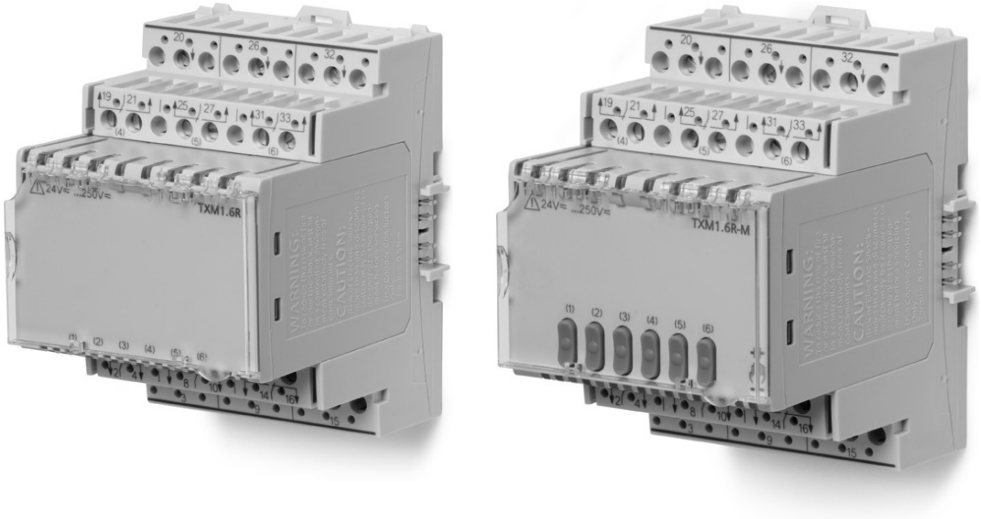
SIEMENS

8175



TX-I/O™

Relay modules

TXM1.6R
TXM1.6R-M

- **Two fully compatible versions:**
  - **TXM1.6R:** **– 6 volt-free relay outputs**
    – Individual I/O point signaling with green I/O status LED
  - **TXM1.6R-M:** **As TXM1.6R, but with the following additional features**
    – Three-color I/O status LED (red, yellow or green)
    – Local override (to ISO 16 484-2)
- **6 relay outputs, which can be individually configured as:**
  – Maintained contact or pulse, 1 … 3-stage
  – Three-position control output with stroke algorithm
- **Mixed voltages (AC 250 V mains voltage and SELV/PELV 24 V) as well as mixed phases are permitted on adjacent I/O points of the module**
- **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**
- **Terminal strips are required to connect N and PE of the field devices**
- **Simple strategy for operation and display**
  - **I/O status LED for each I/O point**
  - **LEDs for fast diagnostics**
- **Double-sided labels for identification of all I/O points**

Functions

The modules support the following I/O functions:

Signal type (TRA)	Signal type	Description
BO Relay NO 250V **BO Relay NC 250V**	**Q250**	Maintained contact relay, changeover contact N/O, N/C contact
BO Pulse On-Off	**Q250-P** **Q250A-P**	On/off pulse Q250-P With self-latching and 2 channels Q250A-P With dual-winding switch
BO Pulse	***)**	Pulse
MO Steps	**Q-M1…M4**	Multistate maintained contact, 1…6-stage mutually exclusive electronic relay interlock
MO Pulse	**Q250-P1…P5**	Multistate pulse, 1…5-stage mutually exclusive electronic relay interlock
BO 3-Pos Relay	**Y250T**	Pulse, control signal, three-position output, internal algorithm for stroke running time

*) DESIGO V4, V5: Use MO Q250-P1.

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

Notes

- **Q250B** Use TXM1.6RL with BO Bistable NO / NC
  For switched current <100mA, see CM110563, Replacement of legacy signal types.
- **QD** Feedback must be implemented using separate digital inputs
  e.g. with TXM1.8D, see CM110563.

Compatibility

Support of signal types and functions in different building automation and control systems: see TX-I/O Engineering and installation manual, CM110562

Type summary

ASN

Relay module **TXM1.6R**

Relay module **TXM1.6R-M** with local override

Delivery

The terminal base and the plug-in I/O module are interconnected and delivered in the same box.

