EDS SE

ELECTRONIC DATASHEET STANDARD ENCODER

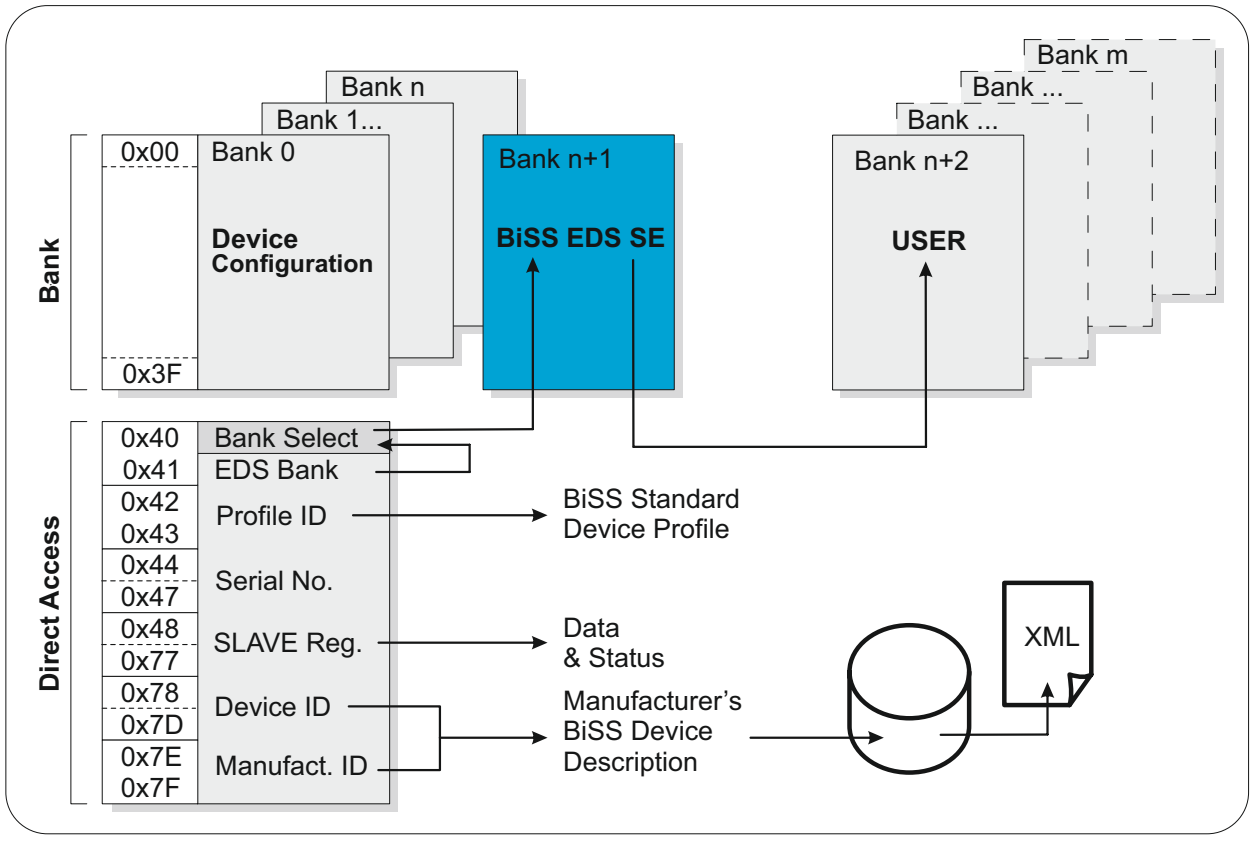
FEATURES

- Electronic Data Sheet **EDS SE** for standard encoder
- For point-to-point BiSS devices (slaves) using 1 data channel
- Short form EDS with only 64 bytes
- USER DATA capable
- Simplified description
- Extended diagnosis
- Control configuration made easy

APPLICATIONS

- Motion controller configuration
- Rotary and linear encoder
- Absolute and incremental encoder

DIAGRAM



DESCRIPTION

This BiSS EDS SE (Electronic Data Sheet Standard Encoder) describes the attributes and operational conditions of a BiSS encoder device and carries information about process data and parameters. It is available once per device and describes the data channel and slave inside this device. The EDS SE consists of a single bank and starts on the bank that is defined in address 0x41. The EDS SE is not combinable with EDS COMMON PART nor EDS BPx parts.

