INTELLIGENT SUPPLY MODULE EM12D-TIO

The EM12D-T supply module receives the DC 24 V supply voltage, e.g. from a switched mode power supply, and distributes it to the installed intelligent circuit protectors via the integral connector arm of the REX12D-T. The communication interface of the EM12D-T, which is designed as an IO link device, allows a great number of diagnosis and control commands to a superordinate IO link master of the control level.

EM12D-TIO-000-DC24V-40A

TYPICAL FEATURES

- Control, diagnosis and monitoring via IO link
- Device combination of supply module, overcurrent protection and power distribution module
- No accessories required for connecting the components
- Width per module only 12.5 mm
- Up to 32 channels of 16 devices can be controlled

YOUR BENEFITS

- Increases machine availability through high transparency and remote diagnosis
- Saves costs as no further accessories are required
- Saves 50 % time through innovative and flexible mounting and connection technology
- Saves space with only 12.5 mm slim modules
- Provides flexibility through facilitated assembly and disassembly and modular design

TYPICAL APPLICATIONS

Automation, machine building industry, process industry

APPROVALS / CERTIFICATIONS

NEC Class2

WEB LINKS

Detailed information on EM12D-TIO, Operating instructions, Mounting and operation (videos), International approvals, Technical basics, REACH, RoHS, Contact

COMPLIANCE

GENERAL INFORMATION

SAFETY AND INSTALLATION INSTRUCTIONS

Installation must be done by a qualified electrician.

- The intelligent EM12D-T supply module is only intended for use with extra-low voltage (DC 24 V).
- Connection to higher or not selectively protected voltages can cause harmful conditions or damage.
- Only the intended circuit protectors must be used.
- The device must only be supplied with power after proper installation.
- When a circuit protector has tripped and before the reset, the cause of the failure (short circuit or overload) must be remedied.
- The national standards (e.g. in Germany DIN VDE 0100) for installation and selection of the feed and return cables must be observed.
- For convenient parametrisation and configuration by means of a projecting software a master data file (IODD file) can be downloaded on the E-T-A homepage (refers to EM12D-TIO-xxx version).
- Please observe separate EM12D-T instruction manual.
- The intelligent EM12D-T is not suitable for controlling safety-relevant or functionally safe applications.

Electrostatically sensitive sub-assemblies can be destroyed by voltages far below the human perception threshold. These voltages already occur if you touch a component or electrical terminals of a component without being electrostatically discharged. The damage of a sub-assembly caused by an overvoltage is often not immediately recognised, but will be noticed only after a longer operating time.

Note:
When wiring and connecting to the IO link bus system, the installation and wiring regulations of the PROFIBUS User Organisation (PNO) must be observed.

Mounting instruction:
Mounting or actuation of the REX connector arm must only be effected at dead-voltage. For start-up, the REX connector arm must be closed.

FURTHER INFORMATION

CONTROLPLEX® EM12D SYSTEM
https://global.e-t-a.com/c17671/

TECHNICAL DATA (T_u = +23 °C, U_b = DC 24 V)

ELECTRICAL DATA

Rated voltage U_n	DC 24 V
Operating voltage U_b	18...30 V
Dielectric strength	max. DC 30 V (load circuit)
Maximum rated current	40 A
Quiescent current I_0	typically 20 mA
Reverse polarity protection	Yes
Power failure bridging time	10 ms (tolerated up to 10 ms)
LED for operating condition signalling	**Green:** • Faultless operation, Communication to IO link master OK **Green blinking:** • Independent operation, No communication to IO link master **Orange:** • Uncritical failure detected, Communication to IO link master OK **Blinking orange:** • Uncritical failure detected, No communication to IO link master **Red:** • Critical failure detected, No communication to IO link master
Insulation co-ordination (IEC 60934)	0.5 kV / pollution degree 2

DIGITAL DATA

Note on the operating mode	Caution: The standard version records the status of max. 32 channels, the extended version records the status and the measuring data of max. 16 channels.

