

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)** 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
- **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
 - 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	Description
Q250	Maintained contact, changeover contact
Q250-P With self-latching and 2 channels Q250A-P With dual-winding switch	On/off pulse
Q-M3	Maintained contact, three-stage mutually exclusive electronic relay interlock
IB Q-M1...M4	Maintained contact, 1...4-stage mutually exclusive electronic relay interlock
Q250-P3	Pulse, three-stage mutually exclusive electronic relay interlock
IB Q250-P1...P5	Pulse, 1...5-stage mutually exclusive electronic relay interlock
Y250T	Pulse, control signal, three-position output, internal algorithm for stroke running time

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

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

- Notes
- **Q250B** Use external bistable relay
 - **QD:** Feedback must be implemented using separate digital inputs e.g. with TXM1.8D
- (For details, refer to CM110563, Replacement of legacy signal types).

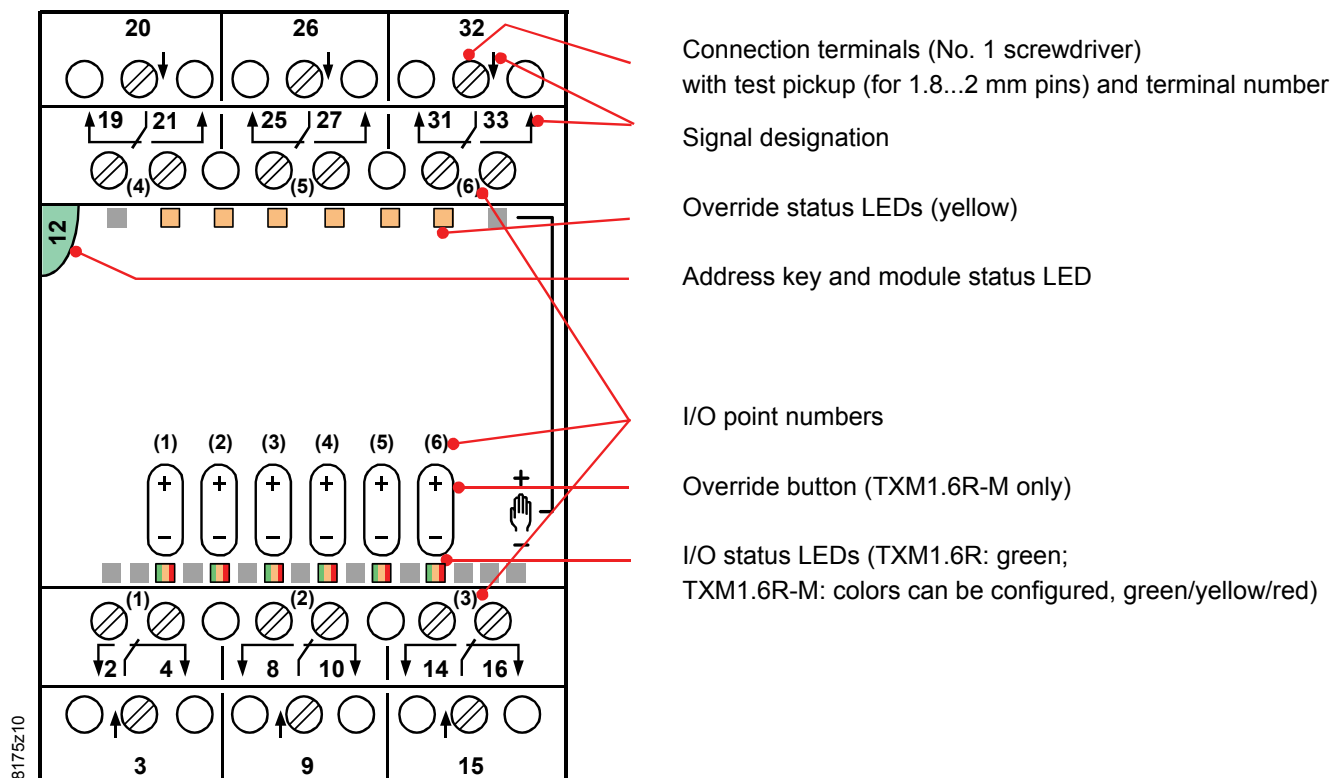
Type summary

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

**I/O status LEDs**

- The I/O status LEDs indicate the status of the peripheral devices
- 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) 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

