SCU-0-EC/x

*SCU*SERIES *» SCU Master*

BBH PRODUCTS

DESCRIPTION

Open programmable and configurable FSoE master unit for operation on EtherCAT networks

- Simple integration of safe drives (Safe Drive Profile)
- Fast-Channel task for logic processing with a guaranteed response time of 4 ms
- Safety controller up to PL e acc. to EN ISO 13849-1 or SIL3 acc. to IEC 61508
- optional: kinematics module, PROFIsafe / FSoE-Slave stack

CHARACTERISTIC OF THE MODULE

» Connection of up to 32 FSoE Slave units

» Safe logic processing of input, output, status and activation signals

» Simple and transparent programming and parametrization in the EtherCAT environment via SafePLC²

» Fast response time with integrated Fast Channel Task with guaranteed processing time of 4 ms

» Central or decentralized drive monitoring possible

» Complete set of Drive monitoring for single axes and charged axes (based on Kinematics function)

» Temporary deterministic data communication and processing for safe position und speed functions via distributed sensor / multiple axes

» Specific profiles for process data exchange and central parametrization that can be adapted to converter/manufacture

» Safe cross communication (**S**afe **M**aster- **M**aster **C**ommunication) for data exchange between FSoE masters via EAP

» Storage of safe parameters in the basic module

» Coded status display via front-side 7 segment display and status LEDs

» Multifunction buttons (quit, start, reset) can be operated from fthe ront side

» Optional integrated Communication interface :

- additional field bus interface and PROFIsafe / FSoE-Slave stack for secure connectivity to higher levels of control
- safe kinematics module for up to 6/12 axes with spatial speed and position monitoring

» The mechanical structure of SCU-0-EC (/x*) is depended on the respective forms of the base module

* Optional: integrated Communication interface (/NM)

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SCU-0-EC/x
SCU SERIES » SCU Master

SAFETY RELATED CHARACTERISTIC DATA

Performance Level	PL e (EN ISO 13849-1)
PFH / architecture	PFH = $7,68*10^{-9}$
	MTTFd = 280 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	32
Interface for expansion modules	RJ-45 (Ethernet)
Number of safe digital inputs	–
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
Cycle time PLC	16 ms
Fast Channel central / SCU	4 ms
Fast Channel decentralized SSB / standard Slave	4 ms
Safe Master	FSoE
Safe Slave *	PROFIsafe / FSoE / CIP Safety
Non-safe Slave	EtherCAT

* **optional**: integrated communication interface (/NM)

ELECTRICAL DATA

Supply voltage (tolerance)		24 VDC (-10%, +15%)
Fuse	24+	min. 30 VDC; max. 3,15A
Max. Power consumption (logic)	SCU-0-EC	3,1 W
Rated data digital inputs		24 VDC; 20 mA Typ1 acc. to IEC 61131-2
Rated data digital outputs		–
Rated data relays		–

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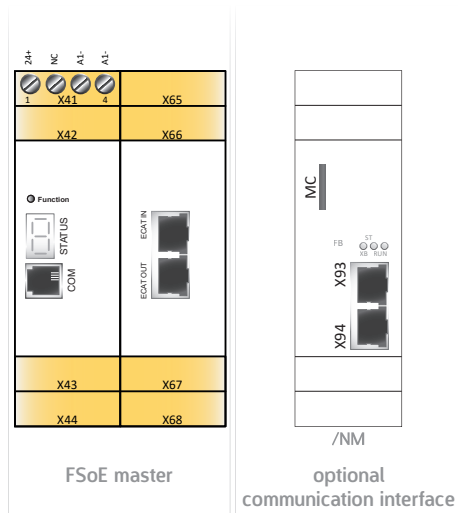
ENVIRONMENTAL DATA

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

Dimensions (HxDxW [mm])	SCU-0-EC	100x115x45
	SCU-0-EC/x *	100x115x67,5
Weight [g]	SCU-0-EC	162
	SCU-0-EC/x *	248
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

* Specification, see: „ Optional integrated communication interface"

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DEVICE INTERFACES

FSoE master

optional communication interface

Interface	Description of interface
X41 − X44 / X65 − X68	Diagnostic and configuration interface
COM	Fieldbus interfaces *
ECAT IN / OUT	Fieldbus interfaces *
X93 / X94	Feldbus-Schnittstellen*
* configurable via SafePLC²	

VOLTAGE SUPPLY AND I/O INTERFACE

X41		
Pin	1 - 24+	Voltage supply device +24 VDC
	2 - NC	No function
	3 - A1-	Voltage supply device 0 VDC
	4 - A1-	

X42		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X43		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X44		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X65		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X66		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X67		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

X68		
Pin	1 – NC	No function
	2 – NC	
	3 - NC	
	4 - NC	

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DIAGNOSTIC AND CONFIGURATION INTERFACE

Pin assignment

RJ 10, 4-pin		
Pin	Beschreibung	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 / optional Ethernet-based fieldbus interface (RJ45)				
Pin	Name	Description	Colour	EtherCAT IN/OUT , 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	

OPTIONAL INTEGRATED COMMUNICATION INTERFACE

» The optionally integrated communication interface expands the FSoE-Master with a additional safe fieldbus interface (/NM)

General data		
Fieldbus interface		
	/N	2x RJ 45 *
Memory Card (safety program)		
	/xM	1x Mini SD (front side)
Status LED`s		4

* available field buses: FSoE, PROFIsafe

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ORDER INFORMATIONS

FSoE MASTER

item	description	item no.
SCU-0-EC	FSoE Master - modular basic module	2411
SCU-0-EC/NM	FSoE Master + ethernet-based fieldbus interface + memory card	2412

ACCESSORIES

item	description	item no.
FSoE License	Field bus license for FSoE	2366
PROFIsafe License	Field bus license for PROFIsafe	2319
SMX91	Programming adapter	1010
SX*xxxx*-*x*	Terminal connector, screw terminals (set), encoded for cabling SCU-0-EC (/NM)	on request
SX*xxxx*-*x*	Terminal connector, spring terminals (set), encoded for cabling SCU-0-EC (/NM)	on request

FSoE SLAVES

item	description	item no.
SSB-6-A-x	Axis expansion module for up to 6 axes + SinCos / resolver	on request
SSB-6-EnDAT-x	Axis expansion module for up to 6 axes + EnDAT 2.2	1656
SSB-6-DSL-x	Axis expansion module for up to 6 axes + HyperfaceDSL	1665
SIO-1	Decentralized IO expansion module	2234
SIO-2	Decentralized IO expansion module	2235
SDU-11	Decentralized axis expansion module for one axis	2394
SDU-11/NM	Decentralized axis expansion module for one axis, safe PROFIsafe / FSoE-slave	2471
SDU-11-PXV	Decentralized axis expansion module for one axis, with safePXV encoder interface	2472
SDU-12	Decentralized axis expansion module for one axis	2395
SDU-21	Decentralized axis expansion module for 2 axes	2396
SDU-22	Decentralized axis expansion module for 2 axes	2397
SDU-21A	Decentralized axis expansion module for 2 axes + Analog Option	2398
SDU-21A-I	Decentralized axis expansion module for 2 axes + Analog Option (current.)	2399
SDU-21A-U	Decentralized axis expansion module for 2 axes + Analog Option (voltage)	2400
SDU-22A	Decentralized axis expansion module for 2 axes + Analog Option	2401
SDU-22A-I	Decentralized axis expansion module for 2 axes + Analog Option (current)	2402
SDU-22A-U	Decentralized axis expansion module for 2 axes + Analog Option (voltage)	2403

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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