ELECTRONIC DATA SHEET (EDS SE)

Addr.	Symbol	Description	Group	Format	Unit	Value
COMMON PART						
0x00	EDS_VER	EDS version (continuous number)	ORGA	U8	-	16 . . . 31
0x01	EDS_LEN	EDS length (full bank count)	ORGA	U8	Banks	1
0x02	USR_STA	Start address USER DATA banks	ORGA	U8	-	0 . . . 255
0x03	USR_END	End address USER DATA banks	ORGA	U8	-	0 . . . 255
TIMING						
0x04	TO_MAX	Maximum BiSS timeout	TIMING	B, U7	500 ns	1 . . . 255
0x05	TBUSY_S	Maximum processing time SCD (0 = no processing time)	TIMING	U8	500 ns	0 . . . 254
0x06	TCYC	Minimum cycle time (0 = no limitation)	TIMING	U8	500 ns	0 . . . 254
DATA LENGTHS						
0x07	MT_LEN	Data length multiturn	ORGA	U8	bit	0 . . . 55
0x08	ST_LEN	Data length singleturn	ORGA	U8	bit	0 . . . 55
0x09	DIAG_LEN	Data length SCD diagnosis bits	ORGA	U8	bit	2, 3, 8
MECHANICAL DATA						
0x0A	EN_TYP	Encoder type	MECH	U8	-	0 . . . 3
0x0B 0x0C 0x0D	SIP_CNT	Number of signal periods per revolution (rotary), length of signal period (linear)	MECH	U24[2)]	 CPR (rotary) nm (linear)	1 . . . 2^{24}-2
0x0E 0x0F	SPD_MAX	Maximum revolution speed/maximum speed	MECH	U16[2)]	10 / min 10 mm/ sec	1 . . . 2^{16}-2
INCREMENTAL ENCODER						
0x10	INC_OFF	First address of position offset after referencing	INCR	U7	ADDR(6:0)[1)]	0, 72 . . . 119
0x11 - 0x13		Reserved				
ENCODER PERFORMANCE						
0x14	TLATEN	Typical latency of position sensing	PERF	U8	1000 ns	0 . . . 254
0x15 - 0x17		Reserved				

Addr.	Symbol	Description	Group	Format	Unit	Value
TEMPERATURE DATA						
0x18	T_INT	Temperature data from internal sensor with 8/16 bit	MEAS	B, U7	F[3] + ADDR(6:0)[1]	0, 72 . . . 119, 200 . . . 246
0x19	T_EXT	Temperature data from external sensor with 8/16 bit	MEAS	B, U7	F[3] + ADDR(6:0)[1]	0, 72 . . . 119, 200 . . . 246
0x1A - 0x1F		Reserved				
PRODUCT INFO						
0x20 - 0x23	PDATE	Production date	INFO INFO	U32[2]	- -	0 . . . 2^{32}-1
0x24 - 0x27	PID	Product id	INFO INFO	U32[2]	- -	0 . . . 2^{32}-1
STATUS						
0x28	STATUS_E1	Address of error byte 1	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x29	STATUS_E2	Address of error byte 2	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2A	STATUS_E3	Address of error byte 3	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2B	STATUS_E4	Address of error byte 4	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2C	STATUS_W1	Address of warning byte 1	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2D	STATUS_W2	Address of warning byte 2	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2E	STATUS_W3	Address of warning byte 3	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x2F	STATUS_W4	Address of warning byte 4	STATUS	U7	ADDR(6:0)[1]	0, 72 . . . 119
COMMAND						
0x30	CMD0	Procedure BiSS command 0	CMDC[5]	U8	CMDENUM	0 , 1
0x31	CMD1	Procedure BiSS command 1	CMDC	U8	CMDENUM	0 , 1
0x32	CMD2	Procedure BiSS command 2	CMDC	U8	CMDENUM	0 . . . 255
0x33	CMD3	Procedure BiSS command 3	CMDC	U8	CMDENUM	0, 2 . . . 255
0x34	CMD_ADDR	Address for all register based commands	CMDR[6]	U7	ADDR(6:0)[1]	0, 72 . . . 119
0x35	REBOOT	Reconfigure from EEPROM	CMDR	U8	CODE	0 . . . 255
0x36	RESET	Initialize (Reset status messages and calculate position data [without rebooting])	CMDR	U8	CODE	0 . . . 255
0x37	PRESET	Execute preset	CMDR	U8	CODE	0 . . . 255
0x38	SCLEAR	Clear status	CMDR	U8	CODE	0 . . . 255
0x39 - 0x3E		Reserved				
CHECKSUM						
0x3F	CHKSUM	Checksum	ORGA	U8	-	0 . . . 255

