



TX-I/O™

Power supply module, TXS1.12F10 bus connection module TXS1.EF10

-
- Each I/O row begins with one of these devices
 - TXS1.12F10 power supply module
 - Up to 4 power supply modules can be operated in parallel
 - AC 24 V input
 - Generation / transfer of DC 24 V, 1.2 A for the supply of TX-I/O modules and field devices
 - Fresh provision of AC 24 V for field device supply
 - Transfer of the bus signal
 - TXS1.EF10 bus connection module
 - Transfer of DC 24 V for the supply of TX-I/O modules and field devices
 - Fresh provision of AC / DC 12...24 V for field device supply
 - Transfer of the bus signal
 - Compact format (to DIN43 880), small footprint
 - Simple installation and easy access
 - Self-establishing bus connection for maximum ease of installation
 - Plug-in screw terminals
 - Fuse is accessible with device installed
 - Easy, fast diagnostics

Function

Each I/O row starts with a power supply module, or a bus connection module (or a P-Bus interface module, see data sheet CM2N8180). These devices are connected via terminals, and they supply the I/O modules with the following (via island bus):

TXS1.12F10

Power supply module

- DC 24 V for the supply of I/O modules and field devices (generated in an internal AC/DC converter)
- AC 24 V for the supply of field devices
- the bus signal

TXS1.EF10

Bus connection module

- AC / DC 12...24 V for the supply of field devices
- the bus signal

Type summary

ASN

Power supply module **TXS1.12F10**

Bus connection module **TXS1.EF10**

Items supplied

Module with 3 bus-connector covers
(1 for left end of I/O bar, 1 for right end and 1 spare)

Ordering

When ordering, please specify the quantity, product name and type code.

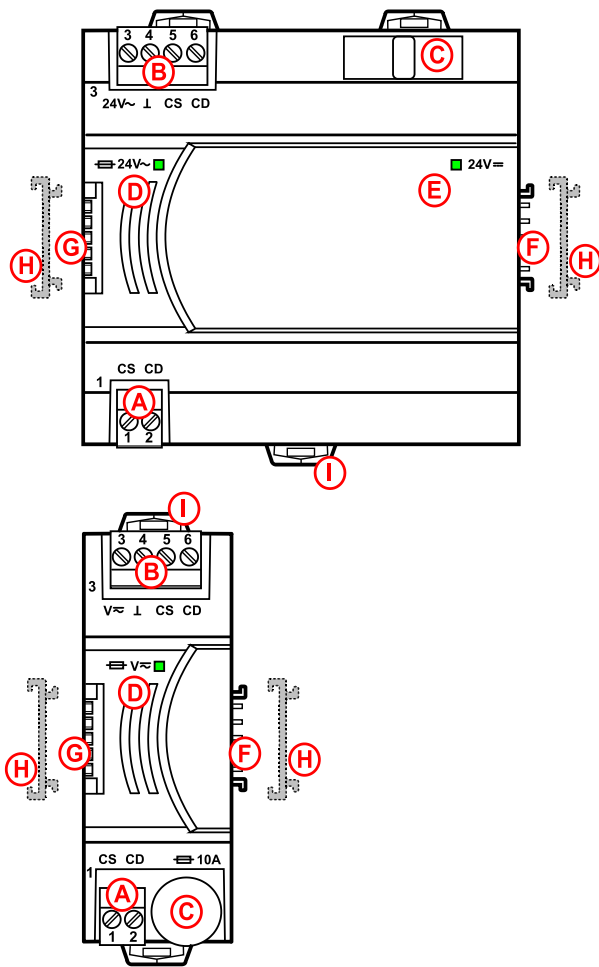
Example:

10 Power supply modules **TXS1.12F10**

Compatibility

TXS1.12F10 power supply modules and the TXS1.EF10 bus connection modules are suitable for use with all TX-I/O™ devices.

