

TX-I/O™

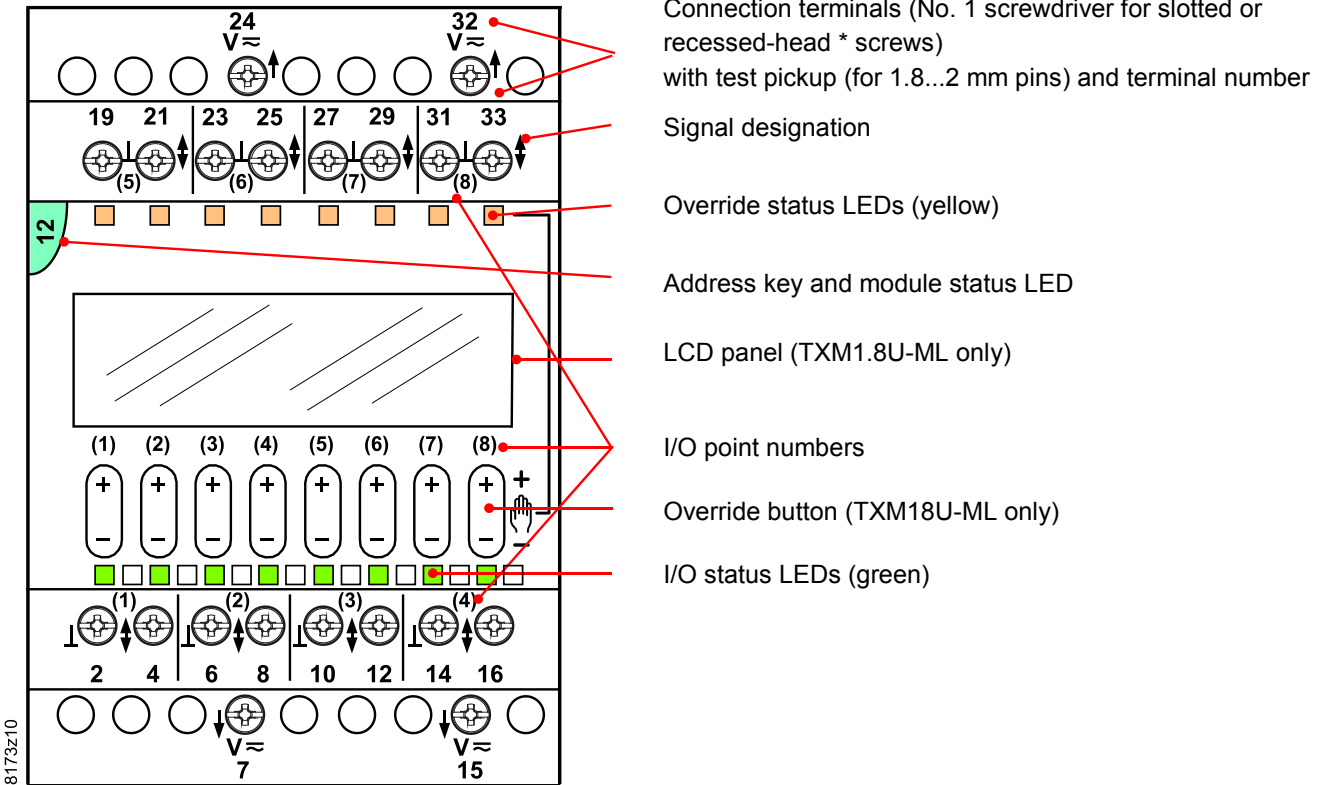
Universal modules

TXM1.8U TXM1.8U-ML

- **Two fully compatible versions:**
 - TXM1.8U: 8 inputs/outputs with LED signal / fault indication
 - TXM1.8U-ML: As TXM1.8U, but with additional local override facility with LCD display (LO/ID to ISO 16 484-2)
- **8 universal I/O points, individually configurable as**
 - Digital input: maintained contact, pulse or counter
 - Analog input: sensor, 0..10V
 - Analog output: 0..10V
- **Compact DIN format, small footprint**
- **Separate terminal base and plug-in I/O module for convenient handling**
 - Self-establishing bus connection for maximum ease of installation
 - Terminal isolation function for fast commissioning
 - I/O module replaceable in seconds, without rewiring and without affecting the full functioning of the remaining I/O modules
- **All terminals are directly on the I/O modules, allowing direct connection of field devices without additional terminal strips.**
- **Simple strategy for operation and display**
 - I/O status LED for each I/O point; mode of operation (N/C or N/O) and brightness depend on I/O function
 - LEDs and LCD for fast diagnostics
- **Double-sided labels for identification of all I/O points**

For a description of the features common to all TX-I/O™ modules, please refer to the TX-I/O™ Engineering and installation manual, document CM110562.

Indicators and operator controls



* Combined slotted / recessed-head screws from mid-2012

I/O status LEDs

- The I/O status LEDs (green) indicate the status of the inputs and outputs (peripheral devices)
- They are also used for diagnostics

Module status LED

- The module status LED illuminates the transparent address key
- The LED (green) shows the module status as a whole (as opposed to the status of the I/O points)