Table 2: Electronic Data Sheet (EDS SE)

[1] U7 addresses are expected in the range of 0x48 to 0x77. A value of 0x00 indicates the unavailability of status, temperature sensors or commands.
[2] U32, U24 and U16 values are saved as a Big Endian, i.e. with the highest-value byte at the lowest-value address.
[3] The bit F = 1 indicates a I16 value and F = 0 indicates a U8 value.
[4] Only the I16 values are saved as Little Endian, i.e. with the lowest-value byte at the lowest-value address.
[5] Control based commands CDMC use BiSS C control communication commands.
[6] Register based commands CDMR use BiSS C control communication register access.

CLASSIFICATION

Absolute encoders
Absolute encoders provide an absolute position information after power-on without referencing.

Incremental encoders
Incremental encoders start without any absolute information after power-on. After referencing, the encoders provide an offset value which can be used to calculate the absolute position.

Encoders separate into the following groups:

- **Multiturn rotary encoder:**
  capable to capture complete revolutions.
- **Singleturn rotary encoder:**
  not capable to capture complete revolutions.
- **Linear encoder:**
  capable to capture linear position.

DATA FORMAT

The encoders transfer data using the BiSS interface. The position and additional diagnosis information is transmitted .

Multiturn (MT)
The multiturn data length is in the range of 0 to 55 bit (0 bit for singleturn encoder). If the encoder uses a different bit count than the resolution, the measurement value is placed right-aligned and filled with "0".

Singleturn (ST)
The singleturn data length is in the range of 0 to 55 bit. If the encoder uses a different bit count than the resolution, the measurement value is placed left-aligned and filled with "0".

Position (POS)
For rotary encoders the position data consists of multiturn and singleturn data.
For linear encoders multiturn data and singleturn data are components of the position data.

Error and warning (DIAG: nE, nW)
Modern encoders monitor the environmental conditions. Typical examples are for instance: monitoring LED aging attributes or monitoring angular values to plausibility. Both bits are transmitted low active, error and warning are indicated with "0". The position is considered valid with a warning and may be invalid with an error.

Diagnosis (DIAG: nI, U, V, W)
Up to six additional diagnosis bits are possible. Incremental encoders signalize the phase after power-on until referencing occur with low active index nI = 0. The commutation information is transmitted via U, V and W.

CRC
To increase the transmission safety, a CRC is extending the data. The CRC value is generated with the start value "0" and the generator polynomial $X^6 + X^1 + X^0$ (0x43). The CRC bits are transferred inverted. The data length (containing position and diagnosis bits) does not exceed a maximum length of 57 bit. The transferred data (measurement data + CRC) carries a hamming distance of 3 and permits a 2-bit-error detection and a 1-bit-error correction.

The sequence of the data is position (multiturn, singleturn), error, warning, further diagnosis bits and CRC. The data is transferred completely as single cycle data (SCD) within a single cycle. Further measurement values e.g. revolution speed or acceleration are not covered with this EDS SE. This EDS SE does also not cover encoders with BiSS safety features.

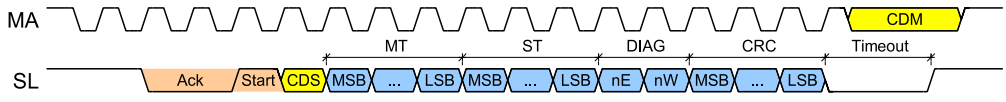


Figure 1: Data format with DIAG_LEN = 2

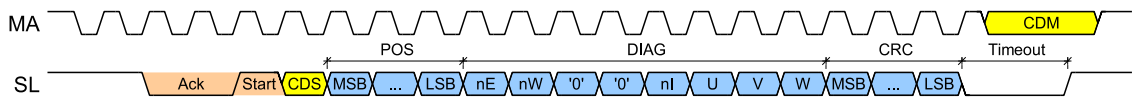


Figure 2: Data format with DIAG_LEN = 8

PARAMETER FORMAT

Data type definitions

- B = single bit, value range 0;1.
- U7 = unsigned 7, value range 0 . . . 127.
- U8 = unsigned 8, value range 0 . . . 255.
- U16 = unsigned 16, value range 0 . . . 65535.
- I16 = signed 16, value range -32768 . . . 32767.
- U24 = unsigned 24, value range 0 . . . 16777215.
- U32 = unsigned 32, value range 0 . . . 4294967295.

