

BiSS Interface

BP3: STANDARD ENCODER PROFILE



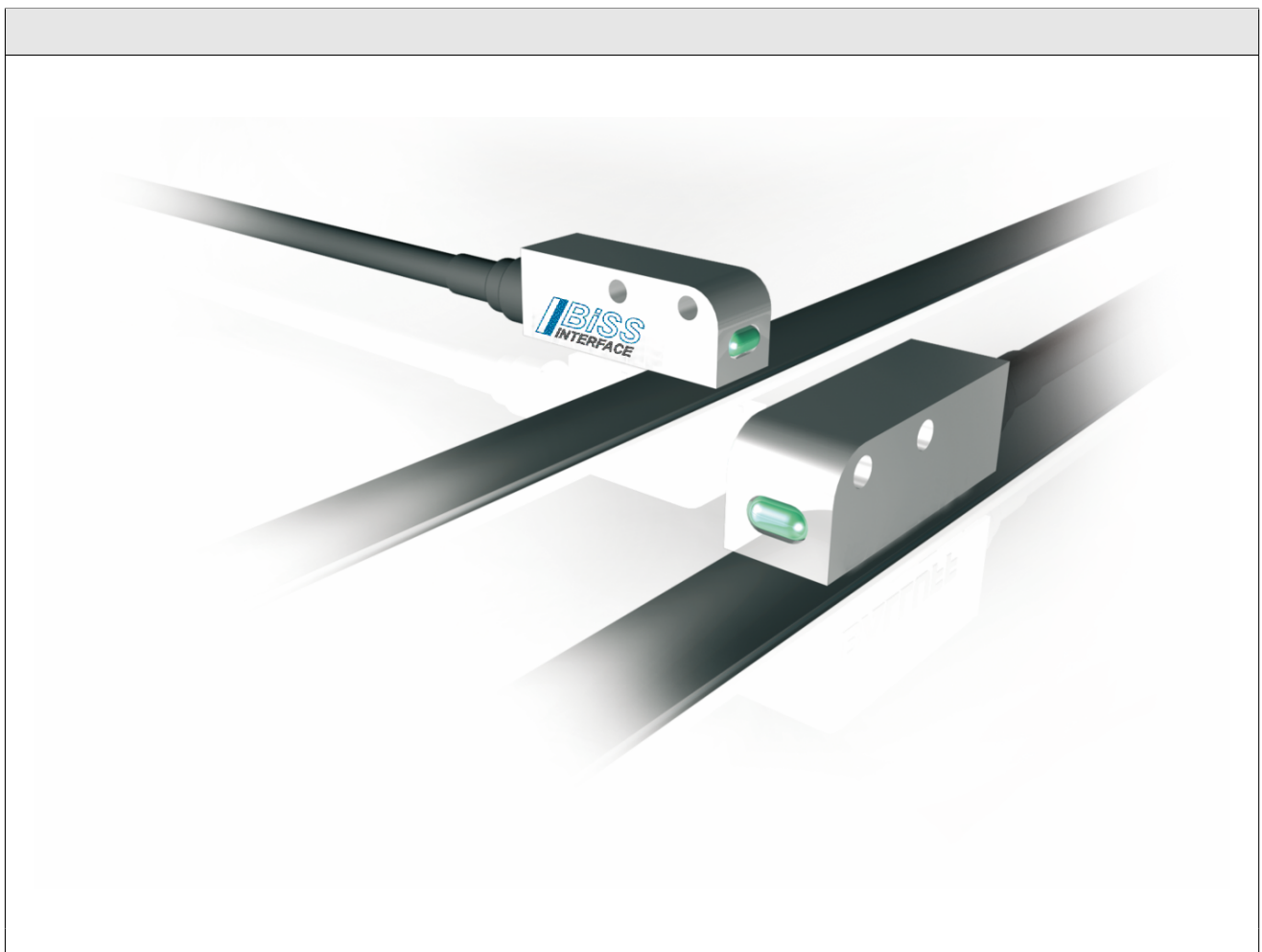
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FEATURES

- Grouping of linear and rotary encoder
- Compatibility within a group
- Standardized data format
- Simple control configuration
- EDS definition for this profile

APPLICATIONS

- Fast and simple motion controller configuration
- Intelligent absolute rotary encoder



DESCRIPTION

The *BiSS* Standard Encoder Profile BP3 describes a standardized interface configuration set for linear and rotary encoder and the herefore defined identifying features.

