



AMKASYN

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KW-R24

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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

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1 For your safety

1.1 Presenting safety messages

Any safety information is configured as follows:

⚠ SIGNAL WORD	
 Symbol	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: • 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'
ID32904	'Controller enable'
ID32913	'Clear error'
ID32942	'Service control'
ID33170	'IPO mode'
ID33730	'System booting'
ID33732	'System reset'

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'
ID32827	'Magnetising current feedback'
ID32834	'Torque current feedback'
ID32920	'Overload time motor'
ID32935	'Voltage standstill'
ID32953	'Encoder type'
ID33102	'Display overload motor'
ID33149	'Saturation current'
ID33150	'Brake torque'
ID33151	'Maximal angular deviation of encoder-sensorless'
ID33176	'Process data 1'
ID33177	'Process data 2'
ID33178	'Process data 3'
ID33179	'Process data 4'

Parameter-ID	Name
ID33180	'Performance index sensorless'
ID33181	'Actual current Ia'
ID33182	'Actual current Ib'
ID33183	'Voltage Ua'
ID33184	'Voltage Ub'
ID33185	'Magnetizing current feedback '
ID33186	'Torque current feedback'
ID33310	'Thermal resistance winding stator Rws'
ID33311	'Thermal resistance stator-rotor Rsr'
ID33312	'Thermal resistance stator environment Rsamb'
ID33313	'Thermal resistance rotor environment Rramb'
ID33314	'Thermal capacity winding Cw'
ID33315	'Thermal capacity stator Cs'
ID33316	'Thermal capacity rotor Cr'
ID33317	'Electrical winding resistance at 20°C Rel20'
ID33318	'Ambient temperature Tamb'
ID33319	'Magnetic flux density proportional factor Kp'
ID33320	'Hysteresis proportional factor Kh'
ID33321	'Eddy current proportional factor Kc'
ID33322	'Thermal model reserve 1'
ID33323	'Thermal model reserve 2'
ID33324	'Thermal model reserve 3'
ID33325	'Thermal model reserve 4'
ID33326	'Thermal model reserve 5'
ID33327	'Thermal model reserve 6'
ID33328	'Thermal model reserve 7'
ID33329	'Thermal model reserve 8'
ID34045	'Inductance path D'
ID34046	'Inductance path Q'
ID34050	'Current path Q integral-action time TN'
ID34052	'Current path D integral-action time TN'
ID34069	'Starting current'
ID34096	'Standstill current motor'
ID34118	'Brake mode'
ID34119	'Torque constant Kt adaption'
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'
ID34177	'Lower threshold current adaption'
ID34178	'Upper threshold current adaption'
ID34179	'Gradient path Q proportional gain'
ID34180	'Gradient path Q integral-action time'
ID34184	'Compensation dead time PWM'
ID34185	'Resistance rotor'
ID34186	'Inductance stator'
ID34187	'Inductance rotor'

Parameter-ID	Name
ID34188	'Main inductance'
ID34189	'Bit list sensorless'
ID34190	'Bit list parameter finding'
ID34191	'Velocity acquisition proportional gain'
ID34192	'Velocity acquisition integral-action time'
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'
ID34244	'Electrical field angle'
ID34246	'ZR-current T1-d'
ID34247	'ZR-current T2-d'
ID34248	'ZR-current T1-q'
ID34249	'ZR-current T2-q'

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 $\geq$ threshold'
ID334	'Message torque: actual value $\geq$ limit'
ID32835	'Torque command value internal'
ID32915	'Sum of additive torques'
ID32916	'Cyclic filter'
ID32986	'Derating factor'
ID32987	'Threshold derating'

Parameter-ID	Name
ID32989	'Torque filter time'
ID33113	'Torque setpoint at controller'
ID33196	'Display friction torque'
ID33197	'Display friction torque linear'
ID33198	'Display holding torque'
ID33199	'Display of moment of inertia'
ID33330	'Friction torque motor'
ID33331	'Friction torque load'
ID33332	'Friction torque linear motor'
ID33333	'Friction torque linear load'
ID33334	'Inertia motor'
ID33335	'Inertia load'
ID33336	'Threshold variable torque limit'
ID34221	'Friction torque'
ID34222	'Friction torque linear'
ID34223	'Holding torque'
ID34224	'Inertia'
ID34225	'Mode feed forward control'
ID34226	'List load model'
ID34264	'Maximum torque'
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'
ID124	'Zero velocity window'
ID125	'Velocity threshold'
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'

Parameter-ID	Name
ID332	'Message speed: actual value < threshold'
ID335	'Message speed: setpoint > limit'
ID392	'Velocity feedback filter'
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'
ID33190	'Velocity feedforward factor'
ID33191	'Velocity feedforward delay 1'
ID34183	'Velocity threshold SL'
ID34228	'Angle feed forward SL'
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
ID32894	'Position command value filter'

Positioning parameters

Parameter-ID	Name
ID51	'Position feedback value'
ID32926	'AMK homing cycle parameter'
ID33192	'Delay target position value'

Binary inputs assignment

Parameter-ID	Name
ID32977	'Address input port 3'
ID32978	'Port 3 Bit 0'
ID32979	'Port 3 Bit 1'
ID32980	'Port 3 Bit 2'
ID33175	'List glitch filter time'
ID34100	'Binary input word'
ID34304	'Communication input word'
ID34816	'Communication output word'

Binary outputs assignment

Parameter-ID	Name
ID32864	'Address output port 3'
ID32865	'Port 3 Bit 0'
ID32866	'Port 3 Bit 1'
ID32867	'Port 3 Bit 2'
ID33308	'Output mask'
ID34120	'Binary output word'
ID34202	'Bit mask port 3'
ID35328	'Communication input double word'
ID35584	'Communication output double word'

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 $\geq$ 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'
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'
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'
ID34091	'User list 3'
ID34117	'OSC configuration 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'
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'

Parameter-ID	Name
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'
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'
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'
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]'
ID144	'Status word'
ID192	'List backup data'
ID269	'ID memory mode'
ID270	'Temporary parameter list'
ID326	'Parameter checksum'
ID390	'Diagnostic number'
ID398	'List status bits'
ID32773	'Service bits'
ID32840	'Diagnostic list'
ID32917	'Time zone'
ID32924	'Operation mode change parameter'

Parameter-ID	Name
ID32938	'Customer variable 1'
ID32943	'Warning time'
ID32944	'SYADR'
ID32945	'List parameter set'
ID32946	'Drive DB file'
ID32988	'Delay software reset'
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'
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'
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'
ID34227	'Motion control bits'
ID34261	'Customer variable 2'
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'
ID45	'Velocity scaling factor'
ID46	'Velocity scaling exponent'
ID76	'Position scaling data'
ID77	'Translative position scaling factor'
ID78	'Translative position scaling exponent'

Parameter-ID	Name
ID79	'Rotation - position resolution'
ID86	'Torque scaling data'
ID93	'Torque scaling factor'
ID94	'Torque scaling exponent'
ID160	'Acceleration scaling data'
ID161	'Acceleration scaling factor'
ID162	'Acceleration scaling exponent'
ID34073	'Scaling parameters'

Communication parameters

Parameter-ID	Name
ID1019	'MAC address'
ID1020	'IP address'
ID1021	'Subnet mask'
ID1022	'Gateway address'
ID34023	'BUS address participant'
ID34025	'BUS mode'
ID34026	'BUS mode attribute'
ID34027	'BUS failure character'
ID34173	'NTP server address'
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-R24 /

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'

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-R24 /

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'

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 I²t-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
5	0	Reserved
	1	Reserved
6	0	Reserved
	1	Reserved

Bit no.	Condition	Meaning
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	Reserved
	1	Reserved
12	0	No error
	1	Error present: Communications error
13	0	Reserved
	1	Reserved
14	0	Reserved
	1	Reserved
15	0	No error
	1	Manufacturer-specific error present: Siehe ID129 'Manufacturer status class 1' auf Seite 69.

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).

Bit no.	Condition	Meaning
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 77.

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: $n_{\text{actual}} = n_{\text{set}}$, see ID330
1	0	Message inactive
	1	Message active: $n_{\text{actual}} = 0$, see ID331
2	0	Message inactive
	1	Message active: $ n_{\text{actual}} < n_x $, see ID332
3	0	Message inactive
	1	Message active: $ Md \geq Md_x $, see ID333
4	0	Message inactive
	1	Message active: $ Md \geq Md_{\text{Limit}} $, see ID334
5	0	Message inactive
	1	Message active: $ n_{\text{set}} > n_{\text{Limit}} $, see ID335
6	0	Reserved
	1	Reserved
7	0	Message inactive
	1	Message active: $ P \geq P_x $, see ID337

Bit no.	Condition	Meaning
8-14	0	Reserved
	1	Reserved
15	0	Message inactive
	1	Manufacturer-specific message active: Siehe ID182 'Diagnosis manufacturer status' auf Seite 78.

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-R24 /

Default value:	6
Sphere of action:	GLOBAL

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 33.	Configured telegram Siehe ID16 'Configuration list AT' auf Seite 29.

Bit no.	Condition Bit 2 Bit 1 Bit 0 (LSB)	Meaning	
		MDT (cyclical target values)	AT (cyclical actual values)
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-R24 /

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-R24 /

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] ($x = n \text{ elements} \times 2 \text{ byte / element}$)
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] ($x = n \text{ elements} \times 2 \text{ byte / element}$)
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)

List element	Content	Meaning
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]

List element	Content	Meaning
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-R24 /

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 th 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-R24 /

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 96.](#)

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-R24 /

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_ttttt
	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_ttttt
	KW-R07		
	KW-R16	-	-
	KW-R17	-	-
	KW-R24 / KW-R24-R	-	-
	KW-R25 / KW-R26	-	-
	KW-R27	-	-
	iX / iC	-	-
	ihXT	-	-
	iDT5	-	-

Instance	Controller	Software version (firmware)	Designation code
2	KW-R06	Monitor P1 (and safety board if present)	MON_vvv_S_vvv_ttttt
	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
 ttttt 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	Reserved

Bit no.	Condition	Meaning
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved

Bit no.	Condition	Meaning
	1 0100	Reserved
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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 $|1 \text{ min}^{-1}|$.

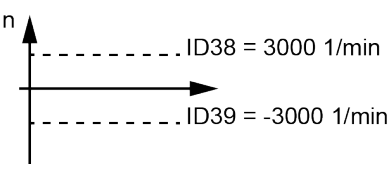
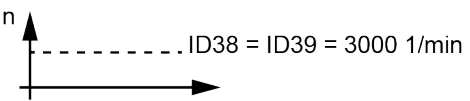
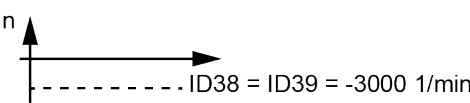
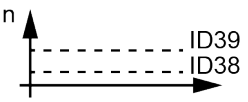
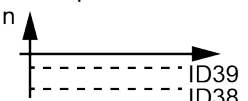
[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID91 'Bipolar velocity limit' auf Seite 59.](#)



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
Access: READING / WRITING
Temporarily changeable: YES
Data length: 4 byte
Signed: YES
Format: DEC
List: NO

Default value: -50000000
Scale: 0.0001
Unit: 1/min
Min. value: -10000.0 1/min
Max. value: 0 1/min

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} .

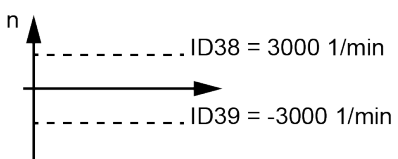
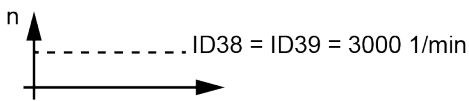
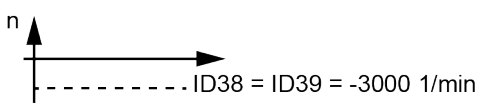
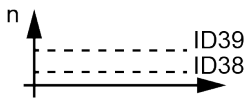
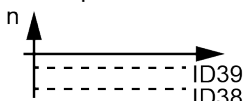
[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID91 'Bipolar velocity limit' auf Seite 59.](#)



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
Access: READING
Temporarily changeable: NO
Data length: 4 byte
Signed: YES
Format: DEC
List: NO

Default value: 0
Scale: 0.0001
Unit: 1/min
Min. value: -100000.0 1/min
Max. value: 100000.0 1/min

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.