Address data definitions

The permitted value range for the record subset **ADDR** is 0x00; 0x48 . . . 0x77. An address of 0x00 indicates that this address, parameter or all commands are not available.
The permitted value range for **CODE** is 0x00 . . . 0xFF. A value of 0xFF indicates that this command is not available.

DESCRIPTION OF COMMON PART

The parameters of the group ORGA do contain EDS related information. This information is relevant for identifying the EDS SE and parsing its content.

EDS_VER (ORGA U8)

The parameter EDS_VER contains the EDS version of this EDS SE content. The EDS version is a continuous number starting at version 1. The expected value range for EDS SE is 16 . . . 31. A value out of range indicates a non programmed/invalid EDS SE content.

EDS_VER	Addr. 0x00; bit 7:0	R
Code	Function	
0x10	EDS SE Rev A1	
0x11. . . 0x1F	Reserved EDS SE Rev range	

Table 3: EDS version (ORGA U8)

EDS_LEN (ORGA U8)

The parameter EDS_LEN contains the EDS length. The value is the count of banks that are used by the EDS. Banks are always fully used. For EDS SE the value is 1.

EDS_LEN	Addr. 0x01; bit 7:0	R
Code	Function	
0x1	EDS SE uses only one bank	

Table 4: EDS length in banks (ORGA U8)

USR_STA (ORGA U8)

The parameter USR_STA contains the first bank address of the USER DATA. The permitted value range is 0 . . . 255. Limitations by involved EEPROM and devices may result in a lower possible maximum value.

USR_STA	Addr. 0x02; bit 7:0	R
Code	Function	
0x00. . . 0xFE	USER DATA start address (bank)	
0xFF	USER DATA not available	

Table 5: USER DATA start address (bank) (ORGA U8)

USR_END (ORGA U8)

The parameter USR_END indicates the last bank address of the USER DATA. The permitted value range is 0 . . . 255. Limitations by involved EEPROM and device may result in a lower possible maximum value.

USR_END $\geq$ USR_STA.
USR_STA = USR_END indicates a single bank USER DATA.

USR_END	Addr. 0x03; bit 7:0	R
Code	Function	
0x00. . . 0xFF	USER DATA end address (bank)	

Table 6: USER DATA end address (bank) (ORGA U8)

MT_LEN (ORGA U8)

The parameter MTLEN indicates the multiturn data length. The LSB of this value is bit. The permitted value range is 0 . . . 55 bit.

MT_LEN	Addr. 0x07; bit 7:0	R
Code	Function	
0x00. . . 0x37	Multiturn length	

Table 7: Multiturn length (ORGA U8)

ST_LEN (ORGA U8)

The parameter STLEN indicates the singleturn data length. The LSB of this value is bit. The permitted value range is 0 . . . 55 bit.

ST_LEN	Addr. 0x08; bit 7:0	R
Code	Function	
0x00. . . 0x37	Singleturn length	

Table 8: Singleturn length (ORGA U8)

DIAGLEN (ORGA U8)

The parameter DIAGLEN indicates the diagnosis data length. The LSB of this value is bit. The permitted value range is 2, 3, 8 bit.

DIAG_LEN	Addr. 0x09; bit 7:0	R
Code	Function	
0x02	Error bit (low active) and Warning bit (low active)	
0x03	Error bit (low active) and Warning bit (low active) and Index bit (low active)	
0x08	Error bit (low active) and Warning bit (low active) and DIAG(5:0) Diagnosis bits incl. Index bit	

Table 9: DIAG_LEN and feedback bits (ORGA U8)

CHKSUM (ORGA U8)

The parameter CHKSUM indicates the check sum of this EDS bank. The value is the sum of all values of addresses 0x00 dots 0x3E within this EDS bank. The permitted value range is 0 . . . 255 for the full U8 range.

$$CHKSUM = \sum_{i=0x00}^{0x3E} value\_of\_address(i)$$

CHKSUM	Addr. 0x3F; bit 7:0	R
Code	Function	
0x00. . . 0xFF	Check sum of the total content (0x00 . . . 0x3E)	

Table 10: Check sum (ORGA U8)

DESCRIPTION OF GROUP TIMING

The parameters of the group TIMING contain BiSS timing related information.