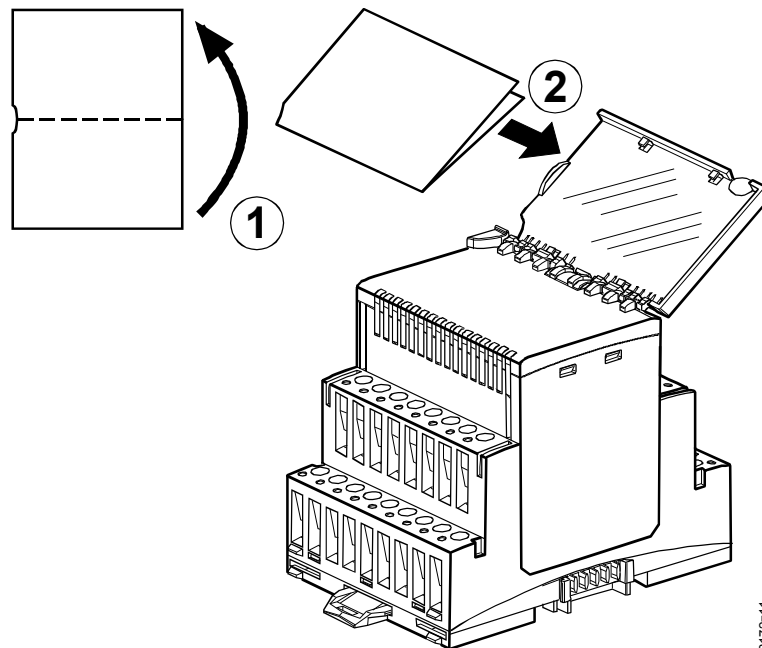


Warning

- **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.



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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	DC 22.5 ... 26 V
	Extra low voltage SELV or PELV in accordance with HD384	
	Max. power consumption	TXM1.6R 1.7 W TXM1.6R-M 1.9 W
	(for the sizing of power supplies, see CM110562)	
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	
	AC/DC switching voltage	max. AC 250 V / DC 30 V min. AC / DC 12 V
	AC current rating	Max. 4 A resistive, 3 A inductive Min. 1 mA at AC 250 V Min. 10 mA at AC 12 V 3 FLA, 9 LRA, 1/4 HP, 3 (3) A
	DC current rating	Max. 3 A resistive at DC 30 V Min. 10 mA resistive at DC 12V
	Current on make	Max. 10 A (1 s)
Response / dropout time	7 ms / 3 ms typical	
Insulation resistance	Service life of contact for AC 250 V (guide values)	
	With 0.1 A resistive	1 x 10 ⁷ switching operations
	With 0.5 A resistive	3 x 10 ⁶ switching operations
	With 4.0 A resistive (N/O)	2 x 10 ⁵ switching operations
	Reduction factor with inductive load	0.85 (cos phi = 0.6)
Cable length	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) are permitted on adjacent I/O points of the module	
Cable length	Cable material	Solid or stranded copper wire
	Permissible cable length	1,000 m
	Minimum wire diameter	0.6 mm, for details see CM110562

Connection terminals	Mechanical design	Cage clamp terminals
	Solid conductors	1 x 0.5 mm ² to 4mm ² or 2 x 0,6 mmØ 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 mmØ 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 mmØ to 1.5 mm ²
	Screwdriver	Slot-headed screws Screwdriver No. 1 <i>with shaft diameter ≤ 4.5 mm</i>
	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	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/EC
	Low Voltage Directive	2006/95/EEC
	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	TXM1.6R 231 / 252 g TXM1.6R-M 241 / 262 g

Connection diagrams (examples)

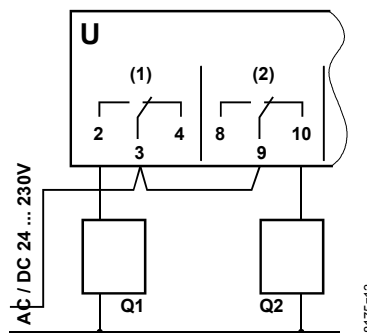
Terminal layout

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.

