

# 8. Diagnostics

## 8.1 Error status/Warning status

Errors are shown on the drive controller display (for D1/2 display see Operation Manual) and in parallel in the DRIVEMANAGER. When a new error occurs, the window below opens, indicating the error name, location and cause. In addition, the green rectangle in the "Drive Status" switches to red.

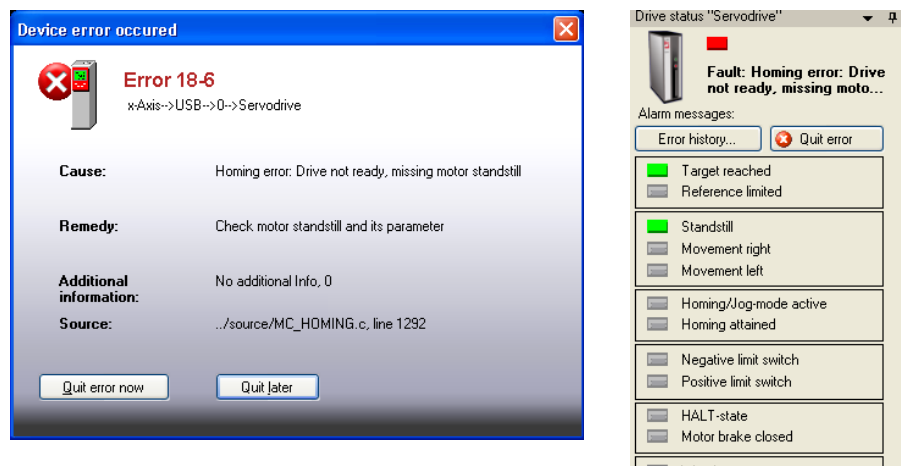


Figure 8.1 Current error display

Clicking the "Error" button in the "Drive Status" window calls up a buffer memory log listing the last 20 errors. When the 21st error occurs, the oldest error in the list is overwritten.

1	Error 11-1	2455760h	External error at digital input detected
2	Error 18-8	2275817h	Homing/logging error: Drive not ready, wrong control mode. Switch to supported control mode
3	Error 0-0	0h	
4	Error 0-0	0h	

Figure 8.2 Error history; storage of last 20 errors

### 8.1.1 Error reactions

Each of the errors listed in parameter P 0033 (sub-ID 0-47) can be assigned one of the error reactions listed below. However, not every error has every selection option.

P.no.	Parameter name/ Settings	Description in DM 5	Error reactions
P 0033 Sub Id 0-46	ErrorReactions	Programmable reaction in case of failure	Error response
(0)	Ignore	Ignore error	The error is ignored
(1)	Specific1	Notify error, reaction is forced by internal PLC function block	A specific error reaction can be programmed via PLC
(2)	Specific 2	Notify error, reaction is forced by external control unit	Error reaction external
(3)	FaultReactionOption-Code	Notify error, reaction as given by fault reaction option codes	The error reaction is based on the value set in object 605Eh "Fault reaction" option code.

P.no.	Parameter name/ Settings	Description in DM 5	Error reactions
(4)	ServoStop	Notify error, execute quick stop and wait for restart of control	Quick stop, waiting for restart of control
(5)	ServoStopAndLock	Notify error, execute quick stop, disable power stage, protect against restart	Quick stop, block power stage, secure against switching on
(6)	ServoHalt	Notify error, disable power stage	Block power stage
(7)	ServoHaltAndLock	Notify error, block power stage, protect against restart	Block power stage, block enable
(8)	WaitERSAndReset	Notify error, block power stage and reset only via switching off/on control voltage (24 V)	Block power stage, reset only by switching the 24 V control voltage off and back on

## 8.1.2 Error details/Alarm & warning details

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error- register DS 402	Error code SERCOS
(0)	(0) no error	No error	0xFF00	1	0x8000
(1)	(1) RunTimeError	Runtime error	0x6010	1	0x1
	(2) RunTimeError_Dyna- micModules	Internal error in device initialization	0x6010	1	0x1
	(3) RunTimeError_ Flashmemory	Error in flash initialization	0x6010	1	0x1
	(4) RunTimeError_PLCL	PLC runtime error	0x6010	1	0x1
(2)	ParaList		0x6320	1	0x1