TO_MAX (TIMING B, U7)

TO_MAX	Addr. 0x04; bit 7:0	R
Code	Function	
0x00	Not allowed	
0x01... 0x7F	Adaptive BiSS Timeout (B=0): (1.5 * T_{MA}) + (TO_MAX(6:0) * 100 ns)	
0x80... 0xFF	Fixed BiSS timeout (B=1): TO_MAX(6:0) * 500 ns	

Table 11: Maximum BiSS timeout (TIMING B, U7)

Adaptive timeout calculation

TO_MAX(6:0) = 3 * T_{CLK}_MAX / 100 ns
See characteristics in BiSS Interface Protocol description.

TBUSY_S (TIMING U8)

The parameter TBUSY_S indicates the maximum processing time of the device. The value of 255 indicates an unknown processing time.

TBUSY_S	Addr. 0x05; bit 7:0	R
Code	Function	
0x00	No processing time	
0x0... 0xFF	Processing time: TBUSY_S(7:0) * 500 ns	

Table 12: Maximum processing time (TIMING U8)

TCYC (TIMING U8)

The parameter TCYC indicates the minimum cycle time of the device. The value of 0 indicates no limitations for a cycle time.

TCYC	Addr. 0x06; bit 7:0	R
Code	Function	
0x00	No limitation	
0x0... 0xFF	Minimum cycle time: TCYC(7:0) * 500 ns	

Table 13: Minimum cycle time (TIMING U8)

DESCRIPTION OF MECHANICAL DATA

The parameters of the group MECH contain mechanical information of this device.

EN_TYP (MECH U8)

The parameter EN_TYP indicates the mechanical type of encoder. The permitted values are 0 and 1.

EN_TYP	Addr. 0x0A; bit 7:0	R
Code	Function	
0x00	Absolute rotary encoder	
0x01	Absolute linear encoder	
0x02	Incremental rotary encoder	
0x03	Incremental linear encoder	
0x04 ... 0xFF	Reserved	

Table 14: Encoder type (MECH U8)

SIP_CNT (MECH U8)

The parameter SIP_CNT indicates the count of periods per revolution of a rotary encoder (CPR Cycles Per Revolution). This count of periods is identical to possible SIN COS analog output signals.
The parameter SIP_CNT indicates the length of the signal periods per revolution of a linear encoder.

SIP_CNT	Addr. 0x0B 0x0C 0x0D; bit 7:0	R
Code	Function	
0x000001	1 CPR (rotary encoder)	
...	...	
0x000100	256 CPR (rotary encoder)	
...	...	
0x000200	512 CPR (rotary encoder)	
...	...	
0x000400	1024 CPR (rotary encoder)	
...	...	
0x000800	2048 CPR (rotary encoder)	
...	...	
0x004E20	20,000 nm signal period (linear encoder)	
...	...	

Table 15: Number of signal periods per revolution (rotary), length of signal period (linear) (MECH U24)

SPD_MAX (MECH U8)

The parameter SPD_MAX indicates the maximum revolution speed of the rotary encoder.
The parameter SPD_MAX indicates the maximum speed of the linear encoder.

SPD_MAX	Addr. 0x0E 0x0F; bit 7:0	R
Code	Function	
0x0001	10 RPM	
0x0001	10 mm/sec	
...	...	
0x03E8	10 m/sec	
...	...	
0x012C	3000 RPM	
...	...	
0xFFFF	655,350 RPM	
0xFFFF	655.35 m/sec	

Table 16: Maximum revolution speed (rotary), maximum speed (linear) (MECH U16)

DESCRIPTION OF INCREMENTAL ENCODER

The parameter of the group INCR contain information related to incremental position.

After the successful referencing the offset value OFFS_V is available. The offset value starting at address INC_OFF and may consist of up to 8 addresses for up to 8 bytes of position offset data. This value can be subtracted from the SCD position to calculate the absolute position. The permitted value range of INC_OFF is 0x00 for absolute encoder and 72 . . . 119 for incremental encoders.

INC_OFF (INCR U8)
The parameter points to the start address of the internal position offset value after referencing.
The internal position offset value is only valid after a successful referencing e.g. passing an index or passing three distance codified indexes.

