

SMX 122-2A/2

SMXSERIES » Modular » Central expansion » 2 Axes module

BBH
PRODUCTS



DESCRIPTION

Central axis extension module for safe speed and position of up to 2 axis for further evaluation in SMX_{MODULAR} - basic modules and with extended encoder functionality

- 12 Digital inputs
- 8 Encoder interfaces
- 2 Analog inputs *
- Safety controller up to PL e acc. to EN ISO 13849-1 or SIL3 acc. to IEC 61508)

CHARACTERISTIC OF THE MODULE

- » Movement monitoring of one or two axes up to PL e EN ISO 13849-1 or SIL 3 acc. to IEC 61508
- » Speed monitoring
- » RPM-monitoring
- » Standstill monitoring
- » Sense of rotation monitoring
- » Safe incremental dimension
- » Emergency Stop monitoring
- » Position monitoring
- » Position range monitoring
- » Trend range monitoring
- » Target position monitoring
- » Parameter management for expansion modules in base device
- » Comprehensive diagnostics functions integrated
- » Assembly on top hat rail
- » With 2 analogue Inputs *
- » Extended functionality:
 - Allows the connection of 2 rotary encoders per axis (SSI-Absolut, SinCos, Incremental-TTL, HTL-proximity sensor)
 - 2nd encoder interface also supports HTL (200 kHz), Sin/Cos High-Resolution and Resolver

* = see "general data"

BBH PRODUCTS GMBH

Böttgerstraße 40
D- 92637 Weiden

Tel.: + 49 961/4 82 44-0
Fax: + 49 961/4 82 44-35

www.bbh-products.de

contact@bbh-products.de

SAFETY @ ITS BEST!

SMX 122-2A/2

SMX_{SERIES} » Modular » Central expansion » 2 Axes module



SAFETY RELATED CHARACTERISTIC DATA

Performance Level	PL e (EN ISO 13849-1)
PFH ¹⁾ / architecture	6,5 FIT ³⁾ / Cat 4
Safety Integrity Level	SIL 3 (IEC 61508)
Proof test interval	20 years = max. operating period

GENERAL DATA

Max. no. of expansion modules	–
Interface for expansion modules	T-bus connector, pluggable in top-hat rail
Number of safe digital inputs	12
Number of safe digital outputs	–
Number of safe digital I/O	–
Number of relay outputs	–
Number of safe analogue inputs	2 **
Number of auxiliary outputs	–
Number of pulse outputs (clock outputs)	–
Type of connection	Plug-in terminals with spring or screw connection
Axis monitoring	2
Encoder interfaces (D-Sub / screw terminals)	4 / 4 *
Encoder technology (See table Encoder specifications)	D-SUB X31, X32: SSI, SinCos, Incremental-TTL D-SUB X33, X34: SSI, SinCos, SinCos (HighRes), Incremental-TTL, Resolver Terminals X27 / X29, X28 / X30: Incremental-HTL (200kHz) X23: HTL-proximity sensor (10kHz)

* Maximum 2 Encoder / Axis

** Analogue current, voltage inputs are available as options

- » SMX122-2A-U (/2) Voltage inputs
- » SMX122-2A-I (/2) Current inputs
- » SMX122-2A (/2) Voltage inputs (X25) and current inputs (X26)

¹⁾ Value applies only for extension module. For total assessment in accordance with EN ISO 13849-1 one must use a series connection with the corresponding basic device => $PFH_{Logic} = PFH_{Basic} + PFH_{Extension}$

³⁾ 2-Axes

BBH PRODUCTS GMBH

Böttgerstraße 40
D- 92637 Weiden

Tel.: + 49 961/4 82 44-0
Fax: + 49 961/4 82 44-35

www.bbh-products.de

contact@bbh-products.de

SAFETY @ ITS BEST!

SMX 122-2A/2

SMX_{SERIES} » Modular » Central expansion » 2 Axes module

ELECTRICAL DATA

Supply voltage (tolerance)	-
Max. Power consumption (logic)	-
Rated data digital inputs	24 VDC; 20 mA Typ1 acc. to IEC 61131-2
Rated data digital outputs	-
Rated data relays	-
Rated data analogue inputs	-7 ... +10 V 4 ... 20 mA
Rated data pulse outputs (clock outputs)	-
Rated data auxiliary outputs	-

ENVIRONMENTAL DATA

Temperature	0°C ... +50°C operation -25°C ... +70°C storage and transport
Class of protection	IP 20
Climatic category	3K3 acc. to DIN EN 60721-3
Min-, Maximum relative humidity (no condensation)	5% - 85%
EMC	DIN EN 61000-6-2, DIN EN 61000-6-4, DIN EN 61000-6-7, DIN EN 61800-3, DIN EN 61326-3, DIN EN 62061
Operating altitude	2000m

MECHANICAL DATA

Dimension (HxDxW [mm])	SMX122-2A/2	100x115x90
Weight [g]	SMX122-2A/2	520
Mounting	to snap on top-hat rail	
Number of T-Bus	4	
Min. terminal cross-section / AWG	0,2 mm ² / 24	
Max. terminal cross-section / AWG	2,5 mm ² / 12	

SMX 122-2A/2

SMXSERIES » Modular » Central expansion » 2 Axes module



X23	
Pin	1 - I05
	2 - I06
	3 - I07
	4 - I08
Safe digital inputs	
X24	
Pin	1 - I09
	2 - I10
	3 - I11
	4 - I12
Safe digital inputs	