The *BiSS* Standard Encoder Profile BP3 is only for *BiSS* C position encoder standardized.

This document describes the profile definition for absolute encoder with *BiSS* interface.

The specification -see *BiSS* C protocol description- defines the enviroment for the data transmission without limiting the data lengths and content. This permits powerful, flexible and cost effective solutions, to the demand of automation industry.

With the XML file devide attributes were decribed by an external file, the two bytes of the the *BiSS* Standard Encoder Profiles BP3 describe the contemplated data transmission. The EDS describes the device attributes.

With the definition of an application specific profile it is possible to access over this standardized data communication manufacturer independant devices identically. The profile defines the data channel parameter and device attributes. This information does not need to be placed in the electronic datasheet in a general way and can be implemented easily on the control side.

To establish a flexible standard with the "*BiSS* Standard Encoder Profile BP3" a classification into different variants defined. For identification 2 bytes in the register adesses 0x42 and 0x43 are available.

The measure transmitted over the *BiSS* interface assembles from position value and optional additional information as are error, warning, temperatur, life cycle counter.

Position

The data length for the position is 1 ... 55 Bit.

Error and Warning

Modern linear and rotary encoder do monitor internal system components and failures. The two feedback bits are transmitted low active: an error or a warning are indicated by a 0. Der measured position is valid with a warning and invalid with an error.

CRC

To increase the transmission reliability the data is extended by a CRC. The CRC is calculated with a start value and a generator polynome and transmitted inverted.

Additional measures e.g. life cycle counter or temperature are also covered by this profile. They can be transmitted in additional data channels and also being be transmitted by register access.

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DEFINITIONS

DL_POS	Position data: 1...55 Bit; non used bits are set to "0".
FB1	Feedback bit 1: 1 bit; feedback bit with no function may have any value.
FB2	Feedback bit 2: 1 bit; feedback bit with no function may have any value.
DL	Total length of the data channel.

DATA CHANNEL PARAMETER

The data channel parameter need to be set in the *BiSS* master configuration.

Data transfer direction and type	SCDS (Single Cycle Data Sensor)
Bit count	Default DL_POS + 2. Depending on configuration by bit C DL_POS + nE + nW + CRC-Length.
Stop bit	1
Processing time	Definied in the EDS <i>BiSS Interface</i> - BiSS_EDS_common_part: TBUSY_S and BUSY_S).
Data alignment	Depending on configuration right- or left-aligned.
CRC polynome	Default $X^6 + X^1 + X^0$. By deactivating the CRC checking further CRC polynomes and lengths are applicable.
CRC start value	Default "0". By deactivating the CRC checking (C = 1) further CRC start value may differ from 0.

DATA FORMAT

BP3 Profile Identifier Scheme

BiSS Profile 3 Identifier Scheme								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Encoder nach BP3								
0x42	0	1	1	0	V	V	V	C
0x43	D	D	D	D	D	D	D	D

Table 3: Register layout

The sequence **0 1 1 0** identifies the *BiSS* Standard Encoder Profil BP3.

The sequence **V** indicates the version of the *BiSS* Standard Encoder Profil BP3. The current version of BP3 is 1 = 0b001.

The bit **C** indicates if there CRC result is remaining to the data (C = 1) or not (C = 0).

If there is no CRC verification by the master required, the count of used CRC bits needs to be added to the count of total data.