- It is also used for diagnostics

Address key

- The module operates only with the address key inserted
- The module address is mechanically encoded in the address key
- When replacing the I/O module, the address key must be swiveled outward. It remains plugged into in the terminal base.

Local override and LCD display (TXM1.8U-ML only)

For a detailed description, please refer to document CM110561, "TX-I/O™ Functions and operation".

Override button

- Pressing an override button in the middle enables or disables the local override
- Pressing "+" or "-" respectively increases or reduces the output value.
- Only outputs can be overwritten. Any attempt to overwrite an input results in an error indication.

Override status LED

- The yellow "Override" LED indicates that local override is active

LCD display

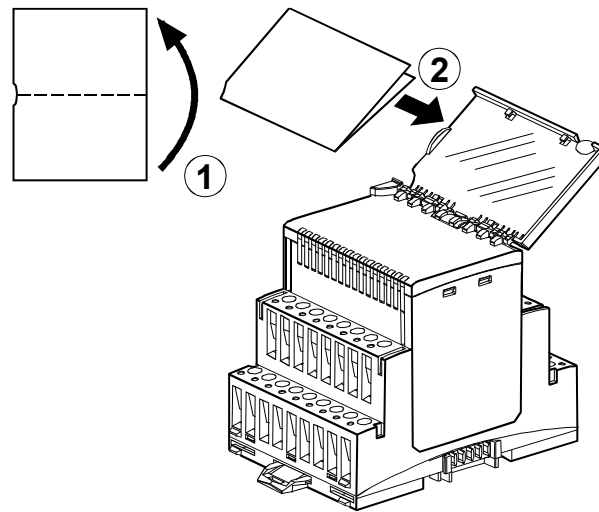
- The following information is displayed for each I/O point:
 - Configured signal type
 - Symbolic display of process value
 - Information for diagnostics.
- **All safety-relevant functions must be implemented with external solutions**
- **The local override must not be used for safety shutdown operations**
- **In compliance with the standard (ISO 16 484-2, Section 3.110), the module executes all local overrides directly, without safety precautions or interlocks.**
→ **Full responsibility lies with the operator.** ←



Warning

Module labeling

The plug-in I/O module has a removable transparent cover (the label holder) for insertion of a label.



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Disposal



The devices are considered electronics devices for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the devices through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.

