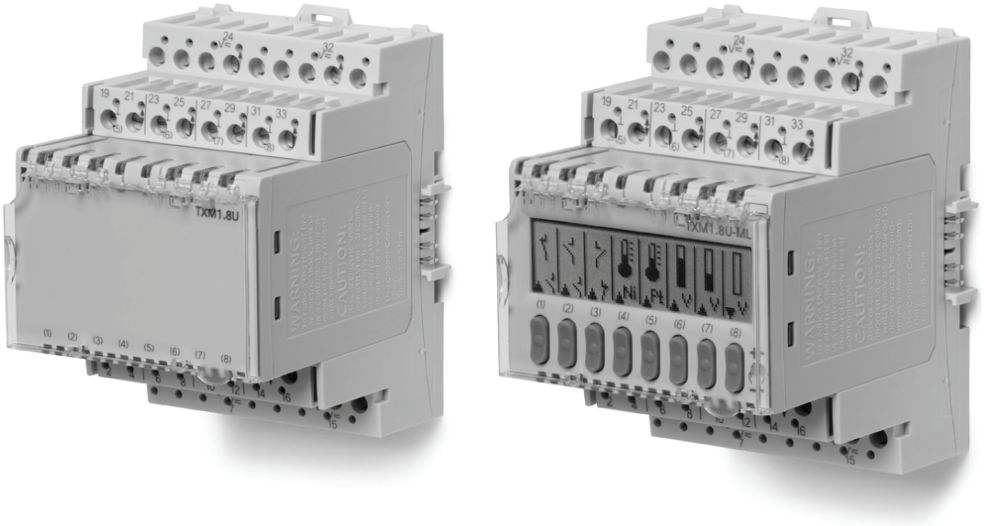
SSS1-1

SIEMENS

8173



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**

Functions

The modules support the following I/O functions:

Function	Signal type	Description	
Status signal	**D20** ***BIM*** **D20R**	Volt-free, interrogation (maintained contact), N/O contact, (***BIM*** also N/C contact)	
Status pulses	**D20S**	Volt-free, N/O contact, interrogation (pulse)	
Counter pulses	**C**	Volt-free, N/O contact, interrogation (pulse) Counting frequency ***BIM*** max. 25 Hz; ***IB*** max. 100 Hz	
Voltage, resistance and temperature	**U10**	DC voltage	0 ... 10 V
	P1K	Resistance	Pt 1000 ohms and resistance transmitter
	IB **R2K5**	Resistance	2500 Ω
	R1K	Temperature sensor	LG-Ni 1000 ohms
	IB **Ni1K**	Temperature sensor	LG-Ni 1000 ohms
	IB **Pt1K 375**	Temperature sensor	Pt 1000
	IB **Pt1K 385**	Temperature sensor	Pt 1000
	T1	Temperature sensor	PTC
	IB **NTC10 K**	Temperature sensor	NTC 10 K
	IB **NTC100 K**	Temperature sensor	NTC 100 K
Proportional output signals	**Y10S**	Proportional control output, DC 0 ... 10 V, with storage of control value	

Key ***IB*** = direct island bus integration ***BIM*** = integration via P-Bus BIM

For a detailed description of these functions, please refer to document CA110561, "TX-I/O™ functions and operation".

Type summary

ASN

Universal module **TXM1.8U**

Universal module **TXM1.8U-ML** with LCD display and local override

Delivery

The terminal base and the electronic plug-in unit are interconnected and delivered in the same box.