Overview



Key

- A Plug-in screw terminal ("1")
 - 1 CS DC 24 V supply for modules and field devices
 - 2 CD Island bus signal
- B Plug-in screw terminal ("3")
 - 3 24V~ Supply for supply module and Field devices (TXS1.12F10)
 - 4 ⊥ System neutral
 - 5 CS DC 24 V module supply
 - 6 CD Island bus signal
- C Fuse, M 10 A for field supply
- D LED: "Field supply OK"
- E LED "DC 24 V module supply OK"
- F Bus connector (right) (with field device supply)
- G Bus connector (left) (no field device supply)
- H Bus connector cover
- I Slide fitting for standard mounting rail

Mechanical characteristics

Housing

- The housing complies with DIN 43880 and is 90 mm wide.
- The plastic housing is provided with a large number of vents for cooling
- When mounting, allow for sufficient heat dissipation by convection (max. ambient temperature 50°C)

Electrical characteristics

TXS1.12F10
supply module)

- The supply module is supplied with AC 24 V.
The tolerance range is $-10\ldots+20\%$.
- The device generates a supply voltage of DC 24 V ("Module supply 24 V=") for the modules and field devices, designed for a current rating of 1.2 A.
- The power supply module is short-circuit proof.
- Parallel operation is permissible as follows:
 - A maximum of 4 power supply modules can be operated in parallel
 - However, each I/O bar can accommodate a maximum of 2 power supply modules (see [3])
- To supply the field devices, the AC 24 V supply voltage is connected via an M 10 A fuse to the island bus ("Field supply 24 V~", maximum admissible current 6 A).
Note: for AC 24 V, the bus is interrupted to the left, the supply module can only supply the modules to the right with 24 V~V.

TXS1.EF10
bus connection module)

- To supply the field devices, an AC / DC 12...24 V supply voltage is connected via an M 10A fuse to the island bus ("Field supply V $\overline{\sim}$ ", maximum admissible current 6 A).
Note: for V $\overline{\sim}$, the bus is interrupted to the left, the bus connection module can only supply the modules to the right with V $\overline{\sim}$.

Interfaces

- Plug-in screw terminals for supply voltage (24 V~, V $\overline{\sim}$, $\perp$) and island bus (CS, CD)

Island bus

- The I/O modules are mounted to the **right** of the supply module / bus connection module on the standard mounting rail. The electrical connection is established via the four island bus contacts on the side of the modules. The bus is created automatically when the TX-I/O™ devices are connected one next to the other on the rail.
- For expansion purposes, the CS and CD signals of the island bus are also routed via terminals.

System ground

- The I/O modules and all connected field devices are connected to the same system ground ($\perp$).
- The system ground of the I/O island ($\perp$) and of the automation station (G0) are electrically connected (in the P-Bus interface module)

Fuse

- In the event of overload or short circuit, the fuse (M 10 A) cuts off the AC 24 V / V $\overline{\sim}$ field supply voltage (but not the supply module's supply voltage)
- The fuse can be replaced without removing the device.

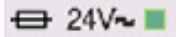
Protection against
incorrect wiring



- All terminals are protected against shortcut and incorrect wiring with AC/DC 24 V
- This is the case even for incorrect AC phase sequence
- **Bus connector on side: no protection**
- **Voltage > AC/DC 24 V: no protection**

LED indication

Fuse LED
for field supply
(TXS1.12F10 only)



Indicator for AC 24 V supply to supply module and field supply:

- ON AC 24 V (supply voltage) input present, and Fuse OK
- OFF No AC 24 V (supply voltage) input, or Fuse blown

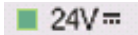
Fuse LED
for field supply
(TXS1.EF10 only)



Indicator for field supply voltage $V_{\sim}$:

- ON $V_{\sim}$ (field supply voltage) input present ($> 22\text{ V}$), and Fuse OK
Voltage $< 22\text{ V}$ are not indicated!
- OFF No $V_{\sim}$ (field supply voltage) input, or Fuse blown