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'

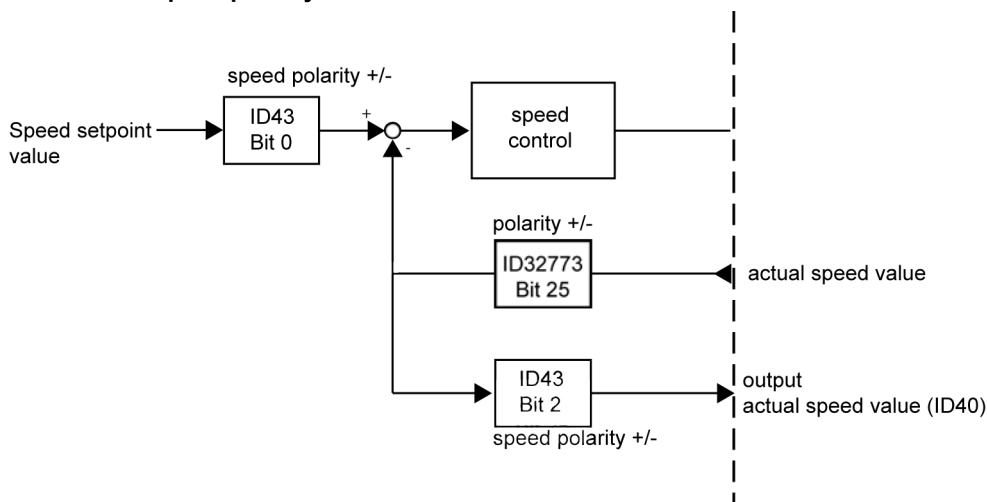
Bit no.	Condition	Meaning
0	0	ID36 'Velocity command value', positive polarity
	1	ID36 'Velocity command value' negative polarity
1	0	ID37 'Additive velocity command value', positive polarity
	1	ID37 'Additive velocity command value', negative polarity
2	0	ID40 'Velocity feedback value', positive polarity  Does not act on the control loop, but rather on the display ID40! 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', negative polarity  Does not act on the control loop, but rather on the display ID40! 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 102.](#)

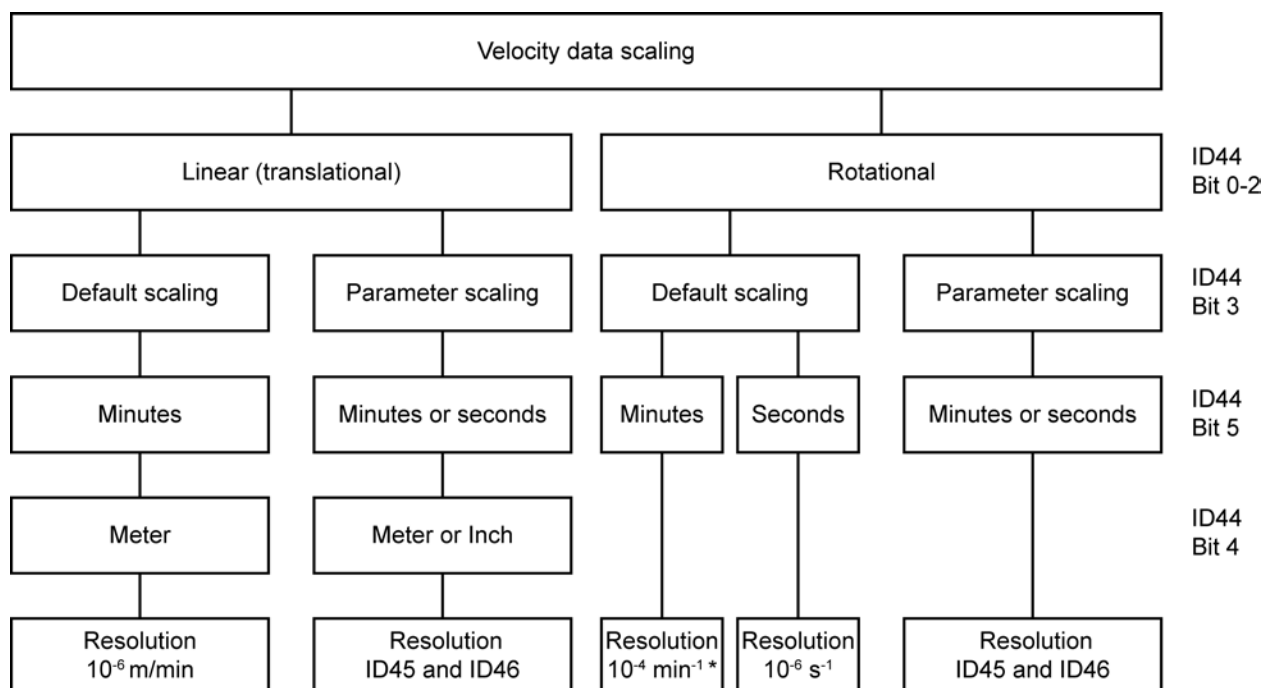
Effect of the speed polarity



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]

Bit no.	Condition	Meaning
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'	ID259	'Positioning velocity'
ID38	'Positive velocity limit'	ID32823	'Velocity control command after ramp'
ID39	'Negative velocity limit'	ID32891	'Internal velocity command value'
ID40	'Velocity feedback value'	ID32914	'Sum of additive velocities'
ID91	'Bipolar velocity limit'	ID34183	'Velocity threshold SL'
ID124	'Zero velocity window'		
ID125	'Velocity threshold'		

This parameter is used by the following function:

'Scaling'

ID45 'Velocity scaling factor'

Sphere of action:	DRIVE	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:	DEZ		
List:	NO		

ID45 'Velocity scaling factor' is needed to determine the resolution in ID44 'Velocity scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

ID46 'Velocity scaling exponent'

Sphere of action:	DRIVE	Default value:	-4
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	2 byte	Min. value:	-9
Signed:	YES	Max. value:	0
Format:	DEZ		
List:	NO		

ID46 'Velocity scaling exponent' is needed to determine the resolution in ID44 'Velocity scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

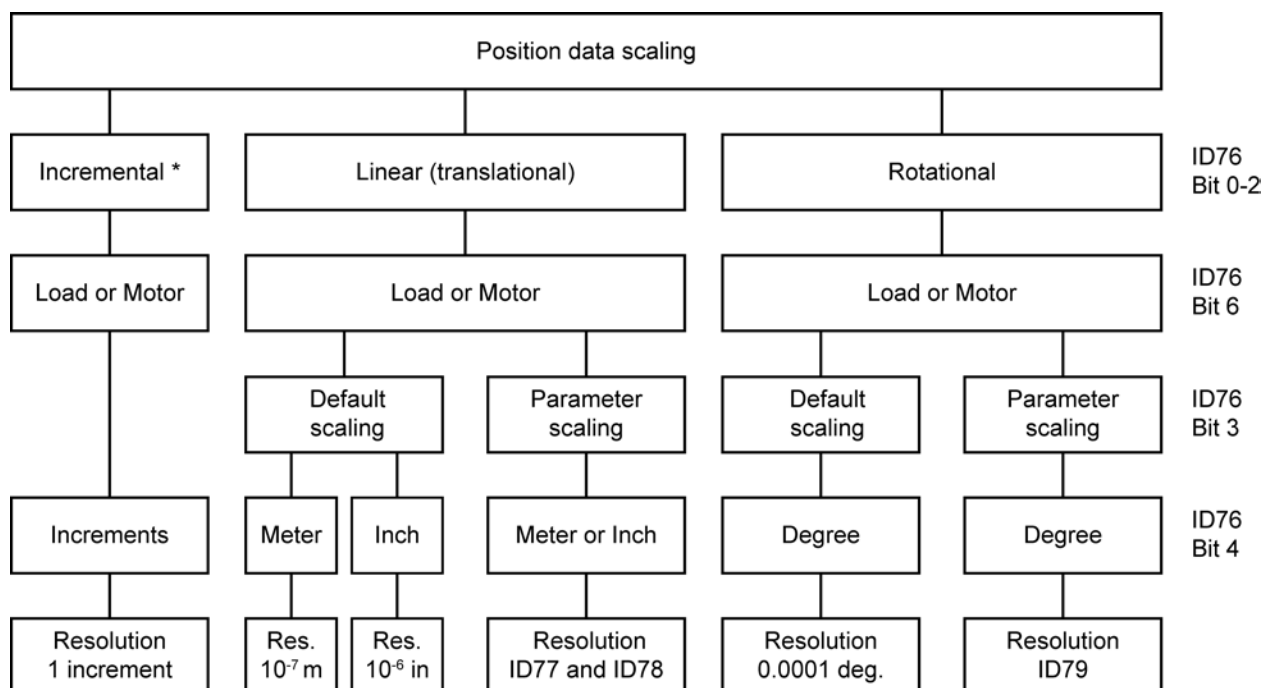
ID51 'Position feedback value'

Reserved for AMK internal use!

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:

ID51 'Position feedback value' ID258 'Target position'

This parameter is used by the following function:

'Scaling'

ID77 'Translative position scaling factor'

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

ID77 'Translative position scaling factor' is needed to determine the resolution in ID76 'Position scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

ID78 'Translative position scaling exponent'

Sphere of action:	DRIVE	Default value:	-7
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	2 byte	Min. value:	-9
Signed:	YES	Max. value:	0
Format:	DEZ		
List:	NO		

ID78 'Translative position scaling exponent' is needed to determine the resolution in ID76 'Position scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

ID79 'Rotation - position resolution'

Sphere of action:	DRIVE	Default value:	3600000
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	Increments
Data length:	4 byte	Min. value:	1 Increment
Signed:	NO	Max. value:	4294967295 Increments

Format: DEZ
List: NO

ID79 'Rotation - position resolution' is needed to determine the resolution in ID76 'Position scaling data' and is effective with parameter scaling selected.

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 I_N').

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 27.

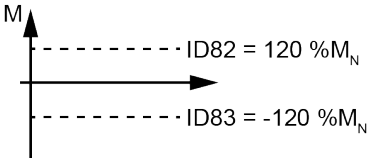


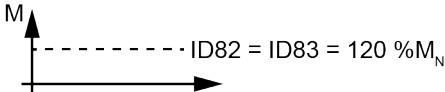
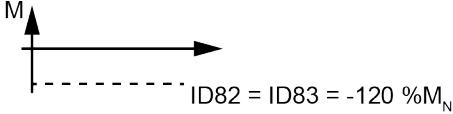
If ID92 'Bipolar torque limit' is configured, this takes priority over ID82 'Positive torque limit' and ID83 'Negative torque limit'.

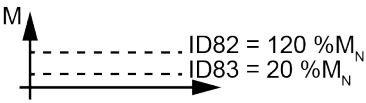
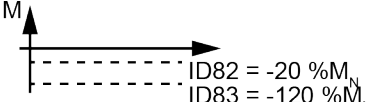
Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current IN').

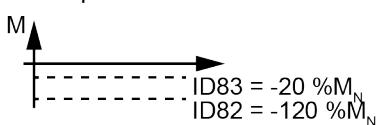
Siehe ID32800 'AMK main operating mode' auf Seite 109.

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. $+120\%M_N$ 	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 $ID113 \times 1,25$ 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 $n > 1.25 \times ID113$ 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. $-120\%M_N$ 	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 $ID113 \times 1,25$ 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 $n > 1.25 \times ID113$ 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 withdrawn and the diagnosis message error 1313 'ID82 less than 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 I _N '
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' $|M_d| \geq |M_{d_limit}|$ is set.

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

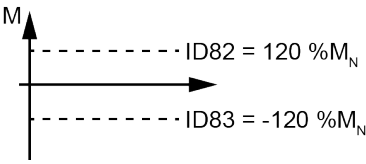
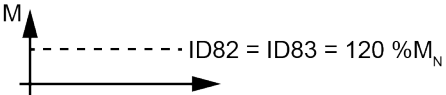


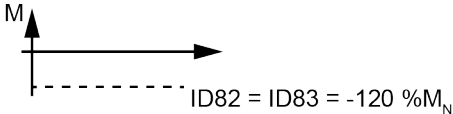
If ID92 'Bipolar torque limit' is configured, this takes priority over ID82 'Positive torque limit' and ID83 'Negative torque limit'.

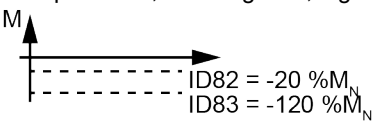
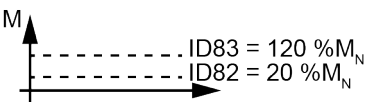
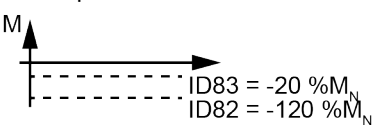
Actual values can not be determined with any accuracy, because of measurement and component tolerances. That means for the control loop, that the real acting limit, actual or setpoint values can differ up to 3 % of the rated torque (proportional to ID111 'Motor nominal current I_N').

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

Examples of torque setpoint limits (ID82, ID83)

Parameterization	Active operation mode	Drive behavior
Bipolar limits, e.g. $\pm 120 \% M_N$ 	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 $ID113 \times 1,25$ 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 $n > 1.25 \times ID113$ 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. $-120 \% M_N$ 	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 $n > 1.25 \times ID113$ 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 $\% M_N$ 	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.

ID84 'Torque feedback value'

Sphere of action: DRIVE / FORMAL
Access: READING
Temporarily changeable: NO
Data length: 2 byte
Signed: YES
Format: DEC
List: NO

Default value: 0
Scale: 0.1
Unit: % M_N
Min. value: -3000.0 % M_N
Max. value: 3000.0 % M_N

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 I_N').

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		

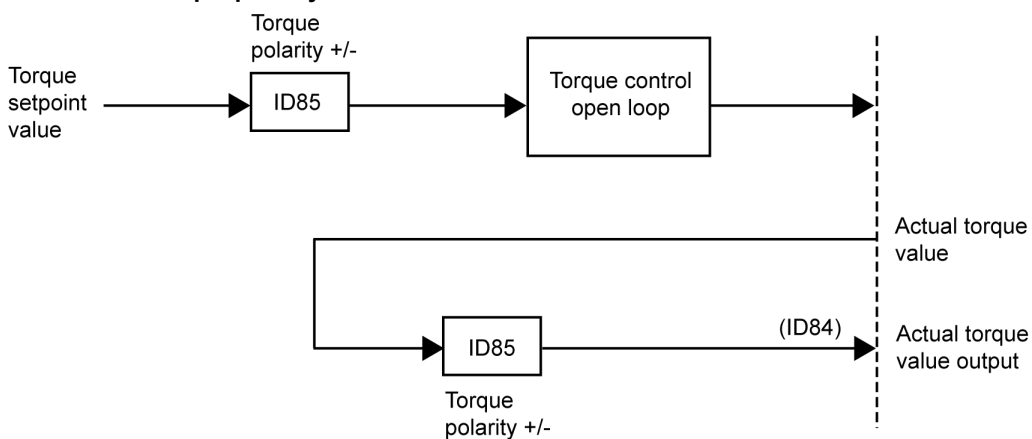
With the 'Torque polarity', the polarities of the torque data can be inverted. The polarities are not switched within, but rather outside (at the input and output) of a controlled section.