The sequence **D** indicates the length data DL that are totally sent (0...254).

All further informations are available in the EDS of the BP3.

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ELECTRONIC DATA SHEET DEFINITION BP3

The profile EDS contains, depending on the *BiSS* profile, required information about data transmission, product and process relevant information for the motion control system. Hereto belong mechanical data, accuracy, structure of position words and product attributes. The specification of the first part of the EDS, the *BiSS* EDS (common) part, is located in the applied *BiSS* EDS (common part) document.

Adr.	Symbol	Description	Group	Format	Unit	Values
0x00	BP_VER	BiSS Profile 3 Version	Orga	U8	-	1 ... 254
0x01	BP_LEN	Length of this profile	Orga	U8	Banks	1 ... 254
0x02	BP_ID	Profile identification BP3 (content also available in adresse 0x42 and 0x43)	Orga	U8	-	1 ... 254
0x03				U8	-	1 ... 254
0x04	FB1	Feedback bit 1	Orga	U8	Table B	0 ... 2
0x05	FB2	Feedback bit 2	Orga	U8	Table B	0 ... 2
0x06	PON_PDL	Maximum "power on delay" until position data are available	Timing	U8	ms	1 ... 254
0x07		Reserved	Prot	U8	-	0
0x08	EN_TYP	Encoder type	Orga	U8	Table T	0 ... 1
0x09	POS_NUM	Position value	Safety	U8	Table N	0 ... 2
0x0A	MT_LEN	Data length MULTITURN	Orga	U8	bit	0 ... 64
0x0B	MT_FMT	Data format MULTITURN	Meas	U8	Table F	0 ... 1
0x0C	CO_LEN	Data length COARSE	Orga	U8	bit	0 ... 64
0x0D	CO_FMT	Data format COARSE	Meas	U8	Table F	0 ... 1
0x0E	FI_LEN	Data length FINE	Orga	U8	bit	0 ... 64
0x0F	FI_FMT	Data format FINE	Meas	U8	Table F	0 ... 1
0x10	MT_CNT	Number of distinguishable revolutions/periods	Meas	U32 ¹	-	1 ...
0x11						2 ³² -2
0x12						
0x13						
0x14	SIP_CNT	Number of signal periods per revolution/length of signal periode	Meas	U32 ¹	PPR (rotay) nm (linear)	1 ...
0x15						2 ³² -2
0x16						
0x17						
0x18	SIP_RES	resolution factor per signal period (LSB of the interpolation)	Mess	U32 ¹	bit	1 ...
0x19						2 ³² -2
0x1A						
0x1B						
0x1C	CPOLY	CRC polynome (32:1) ³	Orga	U32 ¹	-	0 ...
0x1D						2 ³² -1
0x1E						
0x1F						
0x20	CSTART	CRC start value	Orga	U32 ¹	-	0 ...
0x21						2 ³² -1
0x22						
0x23						
0x24	ABS_ACU	Absolute accuracy	Meas	U16 ¹	LSB/2 µm	1 ... 2 ¹⁶ -2
0x25						

