

EtherCat Communication interface. (V0.18)

Servo ↔ NC

File: F28335 Servo to NC 1 V0.18.doc

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1. type message:

This is a cyclical message so it is done in every NC regulating loop

NC → Servo	SSP. Speed SetPoint.	SSP W0
	Data type: [int32]	SSP W1
	SCW. Servo Control Word	SCW0
	Data type: [int32]	SCW1
	Extra Data Code Word [int16]	
Servo → NC	ActPos. Actual Position	POSW0
		POSW1
		POSW2
	Data type: [int64]	POSW3
	SSW. Servo Status Word.	SSW0
	Data type: [int32]	SSW1
	SSW. Servo Error Word.	SEW0
	Data type: [int32]	SEW1
	Message Code	MsgCW0
	Data type: [int32]	MsgCW1
	Message Data	MsgDW0
	Data type: [float32]	MsgDW1
	Extra Data 1	ExtDat1 W0
	Data type: [float32]	ExtDat1 W1
	Extra Data 2	ExtDat2 W0
	Data type: [float32]	ExtDat2 W1
	Extra Data 3	ExtDat3 W0
	Data type: [float32]	ExtDat3 W1
	Extra Data 4	ExtDat4 W0
	Data type: [float32]	ExtDat4 W1

Message Code

This code refers to the content of **Message Data**.

Code chart:

Message Code:	Content of Message Data
0	Motor speed [rpm]
1	Motor current (I) [A]
2	Motor relative current (I/In) [%]
3	Bus voltage [V]
4	Motor temperature [°C]
5	Motor power [kW]
6	
7	
8	
9	

SpeedSetPoint

SSP

Speed SetPoint
(NC → Servo)

Data type: int32 Speed reference signal.

SSPW1

31	30	29	28	27	26	25	24
SSPH_15	SSPH_14	SSPH_13	SSPH_12	SSPH_11	SSPH_10	SSPH_9	SSPH_8

23	22	21	20	19	18	17	16
SSPH_7	SSPH_6	SSPH_5	SSPH_4	SSPH_3	SSPH_2	SSPH_1	SSPH_0

SSPW0

15	14	13	12	11	10	9	8
SSPL_15	SSPL_14	SSPL_13	SSPL_12	SSPL_11	SSPL_10	SSPL_9	SSPL_8

7	6	5	4	3	2	1	0
SSPL_7	SSPL_6	SSPL_5	SSPL_4	SSPL_3	SSPL_2	SSPL_1	SSPL_0

The speed reference signal is in 32 bit format.

(The reference signal is in the space of Low Word in case of Word-type (16bit) reference signal: SSPL_15 ÷ SSPL_0.)

The reference signal is in the space of Low Word and High Word in case of Double Word-type (32 bit) reference signal:

SSPH_15 ÷ SSPH_0 ÷ SSPL_15 ÷ SSPL_0.

ServoControlWord

SCW

Servo Control Word
(NC → Servo)

Data type: int32. Control codes.

31	30	29	28	27	26	25	24
PRGDWN							

23	22	21	20	19	18	17	16

15	14	13	12	11	10	9	8
			ExtPRMTBL	ZPulseRequest	Brake	ErrorClear	SIntLock

7	6	5	4	3	2	1	0
ModeSel	ModeSel	PRMTBL	PRMTBL	POSLOCK	EMGON	SE	SE

Servo Enable. Servo drive enabling

SCW.SE= 0x0÷0x3

Bit	Description	Comment
1÷0	Servo drive enabling	

00 (0x0)	Servo drive disabled	
01 (0x1)	Servo drive disabled	
10 (0x2)	Servo drive enabling. Bit0 1→0 and bit1 0→1.	
11 (0x3)	Servo drive disabled	

Servo drive is enabled for bit0: 1→0 and bit1: 0→1 simultaneous jumps. (Change from 0x1 to 0x2) Servo drive is disabled in any other case.

EMerGency ON. Switch on emergency state. Switch over from “external reference signal” to speed reference signal defined in “Emergency Feed” parameter of servo drive. Speed can be change in an adjustable ramp.

