SDU-11-PXV

SCUserie » SCU Slaves

DESCRIPTION

FSoE slave module for safe speed and position of 1 axis for further evaluation in an FSoE master module

- With integrated safePXV-Encoder interface
- 14 Safe digital inputs
- 2 Relay / pulse outputs
- 2 Auxiliary outputs
- Up to 4 safe digital outputs
- Safety control up to PL e acc. to EN ISO 13849-1 or SIL3 acc. to IEC 61508

CHARACTERISTIC OF THE MODULE

» Decentralized safe axle assembly for the EtherCAT environment
» Safe detection of speed and position of one axis
» Complete speed and position-related safety functions for drive monitoring IEC 61800-5-2 integrated into firmware
» Safe position monitoring with only one sensor in combination with the optical reading head PXV100AS-F200-R4-V19-BBH
» Speed monitoring
» RPM-monitoring
» Standstill monitoring
» Direction monitoring
» Safe incremental dimension
» Emergency Stop monitoring
» Position monitoring
» Position range monitoring
» Trend range monitoring
» Target position monitoring
» Pulse outputs for cross-shorting detection of digital input signals
» External contact monitoring of connected switchgear (EMU)
» Monitored relay outputs for safety-relevant functions
» Switchable safe semi-conductor outputs pn-, pp-switching for safety-relevant functions
» Functionplan-oriented parametrization
» Parameter management for expansion modules in base device
» Comprehensive diagnostics functions integrated
» Multifunction button (quit, start, reset) can be operated from the front side
» Coded status display via front-side 7 segment display and status LEDs
» Extended functionality: safePXV-encoder interface

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SAFETY RELATED CHARACTERISTIC DATA

Performance Level	PL e (EN ISO 13849-1)
PFH / architecture	2,0 * 10^{-9} / 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		–
Number of safe digital inputs		14
Number of safe digital outputs		
	pp-switching *	4
	pn-switching *	2
Number of safe digital I/O		–
Number of relay outputs		2
Number of safe analogue inputs		–
Number of auxiliary outputs		2
Number of pulse outputs (clock outputs)		2
Type of connection		Plug-in terminals with spring or screw connection
Axis monitoring		1
Encoder interfaces (M12)		1
Encoder technology (See Encoder specifications)		**RS 485, ENC 1.5:** PXV100AS-F200-R4-V19-BBH
Cycle time PLC		8 ms
Fast Channel		2 ms
Safe Slave		FSoE

* pn/pp are configurable via SafePLC²

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ELECTRICAL DATA

Supply voltage (tolerance)		24 VDC; 2A (-10%, +20%)
Fuse	X11.1 / 24+	min. 30 VDC; max. 3,15A
	X11.2 / AQ1+	min. 30 VDC; max. 10A
Max. Power consumption (logic)		
	SDU-11-PXV	5,2 W
Rated data digital inputs		24 VDC; 20 mA Typ1 acc. to IEC 61131-2
Rated data digital outputs		
	pn-switching	24 VDC; 2A
	pp-switching	24 VDC; 2A
	auxiliary outputs	24 VDC; 250mA
	pulse outputs (clock outputs)	24 VDC; 250mA
Rated data relays		
Normally open	DC 13	24 VDC; 2A
	AC 15	230 VAC; 2A

DERATING OUTPUTS

» Maximum current load based on temperature.
» The maximum total current is 10A.

type of module	outputs	temperature 30°C / 50°C
SDU-11-PXV	QX 00 – QX 03	2A / 1,8A

*2A outputs can be fully loaded at an ambient temperature of up to **30°C**.*
***From** a ambient temperature from **30°C** to maximum **50°C**, the 2A outputs can be loaded to a maximum of **1.8A**.*

*The maximum total current is **10A.** (IO-Board)*

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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])	SDU-11-PXV	100x115x90
Weight [g]	SDU-11-PXV	490
Mounting		to snap on top-hat rail
Min. terminal cross-section / AWG		0,2 mm² / 24
Max. terminal cross-section / AWG		2,5 mm² / 12

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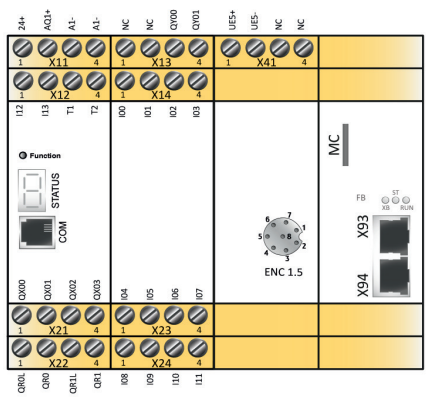
DEVICE INTERFACES