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



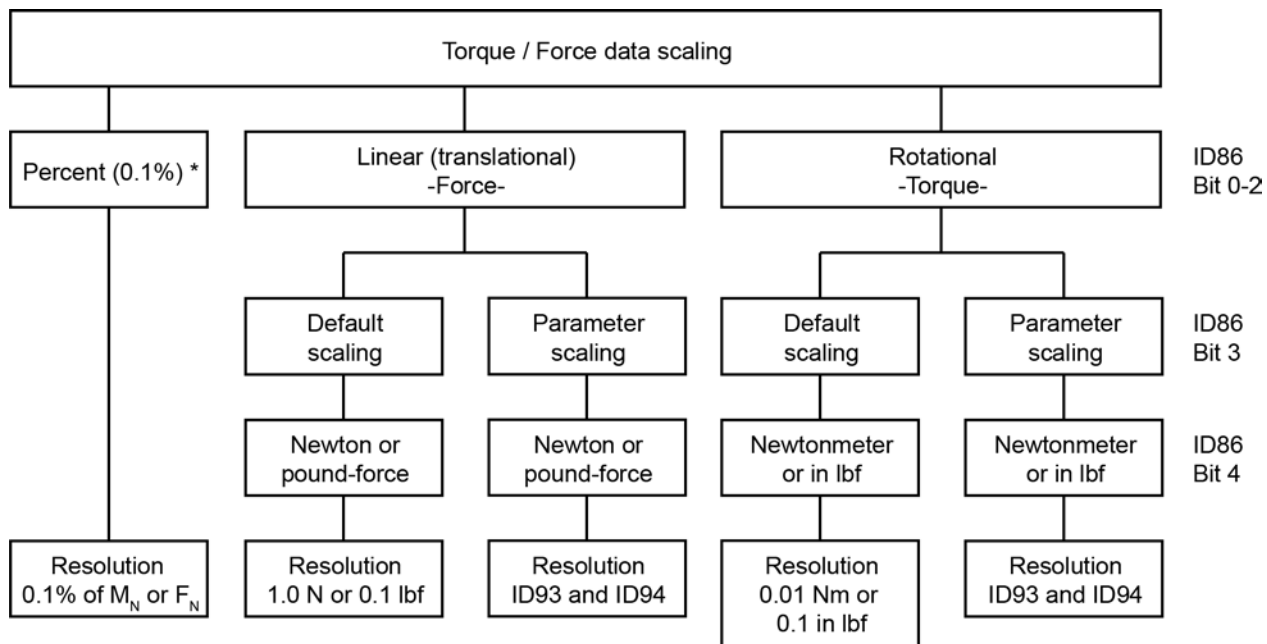
Do you want to reverse the direction of the motor rotation without interfering with the control structure?

[Siehe ID32773 'Service bits' auf Seite 102.](#)

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'	ID32835	'Torque command value internal'
ID82	'Positive torque limit'	ID32915	'Sum of additive torques'
ID83	'Negative torque limit'	ID33113	'Torque setpoint at controller'
ID84	'Torque feedback value'		
ID92	'Bipolar torque limit'		

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 27.](#)

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 27.](#)

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 I_N').

ID93 'Torque scaling factor'

Sphere of action:	DRIVE	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:	DEZ		
List:	NO		

ID93 'Torque scaling factor' is needed to determine the resolution in ID86 'Torque scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

ID94 'Torque scaling exponent'

Sphere of action:	DRIVE	Default value:	-2
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	2 byte	Min. value:	-5
Signed:	YES	Max. value:	0
Format:	DEZ		
List:	NO		

ID94 'Torque scaling exponent' is needed to determine the resolution in ID86 'Torque scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

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-R24 /

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. l	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. l	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

High byte	Own drive address	Here is the participant address of the participant himself.																
Low byte	Next drive address	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></tr><tr><td>03</td><td>05</td></tr></table><table><tr><th colspan="2">SLKN participant 5</th></tr><tr><td>05</td><td>08</td></tr></table><table><tr><th colspan="2">SLKN participant 8</th></tr><tr><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>	SLKN participant 3		03	05	SLKN participant 5		05	08	SLKN participant 8		08	03	SLKN participant 3		03	03
SLKN participant 3																		
03	05																	
SLKN participant 5																		
05	08																	
SLKN participant 8																		
08	03																	
SLKN participant 3																		
03	03																	

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

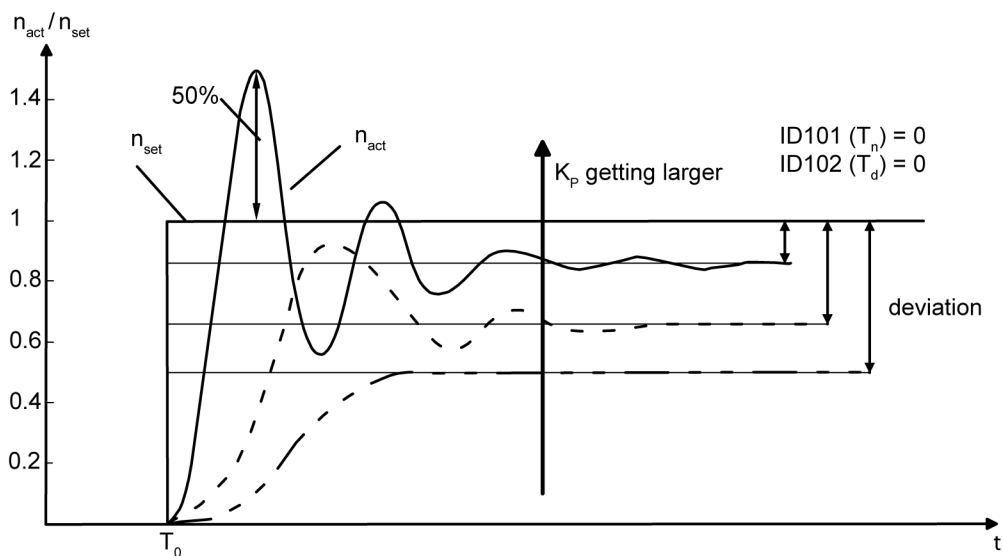
After the status is 0x3 or 0xF, the value 0x0 must be written in the parameter. The command is complete once the value 0x0 is read in the status.

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 K_p (ID100).

Formula: Parameter dependencies ID100

Condition : $1 \leq k_{pdzl} \leq 32767$

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 $\Delta n = n_{\text{set}} - n_{\text{actual}}$

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		

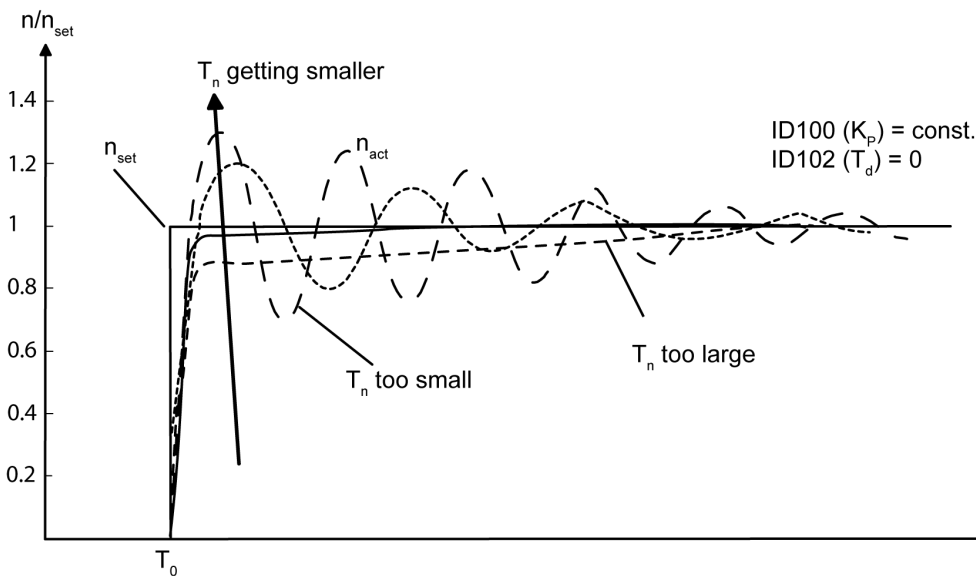
The ID101 'Integral-action time speed control TN' (integral portion) of the speed controller must be optimised by the user.

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: $1 \leq \text{kidzl} \leq 32767$

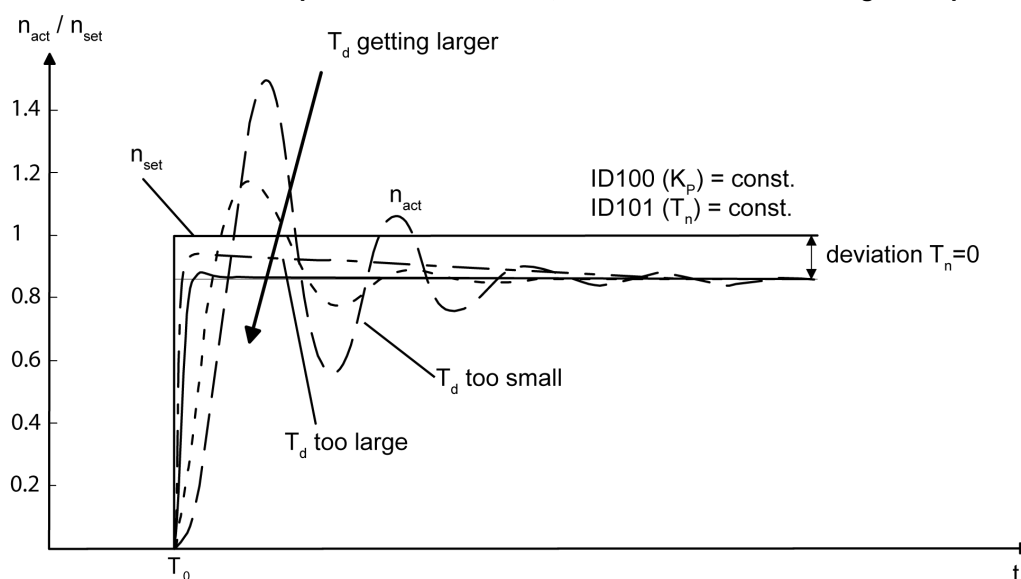
Legend:

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**

$$kddzl = ID102 \times kpdzl$$

Condition: $1 \leq kddzl \leq 32767$

Legend:

kddzl: internal system factor

kpdzl: internal system factor

[Siehe ID100 'Speed control proportional gain KP' auf Seite 63.](#)

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 $\neq 0$.



The i²t-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' ($ID111 \leq ID110 \times 80\%$). 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 66.](#)

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 96.](#)



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

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.

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 $|n_{\text{actual}}| < \text{ID124}$, the real-time bit will be set $n_{\text{actual}} < n_{\text{min}}$ (ID331 'Message speed: actual value < minimal value').

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

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 27.](#)

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 $\geq$ threshold'.

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

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
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

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 90.)
	1	Real time control bit 1 (Siehe ID301 'Allocation control bit 1' auf Seite 90.)
7	0	Real-time control bit 2 (Siehe ID303 'Allocation control bit 2' auf Seite 91.)
	1	Real-time control bit 2 (Siehe ID303 'Allocation control bit 2' auf Seite 91.)
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.
	1	0 --> 1 edge: Drive enabled UE is internally enabled.
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 91.)
	1	Real-time status bit 1 (Siehe ID305 'Allocation status bit 1' auf Seite 91.)
7	0	Real-time status bit 2 (Siehe ID307 'Allocation status bit 2' auf Seite 91.)
	1	Real-time status bit 2 (Siehe ID307 'Allocation status bit 2' auf Seite 91.)

Bit no.	Condition	Meaning
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)

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)
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 29.](#)

[Siehe ID26 'Configuration status bits' auf Seite 34.](#)

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 feedforward value.

Actual speed value: ID40 'Velocity feedback value'

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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 27.](#)

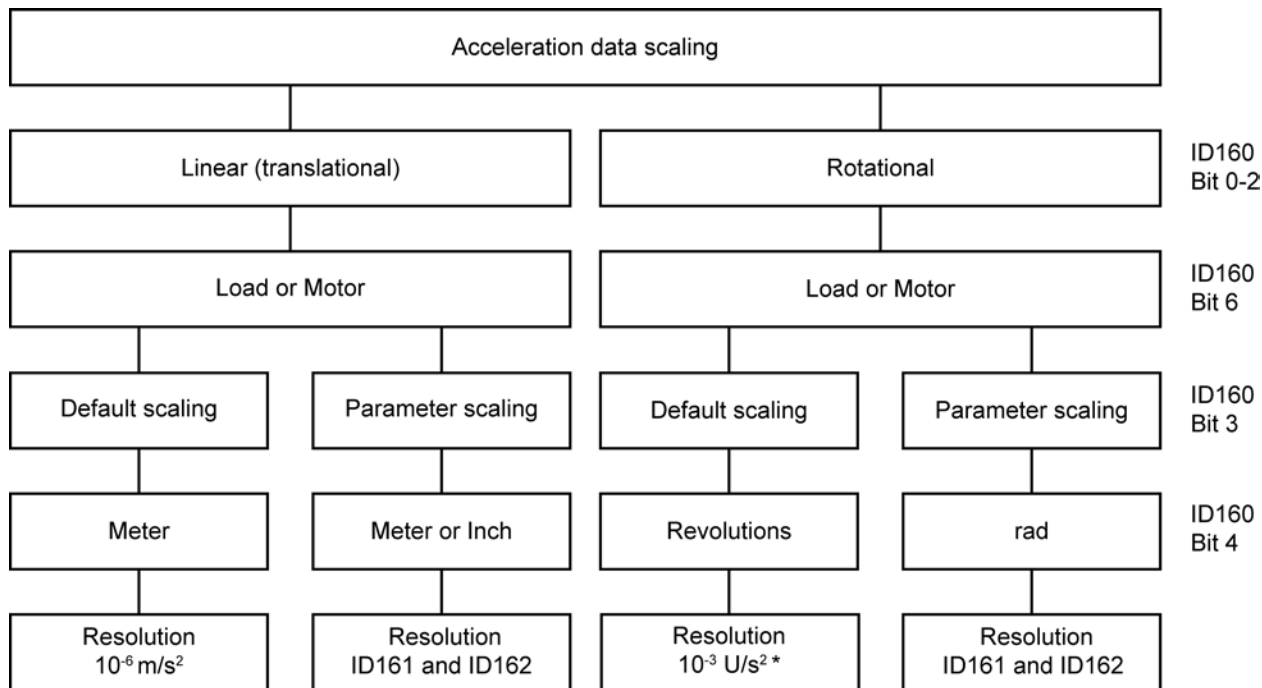
[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

ID160 'Acceleration scaling data'

Sphere of action: DRIVE
Access: READING / WRITING
Temporarily changeable: NO
Data length: 2 byte
Signed: NO
Format: BIN
List: NO

Default value: 0000 0000 0000 0010
Scale: 1
Unit: -
Min. value: -
Max. value: -

The scaling type acceleration data is set by parameter ID160 'Acceleration scaling data'



* Default setting: Default scaling, rotational 0.001 U/s²

Configuration ID160 'Acceleration scaling data'

Bit no.	Condition	Meaning
	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	Unit for linear scaling: - Meter [m] Unit for rotational scaling: - Revolutions [U] for default scaling - Radiant [rad] for parameter scaling
	1	Unit for linear scaling: Inch [in]
5	0	Time unit: Seconds [s ²]
	1	Reserved

Bit no.	Condition	Meaning
6	0	Data relation to the motor shaft
	1	Data relation to the load
7-15	0	Reserved
	1	Reserved

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

ID260 'Positioning acceleration'

This parameter is used by the following function:

'Scaling'

ID161 'Acceleration scaling factor'

Sphere of action:	DRIVE	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:	DEZ		
List:	NO		

ID161 'Acceleration scaling factor' is needed to determine the resolution in ID160 'Acceleration scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

ID162 'Acceleration scaling exponent'

Sphere of action:	DRIVE	Default value:	-3
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	2 byte	Min. value:	-9
Signed:	YES	Max. value:	0
Format:	DEZ		
List:	NO		

ID162 'Acceleration scaling exponent' is needed to determine the resolution in ID160 'Acceleration scaling data' and is effective with parameter scaling selected.