0x26 0x27	REL_ACU	Repeat accuracy	Meas	U16 ¹	LSB/2	1 ... 2 ¹⁶⁻²
0x28 0x29	SPD_ACU	Angular speed/speed depending accuracy	Meas	U16 ¹	LSB/2	1 ... 2 ¹⁶⁻²
0x2A 0x2B	HYST	Hysteresis	Meas	U16 ¹	LSB/2	1 ... 2 ¹⁶⁻²
0x2C 0x2D	SPD_MAX	Maximum revolution speed/maximum speed	Mech	U16 ¹	1/min m/min	1 ... 2 ¹⁶⁻²
0x2E 0x2F	ACC_MAX	Maximum angular acceleration/maximum acceleration	Mech	U16 ¹	1/min ² m/min ²	1 ... 2 ¹⁶⁻²
0x30 0x31	TMP_MIN	Minimum operating temperature	Mech	U16 ¹	K	1 ... 2 ¹⁶⁻²
0x32 0x33	TMP_MAX	Maximum operating temperature	Mech	U16 ¹	K	1 ... 2 ¹⁶⁻²
0x34 0x35	VLT_MIN	Minimum operating voltage	Elec	U16 ¹	mV	1 ... 2 ¹⁶⁻²
0x36 0x37	VLT_MAX	Maximum operating voltage	Elec	U16 ¹	mV	1 ... 2 ¹⁶⁻²
0x38 0x39	CUR_MAX	Maximum current consumption	Elec	U16 ¹	mA	1 ... 2 ¹⁶⁻²
0x3A		Reserved	Prot	U8	-	0
0x3B		Reserved	Prot	U8	-	0
0x3C		Reserved	Prot	U8	-	0
0x3D		Reserved	Prot	U8	-	0
0x3E		Reserved	Prot	U8	-	0
0x3F	CHKSUM	Checksum (additon of all bytes in this bank)	Orga	U8	-	0 ... 255

Table 5: EDS for BP3 address mapping

¹⁾ The U32 and U16 values are saved as a Big Endian, i.e. with the highest-value byte at the lowest-value address.

³⁾ The CRC is located 32:1 as least significant bit is on active CRC checking always 1. This permits the use of up to 32 bit CRC sum. To deactivate CRC checking the crc polynome is 0x00000000 .

Table B	Addr. ...; bit ...	R
0x00	No function, any value possible	
0x01	Error bit low active (nE)	
0x02	Warning bit low active (nW)	

Table 6: Functions of feedback bits

Table F	Addr. ...; bit ...	R
0x00	Right-aligned	
0x01	Left-aligned	

Table 7: Data format

Table T	Addr. ...; bit ...	R
0x00	Rotary encoder	
0x01	Linear encoder	

Table 8: Encoder Type

Table N	Addr. ...; bit ...	R
0x00	Postion value not defined	
0x01	Postion value 1	
0x02	Postion value 2	

Table 9: Postion value

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EXAMPLE I EDS BP3 CONFORM: LINEAR ENCODER

BiSS PROFILE IDENTIFIER								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Linear encoder system BP3 conform: 32 Bit COARS, nE, nW, 6 bit CRC, BiSS C								
D = 34, V = 1, C = 0								
0x42	0	1	1	0	0	0	1	0
0x43	0	0	1	0	0	0	1	0

Table 10: Register layout

Data format: POS(32) + nE(1) + nW(1) + CRC(6)

The BiSS master does verify the CRC.

Adr.	Symbol	Description	Group	Format	Unit	Values
0x00	BP_VER	Version	Orga	U8	-	1
0x01	BP_LEN	Length of this profile	Orga	U8	Banks	1
0x02	BP_ID	Profile identification BP3 (content also available in adresse 0x42 and 0x43)	Orga	U8	-	0x62
0x03				U8	-	0x22
0x04	FB1	Feedback Bit 1 (error = 1)	Orga	U8	Table B	2
0x05	FB2	Feedback Bit 2 (warning = 2)	Orga	U8	Table B	1
0x06	PON_PDL	Maximum "power on delay" until position data are available	Timing	U8	ms	20
0x07		Reserved	Prot	U8	-	0
0x08	EN_TYP	Encoder type (linear = 1)	Orga	U8	Table T	1
0x09	POS_NUM	Position value (position value 1)	Safety	U8	Table N	1
0x0A	MT_LEN	Data length MULTITUR	Orga	U8	bit	0
0x0B	MT_FMT	Data format MULTITURN	Mess	U8	Table F	0
0x0C	CO_LEN	Data length COARSE	Orga	U8	bit	32
0x0D	CO_LEN	Data format COARSE	Mess	U8	Table F	0
0x0E	FI_LEN	Data length FINE	Orga	U8	bit	0
0x0F	FI_FMT	Data format FINE	Mess	U8	Table F	0
0x10	MT_CNT	Number of distinguishable periods	Mess	U32	-	0
0x11						
0x12						
0x13						
0x14	SIP_CNT	Length of signal periode	Mess	U32	nm (linear)	2000000
0x15						
0x16						
0x17						
0x18	SIP_RES	Resolution factor per signal period (LSB of the interpolation)	Mess	U32	bit	0
0x19						
0x1A						
0x1B						