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error- register DS 402	Error code SERCOS
	(1) ParameterInit	Error in parameter initialization	0x6320	1	0x1
	(2) ParameterVirginInit	Basic parameter initialization (factory setting)	0x6320	1	0x1
	(3) ParameterSave	Parameter data backup	0x5530	1	0x1
	(4) ParameterAdd	Registration of a parameter	0x6320	1	0x1
	(5) ParameterCheck	Check of current parameter list values	0x5530	1	0x1
	(6) ParameterListAdmin	Management of parameter list	0x6320	1	0x1
	(7) ParaList_PST	Non-resetable errors from PowerStage : EEPROM data error	0x5400	1	0x1
	(8) ParaList_PST_VL	Error in power stage initialization; selected device voltage not supported	0x6320	1	0x1
(3)	OFF				
	(1) Off_MON_Device	Undervoltage	0x3120	1	0x200
(4)	OverVoltage				
	(1) OverVoltage_MON_ Device	Overvoltage	0x3110	1	0x100
(5)	OverCurrent				
	(1) OverCurrent_Hard- wareTrap	Overcurrent shut-off by hardware	0x2250	1	0x80
	(2) OverCurrent_Soft	Overcurrent shut-off (fast) by software	0x2350	1	0x80
	(3) OverCurrent_ADC	Measuring range of AD converter exceeded	0x2350	1	0x80
	(4) OverCurrent_Wi- reTest	Short-circuit test on initialization	0x2350	1	0x80

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(5) OverCurrent_DC	(Fast) Overcurrent shut-off "below 5 Hz"	0x2350	1	0x80
	(6) OverCurrent_Zero,	Total current monitoring	0x2350	1	0x80
	(7) OverCurrent_I2TS	Fast I <sup>2</sup> t at high overload	0x2350	1	0x80
(6)	OvertempMotor				
	(1) OvertempMotor_MON_MotTemp	Calculated motor temperature above threshold value	0x4310	1	0x4
	(2) OvertempMotor_MON_Device_DIN1	PTC to DIN1	0x4310	1	0x4
	(3) OvertempMotor_MON_Device_DIN2	PTC to DIN2	0x4310	1	0x4
	(4) OvertempMotor_MON_Device_DIN3	PTC to DIN3	0x4310	1	0x4
(7)	OvertempInverter				
	(1) OvertempInverter_MON_Device	Heat sink temperature too high	0x4210	1	0x2
(8)	OvertempDevice				
	(1) OvertempDevice_MON_Device	Interior temperature evaluation	0x4210	1	0x40
(9)	I2tMotor				
	(1) I <sup>2</sup> tMotor_MON_I2t	I <sup>2</sup> t integrator has exceeded motor protection limit value (permissible current/time area)	0x2350	1	0x1
(10)	PowerAmplifier				
	(1) I <sup>2</sup> tPowerAmplifier_MON_Device	I <sup>2</sup> t power stage protection limit value exceeded	0x2350	1	0x1
(11)	External				
	(1) External_MPRO_IN-PUT	External error message	0xFF0	1	0x8000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
(12)	CAN				
	(1) ComOptCan_BusOff	CAN option: BusOff error	0x8140	1	0x8000
	(2) ComOptCan_Guarding	CAN option: Guarding error	0x8130	1	0x8000
	(3) ComOptCan_MsgTransmit	CAN option: Unable to send message	0x8100	1	0x8000
	(4) ComOptCan_HeartBeat	CAN option: Heartbeat error	0x8130	1	0x8000
	(5) ComOptCan_Addr	CAN option: Invalid address	0x8110	1	0x8000
	(6) ComOptCan_PdoMappingError	Mapping error	0x8200	1	0x8000
	(7) ComOptCan_Sync-TimeoutError	CAN option: Synchronization error	0x8140	1	0x8000
(13)	SERCOS				
	(1) ComOptSercos_HardwareInit	SERCOS: Hardware initialization	0xFF00	1	0x1000
	(2) ComOptSercos_IllegalPhase	SERCOS: Invalid communication phase	0xFF00	1	0x1000
	(3) ComOptSercos_CableBreak	SERCOS: Cable break	0xFF00	1	0x1000
	(4) ComOptSercos_Data-Disturbed	SERCOS: Disturbed data transmission	0xFF00	1	0x1000
	(5) ComOptSercos_MasterSync	SERCOS: Faulty synchronization	0xFF00	1	0x1000
	(6) ComOptSercos_MasterSync	SERCOS: Data telegrams missing	0xFF00	1	0x1000
	(7) ComOptSercos_Address- Double	SERCOS: Duplicate address	0xFF00	1	0x1000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(8) ComOptSercos_Phase SwitchUp	SERCOS: Faulty phase switching (Up shift)	0xFF00	1	0x1000
	(9) ComOptSercos_Phase SwitchDown	SERCOS: Faulty phase switching (Down shift)	0xFF00	1	0x1000
	(10) ComOptSercos_Phase SwitchAck	SERCOS: Faulty phase switching (missing acknowledgement)	0xFF00	1	0x1000
	(11) ComOptSercos_Init-ParaList	SERCOS: Faulty initialization of SERCOS parameter lists	0xFF00	1	0x1000
	(12) ComOptSercos_RunTimeError	SERCOS: Various runtime errors	0xFF00	1	0x1000
	(13) ComOptSercos_Watchdog	SERCOS: Hardware watchdog	0xFF00	1	0x1000
	(14) ComOptSercos_Para	SERCOS: Error in parameterization (selection of OP mode, IP times, etc...)	0xFF00	1	0x1000
(14)	EtherCat:				
	(1) ComOptEtherCat_Sm Watchdog0	EtherCat: Sync-Manager0 - Watchdog	0x8130	1	0x8000
	(2) ComOptEtherCat_Wrong EepData	EtherCat: Parameter error, parameter data implausible	0x8130	1	0x8000
	(3) ComOptEtherCat_RamError	EtherCat: Internal RAM error	0x8130	1	0x8000
(15)	Parameters				
	(1) Parameter_MON_Device_Current	Error in current monitoring initialization	0x2350	1	0x8000
	(2) Parameter_MON_I2t	Motor protection	0x2350	1	0x8000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(3) Parameter_CON_ICOM	Autocommutation: Plausibility tolerance exceeded	0xFF00	1	0x8000
	(4) Parameter_CON_FM	Field model	0xFF00	1	0x8000
	(5) Parameter_CON_Timing	Basic initialization of control	0xFF00	1	0x8000
	(6) Parameter_MPRO_FG	Error calculating user units	0x6320	1	0x8000
	(7) Parameter_ENC_RA-TIO	Error initializing encoder gearing	0x6320	1	0x8000
	(8) Parameter_Nerf	Speed detection / observer	0x8400	1	0x8000
	(9) Parameter_ObsLib	Error in matrix library	0xFF00	1	0x8000
	(10) Parameter_CON_CCON	Current control	0x8300	1	0x8000
	(11) Parameter_reserved1	Not used/reserved	0xFF00	1	0x8000
	(12) Parameter_Inertia	Moment of inertia is zero	0xFF00	1	0x8000
	(13) Parameter_MPRO	PARA_WatchDog in open-loop control via DM5	0xFF00	1	0x8000
	(14) Parameter_DV_INIT	DV_INIT: Error in system initialization	0xFF00	1	0x8000
(16)	SpeedDiff				
	(1) SpeedDiff_MON_SDiff	Speed tracking error above threshold value	0x8400	1	0x8000
	(2) SpeedDiff_MON_NAct	Current speed above maximum speed of motor	0x8400	1	0x8000
(17)	PositionDiff				
	(1) PositionDiff_MON_ActDelta	Position tracking error too large	0x8611	1	0x8000
(18)	Motion control				