EMGON. Emergency On. Switch on „Braking” mode

SCW.EMGON= 0x0÷0x1

Bit	Description
2	Braking
0 (0x0)	Emergency state mode
1 (0x1)	Normal mode

This control bit is used for stop motor by servo drive in case of Emergency Feed=0. Speed can be set in value deviate from zero in special cases for emergency state (for example: grinders), in this case Emergency Feed<>0. This function is effective until the servo drive is enabled.

Position Lock. Locking in position.

SCW.POSLOCK= 0x0÷0x1

Bit	Description
3	Locking in position
0 (0x0)	Normal mode
1 (0x1)	Locking in position

A fixed axis can be locked in position (hold) by using this function. Servo drive locks axis in position measured in SCW.POSLOCK= 0→1 jump in fixed axis. Locking in position is effective until SCW.POSLOCK= 1.

PaRaMeTeR TaBLe Select. Select active parameter table.

SCW.PRMTBL= 0x0÷0x3

Bit	Description	Comment
4÷3	Select active parameter table	
00 (0x0)	Select 1. Parameter table	
01 (0x1)	Select 2. Parameter table	
10 (0x2)	Select 3. Parameter table	
11 (0x3)	Select 4. Parameter table	

It is also written in SCW.ExtPRTBL (bit12) control bit.

SpeedRegulator **Mode Select.** **It does not used currently.** Select mode of servo drive.

SCW.ModeSEI= 0x0÷0x1

Bit	Description
7÷6	Locking in position
00 (0x0)	Speed regulating mode
01 (0x1)	Current regulating (torque) mode
10 (0x2)	Position regulating mode
11 (0x3)	Increased accuracy speed regulating mode

Speed Integrator Lock. Enable/freeze Integrator.

SCW.SIntLock= 0x0÷0x1

Bit	Description
8	Freeze speed regulator
0 (0x0)	Normal mode
1 (0x1)	Freeze Integrator

Freeze integrator of speed regulator at SCW.SIntLock=1 level. At this time integrator stops at actual value.

Error Clear. Clear errors

SCW.ErrorClear= 0x0÷0x1

Bit	Description
9	Clear servo drive error

0 (0x0) No event

1 (0x1) Clear errors

Clear servo drive errors in case of SCW.ErrorClear=1.

Brake. **It does not used currently.** Switch on emergency state. Switch over from “external reference signal” to speed reference signal defined in “Emergency Feed” parameter of servo drive. Speed can be change in an adjustable ramp.

SCW.Brake= 0x0÷0x1

Bit	Description
10	"Internal" braking or feed

0 (0x0) Emergency state.

1 (0x1) Normal mode

This control bit is used for stop motor by servo drive in case of Jog Feed=0. Speed can be set in value deviate from zero in special cases for emergency state (for example: grinders), in this case Jog Feed<>0 like EMerGENCY ON (SCW.EMGON) mode. However this function does not require enabling of servo drive. It stops moving axis 0 and enabling servo drive for interval set in EmgDelay parameter for jump SCW.Brake 1 -> 0. After axis stopped or time set in EmgDelay expired servo drive is disabled and servo drive switched off from motor independently from input of servo drive enabling.

ZpulseRequest. Start searching zero pulse in case of incremental encoder. (Grid)

SCW.ZPulseRequest= 0x0÷0x1

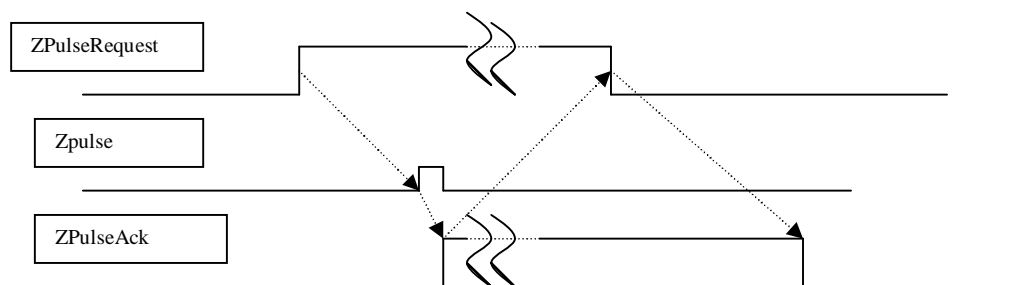
Bit	Description
11	"Searching zero pulse"

