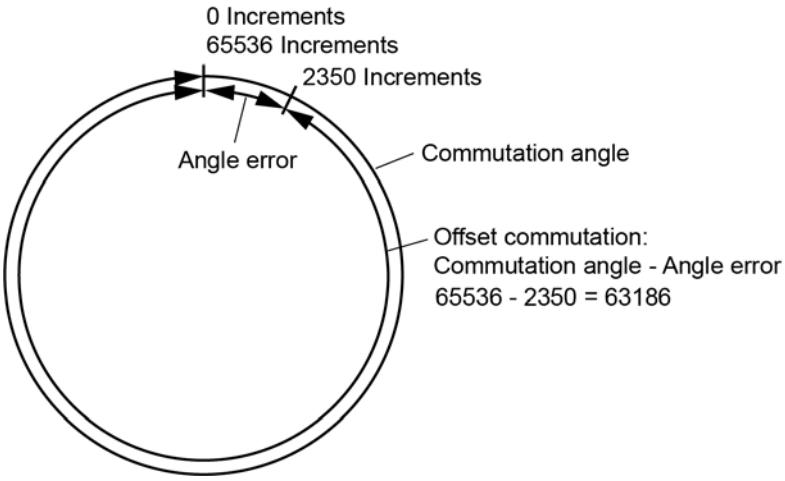
Another area of application is the 'fine tuning' of the commutation angle. An existing deviation from the optimum commutation angle can be compensated by small offset values.

Example: Calculation of the commutation angle from offset commutation and the encoder position
ID32831 'Commutation angle' from encoder position: 451 increments

Example	Parameter	Value
1	ID32773 'Service bits' Bit 16	0
	ID34243 'Offset commutation'	0 [Increments]
	ID32831 'Commutation angle'	451 [Increments]
2	ID32773 'Service bits' Bit 16	0
	ID34243 'Offset commutation'	13000 [Increments]
	ID32831 'Commutation angle'	13451 [Increments]
3	ID32773 'Service bits' Bit 16	1
	ID34243 'Offset commutation'	0 [Increments]
	ID32831 'Commutation angle'	65085 [Increments]
4	ID32773 'Service bits' Bit 16	1
	ID34243 'Offset commutation'	13000 [Increments]
	ID32831 'Commutation angle'	52085 [Increments]

Example: Compensate errors in the commutation angle

Mechanical motor revolution (360°)



The electrically-aligned synchronous motor shows e.g. a commutation angle of ID32831 = 2350 increments (angle error). To compensate this value to 0, the commutation offset is calculated as follows:

Offset commutation	= Commutation angle - Angle error
	= 65536 Increments - 2350 Increments
	= 63186 Increments

Check:

Commutation angle	= Commutation offset + Commutation error
	= 63186 Increments + 2350 Increments
	= 65536 Increments → Correspond the modulo value 0

ID34250 'SIWL source'

Sphere of action:	GLOBAL	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	63
Format:	HEX		
List:	NO		

Structure ID34250 'SIWL source'

Bit number	State Bit 0 (LSB)	Meaning
0-15	0x0000	SIWL switched off, pulse generator interface is switched as input.
	0x0010	SIWL as output active, pulse source is the motor encoder according to ID32953 'Encoder type' If an encoder is selected in ID32953, that the SIWL does not support (e.g. U/f-mode, A-encoder, B- or C-encoder), then no pulses are output from the SIWL and an error message is generated.
	0x0020	SIWL active as output, the SIWL input pulses are specified externally, e.g. from a controller by the controller writing the setpoint in ID33911 'SIWL setpoint'.

This parameter is used by the following function:

'Incremental encoder emulation (SIWL)'

ID34251 'Line counts SIWL output'

Sphere of action:	GLOBAL	**Default value:**	2
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Pulses
Data length:	4 byte	**Min. value:**	2 pulses
Signed:	NO	**Max. value:**	268435456 pulses
Format:	DEC		
List:	NO		

The encoder resolution on the SIWL output encoder is parameterized with ID34251 'Line counts SIWL output'. The SIWL output encoder generates 2 square pulses offset by 90° with homing mark and counts from 0 to ('Line counts SIWL output' -1).

Example:
'Line counts SIWL output' = 1000 pulses
Output value: = 0 - 999

The maximum permitted number of output pulses per 250 µs amounts to:

.

The direction of rotation will be valued incorrectly if exceeded.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34252 'Offset position index'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	Pulses
Data length:	4 byte	**Min. value:**	0 pulses
Signed:	NO	**Max. value:**	268435455 pulses
Format:	DEC		
List:	NO		

With the 'Offset position index', the position at which the homing mark is output is shifted by the number of the pulses in positive direction of rotation based on the '0 position SIWL output encoder'.
Permitted value range: 0 to (ID34251 'Line counts SIWL output' - 1)
ID34252 'Offset position index' starts to count beginning with 0.

Example:
'Offset position index' = 3999
The offset amounts to 4000 pulses (0 - 3999)

When subsequently ID34257 'SIWL control' Bit 4 is set (homing mark set to current position), the input value is in ID34252 'Offset position index'. The newly set position can not be read back via the parameter ID34252 'Offset position index'. ID34252 'Offset position index' continues to show the previous value.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34253 'SIWL factor'

Sphere of action:	GLOBAL	**Default value:**	1
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-32767
Signed:	YES	**Max. value:**	32767
Format:	DEC		
List:	NO		

ID34253 is the multiplier of the SIWL gear and multiplies the SIWL input signal. Negative values invert the rotational direction of the SIWL output signal.