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(1) MotionControl_MC_HOMING_LimitSwitchInterchanged	Homing: Limit switches interchanged	0x8612	1	0x8000
	(2) MotionControl:MC_HOMING: Unexpected home switch event	Homing: Limit switch tripped unexpectedly	0x8612	1	0x8000
	(3) MotionControl_MC_HOMING_ErrorLimitSwitch	Homing: Limit switch error	0x8612	1	0x8000
	(4) MotionControl_MC_HOMING_UnknownMethod	Homing: Wrong homing method, homing method not available	0xFF00	1	0x8000
	(5) MotionControl_MC_HOMING_MethodUndefined	Homing: Homing method available but not defined	0xFF00	1	0x8000
	(6) MotionControl_MC_HOMING_DriveNotReadyHoming	Homing: Drive not ready for homing	0xFF00	1	0x8000
	(7) MotionControl_MC_HOMING_DriveNotReadyJogging	Homing: Drive not ready for jog mode	0xFF00	1	0x8000
	(8) MotionControl_MC_HOMING_WrongConMode	Homing: Control mode does not match homing method	0xFF00	1	0x8000
	(9) MotionControl_MC_HOMING_EncoderInitFailed	Homing: Encoder initialization error	0xFF00	1	0x8000
	(10) MotionControl_MC_HOMING_MaxDistanceOverrun	Homing: Homing travel exceeded	0xFF00	1	0x8000
	(11) MotionControl_MPRO_REF_EnabledOperationFailed	Max. permissible tracking error on "Start control" exceeded	0xFF00	1	0x8000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(12) MotionControl_MPRO_REF_SSP_StackOverflow	Memory overflow for table values	0xFF00	1	0x8000
	(13) MotionControl_MC_HOMING_RestoreBackupPos,	Error initializing last actual position after restart.	0xFF00	1	0x8000
	(19) FatalError	Non-resettable error			
	(1) FatalError_PowerStage_LimitIdx	PST: Data index too large	0x5400	1	0x8000
	(2) FatalError_PowerStage_SwitchFreq	PST: Error in switching frequency-dependent data	0x5400	1	0x8000
	(3) FatalError_PowerStage_DataInvalid	PST: Invalid EEPROM data	0x5400	1	0x8000
	(4) FatalError_PowerStage_CRC	PST: CRC error	0x5400	1	0x8000
	(5) FatalError_PowerStage_ErrorReadAccess	PST: Error reading power stage data	0x5400	1	0x8000
	(6) FatalError_PowerStage_ErrorWriteAccess	PST: Error writing power stage data	0x5400	1	0x8000
	(7) FatalError_MON_Chopper	Current in braking resistor even though transistor switched off	0x5420	1	0x8000
	(8) FatalError_HW_Identification	Hardware identification error	0x5300	1	0x8000
	(9) FatalError_FlashMemory	Error in flash memory	0x5300	1	0x8000
	(20) HardwareLimitSwitch				
	(1) HardwareLimitSwitch_Interchanged	Limit switches interchanged	0x8612	1	0x8000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(2) HardwareLimitSwitch_LCW	Hardware limit switch LCW	0x8612	1	0x8000
	(3) HardwareLimitSwitch_LCCW	Hardware limit switch LCCW	0x8612	1	0x8000
(21)	EncoderInit	General encoder initialization (locations which cannot be assigned to a channel)			
	(1) EncoderInit_CON_ICOM_Eps_Delta	Encoder general initialization: Excessive motion	0x7300	1	0x20
	(2) EncoderInit_CON_ICOM_Tolerance	Encoder general initialization: Excessive tolerance	0x7300	1	0x20
(22)	Encoder CH1Init	Encoder channel 1 initialization			
	(1) EncCH1Init_Sincos_Lines	Encoder channel 1 initialization, Sincos: Plausibility check ,Lines' from PRam_ENC_CH1_Lines	0x7305	1	0x20
	(2) EncCH1Init_Sincos_ABSquareSum	Encoder channel 1 initialization, Sincos: Getting ABSquareSum, Timeout	0x7305	1	0x20
	(3) EncCH1Init_Sincos_EncObs	Encoder channel 1 initialization, SinCos: Encoder monitoring Sincos	0x7305	1	0x20
	(4) EncCH1Init_EnDat2.1_NoEnDat2.1	Encoder channel 1 initialization, EnDat2.1: No EnDat2.1 encoder (encoder may be SSI)	0x7305	1	0x20
	(5) EncCH1Init_EnDat2.1_Line5	Encoder channel 1 initialization, EnDat2.1: Plausibility check ,Lines' from encoder	0x7305	1	0x20
	(6) EncCH1Init_EnDat2.1_Multiturn	Encoder channel 1 initialization, EnDat2.1: Plausibility check ,Multiturn' from encoder	0x7305	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(7) EncCH1Init_EnDat2.1_Singleturn	Encoder channel 1 initialization, EnDat2.1: Plausibility check ,Singleturn' from encoder	0x7305	1	0x20
	(8) EncCH1Init_EnDat2.1_CrcPos	Encoder channel 1 initialization, EnDat2.1: CRC error position transfer	0x7305	1	0x20
	(9) EncCH1Init_EnDat2.1_CrcData	Encoder channel 1 initialization, EnDat2.1: CRC error data transfer	0x7305	1	0x20
	(10) EncCH1Init_EnDat2.1_WriteToProt	Encoder channel 1 initialization, EnDat2.1: An attempt was made to write to the protection cells in the encoder!	0x7305	1	0x20
	(11) EncCH1Init_EnDat2.1_SscTimeout	Encoder channel 1 initialization, EnDat2.1: Timeout on SSC transfer	0x7305	1	0x20
	(12) EncCH1Init_EnDat2.1_StartbitTimeout	Encoder channel 1 initialization, EnDat2.1: Timeout, no start bit from encoder	0x7305	1	0x20
	(13) EncCH1Init_EnDat2.1_PosConvert	Encoder channel 1 initialization, EnDat2.1: Position data not consistent	0x7305v	1	0x20
	(14) EncCH1Init_SSI_Lines	Encoder channel 1 initialization, SSI: Plausibility check ,Lines' from encoder	0x7305	1	0x20
	(15) EncCH1Init_SSI_Multiturn	Encoder channel 1 initialization, SSI: Plausibility check ,Multiturn' from encoder	0x7305	1	0x20
	(16) EncCH1Init_SSI_Singleturn	Encoder channel 1 initialization, SSI: Plausibility check ,Singleturn' from encoder	0x7305	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(17) EncCH1Init_SSI_ParityPos	Encoder channel 1 initialization, SSI: Parity error position transfer	0x7305	1	0x20
