

# Product datasheet

Specifications



## controller M200 24 IO transistor SINK+ Ethernet

TM200CE24U

### Main

Range of product	Easy Modicon M200
Product or component type	Logic controller
[Us] rated supply voltage	24 V DC
Discrete I/O number	24
Discrete input number	I2...I5: 4 fast input I0, I1, I6, I7: 4 high speed input I8...I13: 6 regular input
Discrete output number	Q0...Q1: 2 fast output (PLS/PWM/PTO mode) Q2...Q9: 8 transistor output
Discrete input voltage	24 V
Discrete input voltage type	DC
Discrete input current	7 mA for input
Discrete input logic	Sink or source (positive/negative) type 1 conforming to IEC 61131-2
Discrete output voltage	24 V DC
Discrete output current	0.5 A
Discrete output type	Transistor
Discrete output logic	Negative logic (sink)
Power consumption in W	10 W at 24 V DC (with max I/O)

### Complementary

Maximum number of I/O expansion module	4 with 64 discrete output(s) for relay output 4 with 138 discrete output(s) for transistor output
Supply voltage limits	20.4...28.8 V
Inrush current	35 A
Voltage state 1 guaranteed	$\geq 15$ V for input
Voltage state 0 guaranteed	$\leq 5$ V for input
Input impedance	3.3 kOhm for discrete input
Response time	1 ms turn-on, Q0...Q9 terminal(s) for output 1 ms turn-off, Q0...Q9 terminal(s) for output 5 $\mu$ s turn-off, I0, I1, I6, I7 terminal(s) for high speed input 5 $\mu$ s turn-on, I0, I1, I6, I7 terminal(s) for high speed input 100 $\mu$ s turn-off, I2...I5 terminal(s) for fast input 35 $\mu$ s turn-on, I2...I5 terminal(s) for fast input 100 $\mu$ s turn-off, I8...I13 terminal(s) for regular input 35 $\mu$ s turn-on, I8...I13 terminal(s) for regular input
Configurable filtering time	0 ms for input 3 ms for input 12 ms for input

<b>Maximum current per output common</b>	2 A at COM 0 3 A at COM 1
<b>Output frequency</b>	100 kHz for fast output (PWM/PLS mode) at Q0...Q1
<b>Maximum leakage current</b>	0.1 mA for transistor output
<b>Maximum voltage drop</b>	<1 V
<b>Maximum tungsten load</b>	<12 W for output and fast output
<b>Protection type</b>	Overload and short-circuit protection at 3.8 A
<b>Reset time</b>	1 s automatic reset
<b>Memory capacity</b>	512 byte internal flash for backup of programs
<b>Data storage equipment</b>	32 GB micro SD card (optional)
<b>Battery type</b>	BR2032 Li-CFx (Lithium-Carbon Monofluoride), battery life: 5 year(s)
<b>Backup time</b>	3 years at 25 °C (by interruption of power supply)
<b>Execution time for 1 KInstruction</b>	0.3 ms for event and periodic task
<b>Execution time per instruction</b>	0.2 µs Boolean
<b>Exct time for event task</b>	60 µs response time
<b>Clock drift</b>	<= 90 s/month at 25 °C
<b>Regulation loop</b>	Adjustable PID regulator up to 14 simultaneous loops
<b>Positioning functions</b>	PWM/PLS 2 channel(s) at 100 kHz
<b>Control signal type</b>	Quadrature (x1, x2, x4) at 100 kHz for fast input (HSC mode) Pulse/direction at 100 kHz for fast input (HSC mode) Single phase at 100 kHz for fast input (HSC mode) CW/CCW at 100 kHz for fast input (HSC mode)
<b>Counting input number</b>	4 fast input (HSC mode) at 100 kHz 32 bits
<b>Integrated connection type</b>	USB port with mini B USB 2.0 connector Non isolated serial link serial 1 with terminal block connector and RS485 interface Non isolated serial link serial 2 with terminal block connector and RS232/RS485 interface Ethernet Modbus TCP/IP Ethernet with RJ45 connector and 1 Ethernet port 10/100BASE-T interface Isolated serial link serial 2 with terminal block connector and RS485 interface
<b>Transmission rate</b>	1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m for RS485 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 3 m for RS232 12 Mbit/s for USB 10/100 Mbit/s for bus length of 100 m for Ethernet Modbus TCP/IP
<b>Communication port protocol</b>	USB port: USB - SoMachine-Network Non isolated serial link: Modbus master/slave - RTU/ASCII or SoMachine-Network Ethernet Modbus TCP/IP: Modbus TCP/IP client/server
<b>Local signalling</b>	1 LED (green) for PWR 1 LED (green) for RUN 1 LED (red) for module error (ERR) 1 LED (green) for SD card access (SD) 1 LED (red) for BAT 1 LED (green) for SL1 1 LED per channel (green) for I/O state 2 LEDs (green) for communication (LK/ACT 10/100)
<b>Electrical connection</b>	Mini B USB 2.0 connectorfor a programming terminal RJ45 connectorfor connecting Ethernet network removable screw terminal blockfor inputs removable screw terminal blockfor outputs removable screw terminal block, 3 terminal(s) for connecting the 24 V DC power supply removable screw terminal block, 4 terminal(s) for connecting the serial link1
<b>Maximum cable distance between devices</b>	Unshielded cable: <50 m for input Shielded cable: <10 m for fast input Shielded cable: <10 m for high speed input Unshielded cable: <150 m for output