This parameter is used by the following function:

'Scaling'

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 92.
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	Reserved
	1	Reserved
1-6	0	Reserved
	1	Reserved
7	0	Reserved
	1	Reserved
8	0	Reserved
	1	Reserved
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-R24 /**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 28.](#)**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-R24 /**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 28.](#)

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 29.](#)

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 33..](#)

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		

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.

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).

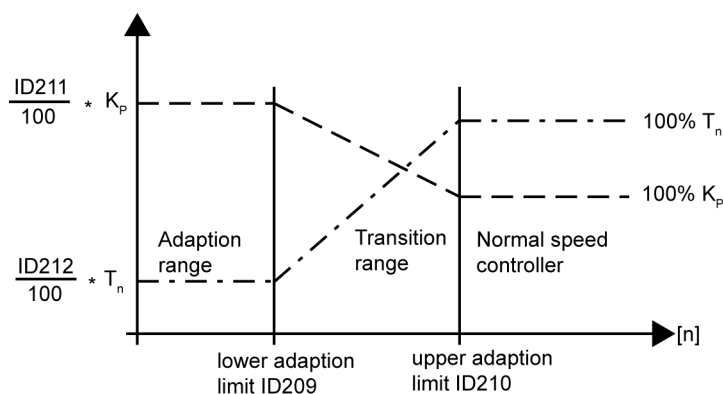
This parameter is used by the following function:

'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 K_P ' and ID101 'Integral-action time speed control T_N ', 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 82.

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 82.

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 82.

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.

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.

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] ($x = n \text{ elements} \times 2 \text{ byte / element}$)
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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	Reserved
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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	Reserved

Bit no.	Condition	Meaning
	0 0100	Reserved
	0 0101	Reserved
	0 0110	Reserved
	0 0111	Operating mode without control
	0 1011	Reserved
	0 1100	Reserved
	0 1101	Reserved
	0 1110	Reserved
	1 0011	Reserved
	1 0100	Reserved
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		

Reserved for AMK internal use!

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 91.](#)

[Siehe ID12 'Status class 2-warnings' auf Seite 26.](#)

[Siehe ID114 'Overload limit motor' auf Seite 67.](#)

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 91.](#)

[Siehe ID12 'Status class 2-warnings' auf Seite 26.](#)

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 91.](#)

[Siehe ID12 'Status class 2-warnings' auf Seite 26.](#)

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 91.](#)

[Siehe ID181 'Diagnosis manufacturer class 2' auf Seite 77.](#)

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 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

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 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

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 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

ID333 'Message torque: actual value $\geq$ 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 $\geq$ ID126 'Torque threshold', the real-time bit ID333 'Message torque: actual value $\geq$ threshold' is set.

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

ID334 'Message torque: actual value $\geq$ 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 $\geq$ ID82 'Positive torque limit', ID83 'Negative torque limit' or ID92 'Bipolar torque limit', the real-time bit ID334 'Message torque: actual value $\geq$ limit' is set.

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

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 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

ID337 'Message power: actual value $\geq$ 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 $\geq$ ID158, the real-time bit ID337 'Message power: actual value $\geq$ threshold' is set.

[Siehe ID13 'Status class 3-messages' auf Seite 27.](#)

[Siehe ID305 'Allocation status bit 1' auf Seite 91.](#)

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 118.](#)

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 135.](#)

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 109.

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 181.

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		

ID1019 'MAC address'

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

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

In ID1019 'MAC address' the MAC address of the device is displayed.

Configuration ID1019 'MAC address'

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		
3		
...		
20		

ID1020 'IP address'

Sphere of action:	GLOBAL	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:*	-
List:	YES	Max. list length:*	16

* The list length is the number of usage data elements without 2 byte head elements.

ID1020 'IP address' sets the IP address.

Configuration ID1020 'IP address'

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		
3		
...		
16		

ID1021 'Subnet mask'

Sphere of action:	GLOBAL	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:*	-
List:	YES	Max. list length:*	16

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

ID1021 'Subnet mask' sets the Subnet mask.

Configuration ID1021 'Subnet mask'

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

List element	Content	Meaning
1	16	List head: Maximum list length without list head [byte]
2		
3		
...		
16		

ID1022 'Gateway address'

Sphere of action:	GLOBAL	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:*	-
List:	YES	Max. list length:*	16

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

ID1022 'Gateway address' sets the Gateway address.

Configuration ID1022 'Gateway address'

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		
3		
...		
16		

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 $n \leq$ 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'.

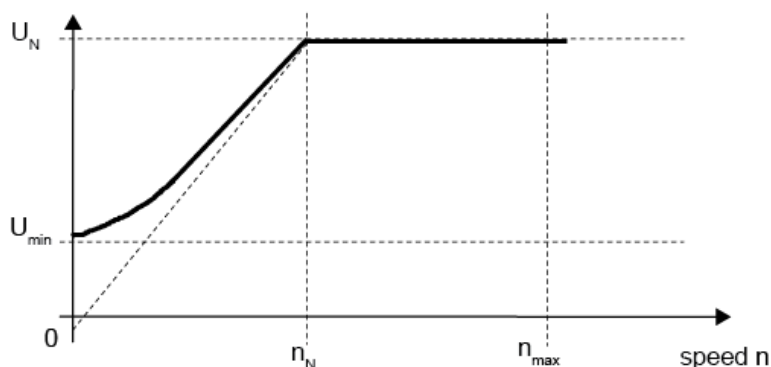


Note that the ramp times in ID32780 'Acceleration ramp', ID32781 'Deceleration ramp' and ID32782 'Deceleration ramp RF inactive' may not be less than the physically achievable speed ramps of the system.

Siehe ID32991 'U/f startup' auf Seite 132.

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

Motor voltage U



U_N : ID32768 'Nominal motor voltage'

U_{min} : ID32935 'Voltage standstill'

n_N : ID32772 'Nominal velocity'

n_{max} : ID00113 'Maximum speed'

ID32769 'Magnetising current'

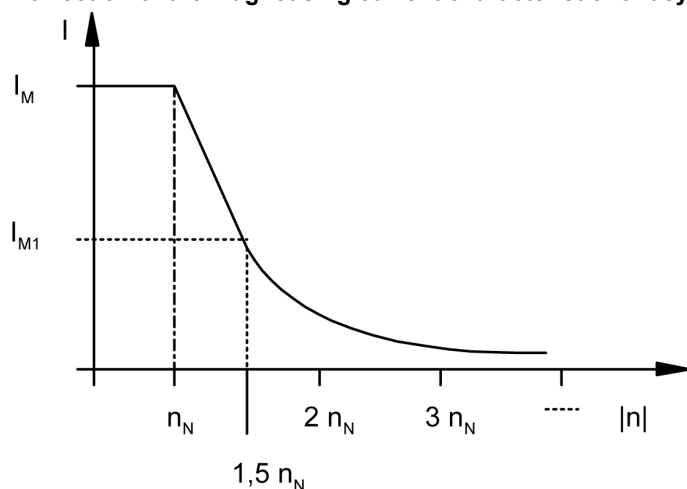
Sphere of action:	DRIVE	Default value:	1500
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	NO	Unit:	A
Data length:	4 byte	Min. value:	0.00 A
Signed:	NO	Max. value:	1000.00 A
Format:	DEC		
List:	NO		

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		

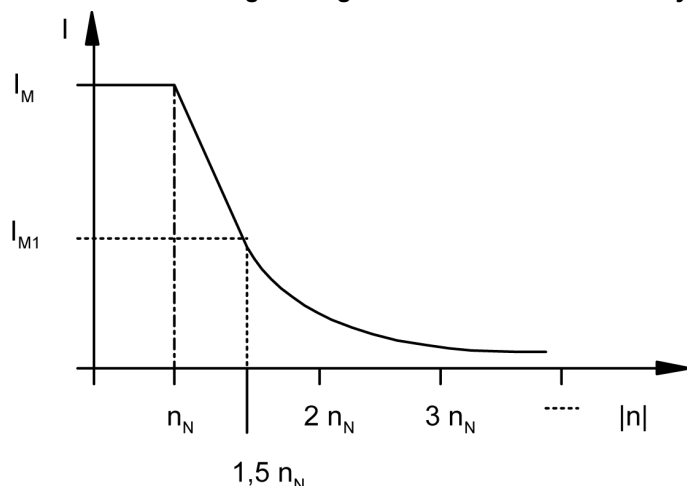
The values of the magnetising current depend on the motor and are to be taken from the respective type plate or data sheet of the motor. The motor used is to be defined in ID32953 'Encoder type'.

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 $U_N = 400 \text{ VAC}$
Nominal velocity $n_N = 1750 \text{ 1/min}$

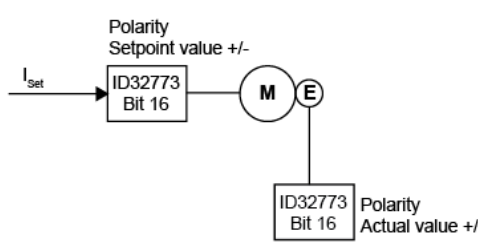
ID32772 'Nominal velocity' = $1750 \text{ 1/min} / 400 \text{ VAC} \times 350 \text{ VAC}$
ID32772 'Nominal velocity' = 1400 1/min

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	Reserved
	1	Reserved
1	0	Reserved
	1	Reserved
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

Bit no.	Condition	Meaning
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 ² t monitoring of motor inactive
	1	i ² t 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 65. Siehe 'ID34168 'Time maximum current motor' auf Seite 161. Formula for calculating the overload time t_x with a current I_x :
15	0	Reserved
	1	Reserved
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. 
17	0	Reserved
	1	Reserved
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

Bit no.	Condition	Meaning
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 44.
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	PI controller for current control active
	1	Reserved
28	0	Reserved
	1	Reserved
29	0	Reserved
	1	Reserved
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 coast 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'.

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		

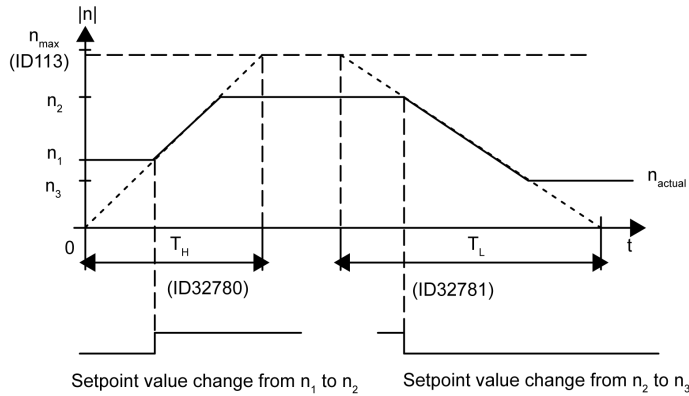
By setting bit 6 = 1 in the operating mode parameter (ID32800ff), a ramp generator (acceleration / deceleration) acts on the speed controller input. The entered times apply for acceleration and deceleration between the speed 0 U/min and $\pm$ ID113 'Maximum speed'.

The following figure shows the effect of the acceleration and deceleration time parameters. The following applies to the speed setpoint specification:

$|n_2| > |n_1| \rightarrow$ acceleration ramp

$|n_3| < |n_2| \rightarrow$ 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		

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 $\pm$ ID113 'Maximum speed'.

The figure in ID32780 shows the effect of the acceleration and deceleration time parameters.

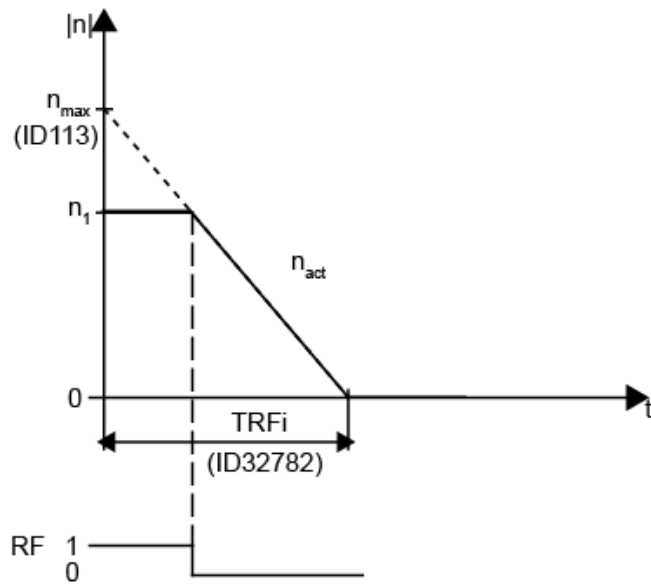
[Siehe ID32780 'Acceleration ramp' auf Seite 105.](#)

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
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.