	(18) EncCH1Init_SSI_Ssc-Timeout	Encoder channel 1 initialization, SSI: Timeout on SSC transfer	0x7305	1	0x20
	(19) EncCH1Init_SSI_PosConvert	Encoder channel 1 initialization, SSI: Position data not consistent	0x7305	1	0x20
	(20) EncCH1Init_SSI_En-cObs	Encoder channel 1 initialization, SSI: Encoder monitoring bit	0x7305	1	0x20
	(21) EncCH1Init_Hiperface_NoHiperface	Encoder channel 1 error initializing Hiperface interface	0x7305	1	0x20
	(22) EncCH1Init_Hiperface_Common	Encoder channel 1 initialization, Hiperface: Interface, gen. Error	0x7305	1	0x20
	(23) EncCH1Init_Hiperface_Timeout	Encoder channel 1 initialization, Hiperface: Interface, Timeout	0x7305	1	0x20
	(24) EncCH1Init_Hiperface_Command-Mismatch	Encoder channel 1 initialization, Hiperface: Encoder, impossible COMMAND in response	0x7305	1	0x20
	(25) EncCH1Init_Hiperface_EStatResp_Crc	Encoder channel 1 initialization, Hiperface: CRC error in error status response	0x7305	1	0x20
	(26) EncCH1Init_Hiperface_EStatResp_Com	Encoder channel 1 initialization, Hiperface: Error status response returns communication error	0x7305	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(27) EncCH1Init_Hiperface_EStatResp_Tec	Encoder channel 1 initialization, Hiperface: Error status response returns technology or process error	0x7305	1	0x20
	(28) EncCH1Init_Hiperface_EStatResp_None	Encoder channel 1 initialization, Hiperface: Error status response returns no error(!)	0x7305	1	0x20
	(29) EncCH1Init_Hiperface_Response_Crc	Encoder channel 1 initialization, Hiperface: CRC error in response	0x7305	1	0x20
	(30) EncCH1Init_Hiperface_Response_Com	Encoder channel 1 initialization, Hiperface: Response with error bit: Status returns communication error	0x7305	1	0x20
	(31) EncCH1Init_Hiperface_Response_Tec	Encoder channel 1 initialization, Hiperface: Response with error bit: Status returns technology or process error	0x7305	1	0x20
	(32) EncCH1Init_Hiperface_Response_None	Encoder channel 1 initialization, Hiperface: Response with error bit: Status returns no error	0x7305	1	0x20
	(33) EncCH1Init_Hiperface_Status_Com	Encoder channel 1 initialization, Hiperface: Status telegram reports communication error	0x7305	1	0x20
	(34) EncCH1Init_Hiperface_Status_Tec	Encoder channel 1 initialization, Hiperface: Status telegram returns technology or process error	0x7305	1	0x20
	(35) EncCH1Init_Hiperface_TypeKey	Encoder channel 1 initialization, Hiperface: Type identification of encoder unknown	0x7305	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(36) EncCH1Init_Hiperface_ WriteToProt	Encoder channel 1 initialization, Hiperface: An attempt was made to write to the protection cells in the encoder!	0x7305	1	0x20
	(37) EncCH1Init_TTL_IncompatibleHardware	Encoder channel 1 initialization, TTL: Control pcb does not support TTL evaluation	0x7305	1	0x20
	(38) EncCH1Init_EnDat2.1_ PositionBits	Encoder channel 1 initialization, EnDat2.1: Plausibility check ‚Position Bits‘ from encoder	0x7305	1	0x20
	(39) EncCH1Init_EnDat2.1_ TransferBits	Encoder channel 1 initialization, EnDat2.1: Plausibility check ‚Transfer Bits‘ of transfer	0x7305	1	0x20
	(40) EncCH1Init_Np_ NominallIncrement	Encoder channel 1 initialization, NP: Plausibility check ‚Lines‘ and „Nominal-Increment“	0x7305	1	0x20
	(41) EncCh1Init_ Endat21_Common	Encoder channel 1 initialization, Endat21: Interface gen. Error	0x7305	1	0x20
	42) EncCh1Init_SSI_ Common	Encoder channel 1 initialization, SSI: Interface gen. error	0x7305	1	0x20
	43) EncCh1Init_Sincos_ Common	Encoder channel 1 initialization, Sincos: Interface gen. error	0x7305	1	0x20
(23)	EncChannel2Init				
	(1) EncCH2Init_Res_Lines	Encoder channel 2 initialization, Res: Plausibility check ‚Lines‘ from PRam_ENC_CH1_Lines	0x7306	1	0x20
	(2) EncCH2Init_Res_ ABSquareSum_TimeOut	Encoder channel 2 initialization, Res: Getting ABSquareSum, Timeout	0x7306	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(3) EncCH2Init_Res_ EncObs	Encoder channel 2 initialization, Res: Encoder monitoring resolver	0x7306	1	0x20
(24)	EncCH3Init				
	(1) EncCH3Init_ Module IdentificationFailed	Encoder channel 3 initialization: No module inserted or wrong module	0x7307	1	0x20
	(2) EncCH3Init_ Common_ EO_ Error	Encoder channel 3 initialization: General EO error (encoder option)	0x7307	1	0x20
	(3) EncCH3Init_ SSI_ EncObs_20c	Encoder channel 3 initialization: Encoder monitoring	0x7307	1	0x20
	(4) EncCH3Init_ EnDat2.1_ NoEnDat2.1	Encoder channel 3 initialization, EnDat2.1: No EnDat2.1 encoder (encoder may be SSI)	0x7307 0x7307	1	0x20
	(5) EncCH3Init_ EnDat2.1_ Lines	Encoder channel 3 initialization, EnDat2.1: Plausibility check ‚Lines‘ from encoder	0x7307	1	0x20
	(6) EncCH3Init_ EnDat2.1_ Multiturn	Encoder channel 3 initialization, EnDat2.1: Plausibility check ‚Multiturn‘ from encoder	0x7307	1	0x20y
	(7) EncCH3Init_ EnDat2.1_ Singleturn	Encoder channel 3 initialization, EnDat2.1: Plausibility check ‚Singleturn‘ from encoder	0x7307	1	0x20
	(8) EncCH3Init_ EnDat2.1_ CrcPos	Encoder channel 3 initialization, EnDat2.1: CRC error position transfer	0x7307	1	0x20
	(9) EncCH3Init_ EnDat2.1_ CrcData	Encoder channel 3 initialization, EnDat2.1: CRC error data transfer	0x7307	1	0x20