OVERVIEW OF COMMANDS IN THE COM MODE	
Writing/reading the device configuration (parameters)	• Current limit value 50 ... 100 % • Rated current, writing of the rated current only possible with the REX12D-TE and REX22D-TE devices.
Reading static device information	• EM12D module & circuit protectors • EM12D serial number & circuit protectors • EM12D hardware version & circuit protectors • EM12D software version & circuit protectors
Reading dynamic device information / measuring values	• Error memory • Trip counter • Reason of last tripping • Device status / event of the circuit breakers • Load voltage ACTUAL / MIN / MAX / MEDIUM VALUE • Load current: ACTUAL / MIN / MAX / MEDIUM VALUE • Supply voltage • EM12D device status • Internal cycle time
Control commands	• Switch on/off or reset load output • reset trip counter • Set parameters to factory settings

MECHANICAL DATA	
Mounting dimensions (WxHxD)	12.5 x 80 x 98 mm (tolerances according to DIN ISO 286 part 1 IT13)
Mass	Approx. 56 g
Enclosure material	Plastic
Mounting data	DIN rail according to EN 60715-35x7.5
Mounting cycles	Min. 100

MOUNTING VALUES - PUSH-IN TERMINAL - EM12D-TIO

Terminal connection capacity LINE+	Cable cross section [mm²]	Cable cross section [AWG]	Stripping length [mm]
rigid	0.5...16	20...6	18...20
flexible	0.5...16	20...6	18...20
flexible with wire end ferrule with plastic sleeve	0.5...10	20...8	18...20
flexible with wire end ferrule without plastic sleeve	0.5...10	20...8	18...20
Terminal connection capacity 0 V	**Cable cross section [mm²]**	**Cable cross section [AWG]**	**Stripping length [mm]**
rigid	0.14...4	26...12	8...10
flexible	0.14...4	26...12	8...10
flexible with wire end ferrule with plastic sleeve	0.14...2.5	26...14	8...10
flexible with wire end ferrule without plastic sleeve	0.14...2.5	26...14	8...10
IO link terminal connecting capacity X81 COM Terminal 1: L+DC+24V Terminal 2: C/Q Terminal 3: L-	**Cable cross section [mm²]**	**Cable cross section [AWG]**	**Stripping length [mm]**
rigid	0.14...0.5	24...20	6
flexible	0.2...0.5	24...20	6
flexible with wire end ferrule with plastic sleeve	0.25...0.34	24...20	6
flexible with wire end ferrule without plastic sleeve	0.25...0.5	24...20	6

AMBIENT CONDITIONS	
Ambient temperature	-30...+60 °C (without condensation, cf. EN 60204-1)
Storage temperature	-40...+70 °C
Mounting temperature	+5...+60 °C
Damp heat	**Test according to IEC 60068-2-78, test cab. climate class 3K3 to EN60721** 96 hours at 95 % rel. humidity/40 °C

Vibration	**Test according to IEC 60068-2-6 test Fc** 5 g
Corrosion	**Test according to IEC 60068-2-11, test Ka** 96 hours at 5 % salt mist,
IP code standard	IEC 60529, DIN VDE 0470
Actuating area IP code (standard)	IP30
Terminal area IP code (standard)	IP20
EMC requirements (EMC directive, CE logo) emitted interference	EN 61000-6-3
EMC requirements (EMC directive, CE logo) resistance to disturbances	EN 61000-6-2
Operating altitude	2,000 m a. sea level (SL) 3,000 m a. SL up to +55 °C 4,000 m a. SL up to +50 °C
Maximum ambient pressure during operation	4 bar above atmospheric pressure

ORDERING NUMBER CODE

EM12D	-	T	-	IO	-	000	-	DC24V	-	40A
1		2		3		4 5 6		7		8

1 TYPE NUMBER

EM12D	Supply module for REX12D and REX22D with PT connection technology

2 MOUNTING

T	DIN rail mounting

3 VERSION: COMMUNICATION, INTERFACE

IO	IO link
MB	Modbus RTU

4 ADDITIONAL FUNCTIONS

0	without

5 SIGNAL INPUT

0	Without signal input

6 SIGNAL OUTPUT

0	without signal output

7 OPERATING VOLTAGE

DC24V	Rated voltage DC 24 V

8 RATED CURRENT

40A

9 ATEX APPROVAL

[No entry if no ATEX approval]	
E	ATEX/IECEx approval

Further ordering examples:
• EM12D - TIO - 000 - DC24V - 40A - E (with ATEX approval)