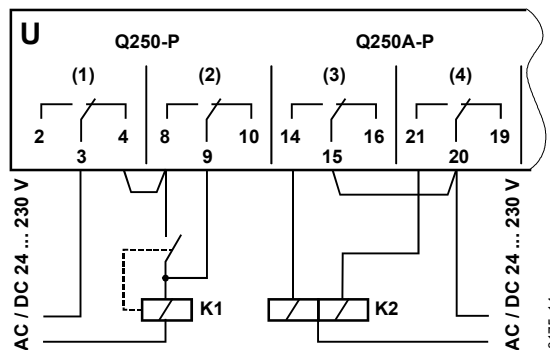
Maintained contact
Q250



U Relay module

- Q1 Switched load (N/O contact)
Q2 Switched load (N/C contact)

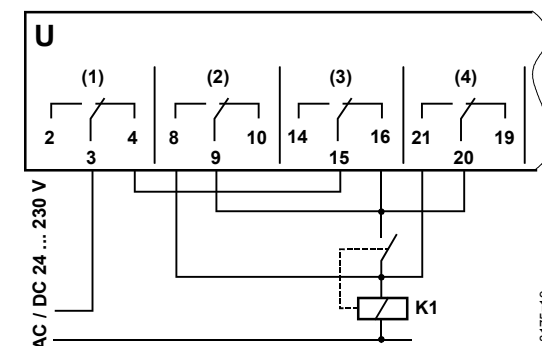
On/off pulse
Q250-P with self-latching and 2 channels)
Q250A-P with dual-winding switch



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
Q250P



U Relay module

K1 Power contactor, self-latching

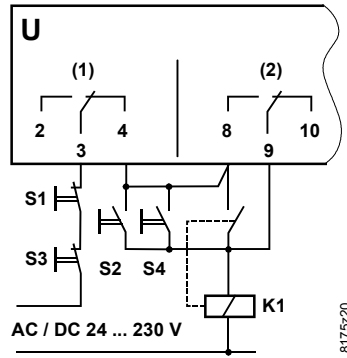
Control circuit 1:

- 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 Q250P



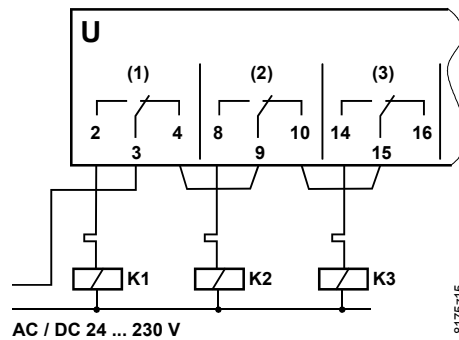
- U Relay module
- K1 Power contactor, self-latching

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 Q-M3



- U Relay module

K1, K2, K3 Contactors for Stages 1...3

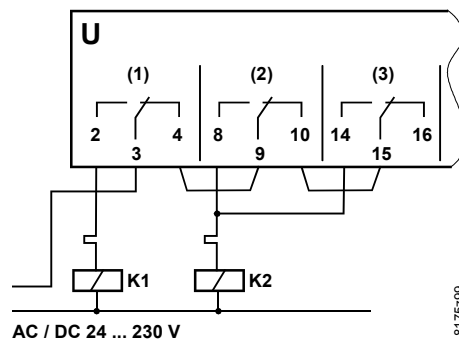
I/O point (1) ON = Stage 1
 I/O point (2) ON = Stage 2
 I/O point (3) ON = Stage 3

Legacy QD-M2 Maintained contact, 2-stage

Signal type QD-M2 is no more supported in DESIGO V2.37 and higher.
V4: Use Q-M2 plus 2 x D20

V2.37: Use Q-M3 and proceed as described in [Knowledge Base article 732](#).
 See also "Replacement of legacy modules, CM110563."