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0x1C	CPOLY	CRC polynome(32:1) of 0x43	Orga	U32	-	0x00
0x1D						0x00
0x1E						0x00
0x1F						0x21
0x20	CSTART	CRC start value	Orga	U32	-	0x00
0x21						0x00
0x22						0x00
0x23						0x00
0x24	ABS_ACU	Absolute accuracy	Mess	U16	LSB/2	8192
0x25						
0x26	REL_ACU	Repeat accuracy	Mess	U16	LSB/2	16384
0x27						
0x28	SPD_ACU	Speed depending accuracy	Mess	U16	LSB/2	8192
0x29						
0x2A	HYST	Hysteresis	Mess	U16	LSB/2	64
0x2B						
0x2C	SPD_MAX	Maximum speed	Mech	U16	m/min	600
0x2D						
0x2E	ACC_MAX	Maximum acceleration	Mech	U16	m/min ²	900
0x2F						
0x30	TMP_MIN	Minimum operating temperature	Mech	U16	K	233
0x31						
0x32	TMP_MAX	Maximum operating temperature	Mech	U16	K	378
0x33						
0x34	VLT_MIN	Minimum operating voltage	Elec	U16	mV	4500
0x35						
0x36	VLT_MAX	Maximum operating voltage	Elec	U16	mV	5500
0x37						
0x38	CUR_MAX	Maximum current consumption	Elec	U16	mA	125
0x39						
0x3A		Reserved	Prot	U8	-	0
0x3B		Reserved	Prot	U8	-	0
0x3C		Reserved	Prot	U8	-	0
0x3D		Reserved	Prot	U8	-	0
0x3E		Reserved	Prot	U8	-	0
0x3F	CHKSUM	Checksum (additon of all bytes in this bank)	Orga	U8	-	0x79

Table 12: EDS example I for BP3 adress mapping

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EXAMPLE II EDS BP3 CONFORM: LINEAR ENCODER

BiSS PROFILE IDENTIFIER								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Linear encoder system BP3 conform: 24 bit COARSE, 13 bit FINE, nE, nE, 6 bit CRC, BiSS C								
D = 39, V = 1, C = 0								
0x42	0	1	1	0	0	0	1	0
0x43	0	0	1	0	0	1	1	1

Table 13: Register layout

Data format: POS(37) + nE(1) + nE(1) + CRC(6)
 The BiSS master does verify the CRC.

Adr.	Symbol	Description	Group	Format	Unit	Values
0x00	BP_VER	Version	Orga	U8	-	1
0x01	BP_LEN	Length of this profile	Orga	U8	Banks	1
0x02	BP_ID	Profile identification BP3 (content also available in adresse 0x42 and 0x43)	Orga	U8	-	0x62
0x03			U8	-	0x27	
0x04	FB1	Feedback bit 1 (error = 1)	Orga	U8	Table B	1
0x05	FB2	Feedback bit 2 (error = 1)	Orga	U8	Table B	1
0x06	PON_PDL	Maximum "power on delay" until position data are available	Timing	U8	ms	7
0x07		Reserved	Prot	U8	-	0
0x08	EN_TYP	Encoder type (linear = 1)	Orga	U8	Table T	1
0x09	POS_NUM	Position value (position value 1)	Safety	U8	Table N	1
0x0A	MT_LEN	Data length MULTITURN	Orga	U8	bit	0
0x0B	MT_FMT	Data format MULTITURN	Mess	U8	Table F	0
0x0C	CO_LEN	Data length COARSE	Orga	U8	bit	24
0x0D	CO_FMT	Data format COARSE	Mess	U8	Table F	0
0x0E	FI_LEN	Data length FINE	Orga	U8	bit	13
0x0F	FI_FMT	Data format FINE	Mess	U8	Table F	1
0x10	MT_CNT	Number of distinguishable periods	Mess	U32	-	0
0x11						
0x12						
0x13						
0x14	SIP_CNT	Length of signal periode	Mess	U32		2000000
0x15						
0x16						
0x17						
0x18	SIP_RES	resolution factor per signal period (LSB of the interpolation)	Mess	U32	bit	13
0x19						
0x1A						
0x1B						

