SMX 122-1-PXV/2

SMX SERIES » Modular » Central expansion » 2 axes module

DESCRIPTION

Central axis extension for safe speed and position of up to 2 axes for further evaluation in SMX MODULAR - basic modules

- Integrated movement monitoring for up to 2 axes
- 12 safe digital inputs
- 6 Encoder interfaces (one with safePXV-encoder interface)
- Safety controller up to PL e acc. to EN ISO 13849-1 or SIL3 acc. to IEC 61508

CHARACTERISTIC OF THE MODULE

» Complete speed and position-related safety functions for drive monitoring of one or two axes up to PL e acc. to EN ISO 13849-1 or SIL 3 acc. to IEC 61508
» Safe position monitoring with only one sensor in combination with the optical reading head PXV100AS-F200-R4-V19-BBH
» Speed monitoring
» Standstill monitoring
» Direction 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
» Extended functionality: SafePXV-encoder interface
» Extended functionality:
  • allows the connection of 2 rotary encoder per axis (SSI-Absolut, Sin/Cos,TTL, HTL proximity switch)
  • 2. encoder interface also support HTL (200 kHz), Sin/Cos High-Resolution and Resolver

BBH PRODUCTS GMBH
Böttgerstraße 40
D- 92637 Weiden
Tel.: + 49 961/4 82 44-0
Fax: + 49 961/4 82 44-35
wwww.bbh-products.de
contact@bbh-products.de

SAFETY RELATED CHARACTERISTIC DATA

Performance Level	PL e (EN ISO 13849-1)
PFH[1] / architecture	3,0 FIT [2] / Cat. 4
	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	–
Number of auxiliary outputs	–
Number of pulse outputs (clock outputs)	–
Type of connection	Plug-in terminals with spring or screw connection
Axis monitoring (axes / Encoder interface)	2 / 6 *
Encoder technology (See table Encoder specifications)	**D-SUB X31:** SSI-Absolut, SinCos, Incremental-TTL **D-SUB X33:** SSI-Absolut, SinCos, SinCos (HighRes), Incremental-TTL, Resolver **Terminal X23:** HTL-proximity sensor (10kHz) **Terminals X27, X28:** Incremental-HTL (200kHz) **RS 485, X35:** PXV100AS-F200-R4-V19-BBH

* Maximum 2 Encoder / Axis

[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 => $PFH_{Logic} = PFH_{Basic} + PFH_{Extension}$

[2] 1-Axis

[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

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	–

ENVIRONMENTAL DATA

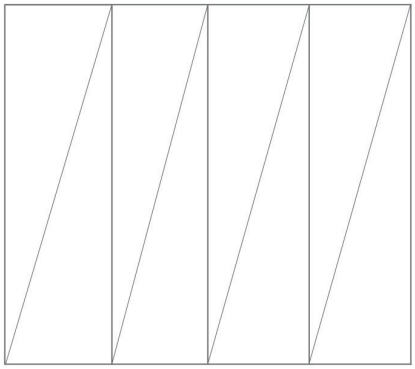
Temperature	0°C … +50°C operation
	-25°C … +70°C storage and transport
Class of protection	IP 20
Climatic category	3K3 acc. to DIN EN 60721-3
Min-, Maximum relative humidity (no condensation)	5% - 85%
EMC	DIN EN 61000-6-2, DIN EN 61000-6-4, DIN EN 61000-6-7, DIN EN 61800-3, DIN EN 61326-3, DIN EN 62061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

MECHANICAL DATA

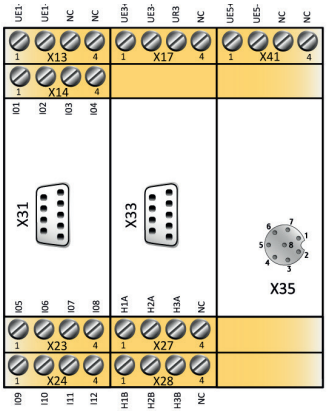
Dimension (HxDxW [mm])		
	SMX122-1-PXV/2	100x115x67,5
Weight [g]		
	SMX122-1-PXV/2	520
Mounting		to snap on top-hat rail
Number of T-Bus		4
Min. terminal cross-section / AWG		0,2 mm² / 24
Max. terminal cross-section / AWG		2,5 mm² / 12

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

DEVICE INTERFACES



Basic module



Central axis extension

Interface	Description of interface
X13, X14, X17 / X23, X24 / X41	Voltage supply and I/O interface
X31 / X33 / X35	Encoder interfaces
X23 / X27, X28	Encoder interfaces

VOLTAGE SUPPLY AND I/O INTERFACE

X13		
Pin	1 – UE1+	Voltage supply encoder +24 VDC X31
	2 – UE1-	Voltage supply encoder 0 VDC X31
	3 - NC 4 - NC	No function
X14		
Pin	1 - I01 2 - I02 3 - I03 4 - I04	Safe digital inputs
X17		
Pin	1 - UE3+	Voltage supply encoder +24V DC X33
	2 - UE3-	Voltage supply encoder 0V DC X33
	3 - UR3	Reference voltage encoder X33
	4 - NC	No function