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 70.
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		

Werte für KW-R24 /

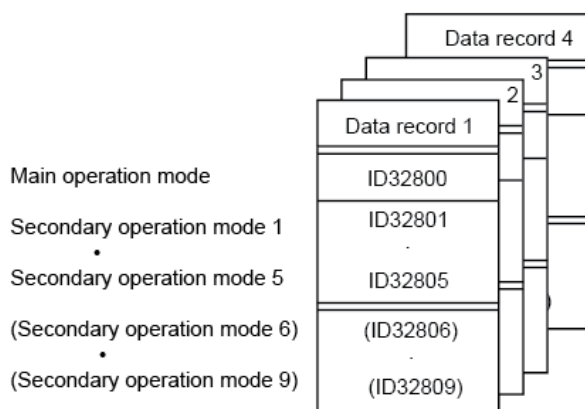
Default value: 00430043

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 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	Reserved
	0x5	Reserved
	0x6	Reserved
	0x7	Reserved

Bit no.	Condition	Meaning
4	0	Torque limiting per ID82, ID83, (ID92)
	1	Reserved
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 The speed fine interpolator supplies 1 speed setpoint/250µs, synchronised to ID2 'SERCOS cycle time'.
8	0	Reserviert
	1	Reserved
9 ²⁾	0	Reserviert
	1	Reserviert
10 ¹⁾	0	Reserviert
	1	Reserviert
11 ²⁾	0	Reserved
	1	Reserved
12	0	Reserved
	1	Reserved
13	0	Reserved
	1	Reserved
14	0	Reserved
	1	Reserved
15	0	Reserved
	1	Reserved
16-23	0x01	Reserved
	0x03	Reserved
	0x43	Cyclical setpoint setting via real-time Ethernet - ID36 'Velocity 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'
	0x48	Reserved for AMK internal use: Setpoint setting through internal modules
24-27	0x00	Default operating mode
	0x01	Reserviert
28-31	0	Reserved
	1	Reserved

1) This parameter is used by the following function:

'Fine interpolator position (FIPO)'

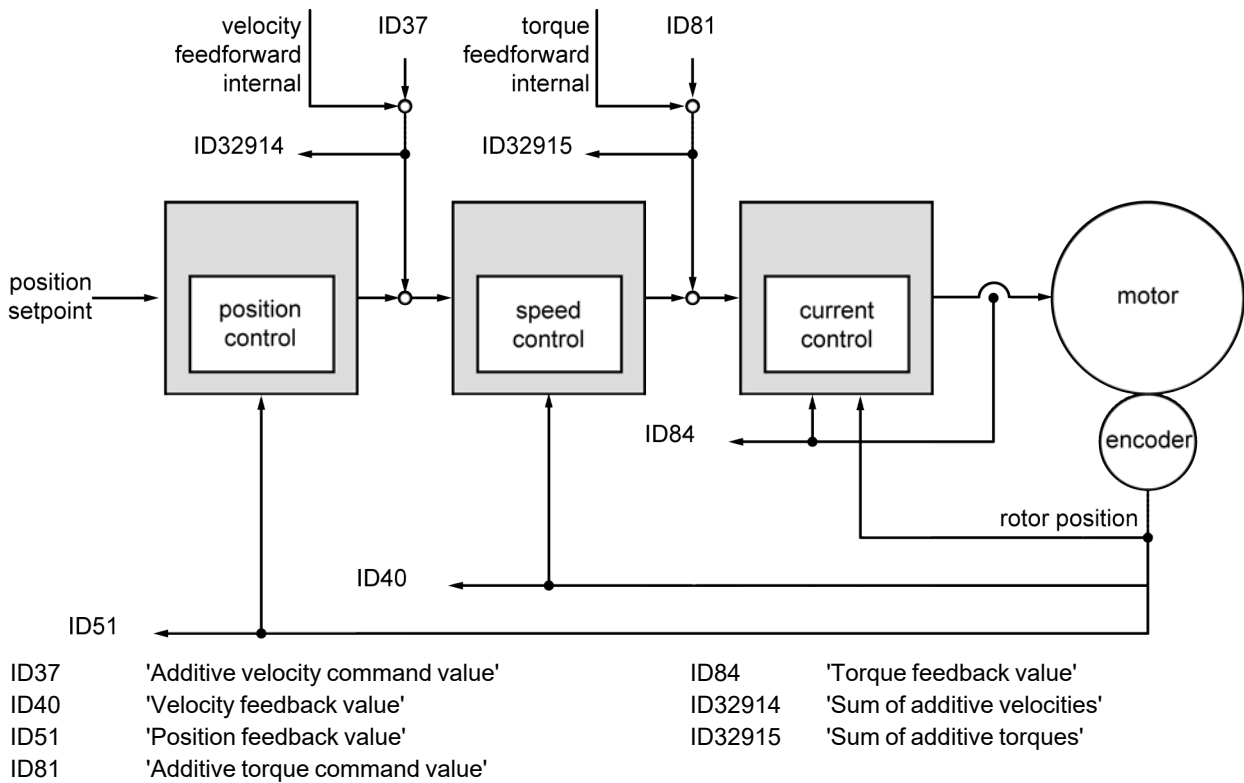
2) This parameter is used by the following function:

'Following error compensation (SAK)'

3.0.1 Overview control loops

Position control is not supported by:

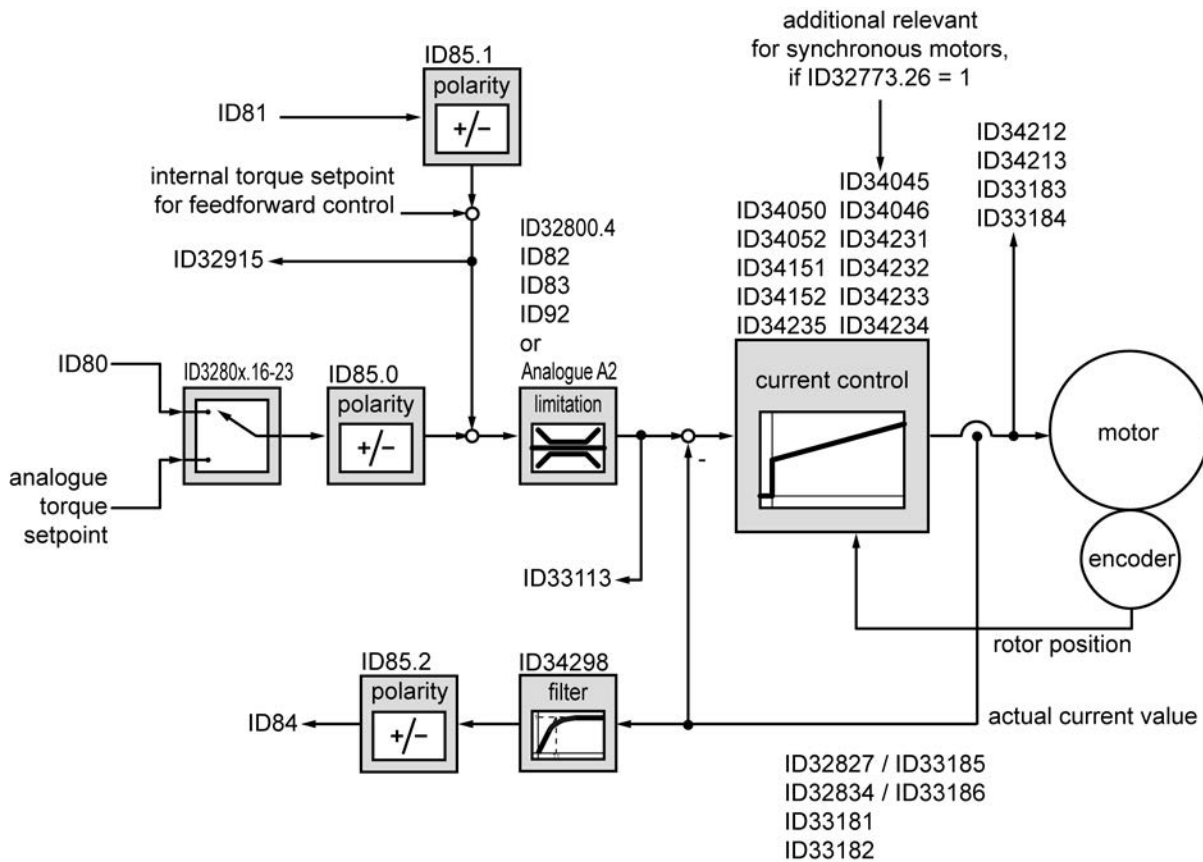
- KW-R24



Torque control and current controller

Analogue setpoint is not supported by:

- KW-R24

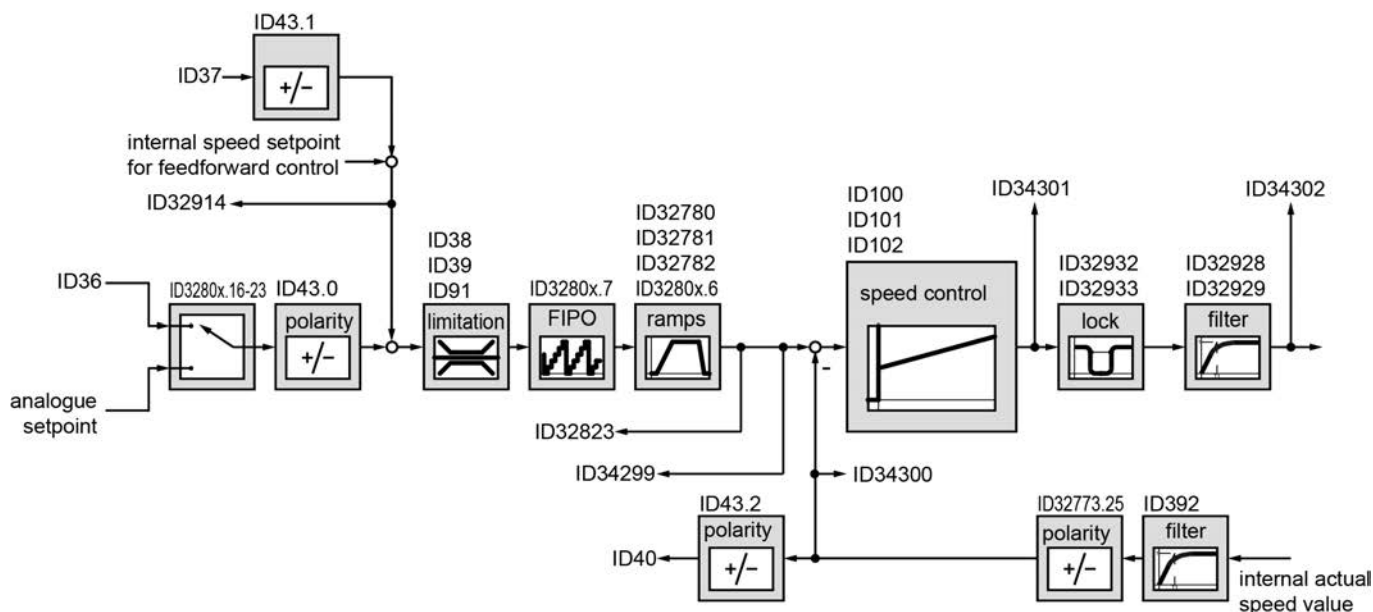


ID80	'Torque command value'	ID33185	'Magnetizing current feedback '
ID81	'Additive torque command value'	ID33186	'Torque current feedback'
ID82	'Positive torque limit'	ID34045	'Inductance path D'
ID83	'Negative torque limit'	ID34046	'Inductance path Q'
ID84	'Torque feedback value'	ID34050	'Current path Q integral-action time TN'
ID85	'Torque polarity'	ID34052	'Current path D integral-action time TN'
ID92	'Bipolar torque limit'	ID34151	'Current path Q proportional gain KP'
ID32773	'Service bits'	ID34152	'Current path D proportional gain KP'
ID32827	'Magnetising current feedback'	ID34212	'Voltage path Q'
ID32834	'Torque current feedback'	ID34213	'Voltage path D'
ID32915	'Sum of additive torques'	ID34231	'Feed forward control voltage path Q'
ID33113	'Torque setpoint at controller'	ID34232	'Feed forward control voltage path D'
ID33181	'Actual current Ia'	ID34233	'Phase resistance'
ID33182	'Actual current Ib'	ID34234	'Voltage constant Ke'
ID33183	'Voltage Ua'	ID34235	'Increase motor voltage'
ID33184	'Voltage Ub'	ID34298	'Torque feedback filter'

Speed control with digital or analogue setpoint

Analogue setpoint is not supported by:

- KW-R24



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

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		

Werte für KW-R24 /

Default value: 00430043

Siehe ID32800 'AMK main operating mode' auf Seite 109.

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		

Werte für KW-R24 /

Default value: 00430043

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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		

Werte für KW-R24 /

Default value: 00430043

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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		

Werte für KW-R24 /

Default value: 00430043

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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		

Werte für KW-R24 /

Default value: 00430043

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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		

Werte für KW-R24 /

Default value: 00430043

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 deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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 deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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		

Reserved for AMK internal use!

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 deceleration ramp after controller enable withdrawn, are only properly executed if the factory setting is maintained.

[Siehe ID32800 'AMK main operating mode' auf Seite 109.](#)

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 109.](#)

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 109.

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.

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-R24 /

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		

List element	Content	Meaning
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

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

- 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 181.](#)
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 = 33942	ID34120 Bit 0
	BA2	ID32866 = 33942	ID34120 Bit 1
	BA3	ID32867 = 33942	ID34120 Bit 2

- 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
Access: READING / WRITING
Temporarily changeable: NO
Data length: 4 byte
Signed: NO
Format: DEC
List: NO

Default value: Device-specific values
Scale: 1
Unit: -

Min. value: -
Max. value: -

Values for KW-R24 /

Binary output default value: 0

[Siehe ID398 'List status bits' auf Seite 96.](#)

[Siehe ID32864 'Address output port 3' auf Seite 120.](#)

ID32866 'Port 3 Bit 1'

Sphere of action: GLOBAL
Access: READING / WRITING
Temporarily changeable: NO
Data length: 4 byte
Signed: NO
Format: DEC
List: NO

Default value: Device-specific values
Scale: 1
Unit: -

Min. value: -
Max. value: -

Values for KW-R24 /

Binary output default value: 33029 (SRM)

[Siehe ID398 'List status bits' auf Seite 96.](#)

[Siehe ID32864 'Address output port 3' auf Seite 120.](#)

ID32867 'Port 3 Bit 2'

Sphere of action: GLOBAL
Access: READING / WRITING
Temporarily changeable: NO
Data length: 4 byte
Signed: NO
Format: DEC
List: NO

Default value: Device-specific values
Scale: 1
Unit: -

Min. value: -
Max. value: -

Values for KW-R24 /

Default value: 33052 (triggering motor brake)

[Siehe ID398 'List status bits' auf Seite 96.](#)

[Siehe ID32864 'Address output port 3' auf Seite 120.](#)

ID32882 'Slot assignment'

Reserved for AMK internal use!