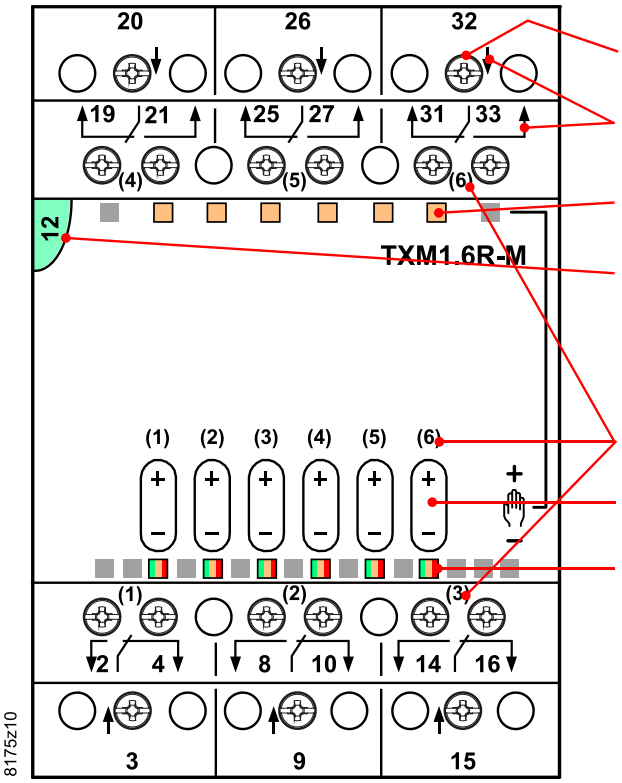
Accessories

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 for slotted or recessed-head * screws)
with test pickup (for 1.8...2 mm pins) and terminal number

Signal designation

Override status LEDs (yellow)

Address key and module status LED

I/O point numbers

Override button (TXM1.6R-M only)

I/O status LEDs (TXM1.6R: green;
TXM1.6R-M: colors can be configured, green/yellow/red)

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

I/O status LEDs

- The I/O status LEDs indicate the status of the relays
- The LEDs on the TXM1.6R are green.
- In the case of the TXM1.6R-M the LEDs are three-colored. If the I/O function supports it, the module can display Alarm = red and Service = yellow, besides Normal = green
- The LEDs are also used for diagnostics

Module status LEDs

- The module status LED illuminates the transparent address key
- The (green) LED shows the module status as a whole (as opposed to 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 plug-in I/O module, the address key must be swiveled outward. It remains plugged into in the terminal base.

Terminals

- The relay contacts of the individual I/O points are volt-free, and are not interconnected. The switched voltage must be provided separately for each I/O point.
- Mixed voltages (AC 250 V mains voltage and SELV/PELV 24 V) as well as mixed phases are permitted on adjacent I/O points of the module

Local override (TXM1.6R-M only)

Override button

- Pressing an override button in the middle enables/disables local override
- Pressing "+" for one of the I/O points activates the relay or switches control to the next stage up (depending on function)
  Repeated or sustained pressure switches several stages until the function stops at the highest stage.
- Pressing "–" for one of the I/O points deactivates opens the relay or switches control to the next stage down (depending on function)
  Repeated or sustained pressure switches several stages until the function stops at the lowest stage.

Override status LED

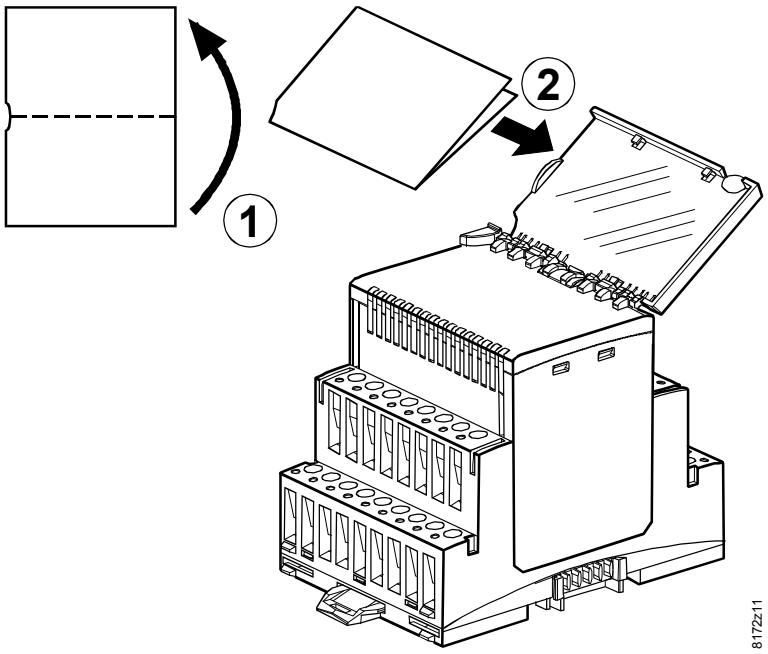
- The yellow "Override" LED indicates that local override is active