0 (0x0) Normal mode

1 (0x1) Start searching zero pulse

This control bit starts searching for zero pulse of incremental encoder. The measuring system of servo drive indicates by ZPulseAck flag bit if found zero pulse. This also means that position (or angular position) of zero pulse is available yet and it can be read from ActPos POSW2 and POSW3 word. Actual position of zero pulse is written automatically in ActPos POSW2 and POSW3 word when found any other additional zero pulses independently from state of ZpulseRequest and ZpulseAck.

Short description: Starting zero pulse search for ZpulseRequest=1. If zero pulse found then measuring system indicates by ZpulseAck=1 value. At this time position of zero pulse is found in POSW2 and POSW3 words. The control writes ZpulseRequest=0 as answer-back signal for position of zero pulse. Value of ZpulseAck is also 0 after than ZpulseRequest=0. In the following figure there is the method of taking home point. It is also written in: ZPulseAck



ExtendedPaRaMeterTaBLe Select. Select extended parameter table.

SCW.ExtPRMTBL= 0x0÷0x1

Bit	Description	Comment
12, (12,4÷3)	Select active parameter table	
0 (0x000)	Select 1. parameter table	
0 (0x001)	Select 2. parameter table	
0 (0x010)	Select 3. parameter table	
0 (0x011)	Select 4. parameter table	
1 (0x100)	Select 5. parameter table	
1 (0x101)	Select 6. parameter table	
1 (0x110)	Select 7. parameter table	
1 (0x111)	Select 8. parameter table	

You can select 4 additional parameter sets (Par5, Par6, Par7, Par8) further the default parameter sets (Par1, Par2, Par3, Par4) by using SCW.ExtPRMTBL bit.

It is also written in SCW.PRTBL (bit4÷3) control bits.

ActualPosition

ActPos

Actual Position
(Servo → NC)

Data type: int64. Measured position.

word 3

63	62	61	60	59	58	57	56
POS_63	POS_62	POS_61	POS_60	POS_59	POS_58	POS_57	POS_56
55	54	53	52	51	50	49	48
POS_55	POS_54	POS_53	POS_52	POS_51	POS_50	POS_49	POS_48

word 2

47	46	45	44	43	42	41	40
POS_47	POS_46	POS_45	POS_44	POS_43	POS_42	POS_41	POS_40
39	38	37	36	35	34	33	32
POS_39	POS_38	POS_37	POS_36	POS_35	POS_34	POS_33	POS_32

word 1

31	30	29	28	27	26	25	24
POS_31	POS_30	POS_29	POS_28	POS_27	POS_26	POS_25	POS_24
23	22	21	20	19	18	17	16
POS_23	POS_22	POS_21	POS_20	POS_19	POS_18	POS_17	POS_16

word 0

15	14	13	12	11	10	9	8
POS_15	POS_14	POS_13	POS_12	POS_11	POS_10	POS_9	POS_8
7	6	5	4	3	2	1	0
POS_7	POS_6	POS_5	POS_4	POS_3	POS_2	POS_1	POS_0

ServoStatusWord

SSW

Servo Status Word Data type: int32.
(Servo → NC)

31	30	29	28	27	26	25	24

23	22	21	20	19	18	17	16

15	14	13	12	11	10	9	8
			ExtPRMTBL	TempWarning	NoEncoder	PRMTBL	PRMTBL

7	6	5	4	3	2	1	0
PulseEnabled	N=Ns	N=0	ErrClearAck	ZPulseAck	Abs/Incr	ServoRDY	ServoEn

Servo Enabled. The servo drive is enabled.