Please refer to the following documents

| Document | Number |
|---|----------|
| TX-I/O™ functions and operation | CM110561 |
| TX-I/O™ Engineering and installation manual | CM110562 |
| Replacement of legacy modules | CM110563 |



Mounting

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

| | | | | | |
|--|---|--|---------|-------|------------|
| Supply (bus connector on side) | Operating voltage range | DC 21.5 ... 26 V (SELV / PELV) or DC 24 V class 2 (US) | | | |
| | Max. power consumption | <table border="0"> <tr> <td>TXM1.8U</td> <td>1.5 W</td> </tr> <tr> <td>TXM1.8U-ML</td> <td>1.8 W</td> </tr> </table> | TXM1.8U | 1.5 W | TXM1.8U-ML |
| TXM1.8U | 1.5 W | | | | |
| TXM1.8U-ML | 1.8 W | | | | |
| (for the sizing of power supplies, see CM110562) | | | | | |
| Protection | All terminals of the modules | Against shortcut and incorrect wiring with AC / DC 24 V | | | |
| | Bus connector on side | No protection! | | | |
| Field devices | The of the connected field devices against mains voltage must comply with the requirements for safety extra-low voltage (SELV) or protection by extra-low voltage (PELV) as per HD 384. | | | | |
| Measuring cables | Cable material | Solid or stranded copper wire | | | |
| | Cable cross section | See manual CM110562 | | | |
| | Permitted cable length | max. 300 m | | | |
| AC/DC output (field supply) | Voltage | AC / DC 12 ... 24 V | | | |
| | Admissible current per module | Max. 4 A (total for all 4 terminals) | | | |
| ( , Terminals 7, 15, 24, 32) | Fuse | T 10A, in power supply module/bus connection module | | | |
|  Caution! | Wiring of the AC/DC 24 V supply: Use cable cross section suited for 10 A according to local regulations. | | | | |

Digital inputs / counter inputs

Digital inputs are not electrically separated from the system electronics.
 Mechanical contacts must be volt-free.
 Electronic switches must comply with SELV / PELV standards.
Counter inputs faster than 1 Hz that are routed for more than 10 m in the same trunking as analog inputs must be shielded.

| | |
|---|-------------------------------|
| Contact sensing voltage | DC 21.5 ...25 V |
| Contact sensing current | 1.0 mA (initial current 6 mA) |
| Contact resistance with contacts closed | Max. 200Ω |
| Contact resistance with contacts open | Min. 50kΩ |

| | Min. closing / opening time [ms] including bouncing | Max. bounce time [ms] | Max. Counting frequency (symmetric) |
|--------------------|---|-----------------------------|-------------------------------------|
| Maintained contact | 60 | 20 | |
| Pulse contact | 30 | 10 | |
| Mechanical counter | 20 | 10 | 25 Hz |
| electronic counter | ..5 | ..0 | 100 Hz |
| counter memory | | 0 ... 4.3 x 10 ⁹ | (32 bit counter) |

Analog inputs

Correction of line resistance 1 Ω (calibrated In module)

| | Signal type (see page 2) | Range | Under / over range | Resolution |
|---|--------------------------|--------------------|---------------------|--------------|
| Resistance Pt 1000 and resistance transmitter | P1K | 0...2500 Ohm | 0...2650 Ohm | 100 mOhm |
| | AI Pt1000 | 0...2500 Ohm | 0...2650 Ohm | 100 mOhm |
| Temp. measurement | AI PT1K 375 | -50...180 | -52.5...185.0 °C | 10 mK |
| | AI PT1K 385 1) | -50...400 (600) °C | 1) -52.5...610°C | 20 mK |
| | AI NI1000 extended 1) | -50...150 (180) °C | 1) -52.5...185.0 °C | 10 mK |
| | AI Ni1000 | -50...150°C | -52.5...155.0 °C | 10 mK |
| | AI T1 (PTC) 1) | -50...130 (150) °C | 1) -52.5...155.0 °C | 10 mK |
| | AI NTC10K 1) | (-40...115 °C) | 1) -52.5...155°C | 10 mK (25°C) |
| | AI NTC100K 1) | (-40 ...125 °C) | 1) -52.5...155°C | 10 mK (25°C) |