ID32891 'Internal velocity command value'

Reserved for AMK internal use!

ID32894 'Position command value filter'

Reserved for AMK internal use!

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-R24 /

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	Reserved
	1	Reserved
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.

Bit no.	Condition	Meaning
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)
13	0	Reserved
	1	Reserved
14	0	Reserved
	1	Reserved
15	0	Reserved
	1	Reserved for AMK internal use! Special function
16	0	Reserved
	1	Reserved
17	0	Reserved
	1	Reserved
18-32	0	Reserved
	1	Reserved

ID32904 'Controller enable'

Reserved for AMK internal use!

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 109.

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 109.

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

ID32917 'Time zone'

Reserved for AMK internal use!

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 I²t 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 I²t-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 I_N '

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.

ID32924 'Operation mode change parameter'

Reserved for AMK internal use!

ID32926 'AMK homing cycle parameter'

Reserved for AMK internal use!

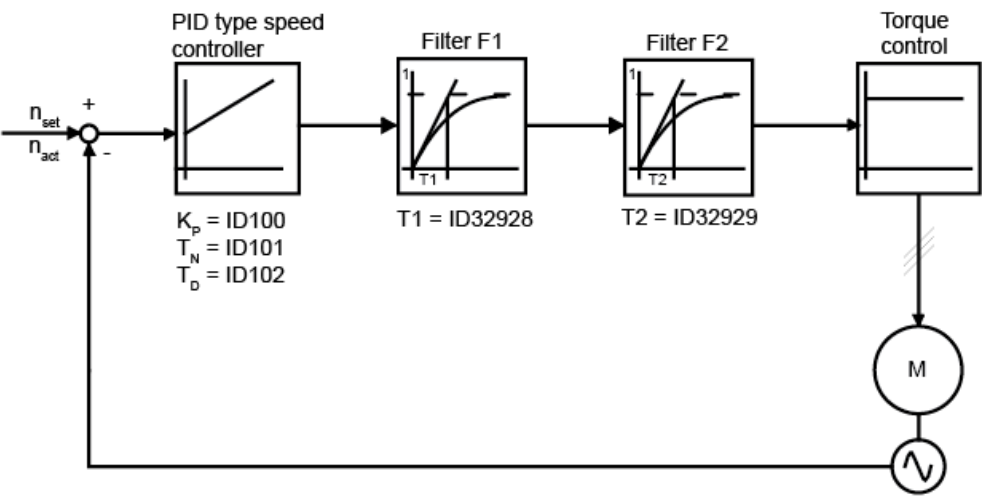
ID32928 'Time filter 1'

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 PT₁ 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.

PT₁ 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 126.

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.

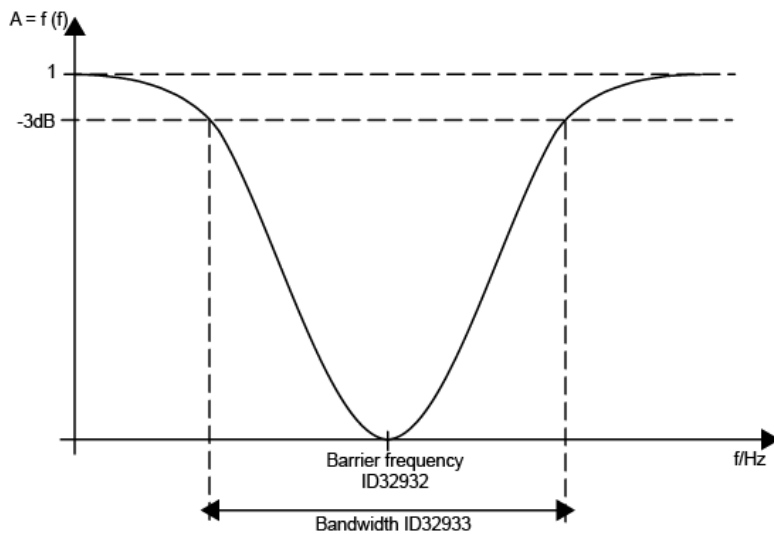
ID32933 'Bandwidth'

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 $\pm$ 50 Hz will be filtered out at the output of the speed controller.

Forward characteristic of the band filter



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 132.](#)

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.

ID32941 'SERCOS service'

Reserved for AMK internal use!

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 135.](#)

[Siehe ID33117 'Temperature external' auf Seite 136.](#)

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'

Reserved for AMK internal use!

ID32945 'List parameter set'

Reserved for AMK internal use!

ID32946 'Drive DB file'

Reserved for AMK internal use!

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-R24 /

Default value: 0020

ID32953 = 0x0020: U/f control

ID32953 = 0x0050: Sensorless

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

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 183.](#)

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-R24 /

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 130.](#)

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		

Werte für KW-R24 /

Digital input default value: 0 (no signal)

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 130.](#)

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		

Werte für KW-R24 /

Digital input default value: 0 (no signal)

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 130.](#)

ID32986 'Derating factor'

Reserved for AMK internal use!

ID32987 'Threshold derating'

Reserved for AMK internal use!

ID32988 'Delay software reset'

Sphere of action:	GLOBAL	Default value:	1000
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	ms
Data length:	2 byte	Min. value:	0
Signed:	NO	Max. value:	65535
Format:	DEC		
List:	NO		

After a firmware update or parameter download, a software reset is executed automatically when switching from the bus status BOOT to bus status INIT.

The software reset can be delayed with ID32988 'Delay software reset'.

ID32989 'Torque filter time'

Reserved for AMK internal use!

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.

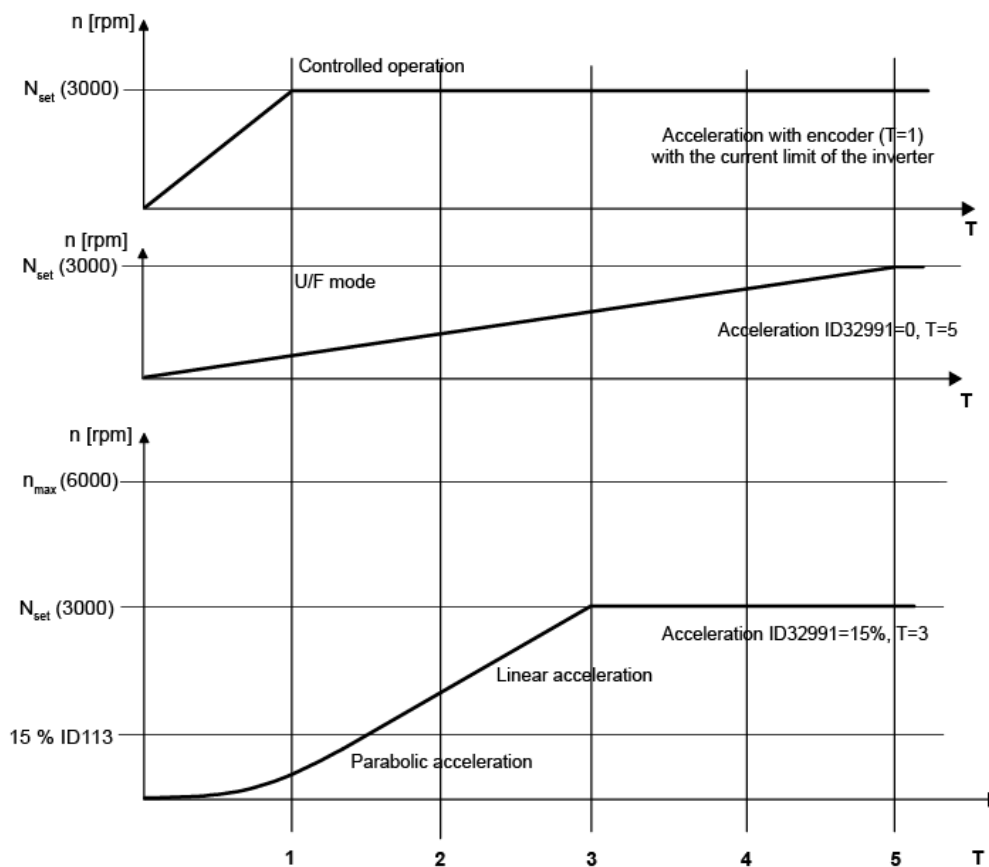
In V/f-operation mode, starting up from standstill can frequently cause a problem, because when the axis "breaks loose" a high current can flow that may cause an overload of the inverter (shutdown "short circuit").

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.
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

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

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 133.](#)

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.

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 109.

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 time¹⁾ (ID32943) has expired.

1) Siehe ID32943 'Warning time' auf Seite 129.

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'.

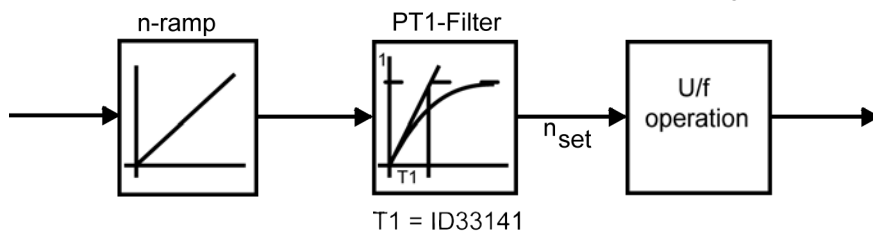


This parameter must not be evaluated if a PTC temperature sensor is used.

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.



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		

Reserved for AMK internal use!

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		

Reserved for AMK internal use!

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'

Reserved for AMK internal use!

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.

ID33176 'Process data 1'

Reserved for AMK internal use!

ID33177 'Process data 2'

Reserved for AMK internal use!

ID33178 'Process data 3'

Reserved for AMK internal use!

ID33179 'Process data 4'

Reserved for AMK internal use!

ID33180 'Performance index sensorless'

Reserved for AMK internal use!

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.

ID33190 'Velocity feedforward factor'

Reserved for AMK internal use!

ID33191 'Velocity feedforward delay 1'

Reserved for AMK internal use!

ID33192 'Delay target position value'

Reserved for AMK internal use!

ID33196 'Display friction torque'

Reserved for AMK internal use!

ID33197 'Display friction torque linear'

Reserved for AMK internal use!

ID33198 'Display holding torque'

Reserved for AMK internal use!

ID33199 'Display of moment of inertia'

Reserved for AMK internal use!

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!

ID33308 'Output mask'

Reserved for AMK internal use!

ID33310 'Thermal resistance winding stator Rws'

Reserved for AMK internal use!

ID33311 'Thermal resistance stator-rotor Rsr'

Reserved for AMK internal use!

ID33312 'Thermal resistance stator environment Rsamb'

Reserved for AMK internal use!

ID33313 'Thermal resistance rotor environment Rramb'

Reserved for AMK internal use!

ID33314 'Thermal capacity winding Cw'

Reserved for AMK internal use!

ID33315 'Thermal capacity stator Cs'

Reserved for AMK internal use!

ID33316 'Thermal capacity rotor Cr'

Reserved for AMK internal use!

ID33317 'Electrical winding resistance at 20°C Rel20'

Reserved for AMK internal use!

ID33318 'Ambient temperature Tamb'

Reserved for AMK internal use!

ID33319 'Magnetic flux density proportional factor Kp'

Reserved for AMK internal use!

ID33320 'Hysteresis proportional factor Kh'

Reserved for AMK internal use!

ID33321 'Eddy current proportional factor Kc'

Reserved for AMK internal use!

ID33322 'Thermal model reserve 1'

Reserved for AMK internal use!

ID33323 'Thermal model reserve 2'

Reserved for AMK internal use!

ID33324 'Thermal model reserve 3'

Reserved for AMK internal use!

ID33325 'Thermal model reserve 4'

Reserved for AMK internal use!

ID33326 'Thermal model reserve 5'

Reserved for AMK internal use!

ID33327 'Thermal model reserve 6'

Reserved for AMK internal use!

ID33328 'Thermal model reserve 7'

Reserved for AMK internal use!

ID33329 'Thermal model reserve 8'

Reserved for AMK internal use!

ID33330 'Friction torque motor'

Sphere of action:	DRIVE	Default value:	0
Access:	READING / WRITING	Scale:	0.01

Temporarily changeable:	YES	Unit:	Nm
Data length:	2 byte	Min. value:	0
Signed:	NO	Max. value:	65.535
Format:	DEC		
List:	NO		

This parameter 'Friction torque motor' represents a constant static friction torque of the motor. The torque of the motor is feed forward controlled.

ID33331 'Friction torque load'

Sphere of action:	DRIVE	Default value:	0
Access:	READING / WRITING	Scale:	0.01
Temporarily changeable:	YES	Unit:	Nm
Data length:	2 byte	Min. value:	0
Signed:	NO	Max. value:	65.535
Format:	DEC		
List:	NO		

This parameter 'Friction torque load' represents a constant static friction torque of the load. The torque of the load is feed forward controlled.

ID33332 'Friction torque linear motor'

Sphere of action:	DRIVE	Default value:	0
Access:	READING / WRITING	Scale:	0.01
Temporarily changeable:	YES	Unit:	Nm
Data length:	2 byte	Min. value:	0
Signed:	NO	Max. value:	65.535
Format:	DEC		
List:	NO		

This parameter 'Friction torque linear motor' represents a linear friction torque of the motor. The torque of the motor is feed forward controlled.

ID33333 'Friction torque linear load'

Sphere of action:	DRIVE	Default value:	0
Access:	READING / WRITING	Scale:	0.01
Temporarily changeable:	YES	Unit:	Nm
Data length:	2 byte	Min. value:	0
Signed:	NO	Max. value:	65.535
Format:	DEC		
List:	NO		

This parameter 'Friction torque linear load' represents a linear friction torque of the load. The torque of the load is feed forward controlled.