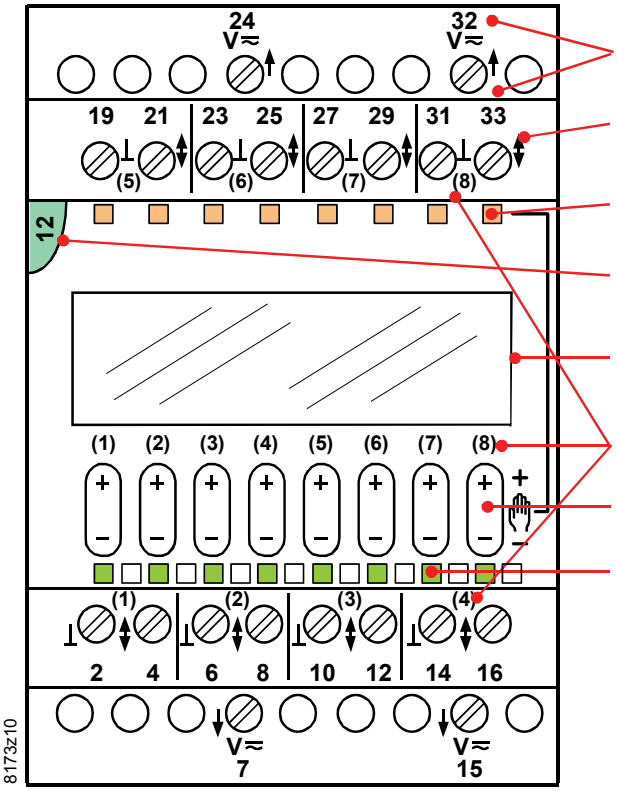
Accessories

The available accessories include address keys, label sheets, and spare transparent label holders. Refer to data sheet CM2N8170.

Technical and mechanical design

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



Connection terminals (No. 1 screwdriver)
with test pickup (for 1.8...2 mm pins) and terminal number

Signal designation

Override status LEDs (yellow)

Address key and module status LED

LCD panel (TXM1.8U-ML only)

I/O point numbers

Override button (TXM18U-ML only)

I/O status LEDs (green)

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

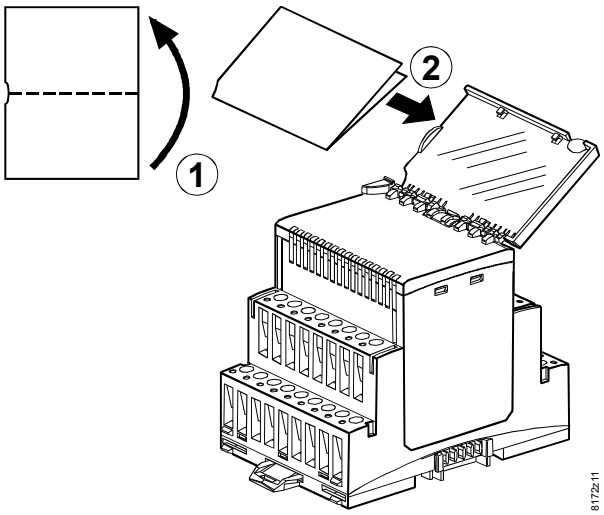
- The following information is displayed for each I/O point:
  - Configured signal type
  - Symbolic display of process value
  - Information for diagnostics.

Warning

- **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. ←

Module labeling

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



Disposal

The device is classified as waste electronic equipment in terms of the European Directive 2002/96/EC (WEEE) and should not be disposed of as unsorted municipal waste.
The relevant national legal rules are to be adhered to.
Regarding disposal, use the systems setup for collecting electronic waste.
Observe all local and applicable laws.

Engineering, mounting, installation and commissioning

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
TX-I/O™ Engineering documentation V2.37	CM110641 ff
TX-I/O™ Engineering documentation V4	CM111001 ff

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 Extra low voltage SELV or PELV in accordance with HD384		DC 22.5 ... 26 V
	Max. power consumption	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 Insulation resistance	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

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
IB electronic counter	..5	..0	100 Hz
IB counter memory *)		0 ... 4.3 x 10^9 (32 bit counter)	

Analog inputs

Correction of line resistance	1 Ω (calibrated In module)	

	Signal type	Range	Resolution ***BIM***	Resolution ***IB***
Resistance Pt 1000 and resistance transmitter	P1K	0...2500 Ohm	333 mOhm	100 mOhm
	R2K5	0...2500 Ohm		100 mOhm
Temp. measurement	Pt1K 375	-50…180 °C		10 mK
	Pt1K 385 1)	-50...400 (600) °C 1)		20 mK
	Ni1K 1)	-50…150 (180) °C 1)		10 mK
	R1K (LG-Ni 1000)	-50...150°C	50 mK	10 mK
	T1 1)	-50...130 (150) °C 1)	50 mK	10 mK
	NTC 10K 1)	-40...115 °C 1)		10 mK (25°C)
	NTC 100K 1)	-40...125 °C 1)		10 mK (25°C)
	1) 180 °C, 600°C, NTC: only with reduced hum injection			
Voltage measurement	U10 2)	0...10 V	3.125 mV	1 mV
	2) In case of open connection: negative voltage –3.1 V, 0.05 mA (open circuit detection)			