1) 180 °C, 600°C, NTC: only with reduced hum injection

Voltage measurement AI 0-10V 2) 0 ... 10 V 2) -1.5...11.5 V 1 mV

2) In case of open connection: negative voltage -3.1 V, 0.05 mA (open circuit detection)

Analog outputs

| | Signal type | Range | Under / over range | Resolution |
|----------------|-------------|------------|--------------------|------------|
| Output voltage | AO 0-10V | 0 ... 10 V | -0.05...10.6 V | 1 mV |
| Output current | | max. 1 mA | | |

Connection terminals

Mechanical design
 Solid conductors
 Rising cage terminals
 1 x 0.5 mm² to 4mm²
 or 2 x 0,6 mmØ to 1.5 mm²

Stranded conductors without connector sleeves
 1 x 0.5 mm² to 2.5 mm²

Stranded conductors with connector sleeves
 (DIN 46228/1)
 or 2 x 0,6 mmØ to 1.5 mm²
 1 x 0.25 mm² to 2.5 mm²
 or 2 x 0,6 mmØ to 1.5 mm²

Screwdriver
 No. 1 Screwdriver for slotted or recessed-head * screws
with shaft diameter ≤ 4.5 mm
 * Combined slotted / recessed-head screws from mid-2012

Max. tightening torque 0.6 Nm

Test pickups (test terminals)

For pin diameter 1.8 ... 2.0 mm

Local override

Local override / indication device ISO 16 484-2, Section 3.11

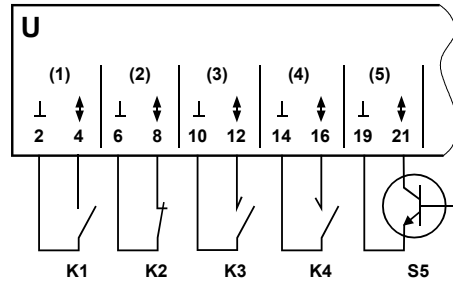
(TXM1.8U-ML only)

| | | |
|-------------------------------------|---|---|
| Classification to EN 60730 | Mode of operation of automatic electrical controls | Type 1 |
| | Contamination level | 2 |
| Housing protection standard | Mechanical design | Protection class III |
| | Protection standard to EN 65029 | |
| | Front-plate components in DIN cut-out | IP30 |
| Ambient conditions | Terminal base | IP20 |
| | Operation | To IEC 60721-3-3 |
| | Climatic conditions | Class 3K5 |
| | Temperature | -5 ... 50 °C |
| | Humidity | 5 ... 95 % rh |
| | Mechanical conditions | Class 3M2 |
| | Operation | To IEC 60721-3-2 |
| | Climatic conditions | Class 2K3 |
| | Temperature | -25...70 °C |
| | Humidity | 5 ... 95 % rh |
| Mechanical conditions | Class 2M2 | |
| Standards, directives and approvals | Product standard | EN 60730-1 |
| | Electromagnetic compatibility (Applications) | Automatic electrical controls for household and similar use For use in residential, commercial, light-industrial and industrial environments |
| | EU conformity (CE) | CM1T10870xx *) |
| | UL certification (US) | UL 916, UL 864, http://ul.com/database |
| | CSA certification | Class 4812 http://directories.csa-international.org/ |
| | RCM-conformity (EMC) | CM1T10870en_C1 *) |
| Environmental compatibility | EAC conformity | Eurasia conformity |
| | Product environmental declaration (contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal) | CM2E8173 *) |
| Color | Terminal base and plug-in I/O module | RAL 7035 (light gray) |
| | Housing to DIN 43 880, see "Dimensions" | |
| Dimensions | | |
| | | |
| Weight | Without / with packaging | TXM1.8U 179 / 200 g |
| | | TXM1.8U-ML 202 / 223 g |

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

Connection diagrams (examples)