ID33334 'Inertia motor'

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:	0
Signed:	NO	Max. value:	4294967.295

Format: DEC
List: NO

This parameter 'Inertia motor' represents the inertia of the motor. The torque of the motor is feed forward controlled.

ID33335 'Inertia load'

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:	0
Signed:	NO	Max. value:	4294967.295
Format:	DEC		
List:	NO		

This parameter 'Inertia load' represents the inertia of the load. The torque of the load is feed forward controlled.

ID33336 'Threshold variable torque limit'

Sphere of action:	DRIVE	Default value:	5
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	YES	Unit:	Increments
Data length:	4 byte	Min. value:	1
Signed:	NO	Max. value:	2147483647
Format:	DEC		
List:	NO		

This parameter 'Threshold variable torque limit' is the limit value of the position increase per bus cycle, from which the standard torque limits ID82 'Positive torque limit' / ID83 'Negative torque limit' act. For increases smaller than the threshold, the transition is made to the variables torque limits ID33305 'Variable positive torque limit' / ID33306 'Variable negative torque limit'.

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.

ID33732 'System reset'

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:	HEX		
List:	NO		

A system reset is a device restart as compared to 24 VDC OFF / ON, except that the system reset, the 24 VDC are still active (software reset).

The command is started if the value 0x1 is written in the parameter.

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-R24 /

Default value:

Instance	Use	Interface	Default value	Meaning
1	EtherCAT slave	X85 (IN) / X86 (OUT)	0	No address assigned

ID34023 specifies the participant address in the bus system.

ID34025 'BUS mode'

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		

The 'BUS mode' defines the fieldbus-specific supported functionality.

Values for KW-R24 /

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	Reserved
		1	Reserved
	1	0	Reserved
		1	Reserved
	2	0	DHCP not active
		1	DHCP active
	3	0	Reserved
		1	Reserved
	4	0	Reserved
		1	Reserved
	5-14		Reserved
	15	0	Reserved
		1	Reserved

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		

ID34026 'BUS mode attribute' defines the fieldbus-specific supported functionality.

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 telegrams 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 148.](#)

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
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'

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.

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 162.](#)

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	EF logic
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.

ID34069 'Starting current'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	NO	Unit:	A
Data length:	4 byte / element	Min. value:	0
Signed:	NO	Max. value:	1000
Format:	DEC		
List:	NO		

When starting a sensorless synchronous motor, the current is applied here. The current determines the available torque .



If ID34069 = 0, the nominal current of ID111 is used as the starting current.

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-R24 /**Max. list length:*** 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
...	...	...

List element	Content	Meaning
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.

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-R24 /

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 162.

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		

ID34091 'User list 3'

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	Maximum list length:*	-
List:	YES	Maximum list length:*	1024

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

The 'User list 3' is a data set in the remanent memory area that is freely available to the user.

Configuration ID34091 'User list 3'

List element	Content	Meaning
0	x	List head: Current list length without list head [byte] (x = n elements x 2 byte / element)
1	1024	List head: Maximum list length without list head [byte]
2		
3		
4		
...		
1025		

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 i²t-monitoring of the motor.

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 130.](#)

ID34117 'OSC configuration list 2'

Reserved for AMK internal use!

ID34118 'Brake mode'

Reserved for AMK internal use!

ID34119 'Torque constant Kt adaption'

Reserved for AMK internal use!

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 120.](#)

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 162.

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.

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

List element	Content	Meaning
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

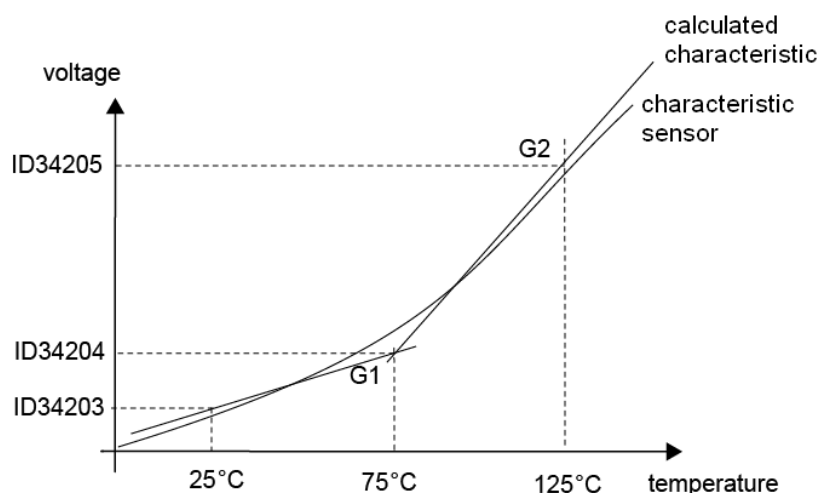
T	T	T	A	X
				Sensor type:
				0: without
				1: THW ¹⁾ temperature sensor (bimetal switch)
				2: No sensor (monitoring inactive)
				3: PTC ¹⁾
				4: KTY 83 ²⁾
				5: KTY 84 with 825 ohm series resistor ²⁾
				6: KTY 84 ²⁾
				7: PT1000 ²⁾
				8: Reserved
				9: User-defined ²⁾
				Number of sensors 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 136.

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 $\neq$ 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 I²t-monitor motor must be activated in ID32773 'Service bits' Bit 14.



For new applications, the I²t 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
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 154.

ID34173 'NTP server address'

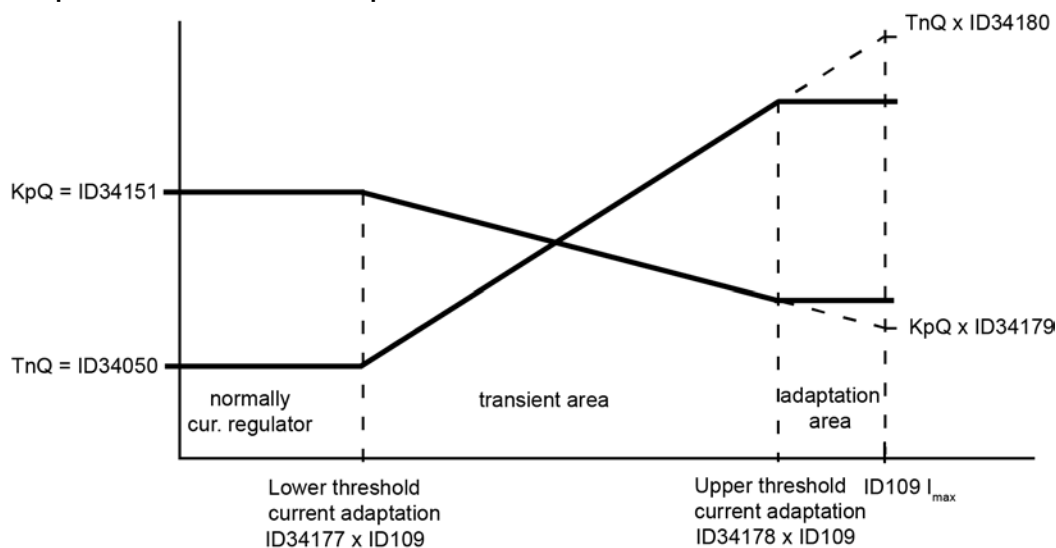
Reserved for AMK internal use!

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 162.](#)

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 162.](#)

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 162.](#)

ID34183 'Velocity threshold SL'

Reserved for AMK internal use!

ID34184 'Compensation dead time PWM'

Reserved for AMK internal use!

ID34185 'Resistance rotor'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	0.0001
Temporarily changeable:	NO	Unit:	Ohm
Data length:	4 byte	Min. value:	0.0000 Ohm
Signed:	NO	Max. value:	200.0000 Ohm
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The characteristic value relates to the equivalent circuit diagram of the motor and can be calculated and automatically parameterised by the startup-software. Alternatively the characteristic value can be taken from the motor data sheet and can be parameterised manually.

ID34186 'Inductance stator'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	0.0001
Temporarily changeable:	NO	Unit:	mH
Data length:	4 byte	Min. value:	0.0000 mH
Signed:	NO	Max. value:	2000.0000 mH
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The characteristic value relates to the equivalent circuit diagram of the motor and can be calculated and automatically parameterised by the startup-software. Alternatively the characteristic value can be taken from the motor data sheet and can be parameterised manually.

ID34187 'Inductance rotor'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	0.0001
Temporarily changeable:	NO	Unit:	mH
Data length:	4 byte	Min. value:	0.0000 mH
Signed:	NO	Max. value:	2000.0000 mH
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The characteristic value relates to the equivalent circuit diagram of the motor and can be calculated and automatically parameterised by the startup-software. Alternatively the characteristic value can be taken from the motor data sheet and can be parameterised manually.

ID34188 'Main inductance'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	0.0001
Temporarily changeable:	NO	Unit:	mH
Data length:	4 byte	Min. value:	0.0000 mH
Signed:	NO	Max. value:	2000.0000 mH
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The characteristic value relates to the equivalent circuit diagram of the motor and can be calculated and automatically parameterised by the startup-software. Alternatively the characteristic value can be taken from the motor data sheet and can be parameterised manually.

ID34189 'Bit list sensorless'

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:	65536
Format:	BIN		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

Configuration ID34189 'Bit list sensorless'

Bit no.	Condition	Meaning
0 (LSB)	0	The sensorless operation mode starts at standstill of the motor.
	1	The sensorless operation mode starts at standstill or during the motor is turning (detected actual speed value)
1-15	0	Reserved
	1	Reserved

ID34190 'Bit list parameter finding'

Reserved for AMK internal use!

ID34191 'Velocity acquisition propotional gain'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	4 byte	Min. value:	0
Signed:	NO	Max. value:	16777215
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The controller for the speed measurement is adjusted by the AMK PC software 'AIPEX PRO Startup'.

ID34192 'Velocity acquisition integral-action time'

Sphere of action:	GLOBAL	Default value:	0
Access:	READING / WRITING	Scale:	1
Temporarily changeable:	NO	Unit:	-
Data length:	4 byte	Min. value:	0
Signed:	NO	Max. value:	16777215
Format:	DEC		
List:	NO		

This parameter affects at the function 'sensorless speed control of an asynchronous motor'.

The controller for the speed measurement is adjusted by the AMK PC software 'AIPEX PRO Startup'.

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 i²t-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 i²t-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 I²t-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

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 160.](#)

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 160.](#)

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 160.](#)

ID34206 'Product code'

Reserved for AMK internal use!

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!

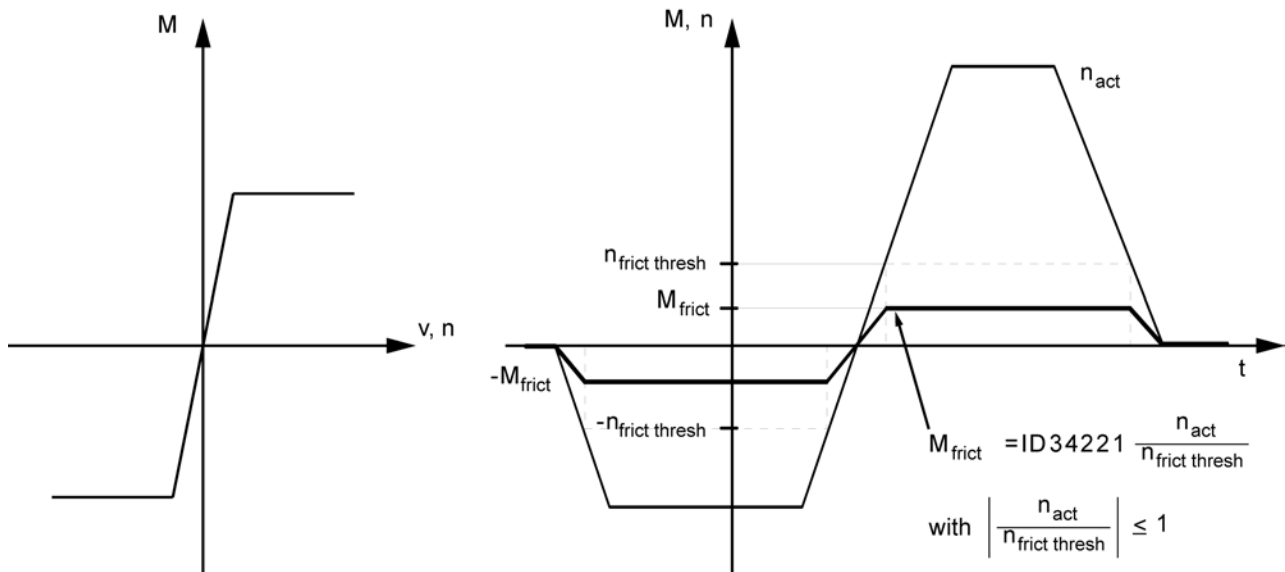
ID34220 'AMK Test 4'

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 $n_{act} \geq n_{frict\ threshold}$. Within the range $n_{act} < n_{frict\ threshold}$, the friction torque is linear.