<b>Insulation</b>	<p>Non-insulated between inputs</p> <p>Between input and internal logic at 500 V AC</p> <p>Between fast input and internal logic at 500 V AC</p> <p>Between input groups at 500 V AC</p> <p>Between output and internal logic at 500 V AC</p> <p>Between output groups at 500 V AC</p> <p>Between supply and internal logic at 500 V DC</p>
<b>Marking</b>	CE
<b>Mounting support</b>	<p>Top hat type TH35-15 rail conforming to IEC 60715</p> <p>Top hat type TH35-7.5 plate or panel with fixing kit conforming to IEC 60715</p>
<b>Height</b>	90 mm
<b>Depth</b>	70 mm
<b>Width</b>	130 mm
<b>Net weight</b>	0.391 kg

## Environment

<b>IP degree of protection</b>	IP20 with protective cover in place
<b>Product certifications</b>	CE
<b>Standards</b>	<p>IEC 61131-2</p> <p>IEC 61010-2-201</p>
<b>Electromagnetic compatibility</b>	<p>Electrostatic discharge immunity test - test level: 8 kV (air discharge) conforming to IEC 61000-4-2</p> <p>Electrostatic discharge immunity test - test level: 6 kV (contact discharge) conforming to IEC 61000-4-2</p> <p>Susceptibility to electromagnetic fields - test level: 10 V/m (80 MHz...3 GHz) conforming to IEC 61000-4-3</p> <p>Magnetic field at power frequency - test level: 30 A/m conforming to IEC 61000-4-8</p> <p>Electrical fast transient/burst immunity test - test level: 2 kV (power lines) conforming to IEC 61000-4-4</p> <p>Electrical fast transient/burst immunity test - test level: 2 kV (relay output) conforming to IEC 61000-4-4</p> <p>Electrical fast transient/burst immunity test - test level: 1 kV (I/O) conforming to IEC 61000-4-4</p> <p>Electrical fast transient/burst immunity test - test level: 1 kV (serial link) conforming to IEC 61000-4-4</p> <p>1.2/50 µs shock waves immunity test - test level: 1 kV (power lines (DC)) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 2 kV (power lines (AC)) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 2 kV (relay output) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 1 kV (I/O) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 1 kV (shielded cable) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 0.5 kV (power lines (DC)) conforming to IEC 61000-4-5</p> <p>1.2/50 µs shock waves immunity test - test level: 1 kV (power lines (AC)) conforming to IEC 61000-4-5</p> <p>Conducted RF disturbances - test level: 10 V (0.15...80 MHz) conforming to IEC 61000-4-6</p> <p>Conducted emission - test level: 79 dBµV/m QP/66 dBµV/m AV (power lines (AC)) conforming to IEC 55011</p> <p>Conducted emission - test level: 73 dBµV/m QP/60 dBµV/m AV (power lines (AC)) conforming to IEC 55011</p> <p>Radiated emission - test level: 40 dBµV/m QP class A (10 m) conforming to IEC 55011</p> <p>Radiated emission - test level: 47 dBµV/m QP class A (10 m) conforming to IEC 55011</p> <p>Electrical fast transient/burst immunity test - test level: 1 kV (Ethernet line) conforming to IEC 61000-4-4</p>
<b>Shock resistance</b>	<p>15 gn for 11 ms</p> <p>30 gn for 6 ms</p>
<b>Immunity to microbreaks</b>	2 ms