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
X41		
Pin	1 - UE5+	Voltage supply sensor +24 VDC
	2 - UE5-	Voltage supply sensor 0 VDC
	3 - NC 4 - NC	No function

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

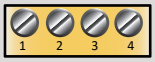
contact@bbh-products.de

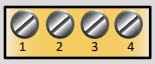
ENCODER INTERFACES

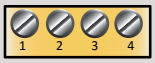
Pin assignment X31 , X33

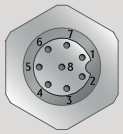
Pin	X31 Inc / Sin/Cos / SSI	X33 Inc / Sin/Cos / SSI	X33 Resolver	Front side SMX
1	n.c.	n.c.	Ref_Out +	
2	GND_ENC	GND_ENC	GND_ENC	
3	n.c.	n.c / n.c. / Clk +	Ref_In +	
4	B- / COS - / Clk -	B- / COS - / n.c.	COS -	
5	A + / SIN + / Data +	A + / SIN + / Data +	SIN +	
6	A- / SIN - / Data -	A- / SIN - / Data -	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 assignment X23 , X27 / X28 , X35

Pin	Z1 – Z1 / Z2 – Z2	Terminals
1	*A (Ā) / A (Ā)*	X23
2	*– – / B ($\overline{B}$)*	
3	*A (Ā) / A (Ā)*	
4	*– – / B ($\overline{B}$)*	

Pin	A+/A-	A+ Signal	
1 – H1A	A+	24V	X27
2 – H2A	A-	A	
3 – H3A	A+	GND	
4 – NC	—	—	

Pin	B+/B-	B+ Signal	
1 – H1B	B+	24V	X28
2 – H2B	B-	B	
3 – H3B	B+	GND	
4 – NC	—	—	

Pin	RS 485	Front side SMX
1	Enable Blue	
2	UB+	
3	Data +	
4	Data -	
5	Sync IN	
6	Enable Red	X35
7	GND	
8	NC	

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

ENCODER SPECIFICATIONS

PXV100AS-F200-R4-V19-BBH		
	Physical Layer	RS-485 compatible
	Data format	Binary Code
	Transmission rate	115200 Bit/s
	Type of connection (X35)	male connector 1x M12, 8-pin
	Termination	120 Ω, selectable
	General data	
	Overrun speed ν	≤ 10 m/s
	Measuring length	max. 100000 m
	Resolution	± 1mm
	Measuring frequency	100 Hz
Inkremental - 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 / X33)	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 / X33)	200 kHz / 250 kHz
	High Resolution Mode	
	Max. frequency of input cycles (X33)	15 kHz
SSI-Absolut		
	Data interface	**S**erial **S**ynchronous **I**nterface (**SSI**) with variable data length of 12 – 28 Bit
	Data format	Binary, Gray code
	Physical Layer	RS-422 compatible
	Type of connenction	D-SUB 9-pole
	Mode	**Master oder Listener**
	SSI-Master operation	
	Clock rate	150 kHz
	SSI-Listener operation	
	Clock rate (X31 / X33)	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 (900Hz Deep pass)
	Input voltage	max. 8 Vss (an 16 kΩ)
	Resolution	9 Bit / pole
	Supported pole number	2 - 16
	Mode	**Master oder Listener**
	Resolver-Master operation	
	Reference frequency	8 kHz
	Resolver-Listener operation	
	Reference frequency	4 kHz – 16 kHz
	Reference amplitude	8 Vss – 28 Vss
	Reference signal form	Sinusoidal, triangle
	Transformation ratio	2:1; 3:1; 4:1
	Phase fault	max. 8°
	Type of connection (X33)	D-SUB 9-pole
Incremental - HTL		
	Signal level	24V / 0V
	Physical Layer	PUSH / PULL
	Max. counting pulse frequency	200 kHz
	Type of connection (X27, X28)	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° phase difference
	Type of connection (X23)	Plug-in terminals with spring or screw connection

ORDER INFORMATIONS

EXTENSIONS

item	description	item no.
SMX122-1-PXV/2	Axes extension module for up to 2 axes with extended encoder interface + safePXV-encoder interface	2658

ACCESSORIES

item	description	item no.
SX*xxxx-x*	Terminal connector, screw terminals (set), encoded for cabling SMX122-1-PXV/2	on request
SX*xxxx-x*	Terminal connector, spring terminals (set), encoded for cabling SMX122-1-PXV/2	on request
SX0000-9	T-Bus connector volltage-carrying (grey)	1015
PXV100AS-F200-R4-V19-BBH	Optical reading head for incident light positioning system	2581

BBH PRODUCTS GMBH
Böttgerstraße 40
D- 92637 Weiden
Tel.: + 49 961/4 82 44-0
Fax: + 49 961/4 82 44-35
wwww.bbh-products.de
contact@bbh-products.de