

DESCRIPTION

FSoE IO-slave module for the decentralized expansion of a FSoE master module (SCUMASTER - modules)

- 14 Safe digital inputs
- Up to 20 safe digital I/Os
- 2 Relay / 2 Pulse outputs
- 2/4 pn- or pp-switching outputs
- Safety controller up to PL e acc. to EN ISO 13849-1 or SIL3 acc. to IEC 61508

CHARACTERISTIC OF THE MODULE

- » Decentralized safe I/O-Slave module for the EtherCAT environment
- » Pulse outputs for cross-shorting detection of digital input signals
- » External contact monitoring of connected switchgear (EMU)
- » Comprehensive diagnostics functions integrated
- » Coded status display via front-side 7 segment display and status LEDs
- » Multifunction button (quit, start, reset) can be operated from the front side
- » Up to 20 safe I/O - configured as inputs or outputs

SAFETY RELATED CHARACTERISTIC DATA

Performance Level	PL e (EN ISO 13849-1)
PFH ¹⁾ / architecture	PFH = 7,96*10 ⁻⁹ / Cat. 4 *
	MTTFd = 126 years = high
	DCavg = high
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	RJ-45 (Ethernet), Communication interface (/D)
Number of safe digital inputs	14
Number of safe digital outputs	–
	pp-switching ** 4
	pn-switching ** 2
Number of safe digital I/O	20
Number of relay outputs	2
Number of safe analogue inputs	–
Number of auxiliary outputs	–
Number of pulse outputs (clock outputs)	2
Type of connection	Plug-in terminals with spring or screw connection
Axis monitoring	–
Encoder interfaces (D-Sub / screw terminals)	–
Safe slave	FSoE

* Value applies only for extension module

** pn/pp are configurable via SafePLC²

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

ELECTRICAL DATA

Supply voltage (tolerance)		24 VDC; 2A (-15%, +20%)
Fuse	X41.1 / 24+	min. 30 VDC; max. 3,15 A
	X41.2 / AQ1+, X45.1 / AQ2+, X49.1 / AQ3+	min. 30 VDC; max. 10A
Max. Power consumption (logic)	SIO-2	3,1 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 *
	pulse outputs (clock outputs)	24 VDC; 250mA
	safe digital I/O	
	00 - 04 10 - 14	24 VDC; 0,5A
	05 - 09 15 - 19	24 VDC; 2A *
Rated data relays		
	Normally open	
	DC 13	24 VDC; 2A
	AC 15	230 VAC; 2A
	Normally closed (Readback contact)	DC 13
		24 VDC; 2A

* see „Derating outputs“

DERATING OUTPUTS

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

type of module	outputs	temperature 30°C / 50°C
SIO-2	QX 00 – QX 03 / IQx5 – IQx9	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)

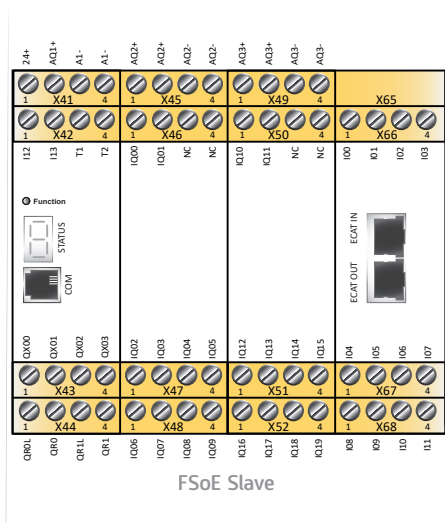
ENVIRONMENTAL DATA

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])	SIO-2	100x115x90
Weight [g]	SIO-2	512
Mounting		to snap on top-hat rail
Number of T-Bus	SIO-2	4
Min. terminal cross-section / AWG		0,2 mm ² / 24
Max. terminal cross-section / AWG		2,5 mm ² / 12

DEVICE INTERFACES



Interface	Description of interface
X41 – X52 / X65 – X68	Voltage supply and I/O interface
COM	Diagnostic- and configuration interface
ECAT IN / OUT	Fieldbus interfaces *

* configurable via SafePLC?

VOLTAGE SUPPLY AND I/O INTERACE

X 41		
Pin	1 - 24+	Voltage supply device +24 VDC
	2 - AQ1+	Voltage supply device +24 VDC outputs
	3 - A1-	Voltage supply device 0 VDC
	4 - A1-	Voltage supply device 0 VDC
X 42		
Pin	1 - I12	Safe digital inputs
	2 - I13	
	3 - T1	Clock outputs
	4 - T2	
X 43		
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
X 44		
Pin	1 - QR0L	Safe relay input
	2 - QR0	Safe relay output
	3 - QR1L	Safe relay input
	4 - QR1	Safe relay output

X45		
Pin	1 - AQ2+	Voltage supply device +24 VDC
	2 - AQ2+	
	3 - AQ2-	Voltage supply 0 VDC
	4 - AQ2-	
X 46		
Pin	1 - IQ00	Safe digital inputs, outputs
	2 - IQ01	
	3 - NC	No function
	4 - NC	
X47		
Pin	1 - IQ02	Safe digital inputs, outputs
	2 - IQ03	
	3 - IQ04	
	4 - IQ05	
X48		
Pin	1 - IQ06	Safe digital inputs, outputs
	2 - IQ07	
	3 - IQ08	
	4 - IQ09	

X49		
Pin	1 - AQ3+	Voltage supply device +24 VDC
	2 - AQ3+	
	3 - AQ3-	Voltage supply 0 VDC
	4 - AQ3-	
X50		
Pin	1 - IQ10	Safe digital inputs, outputs
	2 - IQ11	
	3 - NC	No function
	4 - NC	
X51		
Pin	1 - IQ12	Safe digital inputs, outputs
	2 - IQ13	
	3 - IQ14	
	4 - IQ15	
X52		
Pin	1 - IQ16	Safe digital inputs, outputs
	2 - IQ17	
	3 - IQ18	
	4 - IQ19	

X65		
Pin	1 - NC	No function
	2 - NC	
	3 - NC	
	4 - NC	
X66		
Pin	1 - I00	Safe digital inputs
	2 - I01	
	3 - I02	
	4 - I03	
X67		
Pin	1 - I04	Safe digital inputs
	2 - I05	
	3 - I06	
	4 - I07	
X68		
Pin	1 - I08	Safe digital inputs
	2 - I09	
	3 - I10	
	4 - I11	

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 female connector

EtherCAT interface (RJ45)				
Pin	Name	Description	Colour	EtherCAT IN / OUT
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	

SIO-2

SCU_{SERIES} » SCU Slaves » I/O

ORDER INFORMATION

FSoE SLAVES

item	description	item no.
SIO-2	FSoE-Slave, decentralized I/O expansion module + 20 safe I/Os	2235

ACCESSORIES

item	description	item no.
SXXXX-X	Terminal connector, screw terminals (set), encoded for cabling SIO-2	on request
SXXXX-X	Terminal connector, spring terminals (set), encoded for cabling SIO-2	on request
SMX91	Programming adapter	1010