<b>Vibration resistance</b>	3.5 mm at 5...8.4 Hz on symmetrical rail 1 gn at 8.4...150 Hz on symmetrical rail 3.5 mm at 5...8.7 Hz on panel mounting 2 gn at 8.7...150 Hz on panel mounting
<b>Relative humidity</b>	10...95 %, without condensation (in operation) 10...95 %, without condensation (in storage)
<b>Ambient air temperature for operation</b>	0...55 °C (horizontal installation)
<b>Ambient air temperature for storage</b>	-25...70 °C
<b>Pollution degree</b>	<= 2
<b>Operating altitude</b>	0...2000 m
<b>Storage altitude</b>	0...3000 m

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	13.6 cm
<b>Package 1 Width</b>	9 cm
<b>Package 1 Length</b>	13.8 cm
<b>Package 1 Weight</b>	612 g
<b>Unit Type of Package 2</b>	S03
<b>Number of Units in Package 2</b>	12
<b>Package 2 Height</b>	30 cm
<b>Package 2 Width</b>	30 cm
<b>Package 2 Length</b>	40 cm
<b>Package 2 Weight</b>	7944 g
<b>Unit Type of Package 3</b>	P12
<b>Number of Units in Package 3</b>	288
<b>Package 3 Height</b>	80 cm
<b>Package 3 Width</b>	120 cm
<b>Package 3 Length</b>	105 cm
<b>Package 3 Weight</b>	199656 g

## Contractual warranty

<b>Warranty (in months)</b>	18
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## Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)



### Environmental footprint

Total lifecycle Carbon footprint	777 kg CO2 eq.
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Carbon footprint of the manufacturing phase [A1 to A3]	11 kg CO2 eq.
Carbon footprint of the distribution phase [A4]	0.1 kg CO2 eq.
Carbon footprint of the installation phase [A5]	0.2 kg CO2 eq.
Carbon footprint of the use phase [B2, B3, B4, B6]	765 kg CO2 eq.
Carbon footprint of the end-of-life phase [C1 to C4]	0.3 kg CO2 eq.

### Use Better



### Materials and Substances

Packaging made with recycled cardboard	Yes
Packaging without single use plastic	Yes
EU RoHS Directive	<a href="#">Compliant By Exemption</a>
REACH Regulation	<a href="#">Reference contains Substances of Very High Concern above the threshold</a>