APPROVALS

APPROVALS			
Prüfstelle	**Prüfnorm**	**File Certificate Nr.**	**Bemessungsspannung [V]**
UL	UL 2367 UL 1310 NEC Class2	E306740	DC 24
UL	UL 508 listed CSA C22.2 No. 14, CSA C22.2 No. 107.1	E492388	DC 24
UL	UL 121201 (Class I, Division 2, Groups A, B, C, D) CSA C22.2 No. 213	E543007	DC 24
Bureau Veritas	ATEX 2014/34/EU EN 60079-0 EN 60079-7 EN 60079-15	EPS 23 ATEX 1 260 U	DC 24
IECEx	IEC 60079-0 IEC 60079-7 IEC 60079-15	IECEx EPS 23.0071U	DC 24
UKEX	EN IEC 60079-0 EN IEC 60079-7 EN IEC 60079-15	EPS 23 UKEX 1 261 U	DC 24

Find further information about approvals here: https://www.e-t-a.de/approvals_en

APPROVALS

Operating Temperature Code T4
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only. T5

WARNING - EXPLOSION HAZARD:
- Do not connect or disconnect equipment unless power has been removed or the area is known to be non-hazardous.

This device is OPEN type equipment that must be used within a suitable end-use system enclosure, the interior of which is only accessible using a tool. The suitability of the enclosure must be checked by the local authority at the time of installation.

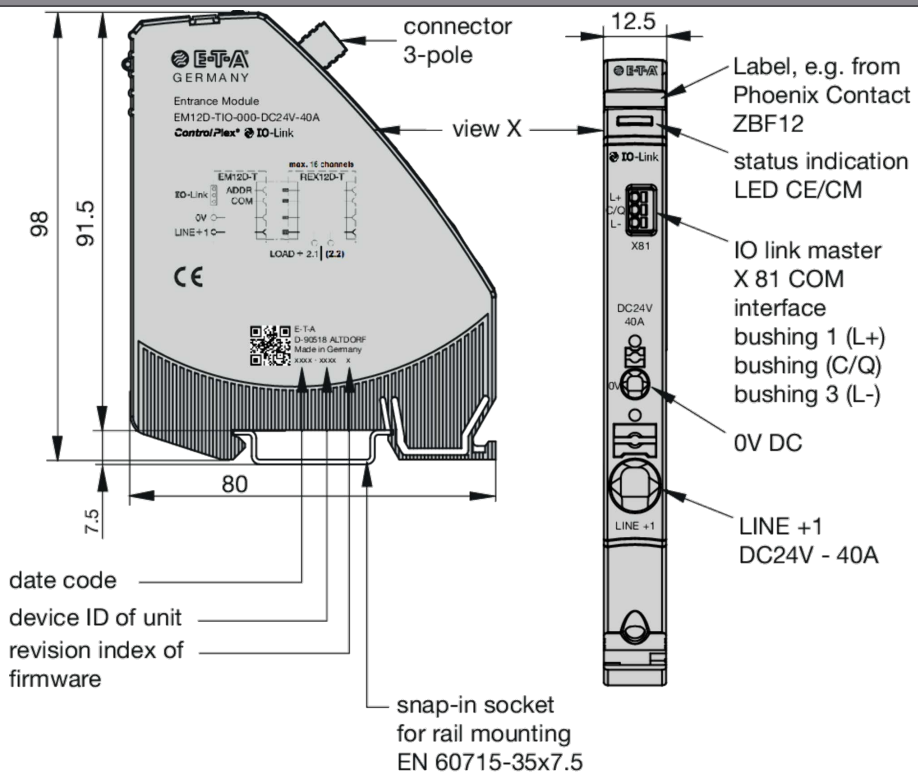
Wiring to or from this device, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 Hazardous Locations, as appropriate for the installation.