Large numbers improve the control behavior.

Example:

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34254 'SIWL divisor'

Sphere of action:	GLOBAL	**Default value:**	1
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	1
Signed:	NO	**Max. value:**	32767
Format:	DEC		
List:	NO		

ID34254 is the divisor of the SIWL gear and divides the SIWL input signal.

Large numbers improve the control behavior.

Example:

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34255 'SIWL modulo IN'

Sphere of action:	GLOBAL	**Default value:**	1000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Pulses
Data length:	4 byte	**Min. value:**	2 pulses
Signed:	NO	**Max. value:**	2147483647 pulses
Format:	DEC		
List:	NO		

If a PLC has been selected as SIWL source , ID34255 determines the modulo value for the SIWL PLC input signal
Parameterization ID34255 'SIWL modulo IN' = Maximum PLC input setpoint +1.

The maximum number of input pulses per 250 microseconds is:

When exceeding the direction of rotation is considered wrong.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34256 'Filter observer'

Sphere of action:	GLOBAL	**Default value:**	5000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	µs
Data length:	2 byte	**Min. value:**	600 µs
Signed:	NO	**Max. value:**	20000 µs
Format:	DEC		
List:	NO		

ID34256 'Filter observer' influences the SIWL monitor. Incoming SIWL input signals are determined and acceleration, speed, and position setpoints are generated from these for the drive controller.
If incoming signals fail, the 'Filter observer' interpolates the missing signals and relies on the next, determined set position again.

The filter time can be parameterized between 0.6 ms and 20 ms. The default value is 5 ms.
With increasing filter time a slower behavior occurs on the SIWL output encoder. If the filter time is too small, the effect of the filter is raised.
For a bus cycle time of ID2 'SERCOS cycle time' = 1 ms a filter time of ID34256 'Filter observer' = 1 ms is recommended.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34257 'SIWL control'

Sphere of action:	GLOBAL	**Default value:**	0000 0000 0000 1000 (until sw-version 1.10) 0000 0000 1000 1001 (up from sw-version 1.11)
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	YES	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	31
Format:	BIN		
List:	NO		

Structure ID34257 'SIWL control'

Bit number	State	Meaning
0	0	No function
	1	SIWL is automatically initialized during device initialization (24 VDC ON) Subsequent system bootings, triggered by functions like 'system startup', 'error deleting' the SIWL will not re-initialized. In operation, the SIWL can be re-initialized with a 0 → 1 edge by the PLC on ID34257 bit 4. Thus, the temporarily changeable parameters of SIWL will re-initialized. For changed remanent SIWL parameters such ID34250 'SIWL source', ID34251 'Line counts SIWL output', the 'SIWL initialization' has no influence. To activate the changing you need a RF + edge or 24 VDC OFF / ON as specified at the parameter attribute. After the 0 → 1 edge, the bit 0 must be reset to the value 0.
1	0	Reserved
	1	Reserved
2	0	The SIWL output encoder changes depending on the SIWL input signal and the SIWL parameterization
	1	The SIWL output encoder is held in the current position, input and output signal are uncoupled
3	0	The homing mark on the SIWL output encoder is blocked and is not output
	1	The homing mark on the SIWL output encoder is enabled for the output
4	0	No function
	1	Set homing mark to current position: For a 0→1 edge by the PLC on ID34257 'SIWL control' Bit 4, the homing mark is set to the current position. When setting the ID34257 'SIWL control' Bit 4: 'Set homing mark to current position', the ID34252 'Offset position index' is overwritten internally. The new position value cannot be read back. A value input before this point in time (ID34252 'Offset position index') has no effect. By writing the ID34252 'Offset position index' again, the set homing mark is discarded and the input value with ID34252 'Offset position index' based on the pulse number 0 of the output encoder is output.
5	0	The SIWL output encoder is preinitialized with 0
	1	With absolute encoders: The SIWL output encoder is preinitialized with the input setpoint (absolute position) x gear ratio (ID34253/ID34254)
6	0	Very fast control performance, with overshoot (monitor with 3 poles)
	1	Very fast control performance, without overshoot (monitor with 2 poles)
7	0	SIWL deactivated
	1	SIWL activated
8	0	Prescaler 256 for SIWL input setpoints deactivated
	1	Prescaler 256 for SIWL input setpoints activated (Slippage effect for division with remainder)
9-15	0	Reserved
	1	Reserved

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34258 'SIWL status'

Sphere of action:	DRIVE / FORMAL	**Default value:**	0000 0000 0000 0000
Access:	READING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	0
Signed:	NO	**Max. value:**	65535
Format:	BIN		
List:	NO		

Structure ID34258 'SIWL status'