X25 (voltage inputs)	
Pin	1 - AIN 1+
	2 - AIN 1-
	3 - AIN 2+
	4 - AIN 2-
Safe analogue input	
X26 (current inputs)	
Pin	1 - AIN 3+
	2 - AIN 3-
	3 - AIN 4+
	4 - AIN 4-
Safe analogue input	

ENCODER INTERFACES

Pin assignment X31 / X32 , X33 / X34

Pin assignment X23 , X27 / X28 , X29 / X30

Pin	X31 / X32	X33 / X34	X33 / X34	Front side SMX
	Inc / Sin/Cos / SSI	Inc / Sin/Cos / SSI	Resolver	
1	n.c.	n.c.	Ref_Out +	
2	GND_ENC	GND_ENC	GND_ENC	
3	n.c.	n.c. / n.c. / Clk +	Ref_In +	
4	B- / COS - / Clk -	B- / COS - / n.c.	COS -	
5	A+ / SIN + / Data +	A+ / SIN + / Data +	SIN +	
6	A- / SIN - / Data -	A- / SIN - / Data -	SIN -	
7	n.c.	n.c. / n.c. / Clk -	Ref -	
8	B+ / COS + / Clk +	B+ / COS + / n.c.	COS +	
9	U_ENC	U_ENC	U_ENC	

Pin	Z1 - Z1 / Z2 - Z2	Terminals
1	A (\bar{A}) / A (\bar{A})	
2	-- / B (\bar{B})	
3	A (\bar{A}) / A (\bar{A})	
4	-- / B (\bar{B})	

Pin	A+/A-	A+ Signal	
1 - H1A	A+	24V	
2 - H2A	A-	A	
3 - H3A	A+	GND	
4 - NC	—	—	

Pin	B+/B-	B+ Signal	
1 - H1B	B+	24V	
2 - H2B	B-	B	
3 - H3B	B+	GND	
4 - NC	—	—	

ENCODER SPECIFICATIONS

Incremental - TTL	
Physical Layer	RS-422 compatible
Measuring signal A/B	Track with 90° phase difference
Type of connection	D-SUB 9 pole
Max. frequency of input cycles (X31, X32 / X33, X34)	200 kHz / 250 kHz
Sin/Cos	
Physical Layer	RS-422 compatible
Measuring signal A/B	Track with 90° phase difference
Type of connection	D-SUB 9 pole
Standard Mode	
Max. frequency of input clock pulses (X31, X32 / X33, X34)	200 kHz / 250 kHz
High Resolution Mode	
Max. frequency of input clock pulses (X33, X34)	15 kHz
SSI-Absolut	
Data interface	Serial Synchronous Interface (SSI) with variable data length of 12 – 28 Bit
Data format	Binary, Gray code
Physical Layer	RS-422 compatible
Type of connection	D-SUB 9pole
Mode	Master or Listener
SSI-Master operation	
Clock rate	150 kHz
SSI-Listener operation	
Clock rate (X31, X32 / X33, X34)	100 kHz ... 200 kHz / 100 kHz ... 250 kHz
Min. clock pause time	150 µsec
Max. clock pause time	1 msec
Resolver	
Measuring signal	Sin/Cos – track with 90° phase difference
Signal frequency	max. 600 Hz (900 Hz Deep pass)
Input voltage	max. 8 Vss (an 16 kΩ)
Resolution	9 Bit / pole
Supported pole number	2 - 16
Type of connection (X31, X32 / X33, X34)	D-SUB 9-pole
Mode	Master or Listener
Resolver-Master operation	
Reference frequency	8 kHz
Resolver-Listener operation	
Reference frequency	4 kHz – 16 kHz

SMX 122-2A/2

SMXSERIES » Modular » Central expansion » 2 Axes module

BBH
PRODUCTS

Reference amplitude	8 Vss – 28 Vss
Reference signal form	Sinusoidal, triangle
Transformation ratio	2:1; 3:1; 4:1
Phase fault	max. 8°

Incremental - HTL

Signal level	24V / 0V
Physical Layer	PUSH / PULL
Max. counting pulse frequency	200 kHz
Type of connection (X27, X28, X29, X30)	Plug-in terminals with spring or screw connection

HTL proximity sensor

Signal level	24V / 0V
Max. counting pulse frequency (circuit logic de-bounced)	10 kHz
Pulse width	50 µsec
Type of connection (X23)	Plug-in terminals with spring or screw connection

HTL proximity switch - extended monitoring

Signal level	24V / 0V
Max. counting frequency (circuit logic de-bounced)	4 kHz
Physical Layer	PUSH / PULL
Measuring signal A/B	Track with 90 degree phase difference
Type of connection (X23)	Plug-in terminals with spring or screw connection

SMX 122-2A/2

SMXSERIES » Modular » Central expansion » 2 Axes module



ORDER INFORMATION

EXTENSIONS

item	description	item no.
SMX122-2A/2	Axis extension module for up to 2 axes + analogue option (voltage + current) + extended encoder functionality	2190
SMX122-2A-I/2	Axis extension module for up to 2 axes + analogue option (current) + extended encoder functionality	2312
SMX122-2A-U/2	Axis extension module for up to 2 axes + analogue option (voltage) + extended encoder functionality	2313

ACCESSORIES

item	description	item no.
SXxxx-x	Terminal connector, screw terminals (set), encoded for cabling SMX122-2A/2	on request
SXxxx-x	Terminal connector, spring terminals (set), encoded for cabling SMX122-2A/2	on request
SX0000-9	T-Bus connector, voltage-carrying (grey)	1015