COMPLIANCE

according to 2014/30/EU

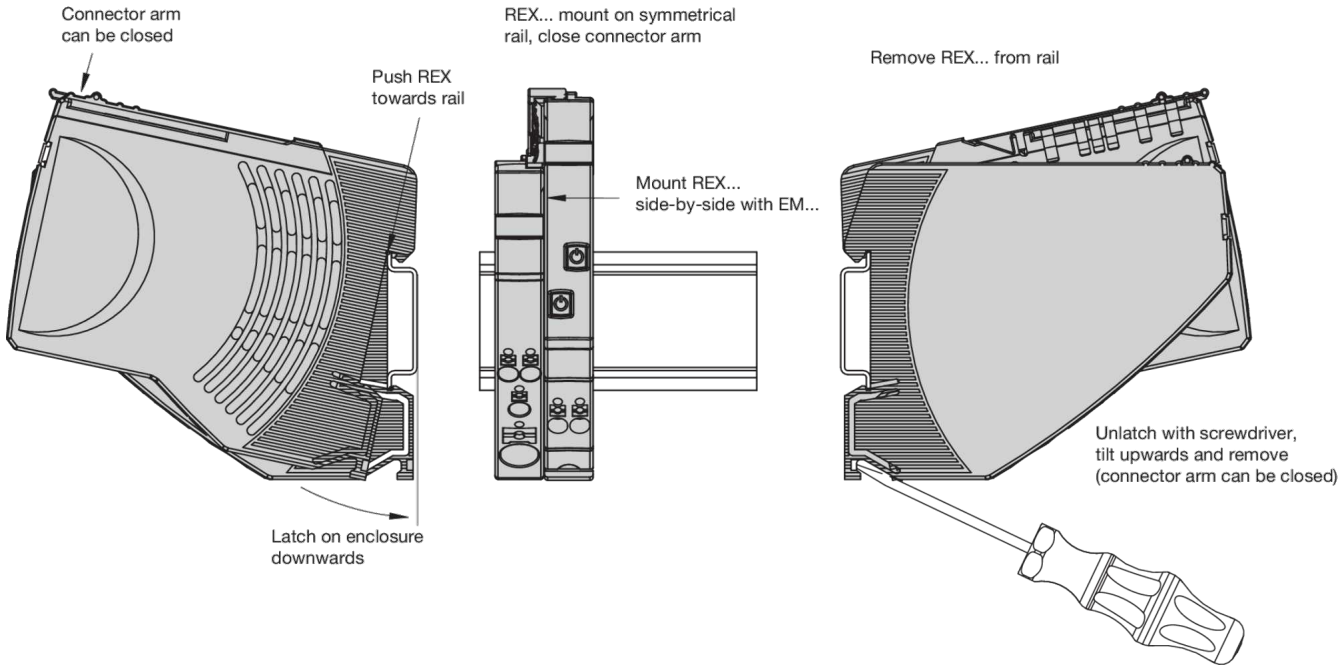
DIMENSIONS

DIMENSIONAL DRAWING WITH CONNECTION DIAGRAM: EM12D-TIO-XXX SUPPLY MODULE (IO LINK)