Bit number	State	Meaning
0-1	00	SIWL is not initialized
	01	SIWL is initialized
	10	SIWL is initialized, no command in ID34257 'SIWL control' active (ID34257 Bit 0 = 0)
	11	Reserved
2	0	The SIWL output signal changes depending on the SIWL input signal and the SIWL parameterization.
	1	The SIWL output encoder is held in the current position, input and output signal are uncoupled (slip = 1).
3	0	The homing mark on the SIWL output is blocked and is not output.
	1	The homing mark on the SIWL output encoder is enabled for the output.
4	0	The position of the homing mark according to ID34252 'Offset position index' is valid.
	1	The homing mark of the SIWL output signal was set to the current position.
5	0	The SIWL output encoder was preinitialized with 0
	1	SIWL output encoder was preinitialized with the input setpoint (absolute value) x gear ratio (ID34253/ID34254)
6	0	Monitor with 3 poles active
	1	Monitor with 2 poles active
7	0	SIWL deactivated
	1	SIWL activated
8	0	Prescaler SIWL 256 deactivated
	1	Prescaler SIWL 256 activated
9-15	0	Reserved
	1	Reserved

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34259 'Maximum scanning frequency'

Sphere of action:	GLOBAL	**Default value:**	2000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	kHz
Data length:	2 byte	**Min. value:**	1 kHz
Signed:	NO	**Max. value:**	2000 kHz
Format:	DEC		
List:	NO		

ID34259 limits the maximum SIWL output frequency. If the SIWL generates more pulses at the output than ID34259 permits, the pulses are stored temporarily and issued as soon as the SIWL output frequency is below the 'Maximum scanning frequency' limit. No pulses are lost.

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34260 'Line counts SIWL input'

Sphere of action:	GLOBAL / FORMAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Pulses
Data length:	4 byte	**Min. value:**	0 pulses
Signed:	NO	**Max. value:**	268435456 pulses
Format:	DEC		
List:	NO		

ID34260 'Line counts SIWL input' shows the encoder line number (pulses) on the SIWL input per motor revolution.

Requirement:

- ID34250 'SIWL source' = 0x10 (motor encoder according to ID32953 'Encoder type')
- ID34257 'SIWL control' Bit 0 = 1 (initialize SIWL)
- ID34257 'SIWL control' Bit 7 = 1 (activate SIWL)
- 24 VDC OFF/ON

Relation between encoder type and encoder line number per motor revolution

Encoder type	Encoder line number per motor revolution
Resolver	128
I-encoder	ID32776 'Sine encoder period'
E-, F-, S-, T-encoder	ID32776 'Sine encoder period' **x 2048**[1)]
P-, Q-encoder	Encoder-specific
U-, V-encoder	ID32776 'Sine encoder period' **x 2048**[1)]

1) 2048 corresponds to the highest internal resolution

This parameter is used by the following function:
'Incremental encoder emulation (SIWL)'

ID34261 'Customer variable 2'

Sphere of action:	DRIVE	**Default value:**	0000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

This variable is available as a free memory location and can be used per parameter set in an application-specific manner.

ID34262 'Motor encoder database image'

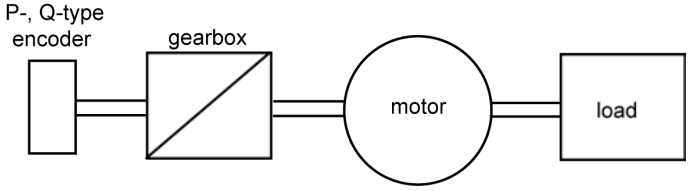
Reserved for AMK internal use!

ID34265 'Encoder ratio'

Sphere of action:	DRIVE	**Default value:**	101
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	101
Signed:	NO	**Max. value:**	6401
Format:	DEC		
List:	NO		

The 'Encoder ratio' works with P and Q-encoders where an encoder gear ratio must be taken into consideration (e.g. for encoder gears or encoder belts). The value in ID34265 influences the commutation, the position and speed factors.

Arrangement



The following ratios of 'motor revolutions' to 'encoder revolutions' are allowed:

Encoder ratios Motor revolutions: Encoder revolutions	Parameterisation
1:1	0101
2:1	0201
4:1	0401
8:1	0801
16:1	1601
32:1	3201
64:1	6401
1:2*)	0102
1:4*)	0104
1:8*)	0108
1:16*)	0116
1:32*)	0132
1:64*)	0164

*) Conversions are only possible for multi-turn absolute encoders (Q encoder)

ID34266 'Voltage reserve'

Sphere of action:	DRIVE	**Default value:**	30
Access:	READING / WRITING	**Scale:**	0,1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	0.0 V
Signed:	NO	**Max. value:**	100.0 V
Format:	DEC		
List:	NO		

ID34266 works for asynchronous motors with voltage regulation (ID32953 motor model with nibble 1 = 0x6) and for field weakening synchronous motors (nibble 1 = 0x3). The voltage reserve determines from which motor voltage the field weakening begins. The field weakening begins if the motor voltage is greater than the maximum inverter output voltage minus the voltage reserve.

ID34273 'Osci 1'

Reserved for AMK internal use!

ID34274 'Osci 2'

Reserved for AMK internal use!

ID34275 'Osci 3'

Reserved for AMK internal use!

ID34276 'Osci 4'

Reserved for AMK internal use!

ID34277 'Osci 5'

Reserved for AMK internal use!

ID34278 'Osci 6'

Reserved for AMK internal use!

ID34279 'Osci 7'

Reserved for AMK internal use!

ID34280 'Osci 8'

Reserved for AMK internal use!

ID34281 'Current setpoint ISQ'

Reserved for AMK internal use!