### Use Longer



### Lifetime extension

Repair	No
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### Use Again



### Repack and remanufacture

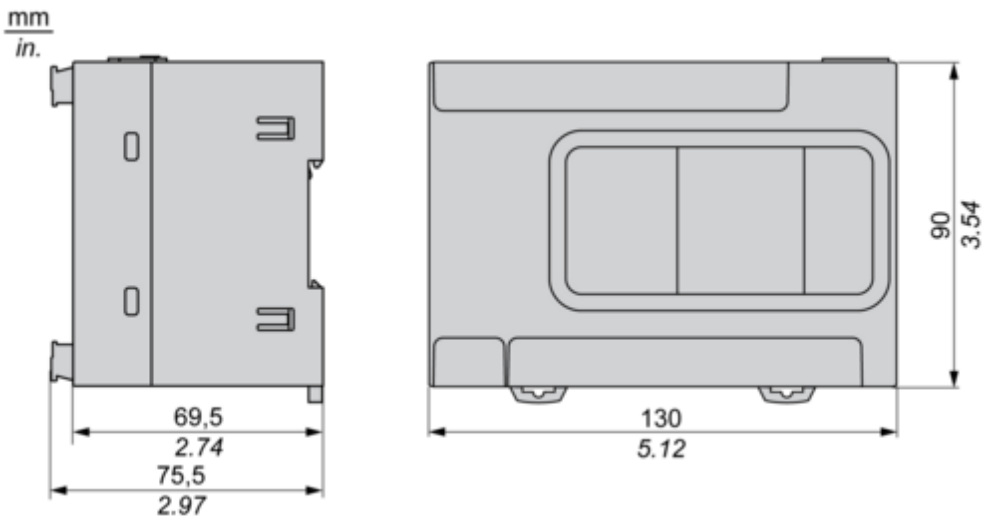
End of life manual availability	<a href="#">End of Life Information</a>
Take-back	No

Dimensions Drawings

Dimensions Drawings

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Dimensions

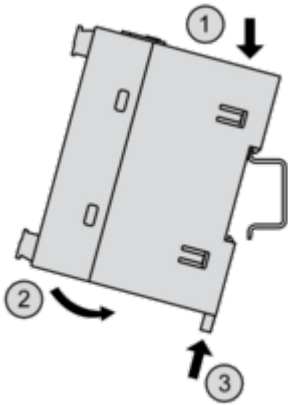


Mounting and Clearance

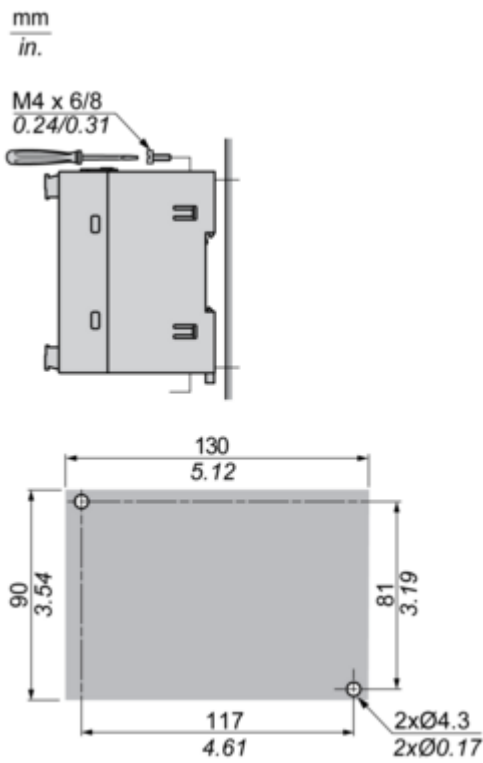
Mounting and Clearance

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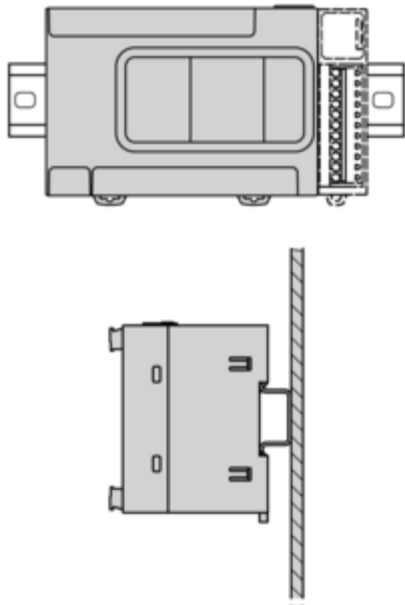
Mounting on a Rail