SSW.ServoEn = 0x0÷0x1

Bit	Description
0	Servo drive enabling

0 (0x0) Servo drive is disabled

1 (0x1) Servo drive is enabled

If **SSW.ServoEn=1** then servo drive activates motor so it is live.

Setting SCW.SE enables the servo drive.

Servo ReaDY. Servo drive is ready.

SSW.ServoRDY = 0x0÷0x1

Bit	Description
1	Servo drive enabling

0 (0x0) Servo drive is not ready

1 (0x1) Servo drive is ready

State of **SSW.ServoRDY** is function of setting of Servo_Ready_Mode parameter and also error state of servo drive based on the following chart.

Servo_Ready_Mode	ServoEn SSW.ServoEn	Servo_Errors SEW.ServoErrors	ServoRDY SSW.ServoRDY
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

Absolut/Incremental Encoder. Using absolute or incremental encoder.

SSW.Abs/Incr= 0x0÷0x1

Bit	Description
2	Servo drive enabling

0 (0x0) Absolute encoder

1 (0x1) Incremental encoder

If **SSW.Abs/Incr=0** then servo drive transmits data of position (**ActPos**) from EnDat absolute encoder. (The position is in 64 bit format)

If **SSW.Abs/Incr=1** then servo drive transmits data of position (**ActPos**) from incremental encoder. (The position is in 32 bit format)

ZpulseAck. Found zero pulse after start searching zero pulse in case of incremental encoder. (Grid)

SSW.ZPulseAck= 0x0÷0x1

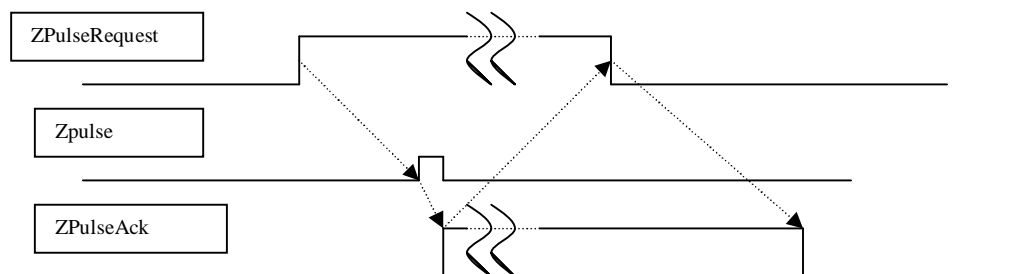
Bit	Description
3	"Searching zero pulse"

0 (0x0) Normal mode

1 (0x1) Zero pulse found

In case of incremental encoder this control bit will be equal to 1 when finding the first zero pulse after start searching for zero pulse (ZpulseRequest). The measuring system of servo drive indicates by ZPulseAck flag bit if found zero pulse. This also means that position (or angular position) of zero pulse is available yet and it can be read from ActPos POSW2 and POSW3 word. Actual position of zero pulse is written automatically in ActPos POSW2 and POSW3 word when found any other additional zero pulses independently from state of ZpulseRequest and ZpulseAck.

Short description: Starting zero pulse search for ZpulseRequest=1. If zero pulse found then measuring system indicates by ZpulseAck=1 value. At this time position of zero pulse is found in POSW2 and POSW3 words. The control writes ZpulseRequest=0 as answer-back signal for position of zero pulse. Value of ZpulseAck is also 0 after than ZpulseRequest=0. In the following figure there is the method of taking home point. It is also written in: ZPulseRequest



ErrClearAck. Indicate deleting errors.

SSW.ErrClearAck= 0x0÷0x1

Bit	Description
4	"Errors are deleted yet"

0 (0x0) Normal mode

1 (0x1) Servo drive errors are deleted

Servo drive deletes errors for **SCW.ErrorClear=1** then it indicates to NC the deleting by writing **SCW.ErrClearAck=1**.

The control has to indicate **SCW.ErrorClear=0** value.

N=0. Indicate that motor stops.