ID34282 'Current setpoint ISD'

Reserved for AMK internal use!

ID34283 'Commutation angle'

Reserved for AMK internal use!

ID34284 'OSC container length'

Sphere of action:	GLOBAL	**Default value:**	4096
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	Byte
Data length:	4 byte	**Min. value:**	4096 byte
Signed:	NO	**Max. value:**	32600 byte
Format:	DEC		
List:	NO		

The 'OSC container length' defines the available memory for the oscilloscope function in AIPEX PRO.

ID34285 'Motion data list'

Reserved for AMK internal use!

ID34286 'Time stop drive cmd'

Sphere of action:	DRIVE	**Default value:**	100
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0 ms
Signed:	NO	**Max. value:**	10000 ms
Format:	DEC		
List:	NO		

* The list length is the number of usage data elements without 4 byte head elements.

The 'Time stop drive cmd' is effective with the command ID149 'Cmd position stop'.

Siehe ID149 'Cmd position stop' auf Seite 93.

ID34297 'Encoder type 2'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

With the parameter 'Encoder type 2', a second encoder can be configured as a actual position value encoder or as a actual speed value encoder. If the second encoder is configured as an actual position value in ID34297, evaluation does not take place in ID32800 bit 14/15. The following applies:

ID51 'Position feedback value': resolution according to ID116, no drive ratio ID121/ID122 effective

ID53 'Position feedback value 2': resolution according to ID117, drive ratio ID121/ID122 effective

in preparation:

If the second encoder is configured as an actual speed value in ID34297, the actual speed value of the second encoder is shown in ID156 'Velocity feedback value 2'. The actual speed value filter is the same for ID40 'Velocity feedback value' and ID156 'Velocity feedback value 2' (ID392 'Velocity feedback filter').

Configuration ID34297 'Encoder type 2'

Bit no.	Condition	Meaning
0-3 (Nibble 0)	0x0	switched off
4-7 (Nibble 1)	0x0	switched off
8-11 **in preparation:** **Speed encoder** (Nibble 2)	0x0	like motor encoder
	0x1	Reserved
	0x2	T, V encoder
	0x3	Reserved
	0x4	Reserved
	0x5	Pulse encoder
	0x6	Reserved
	0x7	S or U encoder
	0x8	Resolver
	0x9	Square-wave pulse encoder
	0xA	E or F encoder
	0xB	Reserved
	0xC	P or Q encoder
	0xD - 0xF	Reserved
12-15 **Position encoder** (Nibble 3)	0x0	switched off
	0x1	Reserved
	0x2	T or V encoder
	0x3	Reserved
	0x4	Reserved
	0x5	Reserved
	0x6	Reserved
	0x7	S or U encoder*
	0x8	Resolver*
	0x9	Reserved
	0xA	E* or F encoder
	0xB	Reserved
	0xC	P* or Q encoder
	0xD - 0xF	Reserved

*) The actual position value of the single-turn absolute encoder is only unique within a motor revolution.

ID34298 'Torque feedback filter'

Sphere of action:	DRIVE	**Default value:**	0
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	ms
Data length:	2 byte	**Min. value:**	0 ms
Signed:	NO	**Max. value:**	32767 ms
Format:	DEC		
List:	NO		

The 'Torque feedback filter' filters the value that is issued in ID84 'Torque feedback value'.

ID34299 'Velocity setpoint in control'

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID34300 'Velocity actual value in control'

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID34301 'Torque setpoint filter input'

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID34302 'Torque setpoint filter output'

Siehe ID32800 'AMK main operating mode' auf Seite 141.

ID34303 'DC-bus monitor upper limit'

Sphere of action:	GLOBAL	**Default value:**	0
Access:	READING / WRITING	**Scale:**	0.1
Temporarily changeable:	NO	**Unit:**	V
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	DEC		
List:	NO		

ID34303 defines the upper limit of permissible voltage for the DC bus. If this value is exceeded, warning 1059 'DC bus overvoltage' is output.

The following applies:

ID34303 = 0 (The DC-bus monitor upper limit is deactivate by factory-set.)

ID34303 ≠ 0 (The entered value is the upper limit of the voltage [0.1 V] for which the DC bus voltage is monitored.)

ID34304 'Communication input word'

Sphere of action:	Device-specific values	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Sphere of action:	GLOBAL / FORMAL

Meaning for KW-R06 /

ID34304 is the image of the input word 0 in the asynchronous communication address range (wIn0).

Additional input words in the synchronous communication address range (wIn1, wIn2, wIn3,...) are mapped in the formal parameters ID34305... Data in the asynchronous address range is not transmitted to the device cycle (PGT) in a synchronised manner.

Communication address range allocation

Communication address range	asynchronous		synchronous[1)]	
Variable	**Input**	**Output**	**Input**	**Output**
WORD Name	wIn0 ... wIn127	wOut0 ... wOut127	wSyncIn0 ... wSyncIn127	wSyncOut0 ... wSyncOut127
WORD ID no.	ID34304 ... ID34431	ID34816 ... ID34943	ID34560 ... ID34687	ID35072 ... ID35199
DOUBLEWORD Name	dwIn0 ... dwIn63	dwOut0 ...dwOut63	dwSyncIn0 ... dwSyncIn63	dwSyncOut0 ... dwSyncOut63
DOUBLEWORD ID no.	ID35328 ... ID35391	ID35584 ... ID35647	ID35456 ... ID35519	ID35712 ... ID35775

1) Not supported

ID34816 'Communication output word'

Sphere of action:	Device-specific values	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	2 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Sphere of action:	GLOBAL / FORMAL

ID34816 is the image of the output word 0 in the asynchronous communication address range (wOut).