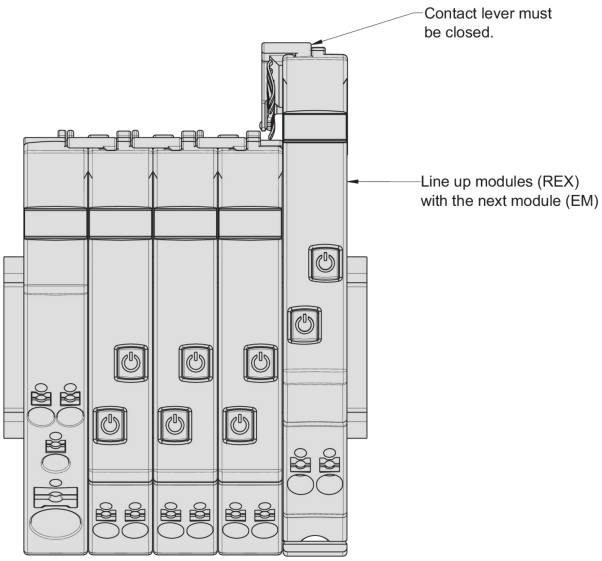
APPLICATION EXAMPLES

MOUNTING / DISMOUNTING ON DIN RAIL IN THE REX SYSTEM



MOUNTING / EXPANSION ON DIN RAIL IN THE REX SYSTEM

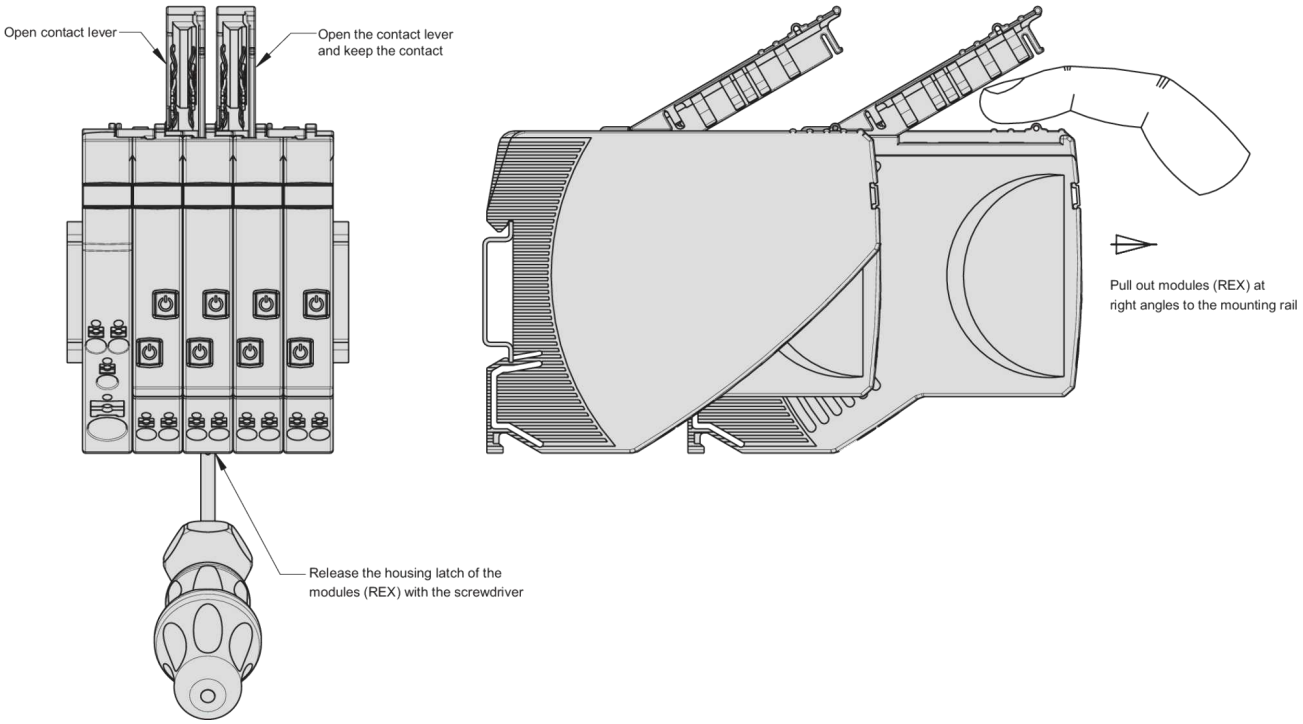
Extend modules (REX) to the mounting rail