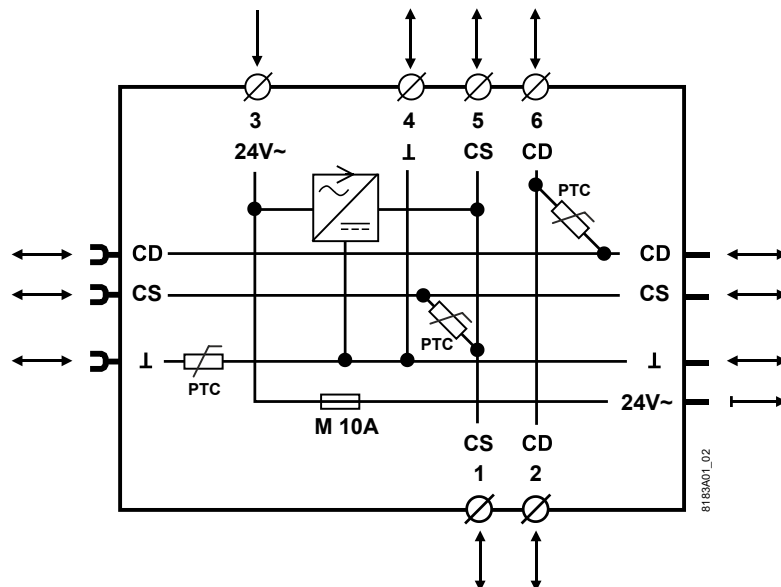
Module supply LED
(CS conductor)



Indicates DC 24 V module supply / field supply:

- ON Module supply OK. *When other supplies are in the I/O island (CS $> 21.5\text{ V}$) and AC 24 V is OK, the LED is also ON.*
- OFF Module supply voltage not OK
Reasons: no AC 24 V (supply voltage) input, or AC/DC converter faulty, or short circuit at DC 24 V connections (CS)

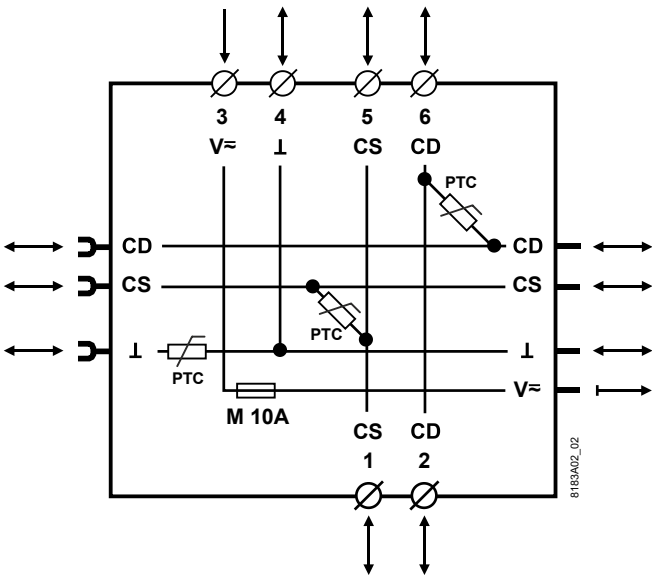
Circuit principles (TXS1.12F10 power supply module)



Note!

For AC 24 V, the bus is interrupted to the left, the supply module can only supply the modules to the right with 24 V~V.

Circuit principles
(TXS1.EF10 bus
connection module)



Note!

For $V_{\sim}$, the bus is interrupted to the left, the bus connection module can only supply the modules to the right with $V_{\sim}$.

Disposal



This symbol or any other national label indicates that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation.

For additional details, refer to www.siemens.com/bt/disposal.

Engineering, mounting, installation and commissioning

Please refer to the following documents

Document	Number
[1] TX-I/O™ module data sheets	CM1N817...
[2] TX-I/O™ functions and operation	CM110561
[3] TX-I/O™ Engineering and installation manual	CM110562
[4] Replacement of legacy signal types	CM110563
[5] TX-I/O™ Engineering documentation V2.35	CM110641 ff
[6] TX-I/O™ Engineering documentation V4	CM111001 ff

The following information is required when designing the power supply for an I/O island (see [3]):

- Number and type of modules to be supplied
(Basic consumption of I/O module)
- Type and number of data points
(Consumption per configured data point)
- Type and number of field devices to be supplied from the field device supply

Caution!