INC_OFF	Addr. 0x10; bit 6:0	R
Code	Function	
0x00	Product is an absolute encoder	
0x48 . . . 0x77	First address of position offset after referencing, incremental encoder	

Table 17: Incremental encoder position offset (INC_OFF U7)

Definition of offset data for incremental encoder

The offset value that is available at address INC_OFF has a dedicated format. The offset value is right aligned and little endian format.

OVERVIEW								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Incremental encoder position offset example: INC_OFF = 0x48								
0x48	OFFS_V(7:0) = OFFS_ST(7:0)							
0x49	OFFS_V(15:12) = OFFS_MT(3:0)				OFFS_V(11:8) = OFFS_ST(11:8)			
0x4A	OFFS_V(23:16) = OFFS_MT(11:4)							
0x4B	0	0	0	0	OFFS_V(27:24) = OFFS_MT(15:12)			

Table 18: Register layout

The example in table 18 assumes a multiturn length of 16 bit (MT_LEN = 16) and a singleturn length of 12 bit (ST_LEN = 12). Due to the LITTLE ENDIAN does the lowest address contain the lease significant byte.

The BiSS master needs to read only as many bytes as required by ST_LEN + MT_LEN starting at INC_OFF. More bytes are needed to be read if ST_LEN + MT_LEN is larger.

The drive needs to calculate the true position by subtracting the increment offset value from the incremental counter value. The offset value (minuend) is subtracted from the counter value(subtrahend) to calculate the current absolute position.

$$position\ value(t) = counter\ value(t) - OFFS\_V\ value$$

DESCRIPTION OF ENCODER PERFORMANCE

The parameters of the group PERF contain information related to encoder performance.

TLATEN (INCR U8)
The value of the parameter is the typical latency of the sensor position in µs.

TLATEN	Addr. 0x14; bit 6:0	R
Code	Function	
0x00 ... 0xFF	Typical latency of position sensing	

Table 19: Latency of position sensing (TLATEN U7)

DESCRIPTION OF TEMPERATURE DATA

The parameters of the group MEAS contain measurement related information.

T_INT(MEAS B, U7)
The parameter points to the internal temperature sensor register.

T_INT	Addr. 0x18; bit 7:0	R
Code	Function	
0x00	Internal temperature sensor register not available	
0x48 ... 0x77	Address T_INT(6:0) of the internal temperature sensor register U8	
0xC8 ... 0xF7	Start address T_INT(6:0) of the internal temperature sensor register I16	

Table 20: Internal temperature sensor register (MEAS B, U7)

T_EXT(MEAS B, U7)
The parameter points to the external temperature sensor register.

T_EXT	Addr. 0x19; bit 7:0	R
Code	Function	
0x00	External temperature sensor register not available	
0x48 ... 0x77	Address T_EXT(6:0) of the external temperature sensor register U8	
0xC8 ... 0xF7	Start address T_EXT(6:0) of the external temperature sensor register I16	

Table 21: External temperature sensor register (MEAS B, U7)

U8 temperature range
The U8 temperature range describes temperature values with the following mapping:

- 1 LSB = 1 °C
- Minimum value -64 °C = 0x00
- Value 0 °C = 0x40
- Maximum value +191 °C = 0xFF

I16 temperature range
The I16[4)] temperature range describes temperature values with the following mapping:

- 1 LSB = 0.1 °C
- Minimum value -3276,8 °C = -32768 = 0x8000
- Value 0 °C = 0x0000
- Maximum value +3276,7 °C = 32767 = 0x7FFF

The I16 temperature value can only be read by reading the lower address byte first, followed by the higher address byte. Reading the lower address byte will latch and freeze the higher value byte to guarantee consistent 16-bit temperature data reading the addresses consecutively or lower address and then the higher address.

[4)] I16 values are saved as Little Endian, i.e. with the lowest-value byte at the lowest-value address.

DESCRIPTION OF PRODUCT INFO

The parameters of the group INFO contain additional information of this device that is not covered by the BiSS serial number nor the BiSS identifier.

PDATE	Addr. 0x20; bit 7:0	R
Code	Function	
0x0 ... 0xF	Product id, any format and any content	

Table 22: Production date (INFO U32)

The parameters indicate the address ranges of this detailed encoder information.

PID	Addr. 0x24; bit 7:0	R
Code	Function	
0x0 ... 0xF	Product id, any format and any content	

Format and content are unrestricted (e.g. U32 number or 4 byte ASCII or 8 BCD numbers).