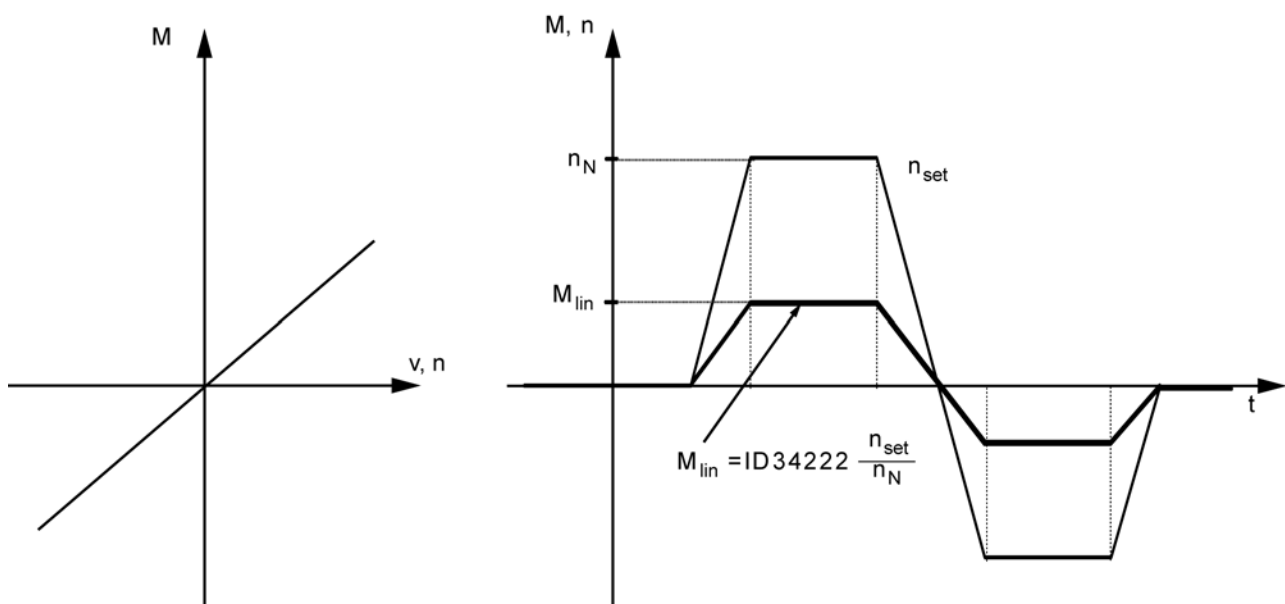
This parameter is used by the following function:
'Load model'

ID34222 'Friction torque linear'

Sphere of action: DRIVE
Access: READING / WRITING
Temporarily changeable: YES
Data length: 2 byte
Signed: NO
Format: DEC
List: NO

Default value: 0
Scale: 0.01
Unit: Nm
Min. value: -
Max. value: -

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.

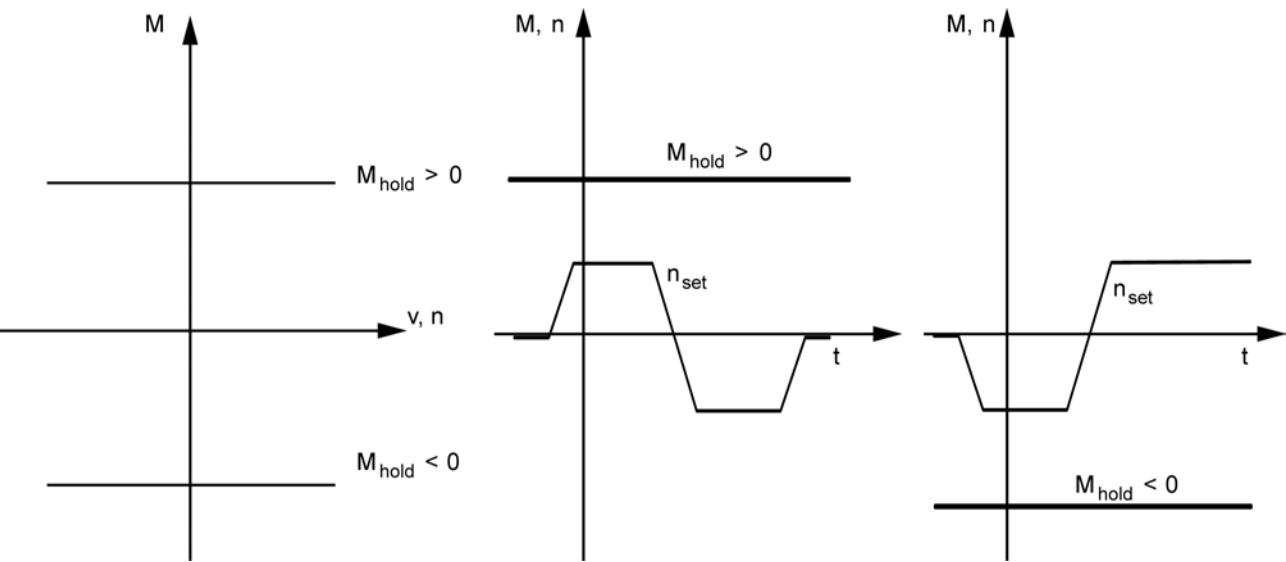


This parameter is used by the following function:
'Load model'

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.

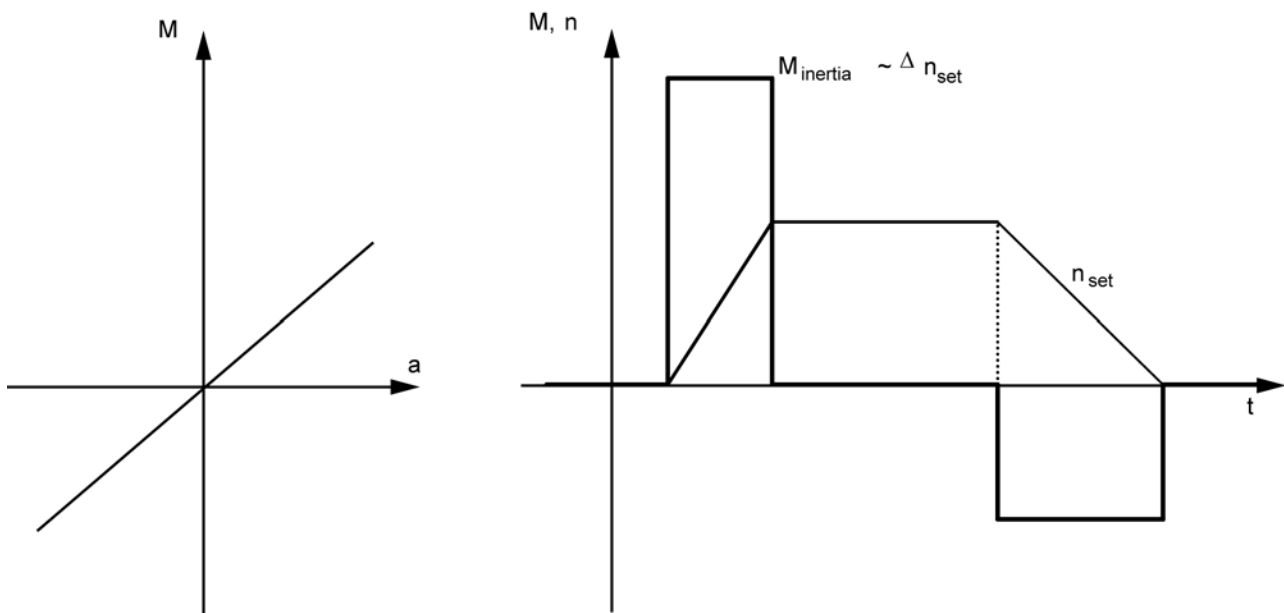


This parameter is used by the following function:
'Load model'

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!

Bit no.	Condition	Meaning
5 ⁴⁾	0	ID33174 'Damping factor position' inactive
	1	ID33174 'Damping factor position' active
6-12	0	Reserved
	1	Reserved
13 ²⁾	0	Inertia in according to ID34224 'Inertia'
	1	Inertia in according to ID33334 'Inertia motor' and ID33335 'Inertia load'
14 ²⁾	0	Friction torque linear in according to ID34222 'Friction torque linear'
	1	Friction torque linear in according to ID33332 'Friction torque linear motor' and ID33333 'Friction torque linear load'
15 ²⁾	0	Friction torque in according to ID34221 'Friction torque'
	1	Friction torque in according to ID33330 'Friction torque motor' and ID33331 'Friction torque load'
16 ²⁾	0	Load model active
	1	Load model inactive
17	0	Reserved
	1	Reserved
18	0	Reserved
	1	Reserved
19	0	Reserved
	1	Reserved
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'

ID34244 'Electrical field angle'

Sphere of action:	DRIVE	Default value:	0
Access:	READING	Scale:	1
Temporarily changeable:	NO	Unit:	Increments
Data length:	2 byte	Min. value:	0

Signed:	NO	Max. value:	65535
Format:	DEC		
List:	NO		

ID34244 shows the electrical field angle.

ID34246 'ZR-current T1-d'

Sphere of action:	DRIVE	Default value:	2.000
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	YES	Unit:	ms
Data length:	2 byte	Min. value:	0.100 ms
Signed:	NO	Max. value:	5.000 ms
Format:	DEC		
List:	NO		

Time constant T1 d-component

ID34247 'ZR-current T2-d'

Sphere of action:	DRIVE	Default value:	2.000
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	YES	Unit:	ms
Data length:	2 byte	Min. value:	0.100 ms
Signed:	NO	Max. value:	5.000 ms
Format:	DEC		
List:	NO		

Time constant T2 d-component

ID34248 'ZR-current T1-q'

Sphere of action:	DRIVE	Default value:	2.000
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	YES	Unit:	ms
Data length:	2 byte	Min. value:	0.100 ms
Signed:	NO	Max. value:	5.000 ms
Format:	DEC		
List:	NO		

Time constant T1 q-component

ID34249 'ZR-current T2-q'

Sphere of action:	DRIVE	Default value:	2.000
Access:	READING / WRITING	Scale:	0.001
Temporarily changeable:	YES	Unit:	ms
Data length:	2 byte	Min. value:	0.100 ms
Signed:	NO	Max. value:	5.000 ms
Format:	DEC		
List:	NO		

Time constant T2 q-component

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.

ID34264 'Maximum torque'

Reserved for AMK internal use!

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		

Reserved for AMK internal use!

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!

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 109.

ID34300 'Velocity actual value in control'

Siehe ID32800 'AMK main operating mode' auf Seite 109.

ID34301 'Torque setpoint filter input'

Siehe ID32800 'AMK main operating mode' auf Seite 109.

ID34302 'Torque setpoint filter output'

Siehe ID32800 'AMK main operating mode' auf Seite 109.

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'

Reserved for AMK internal use!

ID34816 'Communication output word'

Reserved for AMK internal use!

ID35328 'Communication input double word'

Reserved for AMK internal use!

ID35584 'Communication output double word'

Reserved for AMK internal use!

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'
311	Warning: excess converter temperature Note: same as code 33017	Temperature of the device rear wall or value according to the temperature model is too high, diagnostic message 2350 'Device temperature warning'
312	Warning: excess motor temperature Note: same as code 33018	Value at the sensor input X12 or according to ID34166 is too high, diagnostic message 2359 'Motor overload warning'
313	Warning: excess air temperature Note: same as code 33021	Diagnosis 1073 'Cooling Air Temperature Warning'
330	$n_{\text{actual}} = n_{\text{target}}$	$ n_{\text{target}} - n_{\text{actual}} < \text{ID157 'Velocity window'}$
331	$n_{\text{actual}} < n_{\text{min}}$	$ n_{\text{actual}} < \text{ID124 'Zero velocity window'}$
332	$n_{\text{actual}} < n_x$	$ n_{\text{target}} - n_{\text{actual}} < \text{ID125 'Velocity threshold'}$
333	$M_d \geq M_{dx}$	$M_{\text{actual}} \geq \text{ID126 'Torque threshold'}$
334	$M_{\text{Target}} \geq M_{\text{Limit}}$	$M_{\text{Target}} \geq \text{ID82 'Positive torque limit'}$ or $M_{\text{Target}} \leq \text{ID83 'Negative torque limit'}$
335	$n_{\text{Target}} \geq n_{\text{Limit}}$	$n_{\text{Target}} \geq \text{ID38 'Positive velocity limit'}$ or $n_{\text{Target}} \leq \text{ID39 'Negative velocity limit'}$
337	$P \geq P_x$	$P_{\text{actual}} \geq \text{ID158 'Power threshold'}$
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
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

Code	Designation	Description
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
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	Configure 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)	
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
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'
33925	Status of a connected brake	= 0 brake closed = 1 brake opened Siehe 'Codes for the configuration of the binary inputs' auf Seite 183. Code 33906

Code	Designation	Description
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

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
32903	DC bus ON (UE)	Charge DC bus
32904	Controller enable (RF)	Activate control
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
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
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'

Code	Designation	Description
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.

Glossary

A

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

B

BIN

Binary (digital)

C

CMD

Commanding

D

DZR

Speed control

DRIVE

Drive-specific parameter (Value is valid inside only one
parameter set)

DI

Digital input

Default

Factory setting

DEZ

Decimal

DO

Digital output

E

EF

Power output stage enable

EF2

Power output stage enable

F

FIPO

Fine interpolator

Firmware

System software, loaded by AMK

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

HEX

Hexadecimal, 0x...

I

IPO

Interpolator

i²t

Integral of the squared current over time

ID

Parameter identification numbers acc. to SERCOS Standard

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)

K

KW-Rxx

AMKASYN controller card for installation into compact inverter

KP

Proportional gain (speed control, PID controller)

KW

AMKASYN compact inverter

L

LSB

Least Significant Bit

M

MSB

Most Significant Bit

MDT

Master Data Telegram from master to slave

M(N)

Nominal torque

MST

Master synchronization telegram

O

OSC

Oscilloscope

P

Parameter

Identification number acc. to SERCOS standard

PDK_XXXXXX_abcdefgh

Product documentation; XXXXX - AMK part no. , abcdefgh - name

PGT

Periphery basic clock Fetch cycle in the basic device to which the drive controller is synchronized (The cycle time is according to ID2)

PWM

Pulse width modulation

Q

QUE

Acknowledgment DC bus on; shows that DC bus is loaded

QBR

Acknowledgment motor holding brake

QRF

Acknowledgment controller enable; the drive is controlled in the activated operation mode

R

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

SAK

Following distance error compensation

SBM

System ready message; shows that the device is error-free In case of error. SBM will be reset

SEEP

Device-internal memory, serial EEPROM

Sensorless

Operation mode without encoder

SERCOS

Standardized digital interface for communication between controller and field bus participants.

SoE

Servodrive Profile (SERCOS) over EtherCAT (Acc. to IEC 61800-7-300)

STO

Safe torque off (Safety function acc. to DIN EN 61800-5-2)

T

Td

Differentiating time in speed control (PID controller)

Tn

Integral-action time in speed control (PID controller)

U

U/f

Voltage / frequency control (open loop)

V/f

Voltage / frequency control (open loop)

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.

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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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(1) very good (2) good (3) satisfactory (4) less than satisfactory (5) poor

2. Is the content structured well?
(1) very good (2) good (3) moderate (4) hardly (5) not at all

3. How easy is it to understand the documentation?
(1) very easy (2) easy (3) moderately easy (4) difficult (5) extremely difficult

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