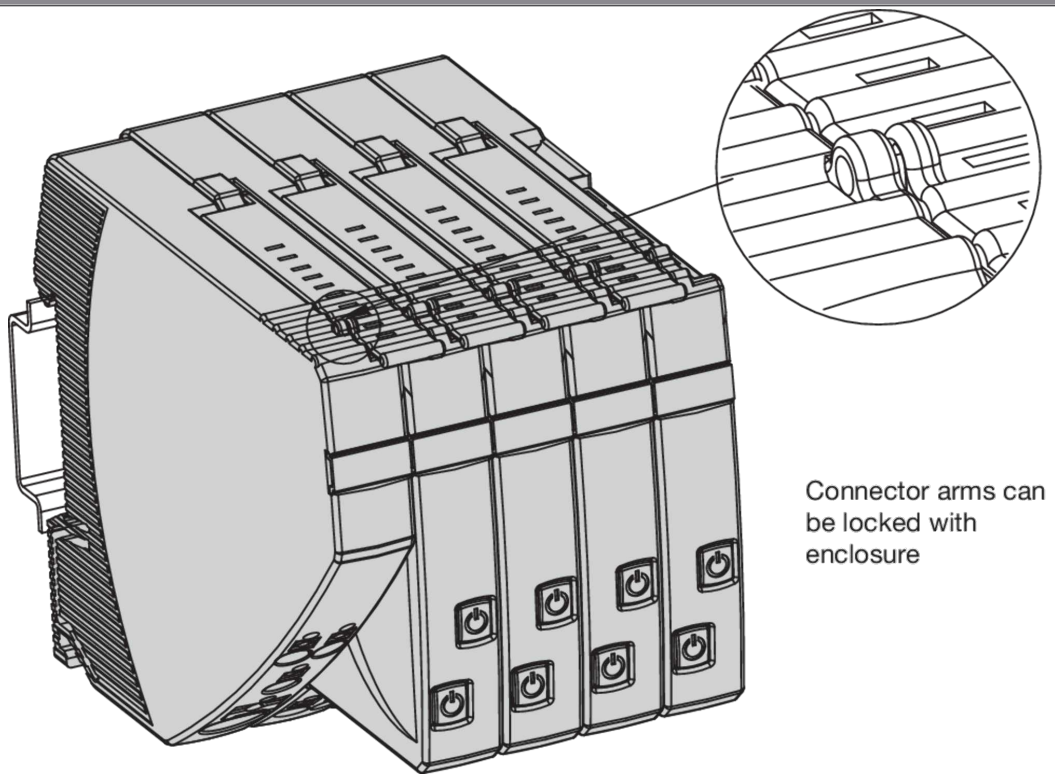
Mount modules individually with closed bracket on the mounting rail.

EXCHANGE IN / DISMOUNTING FROM THE REX SYSTEM NETWORK

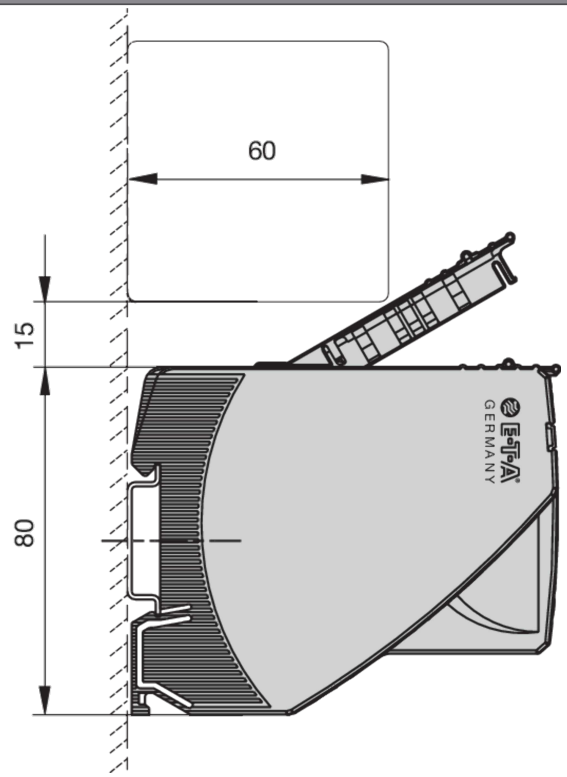
Only open the bracket to change the module