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0x1C	CPOLY	CRC polynome(32:1)of 0x43	Orga	U32	-	0x00
0x1D						0x00
0x1E						0x00
0x1F						0x21
0x20	CSTART	CRC start value	Orga	U32	-	0x00
0x21						0x00
0x22						0x00
0x23						0x00
0x24	ABS_ACU	Absolute accuracy	Mess	U16	LSB/2	10
0x25						
0x26	REL_ACU	Repeat accuracy	Mess	U16	LSB/2	12
0x27						
0x28	SPD_ACU	Speed depending accuracy	Mess	U16	LSB/2	9
0x29						
0x2A	HYST	Hysteresis	Mess	U16	LSB/2	4
0x2B						
0x2C	SPD_MAX	Maximum speed	Mech	U16	m/min	5
0x2D						
0x2E	ACC_MAX	Maximum acceleration	Mech	U16	m/min ²	15
0x2F						
0x30	TMP_MIN	Minimum operating temperature	Mech	U16	K	233
0x31						
0x32	TMP_MAX	Maximum operating temperature	Mech	U16	K	358
0x33						
0x34	VLT_MIN	Minimum operating voltage	Elec	U16	mV	9000
0x35						
0x36	VLT_MAX	Maximum operating voltage	Elec	U16	mV	30000
0x37						
0x38	CUR_MAX	Maximum current consumption	Elec	U16	mA	250
0x39						
0x3A		Reserved	Prot	U8	-	0
0x3B		Reserved	Prot	U8	-	0
0x3C		Reserved	Prot	U8	-	0
0x3D		Reserved	Prot	U8	-	0
0x3E		Reserved	Prot	U8	-	0
0x3F	CHKSUM	Checksum (additon of all bytes in this bank)	Orga	U8	-	0x97

Table 15: EDS example II for BP3 adress mapping

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EXAMPLE III EDS BP3 CONFORM: ROTARY ENCODER

BiSS PROFILE IDENTIFIER								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Rotary encoder system BP3 conform: 13 bit ST, nE, nE, 16 bit CRC, BiSS C, Safety Application								
D = 31, V = 1, C = 1								
0x42	0	1	1	0	0	0	1	1
0x43	0	0	0	1	1	1	1	1

Table 16: Register layout

Data format: POS(13) + nE(1) + nW(1) + CRC(16)

The BiSS master does not verify the CRC and passes the received data word completely including the CRC.