SSW.Neq0= 0x0÷0x1

Bit	Description
5	"Motor stops"

0 (0x0) Motor does not stop

1 (0x1) Motor stops

The **SSW.Neq0=1** indicates that the speed of driven motor is decreased under a speed value that defined in servo drive parameter. It shows **SSW.Neq0=0** value if the speed is higher than the set value. (Always has to set hysteresis)
Management of this flag bit is only the function of measured speed and is not function of servo drive enabling or other errors.

N=Ns. Indicate that motor speed is equal to speed of reference signal.

SSW.NeqNs= 0x0÷0x1

Bit	Description
6	"Motor speed is OK"
0 (0x0)	Motor does not rotate by speed of reference signal
1 (0x1)	Motor rotates by speed of reference signal

The **SSW.NeqNs=1** indicates that the speed of driven motor is decreased under an absolute and percentage error limit of speed of reference signal that defined in servo drive parameter. It shows **SSW.NeqNs=0** value if the speed is out of error limit. Management of this flag bit is only the function of measured speed and is not function of servo drive enabling or other errors.

PulseOn. Indicate on/off state of servo drive power stage (IGBT). (Virtual motor circuit contactor handling)

SSW.PulseEnabled= 0x0÷0x1

Bit	Description
7	State of "PulseEnable"
0 (0x0)	IGBT switched off
1 (0x1)	IGBT switched on

The **SSW.PulseEnabled=0** indicates that power stage (IGBT) of servo drive is switched off (by input of PulseEnable) so the servo drive is switched off from motor. (input: PulseEnable=0 -> output: PulseOn=0)

The **SSW.PulseEnabled=1** indicates that power stage (IGBT) of servo drive is enabled (by input of PulseEnable) so the servo drive is switched on the motor. (input: PulseEnable=1 -> output: PulseOn=1)

Note: The PulseEnable is not identical to ServoEnable function. Since the first is just switch on/off the IGBT (virtual motor circuit contactor) then the second switches on/off the regulating circuit and power stage of servo drive.

PaRaMeterTaBLe Selected. It indicates the switched (active) parameter table to NC.

SSW.PRMTBL= 0x0÷0x3

Bit	Description	Comment
9÷8	Select active parameter table	
00 (0x0)	The 1. parameter table is active	
01 (0x1)	The 2. parameter table is active	
10 (0x2)	The 3. parameter table is active	
11 (0x3)	The 4. parameter table is active	

Select active parameter table by setting **SCW.PRMTBL** correctly. It is also written in **SSW.ExtPRMTBL (bit12)** status bit.

NoEncoder. There is no encoder.

SSW.NoEncoder= 0x0÷0x1

Bit	Description
10	"Errors are deleted yet"
0 (0x0)	There is encoder in the axis
1 (0x1)	There is no encoder in the axis

SSW.NoEncoder=1 There is no encoder in the axis. (For example in case of inverter)

TempWarning. Warning for high temperature

SSW.TempWarning= 0x0÷0x1

Bit	Description
11	Warning for high temperature
0 (0x0)	There is no warning
1 (0x1)	Warning

In case of **SSW.TempWarning=1** the temperature of motor measured in encoder is exceeded 80°C value (The maximal permitted temperature of connection cables is usually 80°C.)

ExtendedPaRaMeterTaBLe Selected. Indicate to NC that extended parameter table set is selected.

SSW.ExtPRMTBL= 0x0÷0x1

Bit	Description	Comment
12, (12,9÷8)	Select active parameter table	
0 (0x000)	The 1. parameter table is active	
0 (0x001)	The 2. parameter table is active	
0 (0x010)	The 3. parameter table is active	
0 (0x011)	The 4. parameter table is active	
1 (0x100)	The 5. parameter table is active	
1 (0x101)	The 6. parameter table is active	
1 (0x110)	The 7. parameter table is active	
1 (0x111)	The 8. parameter table is active	

You can select 4 additional parameter sets (Par5, Par6, Par7, Par8) further the default parameter sets (Par1, Par2, Par3, Par4) by using SCW.ExtPRMTBL bit.