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 2012/19/EU 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

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 Extra low voltage SELV or PELV in accordance with HD384		DC 21.5 ... 26 V
	Max. power consumption	TXM1.6R	1.7 W
		TXM1.6R-M	1.9 W
	(for the sizing of power supplies, see CM110562)		
Protection	Bus connector on side		No protection against shortcut and incorrect wiring with AC / DC 24 V
Switching outputs	Number of switching outputs		6 (changeover contact)
	External fuse protection for incoming cable		
	• Slow blow fusible link		Max. 10 A
	• Circuit breaker		Max. 13 A
	Circuit breaker tripping characteristic		Type B, C or D to EN 60898
Contact data for AC	Voltage range		min. AC 12 V max. AC 250 V
	Current, resistive load		max. 4 A
	Current, inductive load (cos phi ≥ 0.6)		max. 3 A
	Switching current		min. 1 mA at AC 250 V min. 10 mA at AC 12 V
	Current on make		max. 20 A during max. 10 ms max. 10 A during max. 1 s
	For UL applications		3 FLA, 9 LRA, 1/4 HP, 4 (3) A
Contact data for DC	Voltage range		min. DC 12 V, max. DC 30 V
	Current, resistive load		max. 3 A at DC 30 V min. 10 mA at DC 12 V
	Current on make		max. 3 A
Service life of contact for AC 250 V	With 0.1 A resistive		8 million switching operations
	With 0.5 A resistive		2 million switching operations
	With 4.0 A resistive	(N/O)	0.2 million switching operations
	Reduction factor with inductive load (cos phi ≥ 0.6)		0.6 (max. 3 A inductive)
Insulation resistance	Reinforced insulation between relay outputs and system electronics		AC 3750 V, to EN 60 730-1
	Mixed voltages (AC 250 V mains voltage and SELV/PELV 24 V) as well as mixed phases are permitted on adjacent I/O points of the module		

Connection terminals	Mechanical design	Cage clamp 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	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 (terminals)	For pin diameter	1 x 1.8 … 2.0 mm
Local override (TXM1.6R-M only)	Local override 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	Devices are suitable for use in equipment with protective class I and II
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
	Transport / storage	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	Automatic electrical controls for household and similar use
	Electromagnetic compatibility (Applications)	For use in residential, commercial and industrial environments
	EU conformity (CE)	T10870xx *)
	RCM conformity (EMC)	T10870en_C1 *)
	UL approbation	UL 916, UL 864
Environmental compatibility	The product environmental declaration contains data on RoHS compliance, materials composition, packaging, environmental benefit, disposal)	CM1E8175 *)
Color	Terminal base and plug-in I/O module	RAL 7035 (light gray)
Dimensions	Housing to DIN 43 880, see "Dimensions"	
Weight	Without / with packaging	TXM1.6R 231 / 252 g TXM1.6R-M 241 / 262 g

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

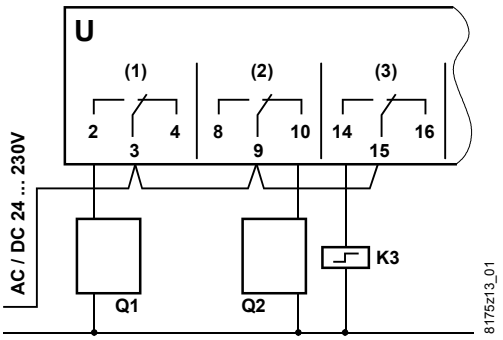
Terminal layout

I/O point	TXM1.6R, TXM1.6R-M (1)	(2)	(3)	(4)	(5)	(6)
Supply	3	9	15	20	26	32
N/O contact	2	8	14	21	27	33
N/C contact	4	10	16	19	25	31

For functions with **several I/O points:**

- Always use adjacent I/O points
- Each function must be confined to one module only
- The I/O points have a fixed sequence within the function, e.g. the first I/O point is for switch-off.