P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(10) EncCH3Init_EnDat2.1_WriteToProt	Encoder channel 3 initialization, EnDat2.1: An attempt was made to write to the protection cells in the encoder!	0x7307	1	0x20
	(11) EncCH3Init_EnDat2.1_SscTimeout	Encoder channel 3 initialization, EnDat2.1: Timeout on SSC transfer	0x7307	1	0x20
	(12) EncCH3Init_EnDat2.1_StartbitTimeout	Encoder channel 3 initialization, EnDat2.1: Timeout, no start bit from encoder	0x7307	1	0x20
	(13) EncCH3Init_EnDat2.1_PosConvert	Encoder channel 3 initialization, EnDat2.1: Position data not consistent	0x7307	1	0x20
	(14) EncCH3Init_SSI_Lines	Encoder channel 3 initialization, SSI: Error initializing SSI interface	0x7307	1	0x20
	(15) EncCH3Init_SSI_Multiturn	Encoder channel 3 initialization, SSI: Plausibility check ,Multiturn' from encoder	0x7307	1	0x20
	(16) EncCH3Init_SSI_Singleturn	Encoder channel 3 initialization, SSI: Plausibility check ,Singleturn' from encoder	0x7307	1	0x20
	(17) EncCH3Init_SSI_ParityPos	Encoder channel 3 initialization, SSI: Parity error position transfer	0x7307	1	0x20
	(18) EncCH3Init_SSI_SscTimeout	Encoder channel 3 initialization, SSI: Timeout on SSC transfer	0x7307	1	0x20
	(19) EncCH3Init_SSI_PosConvert	Encoder channel 3 initialization, SSI: Position data not consistent	0x7307	1	0x20
	(20) EncCH3Init_SSI_EnccObs	Encoder channel 3 initialization, SSI: Encoder monitoring bit	0x7307	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(38) EncCH3Init_EnDat2.1_PositionBits	Encoder channel 3 initialization, EnDat2.1: Plausibility check ,Position Bits' from encoder	0x7307	1	0x20
	(39) EncCH3Init_EnDat2.1_TransferBits	Encoder channel 3 initialization, EnDat2.1: Plausibility check ,Transfer Bits' of transfer	0x7307	1	0x20
	(40) EncCH3Init_Np_NominalIncrement	Encoder channel 3 initialization, NP: Plausibility check ,Lines' and "Nominal-Increment"	0x7307	1	0x20
	(41) EncCH3Init_EnDat21_Common	Encoder channel 3 initialization, EnDat21: Interface, gen. error	0x7307	1	0x20
	(42) EncCH3Init_SSI_Common	Encoder channel 3 initialization, SSI: Interface, gen. error	0x7307	1	0x20
	(43) EncCH3Init_Sincos_Common	Encoder channel 3 initialization, Sincos: Interface, gen. error	0x7307	1	0x20
	(50) EncCH3Init_TOPT_cfg	Encoder channel 3 initialization, interface, gen. error	0x7307		0x20
(25)	EncoderCycl	Encoder cyclus			
	(1) EncoderCycl_CON_ICOM_Epsdelta	Encoder general cyclic: Autocommutation: Excessive motion	0xFF00	1	0x20
	(2) EncoderCycl_CON_ICOM_Tolerance	Encoder general cyclic: Autocommutation: Excessive tolerance	0xFF00	1	0x20
(26)	EncCh1Cycl				
	(1) EncCH1Cycl_Np_Distance	Encoder channel 1 cyclic, NP: Plausibility, CounterDistance'	0x7305	1	0x20
	(2) EncCH1Cycl_Np_DeltaCorrection	Encoder channel 1 cyclic, NP: Delta correction not possible	0x7305	1	0x20