Digital inputs



- U** Universal module
- K1** Status contact (N/O)
- K2** Status contact (N/C)
- K3** Pulse contact (N/O)
- K4** Pulse contact (N/C)
- S5** Electronic switch

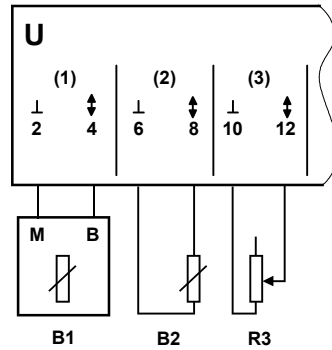
Terminal layout

| I/O point | TXM1.8U, TXM1.8U-ML | | | | | | | |
|--|---------------------|-----|-----|-----|-----|-----|-----|-----|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| System neutral \perp (-) ¹⁾ | 2 | 6 | 10 | 14 | 19 | 23 | 27 | 31 |
| Input \updownarrow (+) | 4 | 8 | 12 | 16 | 21 | 25 | 29 | 33 |

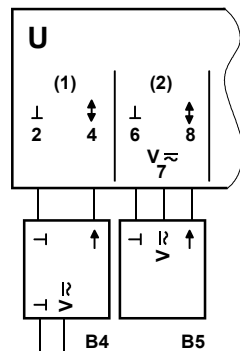
 Counter inputs

Counter inputs faster than 1 Hz that are routed for more than 10 m in the same trunking as analog inputs must be shielded.

Analog inputs



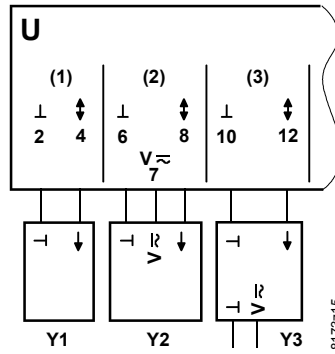
- U** Universal module
- B1** LG-Ni 1000 temperature sensor
- B2** Pt 1000 temperature sensor
- R3** Resistance-type sensor
- B4** Active sensor with external supply
External supply must NOT be earthed (earth loop)
- B5** Active sensor with AC / DC supply



Terminal layout

| I/O point | TXM1.8U, TXM1.8U-ML | | | | | | | |
|---|--|-----|-----|-----|-----|-----|-----|-----|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Measuring neutral \perp (-) ¹⁾ | 2 | 6 | 10 | 14 | 19 | 23 | 27 | 31 |
| Input \updownarrow (+) | 4 | 8 | 12 | 16 | 21 | 25 | 29 | 33 |
| AC / DC sensor supply voltage ²⁾ | Selected from: 7, 15, 24, 32 ²⁾ | | | | | | | |

Analog outputs



- U** Universal module
- Y1** Actuator with input DC 0 ..10 V
- Y2** General device with input DC 0 ..10 V, supplied by module
- Y3** General device with input DC 0 ..10 V, supplied externally
External supply must NOT be earthed (earth loop)

Terminal layout

| I/O point | TXM1.8U, TXM1.8U-ML | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| System neutral \perp (-) ¹⁾ | 2 | 6 | 10 | 14 | 19 | 23 | 27 | 31 |
| Output \updownarrow (+) | 4 | 8 | 12 | 16 | 21 | 25 | 29 | 33 |
| AC / DC operating voltage ²⁾ | Selected from: 7, 15, 24, 32 ²⁾ | | | | | | | |

¹⁾ All measuring / system neutral terminals are interconnected, not in the terminal base but in the plug-in I/O module. When this unit is pulled outward (into the "parking" position) there is no connection.

- The system neutral of a **digital input** can be connected to any system neutral terminal
- With **analog inputs and outputs**, the measuring / system neutral must always be connected to the terminal associated with that I/O point.

²⁾ All **AC/DC** 24V supply terminals are interconnected (in the I/O module, not in the terminal base).