- The **cable insulation** must always comply with the present rated voltage.
- When the supply voltage of the Devices is transited to external devices, the cable **cross section** must always correspond to the rated current of the safety circuit breaking device.
Observe local regulations in any case.

Mounting

Mounting

The module is mounted on a standard 35 x 7.5 mm mounting rail
(top-hat rail type TH35-7.5 to EN60715)

Mounting sequence

An I/O row always starts on the "left" side with a device for power supply (power supply module, bus connection module, BIM, or automation station, see [3])

Replacement

A power supply module or bus connection module can be removed from the row of modules, **but to do this, it is essential to remove the plug-in I/O unit from the adjacent module to the right**. There is no need to remove the terminal base of this module.

Permitted orientation

The TX-I/O™ devices can be installed in any orientation:

It is important to provide adequate ventilation so that the admissible ambient temperature (max. 50°C) is not exceeded.

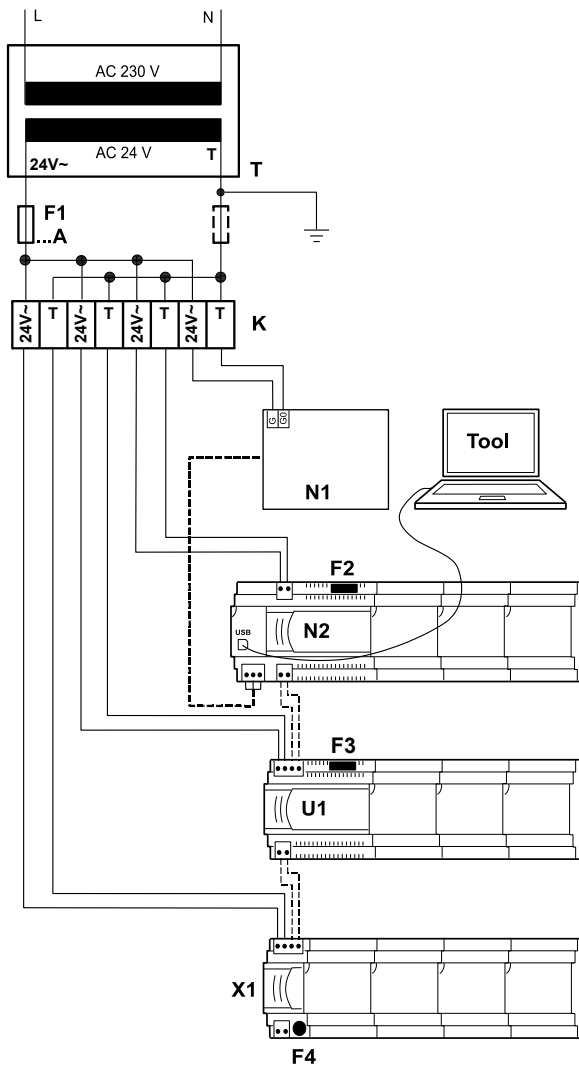
Technical data

Operating voltage (24V~, ⊥)	Extra low voltage SELV or PELV in accordance with HD348	AC 24 V, -10...+20% or AC 24 V class 2 (US) 50... 0 Hz
Power consumption TXS1.12F10	Half-wave load – Without module and field device load	Symmetrical 4 VA / 0.17 A
Pass-through TXS1.12F10	– With maximum admissible load DC 24 V / 1.2 A	57 VA / 2.4 A
Pass-through TXS1.EF10	– AC 24 V / 6 A (for details refer to [3])	144 VA / 6 A
Fusing	External supply line protection (EU)	144 VA / 6 A
Protection	Bus connector on side	Fuse slow max. 10 A or Circuit breaker max. 13 A Characteristic B, C, D according to EN 60898 or Power source with current limitation of max. 10 A No protection against shortcut and incorrect wiring
DC output (CS, ⊥)	Nominal voltage Max. current Can be connected in parallel (regulated output voltage) Short-circuit-proof, overload protected Excess temperature cutout Indication	DC 24 V 1.2 A For details refer to [3] Self-resetting LED "24 V="
AC output (24V~, ⊥) (TXS1.12F10 only)	Nominal voltage Max. current Fuse Indication	AC 24 V 6.0 A M 10A (Medium time lag, replaceable) LED "24 V~"
AC /DC output (V~, ⊥) (TXS1.EF10 only)	Nominal voltage Max. current Fuse Indication	AC / DC 12...24 V 6.0 A M 10 A (Medium time lag, replaceable) LED "24 V~"
Island bus communication Plug-in connection terminals	(CD, CS) Mechanical design Solid or stranded copper conductors with connector sleeves Stranded copper conductors without connector sleeves Screwdriver Max. tightening torque	Short-circuit proof Plug-in screw terminals 1 x 0,6 mmØ to 2.5 mm ² or 2 x 0,6 mmØ to 1.0 mm ² 1 x 0,6 mmØ to 2.5 mm ² or 2 x 0,6 mmØ to 1.5 mm ² Slot-headed screws Screwdriver No. 1 <i>with shaft diameter ≤ 4.5 mm</i> 0.6 Nm