Analog outputs

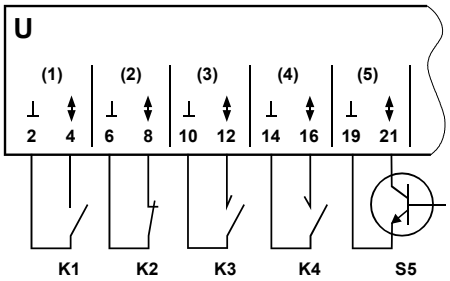
	Signal type	Range	Resolution ***BIM***	Resolution ***IB***
Output voltage	Y10S	0 … 10 V	11 mV	1 mV
Output current		max. 1 mA		

Connection terminals	Mechanical design	Rising cage terminals
	Solid conductors	1 x 0.5 mm^2 to 4mm^2 or 2 x 0,6 mm∅ to 1.5 mm^2
	Stranded conductors without connector sleeves	1 x 0.5 mm^2 to 2.5 mm^2 or 2 x 0,6 mm∅ to 1.5 mm^2
	Stranded conductors with connector sleeves (DIN 46228/1)	1 x 0.25 mm^2 to 2.5 mm^2 or 2 x 0,6 mm∅ to 1.5 mm^2
	Screwdriver	Slot-headed screws Screwdriver No. 1 *with shaft diameter ≤ 4.5 mm*
	Max. tightening torque	0.6 Nm
Test pickups (test terminals)	For pin diameter	1.8 … 2.0 mm
Local override (TXM1.8U-ML only)	Local override / indication device	ISO 16 484-2, Section 3.11
Classification to EN 60730	Mode of operation of automatic electrical controls	Type 1
	Contamination level	2
	Mechanical design	Protection class III
Housing protection standard	Protection standard to EN 65029	
	Front-plate components in DIN cut-out	IP30
	Terminal base	IP20
Ambient conditions	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

Industry standards	Product safety	
	Automatic electronic controls for household and similar use	EN 60730-1
	Electromagnetic compatibility	
	Interference immunity Industrial environments	EN 61000-6-2
	Emitted interference Residential, commercial and light industrial environments	EN 61000-6-3
	CE conformity	
	EMC Directive	2004/108/EG
	C-tick conformity in accordance with Australian EMC framework	Radio Communications Act 1992
	Radio Emission Standard	AS/NZS 3548
	UL approval (UL 916, UL 864)	UUKL
Environmental compatibility	The product environmental declaration CM1E8174 contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal)	ISO 14001 (Environment) ISO 9001 (Quality) SN 36350 (Environmentally compatible products) 2002/95/EC (RoHS)
Color	Terminal base and plug-in I/O module	RAL 7035 (light gray)
Dimensions	Housing to DIN 43 880, see "Dimensions"	
Weight	With / without packaging	TXM1.8U 179 / 200 g TXM1.8U-ML 202 / 223 g

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

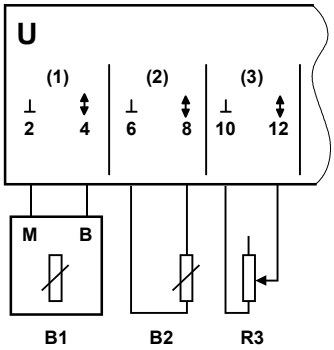
Terminal layout

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

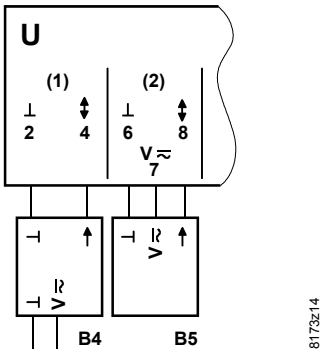
Counter inputs

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



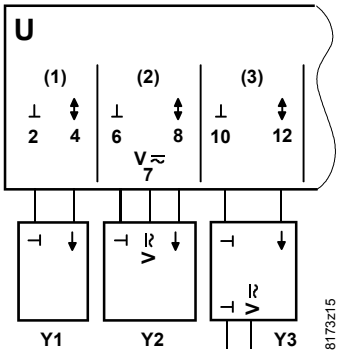
U Universal module
B1 LG-Ni 1000 temperature sensor
B2 Pt 1000 temperature sensor
R3 Resistance-type sensor
B4 Active sensor with external supply
External supply must NOT be earthed (earth loop)
B5 Active sensor with AC / DC supply



Terminal layout

I/O point	TXM1.8U, TXM1.8U-ML (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Measuring neutral ⊥ (–) [1]	2	6	10	14	19	23	27	31
Input ↕ (+)	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 ⊥ (–) [1]	2	6	10	14	19	23	27	31
Output ↕ (+)	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.

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

Dimensions

Dimensions in mm