Additional output words in the synchronous communication address range (wOut1, wOut2, wOut3,...) are mapped in the formal parameters ID34817... Data in the asynchronous address range is not transmitted to the device cycle (PGT) in a synchronised manner.

Siehe ID34304 'Communication input word' auf Seite 266.

ID35328 'Communication input double word'

Sphere of action:	Device-specific values	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Sphere of action:	GLOBAL / FORMAL

ID35328 is the image of the input double word 0 in the asynchronous communication address range (dwIn0).

Additional input double words in the synchronous communication address range (dwIn1, dwIn2, dwIn3,...) are mapped in the formal parameters ID34329... Data in the asynchronous address range is not transmitted to the device cycle (PGT) in a synchronised manner.

Siehe ID34304 'Communication input word' auf Seite 266.

ID35584 'Communication output double word'

Sphere of action:	Device-specific values	**Default value:**	00000000
Access:	READING / WRITING	**Scale:**	1
Temporarily changeable:	NO	**Unit:**	-
Data length:	4 byte	**Min. value:**	-
Signed:	NO	**Max. value:**	-
Format:	HEX		
List:	NO		

Values for KW-R06 /

Sphere of action:	GLOBAL / FORMAL

ID35584 is the image of the output double word 0 in the asynchronous communication address range (dwOut0).

Additional output double words in the synchronous communication address range (dwOut1, dwOut2, dwOut3, ...) are mapped in the formal parameters ID35585... Data in the asynchronous address range is not transmitted to the device cycle (PGT) in a synchronised manner.

Siehe ID34304 'Communication input word' auf Seite 266.

4 Appendix

4.1 Codes for the configuration of the binary outputs

Codes for the configuration of the binary outputs

Code	Designation	Description
0	Function inactive	No function assigned to the binary output
310	Warning: Motor overload	Maximum load integral i^2t of the motor according to ID114 'Overload limit motor'
330	$n_{actual} = n_{target}$	$\lvert n_{target} - n_{actual} \rvert <$ ID157 'Velocity window'
331	$n_{actual} < n_{min}$	$\lvert n_{actual} \rvert <$ ID124 'Zero velocity window'
332	$n_{actual} < n_x$	$\lvert n_{target} - n_{actual} \rvert <$ ID125 'Velocity threshold'
333	$M_d \geq M_{dx}$	$M_{actual} \geq$ ID126 'Torque threshold'
334	$M_{Target} \geq M_{Limit}$	$M_{Target} \geq$ ID82 'Positive torque limit' or $M_{Target} \leq$ ID83 'Negative torque limit'
335	$n_{Target} \geq n_{Limit}$	$n_{Target} \geq$ ID38 'Positive velocity limit' or $n_{Target} \leq$ ID39 'Negative velocity limit'
336	In Position	$\lvert x_{targetl} - x_{actual} \rvert <$ ID57 'In position window'
337	$P \geq P_x$	$P_{actual} \geq$ ID158 'Power threshold'
400	Cam	Cam, cam signal, homing switch
403	Homing point known	Homing point is valid
409	Measured value 1 positive edge detected (MT1)	Actual position value is stored in ID130 'Probe value 1 positive edge'
410	Measured value 1 negative edge detected (MT1)	Actual position value is stored in ID131 'Probe value 1 negative edge'
411	Measured value 2 positive edge detected (MT2)	Actual position value is stored in ID132 'Probe value 2 positive edge'
412	Measured value 2 negative edge detected (MT2)	Actual position value is stored in ID133 'Probe value 2 negative edge'
33013	$X_{actual} \leq$ -Soft end position limit switch	ID50 'Negative position limit' reached
33014	Position synchronization	|position control difference| ≤ ID32952 'At synchronous speed window'
33015	$X_{actual} \geq$ +Soft end position limit switch	ID49 'Positive position limit' reached
33016	Warning: Converter overcurrent	Maximum load integral i^2t of the converter according to ID32999 'Overload limit inverter', diagnostic message 2357 'Device overload warning'
33017	Warning: excess converter temperature	Temperature of the device rear wall or value according to the temperature model is too high, diagnostic message 2350 'Device temperature warning'
33018	Warning: excess motor temperature	Value at the sensor input X12 or according to ID34166 'Temperature sensor motor' is too high, diagnostic message 2359 'Motor overload warning'
33021	Warning: excess air temperature	Diagnosis 1073 'Cooling Air Temperature Warning'
33022	Warning: excess temperature of external components	Power supply KE(N,S): Brake resistor
33029	System ready message (SBM)	System ready message
33030	Acknowledgement DC bus ON (QUE)	Acknowledgement DC bus charged
33031	Acknowledgement controller enable (QRF)	Acknowledgement that the drive is operating in control loop
33032	Controller enable (RF) set	Control input of controller enable set
33034	Commanding (KMD) active	Drive function is active
33035	Interpolator (IPO) active	Internal interpolator is active
33036	Homing point known	Homing point is valid