QD-M2 for BIM

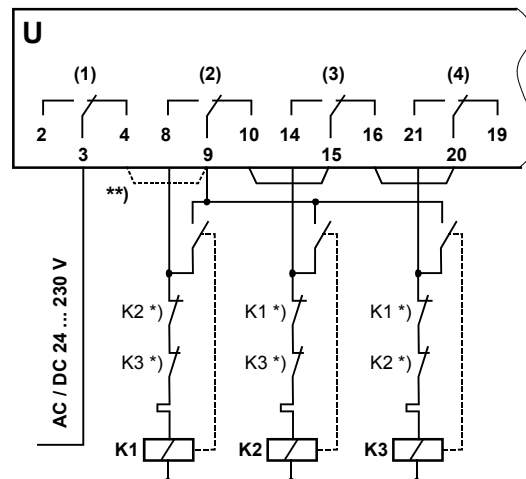


- U Relay module

K1, K2 Contactors for Stages 1...2

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

Pulse, 3-stage Q250-P3

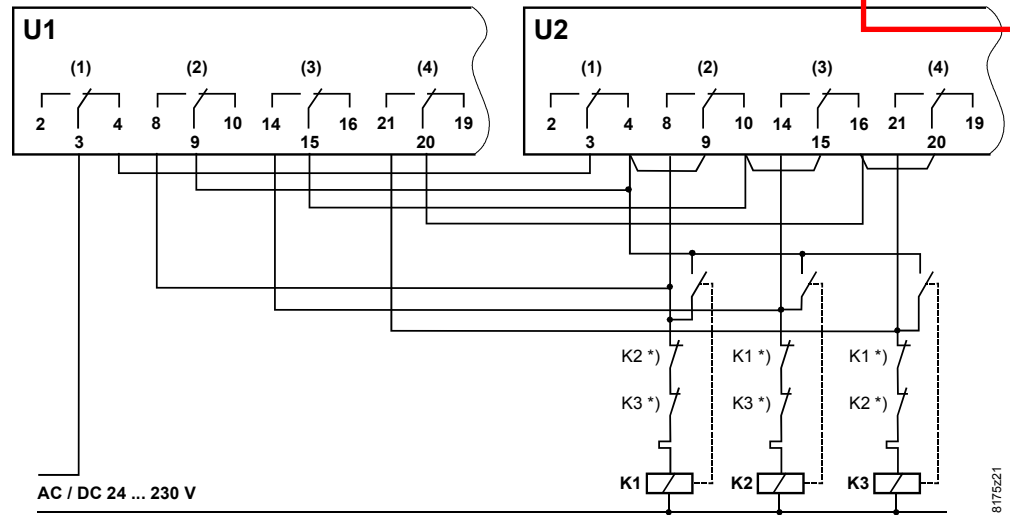


- U Relay module
- K1, K2, K3 Contactors with self-latching feature for Stages 1 ... 3

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
Q250-P3**



U1, U2 Relay modules

K1, K2, K3 Contactors with self-latching feature for Stages 1 ... 3
*) External self-latching is optional

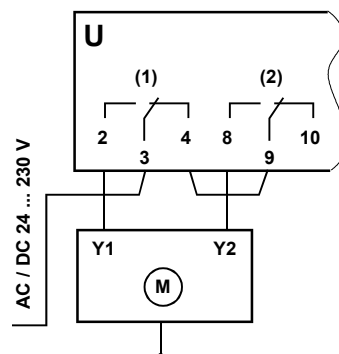
Control loop 1:

- 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
Y250T**



U Relay module

- Y1 Control signal OPEN
- Y2 Control signal CLOSE

Dimensions

Dimensions in mm