Adr.	Symbol	Description	Group	Format	Unit	Values
0x00	BP_VER	Version	Orga	U8	-	1
0x01	BP_LEN	Length of this profile	Orga	U8	Banks	1
0x02	BP_ID	Profile identification BP3 (content also available in adresse 0x42 and 0x43)	Orga	U8	-	0x63
0x03				U8	-	0x1F
0x04	FB1	Feedback bit 1 (error = 1)	Orga	U8	Table B	1
0x05	FB2	Feedback bit 2 (error = 1)	Orga	U8	Table B	1
0x06	PON_PDL	Maximum "power on delay" until position data are available	Timing	U8	ms	7
0x07		Reserved	Prot	U8	-	0
0x08	EN_TYP	Encoder type (rotary = 0)	Orga	U8	Table T	0
0x09	POS_NUM	Position value (position value 1)	Safety	U8	Table N	1
0x0A	MT_LEN	Data length MULTITURN	Orga	U8	bit	0
0x0B	MT_FMT	Data format MULTITURN	Mess	U8	Table F	0
0x0C	CO_LEN	Data length COARSE	Orga	U8	bit	0
0x0D	CO_FMT	Data format COARSE	Mess	U8	Table F	0
0x0E	FI_LEN	Data length FINE	Orga	U8	bit	13
0x0F	FI_FMT	Data format FINE	Mess	U8	Table F	0
0x10	MT_CNT	Number of distinguishable revolutions	Mess	U32	-	0
0x11						
0x12						
0x13						
0x14	SIP_CNT	Number of signal periods per revolution	Mess	U32	PPR (rotary)	1
0x15						
0x16						
0x17						
0x18	SIP_RES	resolution factor per signal period (LSB of the interpolation)	Mess	U32	bit	13
0x19						
0x1A						
0x1B						

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0x1C	CPOLY	CRC polynome(32:1) of 0x11021 = 0x8810	Orga	U32	-	0x00
0x1D						0x00
0x1E						0x88
0x1F						0x10
0x20	CSTART	CRC start value	Orga	U32	-	0x00
0x21						0x00
0x22						0x00
0x23						0x00
0x24	ABS_ACU	Absolute accuracy	Mess	U16	LSB/2	7
0x25						
0x26	REL_ACU	Repeat accuracy	Mess	U16	LSB/2	8
0x27						
0x28	SPD_ACU	Drehzahlabhängige Genauigkeit	Mess	U16	LSB/2	6
0x29						
0x2A	HYST	Hysterese	Mess	U16	LSB/2	4
0x2B						
0x2C	SPD_MAX	Maximum revolution speed	Mech	U16	1/min	1500
0x2D						
0x2E	ACC_MAX	Maximum angular acceleration	Mech	U16	1/min ²	4500
0x2F						
0x30	TMP_MIN	Minimum operating temperature	Mech	U16	K	273
0x31						
0x32	TMP_MAX	Maximum operating temperature	Mech	U16	K	373
0x33						
0x34	VLT_MIN	Minimum operating voltage	Elec	U16	mV	4500
0x35						
0x36	VLT_MAX	Maximum operating voltage	Elec	U16	mV	5500
0x37						
0x38	CUR_MAX	Maximum current consumption	Elec	U16	mA	75
0x39						
0x3A		Reserved	Prot	U8	-	0
0x3B		Reserved	Prot	U8	-	0
0x3C		Reserved	Prot	U8	-	0
0x3D		Reserved	Prot	U8	-	0
0x3E		Reserved	Prot	U8	-	0
0x3F	CHKSUM	Checksum (additon of all bytes in this bank)	Orga	U8	-	0x9F

Table 18: EDS example III for BP3 adress mapping

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EXAMPLE IV EDS BP3 CONFORM: LINEAR ENCODER

BiSS PROFILE IDENTIFIER BEISPIEL IV								
Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Linear encoder system BP3 conform: 19 bit Pos, nE, nW, 6 bit CRC, BiSS C								
D = 21, V = 1, C = 0								
0x42	0	1	1	0	0	0	1	0
0x43	0	0	0	1	0	1	0	1

Table 19: Register layout

Data format: POS(19) + nE(1) + nW(1) + CRC(6).
The BiSS master does verify the CRC.