Classification to EN 60730	Mode of operation of automatic electrical controls		Type 1
	Contamination level		2
	Mechanical design		Protection class III
	Protection standard to EN 65029		
Housing protection standard	Front-plate components in DIN cut-out		IP30
	Terminal section		IP20
Ambient conditions	Operation		As per IEC/EN 60721-3-3
	Climatic conditions		Class 3K23
	Temperature		–5...50 °C
	Humidity		5...95 % rh
	Mechanical conditions		Class 3M11
	Transport		As per IEC/EN 60721-3-2
	Climatic conditions		Class 2K12
	Temperature		–25...70 °C
	Humidity		5...95 % rh
	Mechanical conditions		Class 2M4
Standards, directives and approbations	Product standard	EN 60730-1	Automatic electrical controls for household and similar use
	Electromagnetic compatibility (Applications)		For use in residential, commercial, light-industrial and industrial environments
	EU conformity (CE)		See EU declaration of conformity *)
	UL certification (US)		UL 916, http://ul.com/database
	CSA certification		Class 4812
	RCM-conformity (EMC)		https://www.csagroup.org/services-industries/product-listing/
	EAC conformity		See RCM declaration of conformity*)
			Eurasia conformity
	Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal)		CM1E8183 *) (CM1E8183..01: TXS1.12F10) (CM1E8183..02: TXS1.EF10)
Color	Top / bottom		2003 Ti-Grey / 804 Black
Dimensions	Housing to DIN 43 880, see "Dimensions"		
Weight	Without / with packaging TXS1.12F10		309 g / 341 g
	TXS1.EF10		82 g / 102 g

*) The documents can be downloaded from <http://siemens.com/bt/download>.