It is also written in SCW.PRMTBLPRTBL (bit9÷8) control bits.

ServoErrorWord

SEW

Servo Error Word (DoubleWord)
(Servo → NC)

31	30	29	28	27	26	25	24
							CurrDiffErr
23	22	21	20	19	18	17	16
OverSpeed	ECatWatchDog	SFlashErr	OverLoad	FollowerErr	PRGCHKSErr	PTBLCHKSErr	PDPINT
15	14	13	12	11	10	9	8
ECatTErr	CAN2HErr	CAN1HErr	CAN2TErr	CAN1TErr	SRTErr	HallSErr	HallErr
7	6	5	4	3	2	1	0
CURROErr	CurrErr	BVErr		ECatConfigError	I2t_Endat	EncoderErr	ServoErrors

ServoErrors. Summarized errors.

SEW.ServoErrors= 0x0÷0x1

Bit	Description	Error Code
0	Indicate summarized servo drive errors	

0 (0x0) There is no servo drive error.

1 (0x1) There is servo drive error.

Summarizing errors of servo drive creates this flag bit.

If **SEW.ServoErrors=1** then the additional error bits indicate the cause of error.

EncoderErr. Encoder Error. Connected encoder error.

SEW.EncoderErr= 0x0÷0x1

Bit	Description	Error Code
1	Encoder error	E01

0 (0x0) There is no error.

1 (0x1) There is encoder error

If **SEW.EncoderErr=1** then the measuring system of servo drive is detected error on the connected encoder (Endat, SinCos or TTL).

I2t_Endat. I2t from Endat Encoder. Heat protection error. Built-in temperature sensor of Endat encoder is measured high temperature (>95°C).

SEW.I2t_Endat= 0x0÷0x1

Bit	Description	Error Code
2	High temperature	E19

0 (0x0) There is no error.

1 (0x1) High temperature (>95°C)

If **SEW.I2t_Endat=1** then the temperature sensor of EnDat encoder is measured temperature higher than value defined in „Max_Temperature“ parameter (usually 95°C).

EtherCat Init Error. EtherCat initializing error.

SEW.ECatConfigError= 0x0÷0x1

Bit	Description	Error Code
3	EtherCat initializing error	E14

0 (0x0) There is no error

1 (0x1) Error. Wrong EtherCat setting

In case of **SEW.ECatConfigError=1** the EtherCat Master (NC) loaded EtherCat Slave (servo drive) unit with wrong initializing data. Check Slave settings to apply the settings of address and data spaces.

Reserved.

= 0x0

Bit	Description	Error Code
4	It does not used currently	

0 (0x0)

Bus Voltage Error. Bus voltage is too high.

SEW.BVErr= 0x0÷0x1

Bit	Description	Error Code
5	High bus voltage	E05

0 (0x0) There is no error.

1 (0x1) Bus voltage exceeded the setting value

If **SEW.BVErr=1** then bus voltage measured continuously by servo drive is exceeded value set in U_max parameter.

CURRENT Error. Motor current is too high.

SEW.CURRErr= 0x0÷0x1

Bit	Description	Error Code
6	Motor current is too high	E06

0 (0x0) There is no error.

1 (0x1) Motor current is exceeded value set in I_max parameter

If **SEW.CURRErr=1** then motor current measured continuously by servo drive is exceeded value set in I_max parameter.

Current Offset Error. Current measuring error, offset error.

SEW.CURROErr= 0x0÷0x1

Bit	Description	Error Code
7	Current measuring error	E07

0 (0x0) There is no error.

1 (0x1) Current measuring error, Offset error

If **SEW.CURROErr=1** then current measuring error is occurred. Value of zero current in analogue measuring circuit is deflects significantly from setting value. Offset error.

Hall Sensor Error. Hall signal error.

SEW.HallErr= 0x0÷0x1

Bit	Description	Error Code
8	Commuting signal error	E08

0 (0x0) There is no error.

1 (0x1) Commuting signal error

If **SEW.HallErr=1** then commuting signal error is occurred. There is problem with signal level.