Interface	Description of interface
X11 – X14 / X21 – X24 / X41	Voltage supply and I/O interface
MC	Memory Card for safety program
COM	Diagnostic- and configuration interface
X93 - ECAT IN / X94 - ECAT OUT	Fieldbus interface
ENC 1.5	Encoder interface

VOLTAGE SUPPLY AND I/O INTERACE

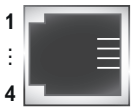
X11		
Pin	1 - 24+	Voltage supply device +24 VDC
	2 - AQ1+	Voltage supply device +24 VDC outputs
	3 - A1- 4 - A1-	Voltage supply device 0 VDC
X12		
Pin	1 - I12 2 - I13	Safe digtal inputs
	3 - T1 4 - T2	Clock outputs
X21		
Pin	1 - QX00	Safe output pn-/ pp-switching 00
	2 - QX01	Safe output pn-/ pp-switching 01
	3 - QX02	Safe output pn-/ pp-switching 02
	4 - QX03	Safe output pn-/ pp-switching 03
X22		
Pin	1 - QR0L	Safe relay input
	2 - QR0	Safe relay output
	3 - QR1L	Safe relay input
	4 - QR1	Safe relay output

X13		
Pin	1 – NC 2 – NC	No function
	3 - QY01 4 - QY02	Auxiliary outputs
X14		
Pin	1 - I00 2 - I01 3 - I02 4 - I03	Safe digital inputs
X23		
Pin	1 - I04 2 - I05 3 - I06 4 - I07	Safe digital inputs
X24		
Pin	1 - I08 2 - I09 3 - I10 4 - I11	Safe digital inputs
X41		
Pin	1 - UE5+	Voltage supply Sensor +24 VDC
	3 - UE5-	Voltage supply Sensor 0 VDC
	4- NC 5 - NC	No function

DIAGNOSTIC AND CONFIGURATION INTERFACE

Pin assignment

RJ 10, 4-pin

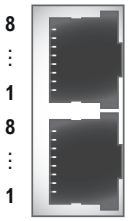
Pin	Description	COM front side
1	GND	
2	RS485-	
3	RS485+	
4	VCCH	

» With existing Ethernet-based fieldbus interface, it can be used as a diagnostic and configuration interface.

FIELDBUS INTERFACES

Pin assignment, ethernet-based interface

Safe EtherCAT interface (RJ45)

Pin	Name	Description	Colour	X93 / X94
1	TX+	Transmit Data +	white-orange	
2	TX-	Transmit Data -	orange	
3	RX+	Receive Data +	white-green	
4	nc	Not used	blue	
5	nc	Not used	white-blue	
6	RX-	Receive Data -	green	
7	nc	Not used	white-brown	
8	nc	Not used	brown	

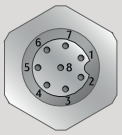
INTEGRATED COMMUNICATION INTERFACE

» The integrated communication interface of the FSoE-slave includes a safe EtherCAT interface for decentralized communication with an FSoE-master unit.

General data			
Fieldbus interface			
	X93 / X94	EtherCAT	2x RJ 45
Memory Card (safety program)			
		MC	1x Mini SD (front side)
Status LEDs		3	

ENCODER INTERFACE

Pin assignment ENC 1.5

Pin	RS 485	Front side SDU
1	Enable Blue	
2	UB+	
3	Data +	
4	Data -	
5	Sync IN	
6	Enable Red	ENC 1.5
7	GND	
8	NC	

ENCODERSPECIFICATIONS

PXV100AS-F200-R4-V19-BBH	
Physical Layer	RS-485 compatible
Data format	Binary Code
Transmission rate	115200 Bit/s
Type of connection (ENC 1.5)	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

ORDER INFORMATION

FSoE SLAVES

item	description	item no.
SDU-11-PXV	Decentralized axis expansion module for one axis, with 1 safePXV encoder interface	2472

ACCESSORIES

item	description	item no.
SMX91	Programming adapter	1010
SX*xxxx-x*	Terminal connector, screw terminals (set), encoded for cabling SDU-11	on request
SX*xxxx-x*	Terminal connector, spring terminals (set), encoded for cabling SDU-11	on request
PXV100AS-F200-R4-V19-BBH	Optical reading head for incident light positioning system	2581

SOFTWARE

item	description	item no.
SafePLC² 1st	Programming software, 1te License incl. Hardlock	1244
SafePLC² 2nd	Programming software, 2te License incl. Hardlock	1646
SafePLC² 3rd	Programming software, 3te License incl. Hardlock	1647

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