They are protected in the power supply module / bus connection module (T10A).

Wiring of the AC/DC 24 V supply (terminals 7, 15, 24, 32):

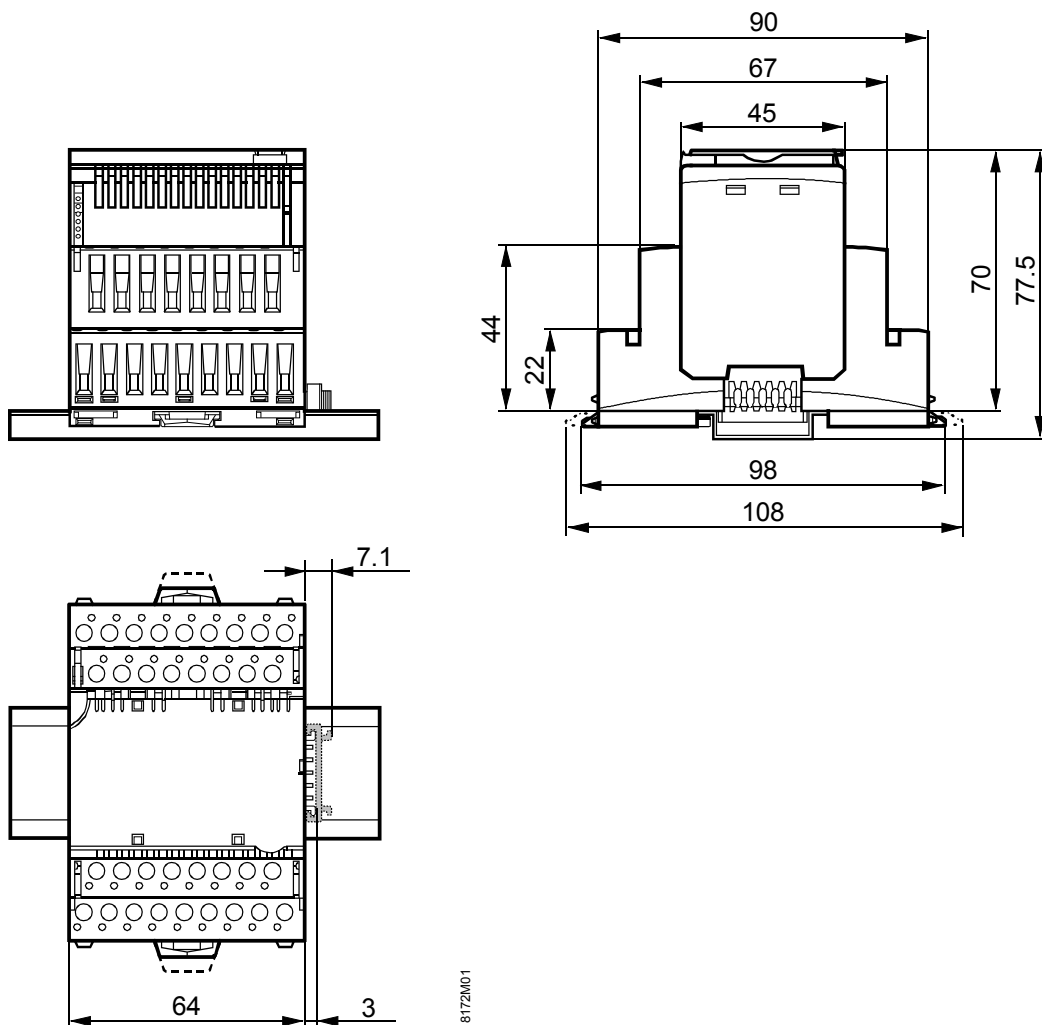
Use cable cross section suited for 10 A according to local regulations.

Caution!

For wiring details refer to the TX-I/O™ Engineering and installation manual, CM110562.

Dimensions

Dimensions in mm



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