Hall Sequence Error. Hall sequence error.

SEW.HallSeqErr= 0x0÷0x1

Bit	Description	Error Code
9	Commuting signal sequence error	

0 (0x0) There is no error.

1 (0x1) Sequence error

If **SEW.HallSeqErr=1** then the sequence of commuting signal does not correspond to GRAY code. There is problem with signal level.

Servo RunTime Error. Servo drive program running timeout error. (Servo WatchDog)

SEW.SRTerr= 0x0÷0x1

Bit	Description	Error Code
10	Servo timeout	

0 (0x0) There is no error.

1 (0x1) Timeout error

If **SEW.SRTerr=1** then WatchDog Timer is ran out in servo drive. The servo drive is broken.

CAN Ch1 RunTime Error. Timeout error in Ch1 channel of CAN. (CAN WatchDog)

SEW.CAN1RTrr= 0x0÷0x1

Bit	Description	Error Code
11	Communication timeout	

0 (0x0) There is no error.

1 (0x1) Timeout error

If **SEW.CAN1RTerr=1** then CAN WatchDog Timer is ran out in servo drive. Communication is broken between CAN and Ch1.

CAN Ch2 RunTime Error. Timeout error in Ch2 channel of CAN. (CAN WatchDog)

SEW.CAN2RTerr= 0x0÷0x1

Bit	Description	Error Code
12	Communication timeout	

0 (0x0) There is no error.

1 (0x1) Timeout error

If **SEW.CAN2RTerr=1** then CAN WatchDog Timer is ran out in servo drive. Communication is broken between CAN and Ch2.

CAN Ch1 Hardware Error. Additional error is occurred in Ch1 channel of CAN.

SEW.CAN1HErr= 0x0÷0x1

Bit	Description	Error Code
13	Communication timeout	

0 (0x0) There is no error.

1 (0x1) CAN error

If **SEW.CAN1HErr=1** then CAN Ch1 error is occurred. Reading error register of CAN Ch1 is necessary for further error diagnostics.

CAN Ch2 Hardware Error. Additional error is occurred in Ch2 channel of CAN.

SEW.CAN2HErr= 0x0÷0x1

Bit	Description	Error Code
14	Communication timeout	

0 (0x0) There is no error.

1 (0x1) CAN error

If **SEW.CAN2HErr=1** then CAN Ch2 error is occurred. Reading error register of CAN Ch2 is necessary for further error diagnostics.

EtherCat RunTime Error. Timeout in EtherCat channel. (Data still does not receive after 3 EtherCat message cycles.)

SEW.ECatRTerr= 0x0÷0x1

Bit	Description	Error Code
15	Communication timeout	E15

0 (0x0) There is no error.

1 (0x1) EtherCat error

If **SEW.ECatRTerr=1** then timeout error is occurred in EtherCat channel.

PDPINT Error. Servo drive motor driving circuit (IGBT) error.

SEW.PDPINTErr= 0x0÷0x1

Bit	Description	Error Code
16	Driving circuit error	E16

0 (0x0) There is no error.

1 (0x1) IGBT error

If **SEW.PDPINTErr=1** then error is occurred in switching circuit (IGBT) of motor. It is circuit or cabling error.

ParameterTaBLE CHecKSumma Error. Check summa error. Active parameter table of servo drive is faulty.

SEW.PTBLCHKSErr= 0x0÷0x1

Bit	Description	Error Code
17	Wrong data content	E30

0 (0x0) There is no error.

1 (0x1) Wrong parameter table

If **SEW.PTBLCHKSErr=1** then active parameter table content is faulty.

PRoGram CHecKSumma Error. Check summa error. Active parameter table of servo drive is faulty.

SEW.PRGCHKSErr= 0x0÷0x1

Bit	Description	Error Code
18		

0 (0x0) There is no error.

1 (0x1) Wrong operating program

If **SEW.PRGCHKSErr=1** then program space is faulty.

Follower Error. Speed following error.

SEW.FollowerErr= 0x0÷0x1

Bit	Description	Error Code
19	Following error	E09

0 (0x0) There is no error.