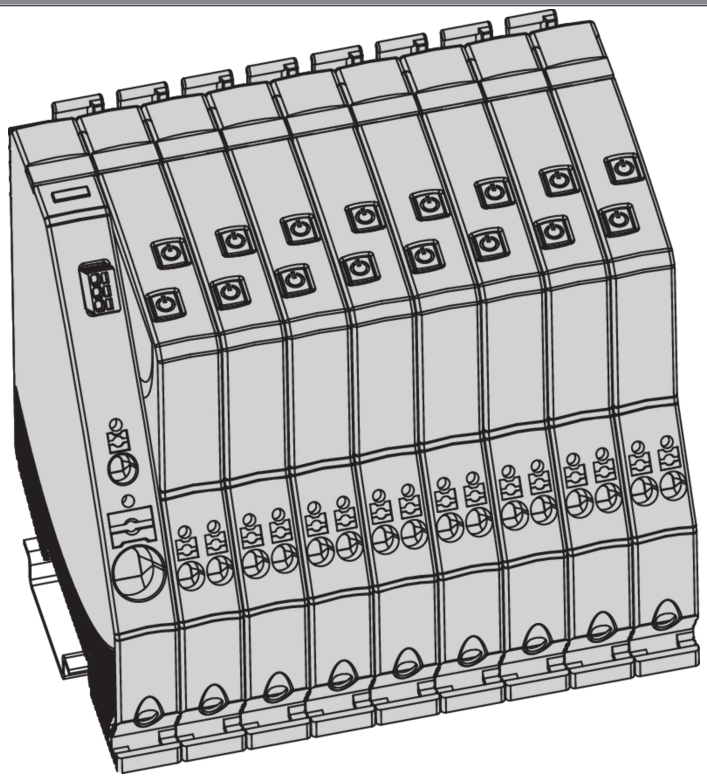
SEALING OF THE REX SYSTEM



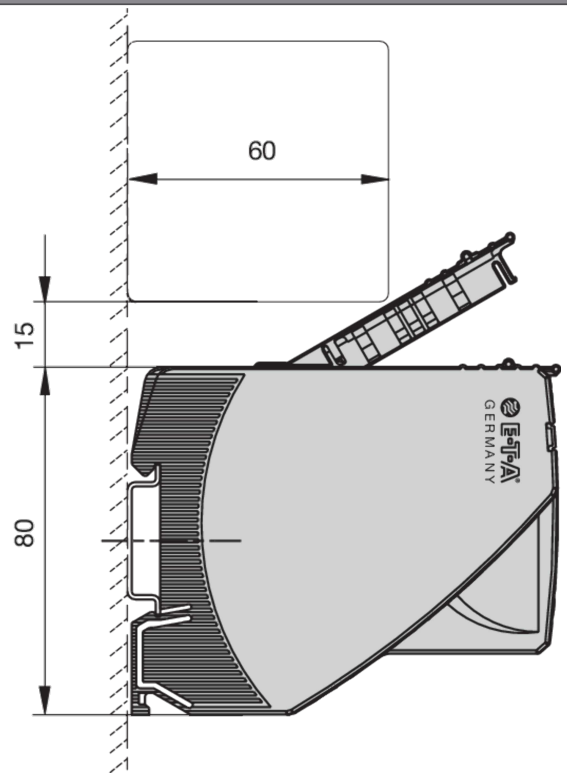
DISTANCES BETWEEN CABLE DUCT AND LEVER IN THE REX SYSTEM



APPLICATION EXAMPLE: EM12D-TIO-XXX WITH REX12D-XXX



DISTANCES BETWEEN CABLE DUCT AND LEVER IN THE REX SYSTEM



ACCESSORIES

REQUIRED ACCESSORIES FROM		
REX12D-T	With the compact and flexible REX system, E-T-A offers a sophisticated DC 24 V solution for protection and power distribution in mechanical and plant engineering - consisting of power supply, overcurrent protection, distribution and bus controller. The REX12D-T circuit protector provides selective protection, reacts faster than the switch mode power supply to short circuits or overloads and reliably switches on capacitive loads up to 20,000 µF. Available with fixed and adjustable current ratings from 1 A to 10 A, it fulfils not only UL508listed and NEC Class 2 but also exclusively EN 60204-1 for line protection. All REX12D-T modules support BASE and COM mode - with simple message signalling or extensive communication and diagnostics just as required. The operating mode is automatically recognised.	
REX22D-T	E-T-A's compact and flexible REX system represents a comprehensive DC 24 V protection- and power distribution solution for the machine building industry. It is a perfectly harmonised system including power supply, overcurrent protection, power distribution and bus controller. The REX22D-T selectively protects all DC 24 V load circuits up to 20 A and linearly limits the output current when switching on or before tripping. The limitation limits the rated current in the event of a short circuit. This allows effective and calculable protection of switch mode power supplies, even with small power reserves.