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(3) EncCH1Cycl_Np_Delta	Encoder channel 1 cyclic, NP: Plausibility ,CounterDelta'	0x7305	1	0x20
(27)	EncCh2Cycl				
	(1) EncCH2Cycl_NoLocation	Not used	0x7306	1	0x20
(28)	EncCh3Cycl				
	(1) EncCH3Cycl_NoLocation	Not used	0x7307	1	0x20
(29)	TC (TriCore)				
	(1) TC_ASC	TriCore ASC	0x5300	1	0x8000
	(2) TC_ASC2	TriCore ASC2	0x5300	1	0x8000
	(3) TC_FPU	TriCore floating point error	0x5300	1	0x8000
	(4) TC_FPU_NO_RET_ADDR	riCore floating point error, no return address available	0x5300	1	0x8000
(30)	InitCon				
	(1) InitCon_AnalInput	Initialization error analog input	0x5300	1	0x8000
	(2) InitCon_FM_GetKM	Initialization error calculating motor torque constant	0x5300	1	0x8000
	(3) InitCon_FM_ASM	Initialization error asynchronous motor	0x5300	1	0x8000
	(4) InitCon_FM_ASM_FW	Initialization error asynchronous motor in field-weakening	0x5300	1	0x8000
(31)	PLC				
	(1) PLC_Location 0...65536	User-specific: Errors generated in PLC program	0xFF00		0x8000
(32)	Profibus				