Code	Designation	Description
33040	Input bit 0 active	Acknowledgement of binary input E1 according to ID32874 'Port 1 Bit 0'
33041	Input bit 1 active	Acknowledgement of binary input E2 according to ID32875 'Port 1 Bit 1'
33042	Input bit 2 active	Acknowledgement of binary input E3 according to ID32876 'Port 1 Bit 2'
33043	Input bit 3 active	Acknowledgement of binary input E4 according to ID32877 'Port 1 Bit 3'
33044	Input bit 4 active	Acknowledgement of binary input E5 according to ID32878 'Port 1 Bit 4'
33045	Input bit 5 active	Acknowledgement of binary input E6 according to ID32879 'Port 1 Bit 5'
33046	Input bit 6 active	Acknowledgement of binary input E7 according to ID32880 'Port 1 Bit 6'
33047	Input bit 7 active	Acknowledgement of binary input E8 according to ID32881 'Port 1 Bit 7'
33048	Residual distance deleted	| dx | > ID32922 'Residual distance erase window'
33052	Control of the motor holding brake	Controlling motor holding brake BA3 = 0: Motor holding brake is closed by the drive BA3 = 1: Motor holding brake is opened by the drive This parameter is used by the following function: 'Controlling motor holding brake'
33058	Parameter set 0 active	Valid from QRF message
33059	Parameter set 1 active	Valid from QRF message
33060	Parameter set 2 active	Valid from QRF message
33061	Parameter set 3 active	Valid from QRF message
33062	Main operating mode active	ID32800 'AMK main operating mode' is active
33063	Secondary operating mode 1 active	ID32801 'AMK secondary operating mode 1' is active
33064	Secondary operating mode 2 active	ID32802 'AMK secondary operating mode 2' is active
33065	Secondary operating mode 3 active	ID32803 'AMK secondary operating mode 3' is active
33066	Secondary operating mode 4 active	ID32804 'AMK secondary operating mode 4' is active
33067	Secondary operating mode 5 active	ID32805 'AMK secondary operating mode 5' is active
33068	AMK secondary operating mode 6 active	ID32806 'AMK secondary operating mode 6' is active
33069	AMK secondary operating mode 7 active	ID32807 'AMK digital torque control' is active
33070	AMK secondary operating mode 8 active	ID32808 'AMK position control' is active
33071	AMK secondary operating mode 9 active	ID32809 'AMK digital speed control' is active
33074	Collective warning active	Collective warning (all warning messages OR linked) The warning bit is generated for each warning and remains active until the error is deleted by the user.
33076	Second cycle output	The output changes cyclically between 1 second ON and 1 second OFF
33079	Output 24 V DC	Configurate the binary output as voltage supply (note the max. current load of the devices!)
33131	Stop acknowledgement for positive setpoint processing	Positive setpoint settings in position or speed control are not carried out
33132	Stop acknowledgement for negative setpoint processing	Negative setpoint settings in position or speed control are not carried out
33133	Power output stage enable control signal (EF AND EF2)	The input signal EF AND EF2 is mirrored at the binary output, which, for example, can be read by a PLC.
33135	Power output stage enable control signal (EF2)	The input signal EF2 is mirrored at the binary output, which, for example, can be read by a PLC.

Code	Designation	Description
33136	Power output stage enable control signal (EF or STO)	The input signal EF or STO is mirrored at the binary output, which, for example, can be read by a PLC.
33142	Acknowledgment software commutation	The function software commutation for synchronous motors with I- or square-wave encoders has been successfully executed, the motor is commutated. If an encoder error, the bit is cleared. The software commutation runs automatically after a 0 → 1 edge of the signal controller enable (RF).
33921	PWM inactive	Display status if the power output stage is energized or free of current = 0 PWM is active, pulses are enabled, power output stage is energized = 1 PWM is inactive, pulses are disabled, power output stage is free of current
33922	Encoder signal invalid	Display status if the encoder signal is valid or an encoder failure occurs = 0 Encoder signal valid = 1 Encoder signal is invalid, encoder failure
33923	Deceleration ramp after RF inactive	Display status if deceleration after internal switch off RF is active = 0 normal operation = 1 Deceleration active, according to ID32782 'Deceleration ramp RF inactive'
33924	Dynamic braking (Regenerative braking if encoder failure)	Display status if the function 'Dynamic braking' is active: = 0 normal operation = 1 Dynamic braking is active Siehe 'ID32773 'Service bits" auf Seite 131.
33930	Input bit 0 port 3 3)	The status of the input bits at the device can be assigned to a binary output
33931	Input bit 1 port 3 3)	
33932	Input bit 2 port 3 3)	
33933	Input bit 3 port 3 3)	
33934	Input bit 4 port 3 3)	
33935	Input bit 5 port 3 3)	
33936	Input bit 6 port 3 3)	
33937	Input bit 7 port 3 3)	
33942	Access via plc	The output can be written by a plc controller

3) Available depending on the hardware

Siehe ID398 'List status bits' auf Seite 122.