Adr.	Symbol	Description	Group	Format	Unit	Values
0x00	BP_VER	Version	Orga	U8	-	1
0x01	BP_LEN	Length of this profile	Orga	U8	Banks	1
0x02	BP_ID	Profile identification BP3 (content also available in adresse 0x42 and 0x43)	Orga	U8	-	0x62
0x03				U8	-	0x15
0x04	FB1	Feedback bit 1 (error = 1)	Orga	U8	Table B	1
0x05	FB2	Feedback bit 2 (warning = 2)	Orga	U8	Table B	2
0x06	PON_PDL	Maximum "power on delay" until position data are available	Timing	U8	ms	3
0x07		Reserved	Prot	U8	-	0
0x08	EN_TYP	Encoder type (linear = 1)	Orga	U8	Table T	1
0x09	POS_NUM	Position value (position value 1)	Safety	U8	Table N	1
0x0A	MT_LEN	Data length MULTITURN	Orga	U8	bit	0
0x0B	MT_FMT	Data format MULTITURN	Mess	U8	Table F	0
0x0C	CO_LEN	Data length COARSE	Orga	U8	bit	9
0x0D	CO_FMT	Data format COARSE (right aligned)	Mess	U8	Table F	0
0x0E	FI_LEN	Data length FINE	Orga	U8	bit	10
0x0F	FI_FMT	Data format FINE (left aligned)	Mess	U8	Table F	1
0x10	MT_CNT	Number of distinguishable periods	Mess	U32	-	0
0x11						
0x12						
0x13						
0x14	SIP_CNT	Length of signal periode	Mess	U32	-	1000000
0x15						
0x16						
0x17						
0x18	SIP_RES	resolution factor per signal period (LSB of the interpolation)	Mess	U32	bit	10
0x19						
0x1A						
0x1B						

BiSS Interface

BP3: STANDARD ENCODER PROFILE



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0x1C	CPOLY	CRC polynome (32:1) of 0x43	Orga	U32	-	0x00
0x1D						0x00
0x1E						0x00
0x1F						0x21
0x20	CSTART	CRC start value	Orga	U32	-	0x00
0x21						0x00
0x22						0x00
0x23						0x00
0x24	ABS_ACU	Absolute accuracy	Mess	U16	LSB/2	5
0x25						
0x26	REL_ACU	Repeat accuracy	Mess	U16	LSB/2	9
0x27						
0x28	SPD_ACU	Speed depending accuracy	Mess	U16	LSB/2	10
0x29						
0x2A	HYST	Hysteresis	Mess	U16	LSB/2	4
0x2B						
0x2C	SPD_MAX	Maximum speed	Mech	U16	m/min	5
0x2D						
0x2E	ACC_MAX	Maximum acceleration	Mech	U16	m/min ²	15
0x2F						
0x30	TMP_MIN	Minimum operating temperature	Mech	U16	K	233
0x31						
0x32	TMP_MAX	Maximum operating temperature	Mech	U16	K	358
0x33						
0x34	VLT_MIN	Minimum operating voltage	Elec	U16	mV	4750
0x35						
0x36	VLT_MAX	Maximum operating voltage	Elec	U16	mV	5250
0x37						
0x38	CUR_MAX	Maximum current consumption	Elec	U16	mA	125
0x39						
0x3A		Reserved	Prot	U8	-	0
0x3B		Reserved	Prot	U8	-	0
0x3C		Reserved	Prot	U8	-	0
0x3D		Reserved	Prot	U8	-	0
0x3E		Reserved	Prot	U8	-	0
0x3F	CHKSUM	Checksum (additon of all bytes in this bank)	Orga	U8	-	0x1E

Table 21: EDS example IV for BP3 adress mapping

REVISION HISTORY

Rev	Notes	Pages affected	Details
A1	Initial version		
A2		3 4, 5 4, 7, 9, 11 7, 9 11 5 13	EDS definition, not only EDS BP3 Added Note: Big Endian for U16, U32 Added Note: CRC Polynome (32:1) CPOLY = 0x21 CPOLY = 0x8810 FBx: error(nE) = 1; warning(nW) = 2 Added example IV

Table 23: Revision history