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(1) ComOptDp_Timeout	PROFIBUS DP: Process data Timeout	0xFF00	1	0x8000
(33)	Timing	Task overflow			
	(1) Timing_ADCTask_ReEntry	ADC task automatically interrupted	0x5300	1	0x8000
	(2) Timin_ControlTask	Control task exceeded scan time	0x5300	1	0x8000
(34)	PowerFail	Power failure detection			
	PowerFail	Power failure detection; supply voltage error	0x3220	1	0x8000
(35)	EncObs	Encoder cable break			
	(1) EncObs_CH1_Sincos	Cable break: Encoder channel 1	0xFF00	1	0x20
	(2) EncObs_CH2_Resolver	Cable break: Encoder channel 2	0xFF00	1	0x20
	(3) EncObs_CH3_Sincos	Cable break: Encoder channel 3	0xFF00	1	0x20
	(4) EncObs_CH1_SSI	Cable break: Encoder channel 1	0xFF00	1	0x20
(36)	VARAN				
	(1) ComOptVARAN_InitHwError	Error in hardware initialization: VARAN option	0x5300	1	0x8000
	(2) ComOptVARAN_BusOffError	"Bus off" error; no bus communication: VARAN option	0x5300	1	0x8000
(37)	Synchronization controller				
	(1) RatioError	The ratios between interpolation, synchronization and/or speed control time do not match	0x6100	1	0x8000