Table 23: Product id (INFO U32)

DESCRIPTION OF STATUS

The status addresses of the STATUS group contain related error and warning status addresses.

STATUS _E1...E4	Addr. 0x28 ... 0x2B; bit 6:0	R
Code	Function	
0x00	Status register not available	
0x48 ...0x77	Address status register	

Table 24: Error status register 1 ... 4 (STATUS U7)

The ADDR address contains the relevant BiSS address to read the status byte. The value 0x00 indicates unavailable status addresses.

STATUS _W1...W4	Addr. 0x2C ... 0x2F; bit 6:0	R
Code	Function	
0x00	Status register not available	
0x48 ...0x77	Address status register	

Up to 4 status addresses are available each for error and warning.

Table 25: Warning status register 1 ... 4 (STATUS U7)

DESCRIPTION OF CONTROL BASED COMMAND

The parameters of the group CMDC contain control based command related information.

Control based commands are part of the control communication itself. Detailed information about the control frame for commands can be found in the BiSS-C Protocol description.

CMD0, CMD1, CMD2 and CMD3 correspond to the control commands "00", "01", "10" and "11" as described in the BiSS-C Protocol description.

There are common commands that are predefined for adaption of the BiSS-C Slave's transmission properties. These commands can be sent to selected slaves by address or to all connected slaves by broadcast.

Additionally, the residual command codes can be used to trigger application specific procedure within the encoder. Specific commands may not be implemented in every connected slave. Those commands need to be sent to a dedicated slave by address (not broadcasted).

CMD0...3	Addr. 0x30 ... 0x33; bit 7:0	R
Code	Function	
0x00	BiSS command not available	
0x01	Predefined in the BiSS C protocol description	
0x02	Reboot	
0x03	Reset	
0x04	Preset	
0x05	SCLEAR	
0x06	CRC verification of internal configuration	
0x07 ... 0x7F	Reserved	
0x80 ... 0xFF	Implemented but not defined in this document version (customized)	

Table 26: BiSS command procedures (CMDx U8 CMDENUM)

DESCRIPTION OF REGISTER BASED COMMAND

The parameters of the group CMDR contain register access based command related information. Commands do start dedicated procedures on the encoder.

Register based commands
The ADDR address contains the relevant BiSS address to write the CODE for the command. A code of 0xFF indicates that this command is not available.

CMD_ADDR(CMD U7)
The parameter points to the command register.

CMD_ADDR	Addr. 0x34; bit 7:0	R
Code	Function	
0x00	Command register not available	
0x48 ...0x77	Address of the register based command register	

Table 27: Command register (CMD U7)

REBOOT(CMD U8)
This command does reboot the device.

REBOOT	Addr. 0x35; bit 7:0	R
Code	Function	
0x00 ...0xFE	Command code range	
0xFF	Command not available	

Table 28: Reboot command (CMD U8)

RESET(CMD U8)
This command does reset the encoder.

RESET	Addr. 0x36; bit 7:0	R
Code	Function	
0x00 ...0xFE	Command code range	
0xFF	Command not available	

Table 29: Reset command (CMD U8)

PRESET(CMD U8)
This command does preset the encoder.

PRESET	Addr. 0x37; bit 7:0	R
Code	Function	
0x00 ...0xFE	Command code range	
0xFF	Command not available	

Table 30: Preset command (CMD U8)

SCLEAR(CMD U7)
The parameter contains the command to clear the status.

SCLEAR	Addr. 0x38; bit 7:0	R
Code	Function	
0x00 ...0xFE	Command code range	
0xFF	Command not available	

Table 31: Status clear command (CMD U8)

REVISION HISTORY

Rel.	Rel. Date*	Chapter	Modification	Page
A1	2017-11-14		Initial release	all

Rel.	Rel. Date*	Chapter	Modification	Page
A2	2018-07-20	DIAGRAM	Missing detail USER DATA banks added	1
		ELECTRONIC DATA SHEET (EDS SE)	Details on reserved BiSS Command functions added as described in the BiSS protocol description	3
		DESCRIPTION OF INCREMENTAL ENCODER	Example details for incremental use added	9
		DESCRIPTION OF CONTROL BASED COMMAND	Details on addressed an broadcasted BiSS command functions added as described in the BiSS protocol description	12
		DESCRIPTION OF TEMPERATURE DATA	Details on reading i16 temperature values by reading lower address first and then the higher address	13

* Release Date format: *YYYY-MM-DD*