4.2 Codes for the configuration of the binary inputs

Codes for the configuration of the binary inputs

Code	Designation	Description
0	Function inactive	No function assigned to the binary input
400	Homing switch (cam)	For cam see 32905
401	Touch probe (MT1)	Measurement signal 1 for touch probe function only at BE3 (ID32980 'Port 3 Bit 2')
402	Touch probe (MT2)	Measurement signal 2 for touch probe function only at BE2 (ID32979 'Port 3 Bit 1')
32903	DC bus ON (UE)	Charge DC bus
32904	Controller enable (RF)	Activate control
32905	Homing switch (cam)	Cam signal, e.g. for the homing cycle

Code	Designation	Description
32912	Reset "homing point known"	Clear "homing point known"
32913	Clear error (FL)	Existing errors in the drive are reset
33700	Activate main operating mode	Change operating mode to the main operating mode (ID32800'AMK main operating mode')
33701	Activate secondary operating mode 1	Change operating mode to the auxiliary operating mode 1 (ID32801 'AMK secondary operating mode 1')
33702	Activate secondary operating mode 2	Change operating mode to the auxiliary operating mode 2 (ID32802 'AMK secondary operating mode 2')
33703	Activate secondary operating mode 3	Change operating mode to the auxiliary operating mode 3 (ID32803 'AMK secondary operating mode 3')
33704	Activate secondary operating mode 4	Change operating mode to the auxiliary operating mode 4 (ID32804 'AMK secondary operating mode 4')
33705	Activate secondary operating mode 5	Change operating mode to the auxiliary operating mode 5 (ID32805 'AMK secondary operating mode 5')
33708	Stop / cancel CMD	The drive changes to the operating mode of digital speed control with the setpoint 0 regardless of the current operating mode
33709	Dig. Speed control N = 0 U/min	CMD digital speed control Speed setpoint N-setpoint= 0, ramp active
33710	Dig. Speed control N = ID36	CMD digital speed control Speed setpoint N-setpoint ID36, ramp active
33711	Homing cycle	CMD homing cycle for homing point (Xi=0)
33721	Dig. Torque control M = 0 %Nm	CMD digital torque control Torque setpoint M-setpoint = 0
33722	Dig. Torque control M = ID80	CMD digital torque control Torque setpoint M-setpoint = ID80
33730	System booting	Complete parameter calculation for inactive controller enable. The recalculation otherwise takes place only after the mains is on, error cleared and RF is activated after changing the parameter.
33735	Control of the motor holding brake	Manual control of the motor holding brake via digital input 0 → 1 edge: Open motor holding brake 1 → 0 edge: Close motor holding brake This parameter is used by the following function: 'Controlling motor holding brake'
33906	Acknowledgement signal of the motor holding brake (QBR)	Acknowledgement motor holding brake (QBR) QBR = 1: Motor holding brake closed QBR = 0: motor holding brake opened (QBR is supplied by the motor holding brake) This parameter is used by the following function: 'Controlling motor holding brake'
33909	Stop positive setpoint processing	If the configured binary input falls to zero volts (low active), the setpoint block takes place in the position or speed control within 2 ms. If the input is set, the setpoint enable takes place within 2 ms.
33910	Stop negative setpoint processing	If the configured binary input falls to zero volts (low active), the setpoint block takes place in the position or speed control within 2 ms. If the input is set, the setpoint enable takes place within 2 ms.

Code	Designation	Description
33940	Hardware limit switch positive direction	The drive is braking according ID32782 'Deceleration ramp RF inactive' until standstill and switch off the controller enable signal, if a signal is active on this input. The controller enable signal must be set again, that the drive can be moved off the hardware limit switch in opposite direction. The hardware limit switch function is not active if the function homing cycle with hardware limit switch evaluation (ID147 bit 9) is active! Siehe 'ID147 'Homing parameter'' auf Seite 91. Siehe ID478 'Hardware limit switch status' ab Seite 126 Siehe 'ID532 'Hardware limit switch configuration'' auf Seite 127.
33941	Hardware limit switch negative direction	

Glossary

A

A1
Analog input 1

ACC
AMK CAN Communication (CAN bus interface with standard CANopen protocol DS301 and additional hardware synchronization signal)

AIPEX
AMK startup and parameterizing software (PC software): Programming, parameterization, configuration, diagnosis, oscilloscope, status information

ASCII
American Standard Code for Information Interchange

AT
Drive telegram from slave to master

A-encoder
Inductive magnetoresistor sensor with sine and cosine track and homing signal (zero pulse)

B

BIN
Binary (digital)

C

CMD
Commanding

COB-ID
Communication Object Identifier (Address of a telegram in CANopen protocol)

D

DI
Digital input

DZR
Speed control

DRIVE
Drive-specific parameter (Value is valid inside only one parameter set)

DEZ
Decimal

DO
Digital output

DC bus on
Converter on

DC
Distributed Clock (EtherCAT)

Default
Factory setting

E

EnDat 2.2
Motor encoder interface protocol of the company Heidenhain

EnDat 2.1
Motor encoder interface protocol of the company Heidenhain

EtherCAT
Real-time Ethernet bus

EF2
Power output stage enable

EF
Power output stage enable

E-encoder
Absolute encoder, singleturn, EnDAT 2.1 with additional sine and cosine track

F

F-encoder
Absolute encoder, multiturn, EnDAT 2.1 with additional sine and cosine track

FIPO
Fine interpolator

Firmware
System software, loaded by AMK

FL
Command (Causes a new system run-up)

FORMAL
Formal parameter

Formal parameter
Formal parameters don't have remanent values in parameter handling

FTP
File transfer protocol

G

GLOBAL
Global parameter; valid for all parameter sets

H

Homing switch
Cam

HEX
Hexadecimal, 0x...