1 (0x1) Following error (Servo error)

If **SEW.FollowerErr=1** then servo drive could not follow speed reference signal for a setting interval.

OverLoad Error. Motor overload.

SEW. OverLoadErr= 0x0÷0x1

Bit	Description	Error Code
20	Motor is overloaded	E20

0 (0x0) There is no error.

1 (0x1) Overload

If **SEW.OverLoadErr =1** then motor overload protection is activated. (Motor current is exceeded constantly the value of In nominal motor current defined in „Motor nominal current“ parameter of servo drive) (Note: This error is not equal to heat protection error!)

SFlashErr. Serial flash memory (storing space of parameter table) access error.

SEW.SFlashErr= 0x0÷0x1

Bit	Description	Error Code
21	Flash writing/reading error	E32

0 (0x0) There is no error.

1 (0x1) Access error

If **SEW.SFlashErr =1** then writing/reading serial flash memory is failed.

ECatWatchDog. EtherCat slave unit WatchDog Timeout error.

SEW. ECatWatchDog = 0x0÷0x1

Bit	Description	Error Code
22	Timing is expired	E31

0 (0x0) There is no error.

1 (0x1) Timing is expired

If **SEW.ECatWatchDog =1** then Timeout of EtherCat slave unit is activated and communication in EtherCat interface is failed.

OverSpeed. Too high speed.

SEW. OverSpeed = 0x0÷0x1

Bit	Description	Error Code
23	Speed error	E11

0 (0x0) There is no error.

1 (0x1) Too high speed

If **SEW.OverSpeed =1** then speed of motor is higher than defined value of servo drive parameter so the motor is „overspeed“.

CurrDiffErr. Current symmetry error.

SEW. CurrDiffErr = 0x0÷0x1

Bit	Description	Error Code
24	Current measuring error	E12

0 (0x0) There is no error.

1 (0x1) A and/or B phase current measuring error

If **SEW.CurrDiffErr =1** then difference between current of A and B phase measured in dead state exceeds the setting value (The current measurement is not reliable so torque can be fluctuate.)

Message Code

Message Code Data type: int32. This code refers to the content of Message Data.

(Servo → NC)

31	30	29	28	27	26	25	24
MSGC_31	MSGC_30	MSGC_29	MSGC_28	MSGC_27	MSGC_26	MSGC_25	MSGC_24
23	22	21	20	19	18	17	16
MSGC_23	MSGC_22	MSGC_21	MSGC_20	MSGC_19	MSGC_18	MSGC_17	MSGC_16

15	14	13	12	11	10	9	8
MSGC_15	MSGC_14	MSGC_13	MSGC_12	MSGC_11	MSGC_10	MSGC_9	MSGC_8
7	6	5	4	3	2	1	0
MSGC_7	MSGC_6	MSGC_5	MSGC_4	MSGC_3	MSGC_2	MSGC_1	MSGC_0

Code chart:

Message Code:	Content of Message Data
0	Motor speed [rpm]
1	Motor current (I) [A]
2	Motor relative current (I/I _n) [%]
3	Bus voltage [V]
4	Motor temperature [°C]
5	Motor power [kW] (Currently does not available)
6	
7	
8	
9	

Message Data

Message Data Data type: float32.

(Servo → NC)

31	30	29	28	27	26	25	24
MSGD_31	MSGD_30	MSGD_29	MSGD_28	MSGD_27	MSGD_26	MSGD_25	MSGD_24
23	22	21	20	19	18	17	16
MSGD_23	MSGD_22	MSGD_21	MSGD_20	MSGD_19	MSGD_18	MSGD_17	MSGD_16

15	14	13	12	11	10	9	8
MSGD_15	MSGD_14	MSGD_13	MSGD_12	MSGD_11	MSGD_10	MSGD_9	MSGD_8
7	6	5	4	3	2	1	0
MSGD_7	MSGD_6	MSGD_5	MSGD_4	MSGD_3	MSGD_2	MSGD_1	MSGD_0