Maintained contact
BO Relay NO 250V
BO Relay NC 250V

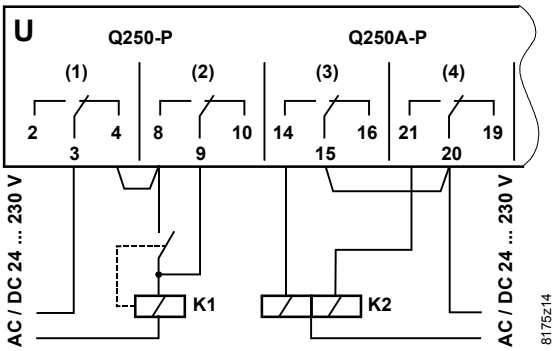


U Relay module

Q1 Switched load (N/O contact)
Q2 Switched load (N/C contact)
K3 Step switch / pulse switch / bistable relay

On/off pulse
BO Pulse On-Off

- Self-latching and 2 channels (Q250-P)
- Dual-winding switch (Q250A-P)



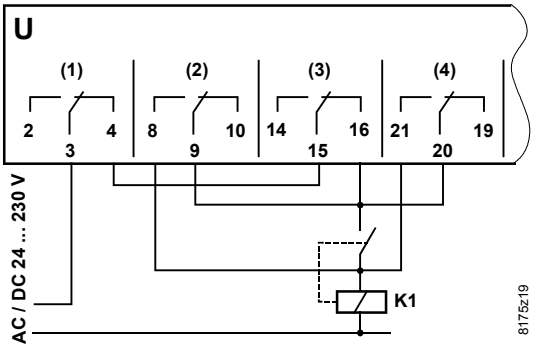
U Relay module

K1 Power contactor, self-latching
K2 Dual-winding stepping switch, bistable relay

Pulse on I/O point (2) = K1 ON
Pulse on I/O point (1) = K1 OFF

Pulse on I/O point (4) = K2 ON
Pulse on I/O point (3) = K2 OFF

Pulse control for single-stage load with control from two separate control loops of equal status
BO Pulse On-Off



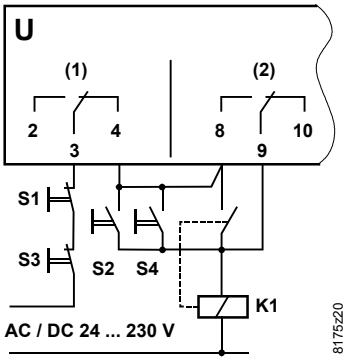
U Relay module

K1 Power contactor, self-latching

Control circuit 1:
Pulse on I/O point (2) = ON
Pulse on I/O point (1) = OFF

Control circuit 2:
Pulse on I/O point (4) = ON
Pulse on I/O point (3) = OFF

Pulse control for single-stage load with control of equal status from two remote switching locations
BO Pulse On-Off