H-encoder
Encoder with Hall sensors (Contains one sine and cosine track per rotation or per pair of poles on linear measuring systems)

Homing point
Zero position after homing cycle

I

i²t
Integral of the squared current over time

ID
Parameter identification numbers acc. to SERCOS Standard

I-encoder
Incremental encoder, optical encoder with sine and cosine track and zero pulse

IGBT
Power electronic component, e. g. transistor

Instance
Parameters, depending on the fieldbus, are instanced. For each bus, different values can be parameterized (bus depending participant address, transmission rate etc.). Field bus interfaces and slots where field bus option cards can be installed are allocated to instances (see product documentation)

IPO
Interpolator

K

KTY
Type of a temperature sensor

KW-Rxx
AMKASYN controller card for installation into compact inverter

Kv
Position loop factor

KP
Proportional gain (speed control, PID controller)

KW
AMKASYN compact inverter

KE
AMKASYN compact power supply with recovery

L

LR
Position control

LSB
Least Significant Bit

M

MST
Master synchronization telegram

MSB
Most Significant Bit

MPU
Measuring steps of the encoder per revolution (digital value for P- and Q-encoders)

M(N)
Nominal torque

Modulo
Modulo processing of position setpoint and actual values

Movement direction
With a positive setpoint value, a rightward movement when looking at the motor shaft (on the A-bearing side) results for rotary motors

Max. No. list element
Maximum number of list elements of a list parameter without header elements

MDT
Master Data Telegram from master to slave

N

NK
Cam switch

NMT
Network management (CANopen)

NIP
Zero pulse of encoder

O

Open loop
Open controller loop, no measurement return by encoder system

Operational
In state operational, data are transferred cyclically via fieldbus

OSC
Oscilloscope

P

PDK_xxxxxx_abcdefgh
Product documentation; xxxxxx - AMK part no. , abcdefgh - name

P-encoder
Absolute encoder singleturn, EnDAT 2.2 light

PGT
Periphery basic clock Fetch cycle in the basic device to which the drive controller is synchronized (The cycle time is according to ID2)

Pre-operational
In pre-operational state, the controller can access the bus participants via the service channel. No cyclic data is exchanged.

PTC
PTC resistor

PWM
Pulse width modulation

Parameter
Identification number acc. to SERCOS standard

Q

QUE
Acknowledgment DC bus on; shows that DC bus is loaded

Q-encoder
Absolute encoder multiturn, EnDAT 2.2 light

QBR
Acknowledgment motor holding brake

QRF
Acknowledgment controller enable; the drive is controlled in the activated operation mode

R

Rated speed
Nominal speed

R-encoder
Absolute angle encoder singleturn (1 sine and cosine track per rotation)

Resolver
Absolute angle encoder singleturn (1 sine and cosine track per rotation)

RF
Command 'Controller enable'; the drive is energized and will be controlled depending on the selected operation mode. Controller enable can only be set if the device is error-free (SBM = TRUE) and acknowledgement DC bus on is set (QUE = TRUE).Acknowledgement controller enable (QRF) is set.

S

SWK
Software commutation

SWC
Software commutation

STO
Safe torque off (Safety function acc. to DIN EN 61800-5-2)

SoE
Servodrive Profile (SERCOS) over EtherCAT (Acc. to IEC 61800-7-300)

SV
Synchronous ratio

SIWL
Software pulse transmission

SL
Sensorless (Operation without encoder return)

SBM
System ready message; shows that the device is error-free In case of error. SBM will be reset

SAK
Following distance error compensation

S-encoder
Absolute encoder, singleturn, RS485 Hiperface with sine and cosine track

SERCOS
Standardized digital interface for communication between controller and field bus participants.

SEEP
Device-internal memory, serial EEPROM

T

Td
Differentiating time in speed control (PID controller)

T-encoder
Absolute encoder, multiturn, RS485 Hiperface with sine and cosine track

Tn
Integral-action time in speed control (PID controller)

TZK
Dead-time compensation

TR
Rotor time constant

U

U/f
Voltage / frequency control (open loop)

V/f
Voltage / frequency control (open loop)

U-encoder
Absolute encoder, singleturn, RS485 Hiperface with sine and cosine track

UE
Command 'DC bus on' control signal to load the DC bus e.g. in KE. DC bus on can only be set if the device is error-free (SBM = TRUE). After the DC bus is loaded, the acknowledgement message QUE is set.

V

V-encoder
Absolute encoder, multiturn, RS485 Hiperface with sine and cosine track

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With our documentation we want to offer you the highest quality support in handling the AMKmotion products.
That is why we are now working on optimizing our documentation.
Your comments or suggestions are always of interest to us.
We would be grateful if you take a bit of time and answer our questions. Please return a copy of this page to us.

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Thank you for your assistance.
Your AMKmotion documentation team

1. How would you rate the layout of our AMKmotion documentation?

   (1) very good (2) good (3) satisfactory (4) less than satisfactory (5) poor

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3. How easy is it to understand the documentation?

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