Connection example



Key

— AC 24 V

- - - P bus

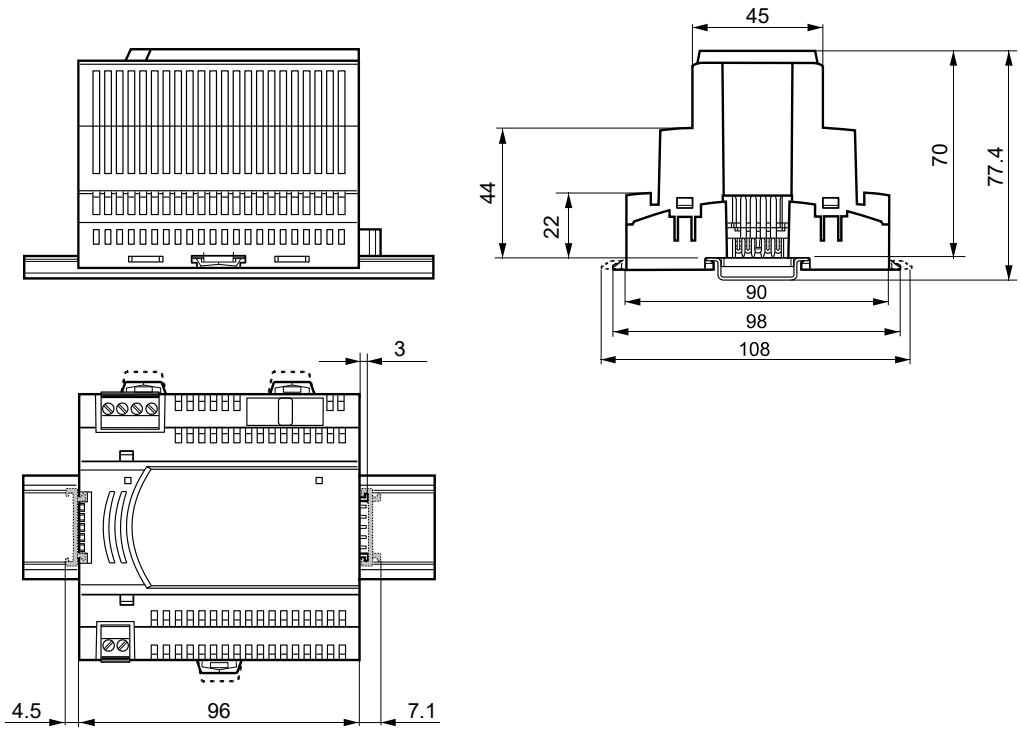
===== Island bus

- T Safety isolating transformer AC 230 V/AC 24 V to EN 61 558
- K Terminal strip for ac 24 V distribution via star configuration
- N1 Automation station
- N2 Bus interface module with integral power supply
- U1 TXS1.12F10 power supply module
- X1 TXS1.EF10 bus connection module
- F1 Extra-low voltage fuse for max. power consumption, AC 24 V
- F2 Fine-wire medium time lag 10 A fuse, factory-fitted in bus interface module
- F3 Fine-wire medium time lag 10 A fuse, factory-fitted in power supply module
- F4 Fine-wire medium time lag 10 A fuse, factory-fitted in bus connection module
- Tool TX-I/O tool for configuration, simulation and diagnostics

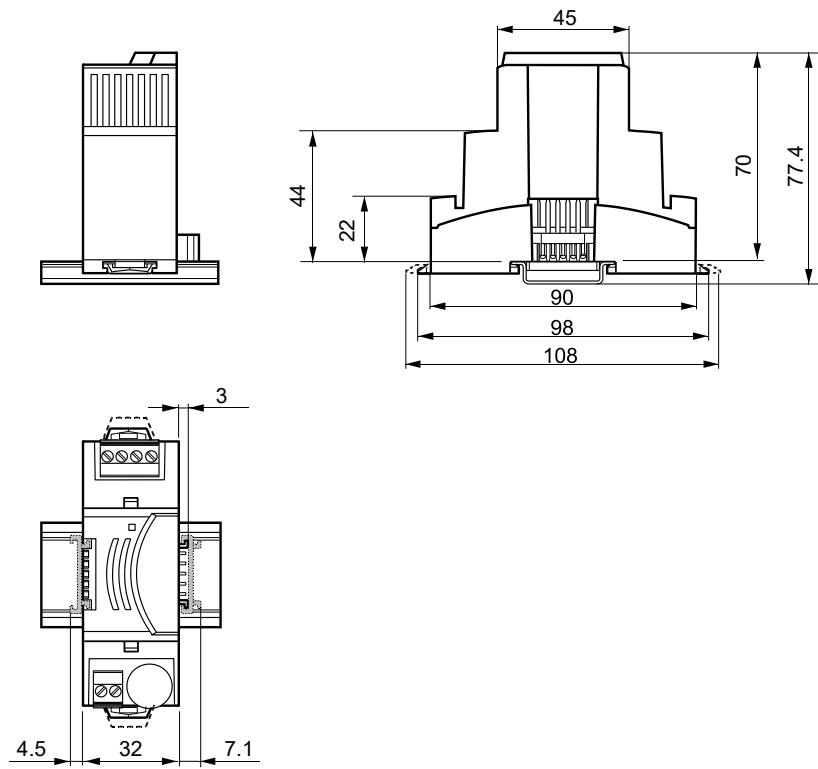
Dimensions

Dimensions
in mm

TXS1.12F10



TXS1.EF10



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