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
(38)	Braking chopper monitoring				
	(1) BC_Overload	Braking chopper overload	0x4210	1	0x0000
(39)	TwinWindow	Monitoring of speed and torque			
	(1) TwinWindow_Speed	Speed deviation between Master and Slave			
	(2) TwinWindow_Torque	Torque deviation between Master and Slave			
(40)	Twin-Sync-Module	Communication fault TECH option			
	(1) TOPT_TWIN_Comm-Lost	Error in "Twin Sync" technology option	0x7300	1	0x8000
	(2) TOPT_TWIN_Switch-Freq		0x7300	1	0x8000
	(3) TOPT_TWIN_Mode-Conflict		0x7300	1	0x8000
	(4) TOPT_TWIN_RemoteError		0x7300	1	0x8000
(41)	DC link fast discharge	Maximum period for fast discharge			
	(1) FastDischarge_Timeout	Maximum period for fast discharge exceeded (35s)	0x7300	1	0x8000
(42)	EtherCAT Master Implementation	Error EtherCat Master			
	(1) Location can't specified CommError	Communication error Ether-Cat Master	0x6100	1	0x8000
(43)	Ethernet interface	Error in Ethernet configuration			

P.no. P 0030	Error name/Error location	Description of error	Emergency code DS 402	Error-register DS 402	Error code SERCOS
	(1) Ethernet_Init	Initialization error TCP/IP communication	0x6100	1	0x8000
(44)	Cable break detected				
	(1) WireBreak_Motor-Brake	No consumer on output X13 (motor holding brake)	0x6100	1	0x8000
(45)	LERR_LockViolate				
	(1)	Movement requested which was limited by reversing lock, limit switch or reference setpoint limitation	0x8612	1	0x8000
	(2)	Movement requested which was limited by reversing lock, limit switch or reference setpoint limitation. Lock active in both directions	0x8612	1	0x8000
46	LERR_positionLimit				
(1)	Position Limit_neg.	Negative software limit switch approached	0x8612	1	0x2000
(2)	Position Limit_pos	Positive software limit switch approached	0x8612	1	0x2000
(3)	Position Limit_Overtravel	Reference setpoint outside software limit switches	0x8612	1	0x2000
47	LERR_FSAFE	Reserved			

### 8.1.3 Warnings

In order to get timely information on excessive or inadequate values via an external controller or the drive's internal PLC, warning thresholds can be freely parameterized with **P 0730**. Each warning is assigned on and off thresholds. This enables parameterization of a hysteresis.

When a warning is triggered, the corresponding bit is entered in parameter **P 0034-ERR\_WRN\_State** . The binary value enables a status interrogation. Warnings can also be programmed onto digital outputs (see section 6, I/O's). The following warning thresholds are supported by the parameter:

P 0034	Warning thresholds
BIT number	
0	I <sub>xt</sub> integrator (motor) warning threshold exceeded
1	Heat sink temperature
2	Motor temperature
3	Interior temperature
4	Reserved for SERCOS
5	Overspeed
6	Reserved for SERCOS
7	Reserved for SERCOS
8	Reserved for SERCOS
9	Undervoltage
10	Reserved for SERCOS
11	Reserved for SERCOS
12	Reserved for SERCOS
13	Reserved for SERCOS
14	Reserved for SERCOS
15	Reserved for SERCOS
16	I <sub>xt</sub> integrator (device) exceeded
17	Monitoring of apparent current
18	Overvoltage

P 0034	Warning thresholds
19	Protection of braking chopper, warning threshold exceeded
20	Overtorque
21	Reserve
22	Reserve
23	Reserve
24	Speed reference limitation active
25	Current reference limitation
26	Right limit switch active
27	Left limit switch active
28	External warning via input
29	Reserve
30	Reserve
31	Reserve

The ON and OFF options enable suitable on and off thresholds (switching hysteresis) to be defined for the following warnings.

P 0730 Index	Parameter name MON Warning Level	Meaning of Warning Level	Warnings
0	UnderVoltage_ON	DC link undervoltage	Undervoltage
1	UnderVoltage_OFF	DC link undervoltage	
2	OverVoltage_ON	DC link overvoltage	Overvoltage
3	OverVoltage_OFF	DC link overvoltage	
4	Current_ON	Motor current	Motor current
5	Current_OFF	Motor current	

P 0730 Index	Parameter name MON Warning Level	Meaning of Warning Level	Warnings
6	Device I2t_ON	I <sup>2</sup> t internal device protection	I <sup>2</sup> xt device protection
7	Device I2t_OFF	I <sup>2</sup> t internal device protection	
8	Motor I <sup>2</sup> t_ON	I <sup>2</sup> t Motor protection	I <sup>2</sup> xt motor protection
9	Motor I <sup>2</sup> t_OFF	I <sup>2</sup> t Motor protection	
10	Torque ON	Motor torque	Torque limit reached
11	Torque OFF	Motor torque	
12	Speed On	Motor actual speed	Speed limit reached
13	Speed OFF	Motor actual speed	
14	TC ON	Cooler (power electronics) temperature	Heat sink temperature reached
15	TC OFF	Cooler (power electronics) temperature	
16	Tint ON	Internal (control electronics) temperature	Housing internal temperature reached
17	Tint OFF	Internal (control electronics) temperature	
18	MotorTemp ON	Motor temperature	Motor temperature reached
19	MotorTemp OFF	Motor temperature	