U Relay module

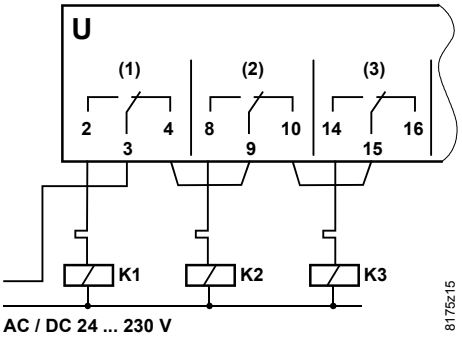
K1 Power contactor, self-latching

Control circuit 1:
Pulse on I/O point (2) = ON
Pulse on I/O point (1) = OFF

External control location A:
S1 OFF button
S2 ON button

External control location B:
S3 OFF button
S4 ON button

Maintained contact, 3-stage
MO Steps



U Relay module

K1, K2, K3 Contactors for Stages 1…3

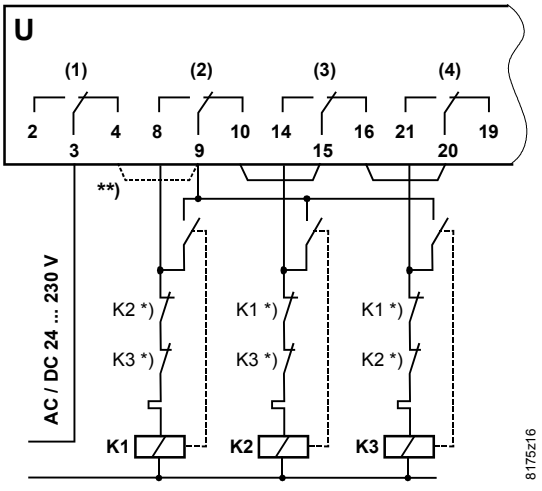
I/O point (1) ON = Stage 1
I/O point (2) ON = Stage 2
I/O point (3) ON = Stage 3

Pulse, 1-stage

DESIGO V4, V5: Use Q250-P1

DESIGO TRA Use BO Pulse

Pulse, 3-stage
MO Pulse



U Relay module

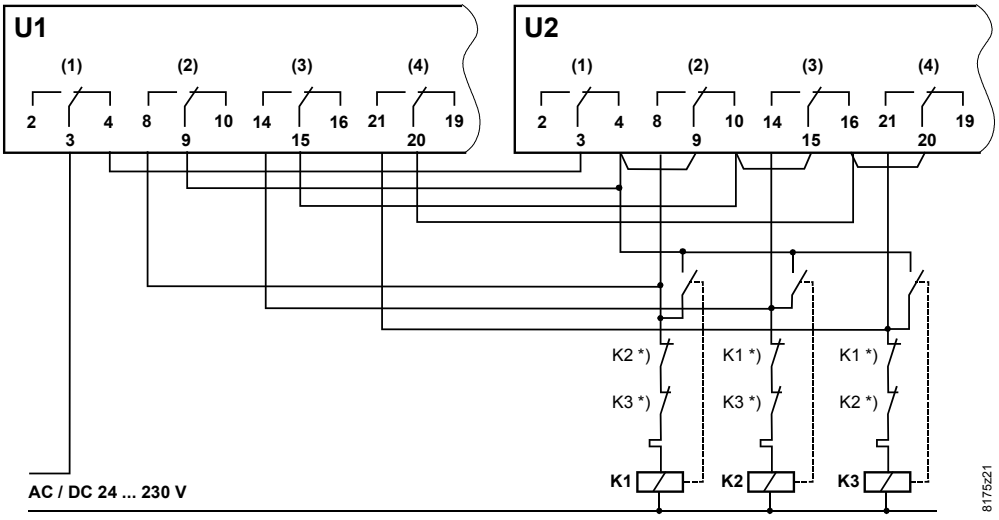
K1, K2, K3 Contactors with self-latching feature for Stages 1 … 3

Pulse on I/O point (1) = OFF
Pulse on I/O point (2) = Stage 1
Pulse on I/O point (3) = Stage 2
Pulse on I/O point (4) = Stage 3

*) External self-latching is optional

**) For other means of control, replace bridge with external circuit

Pulse control for a three-stage load with control from two control loops of equal status
MO Pulse



U1, U2 Relay modules

K1, K2, K3 Contactors with self-latching feature for Stages 1 … 3

*) External self-latching is optional

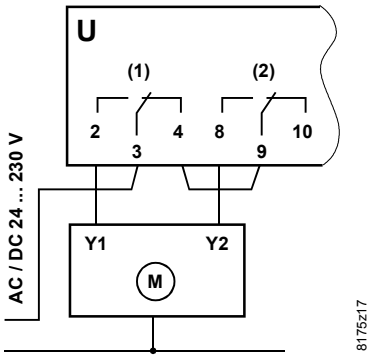
Control loop 1:

U1 Pulse on I/O point (1) = OFF
U1 Pulse on I/O point (2) = Stage 1
U1 Pulse on I/O point (3) = Stage 2
U1 Pulse on I/O point (4) = Stage 3

Control loop 2:

U2 Pulse on I/O point (1) = OFF
U2 Pulse on I/O point (2) = Stage 1
U2 Pulse on I/O point (3) = Stage 2
U2 Pulse on I/O point (4) = Stage 3

Control signal, three-position output
BO 3-Pos Relay

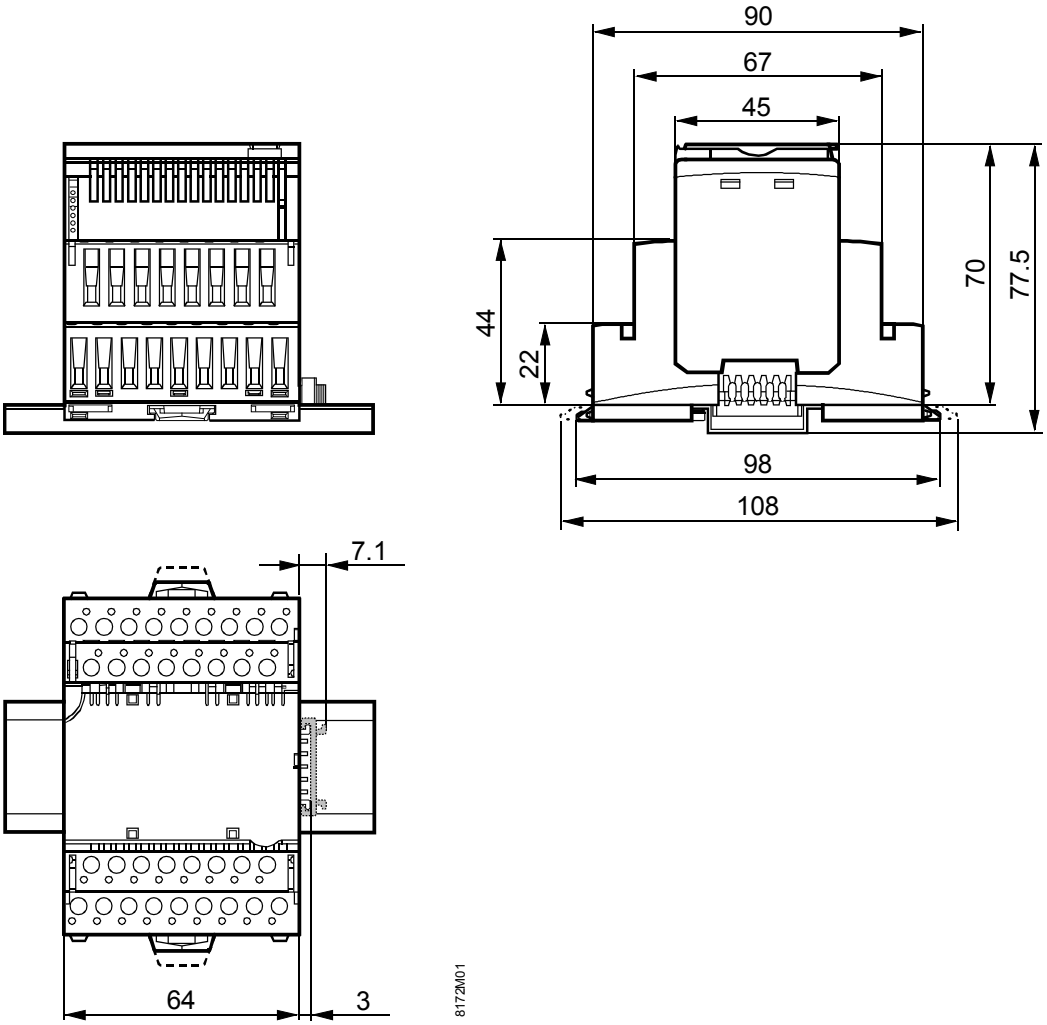


U Relay module

Y1 Control signal OPEN
Y2 Control signal CLOSE

Dimensions

Dimensions in mm



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