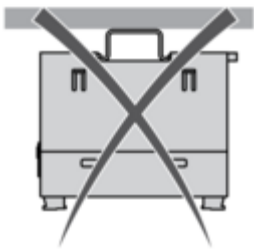
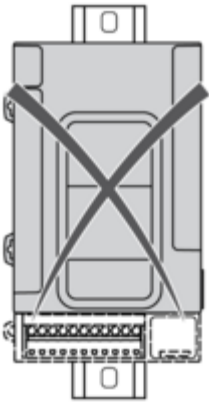
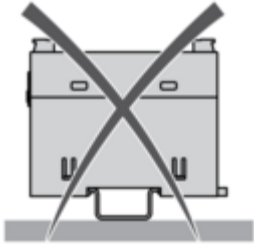


Direct Mounting on a Panel Surface



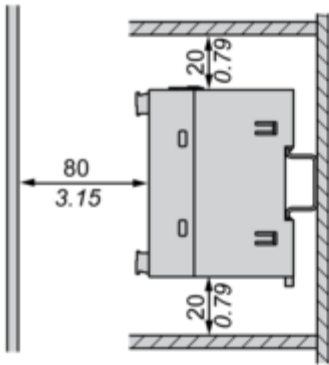
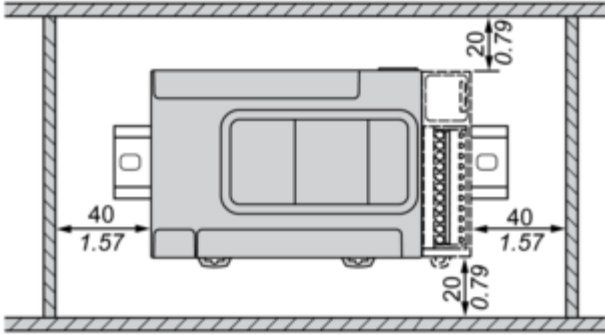
Mounting Position



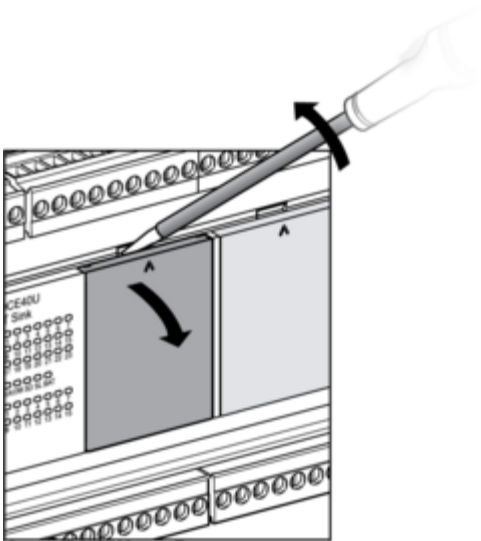


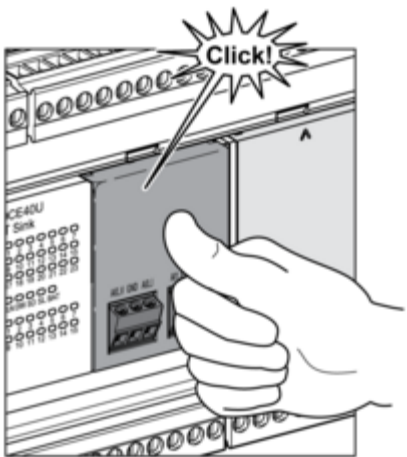
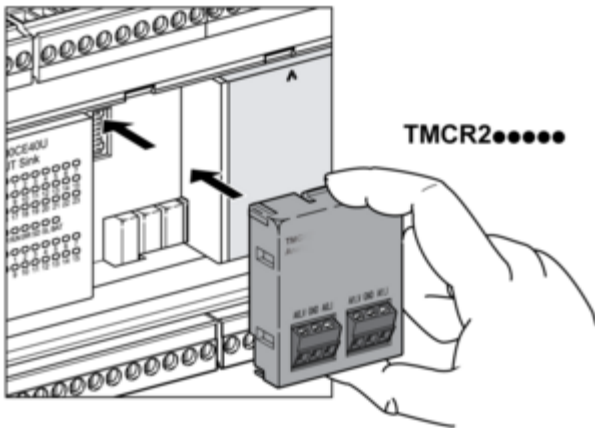
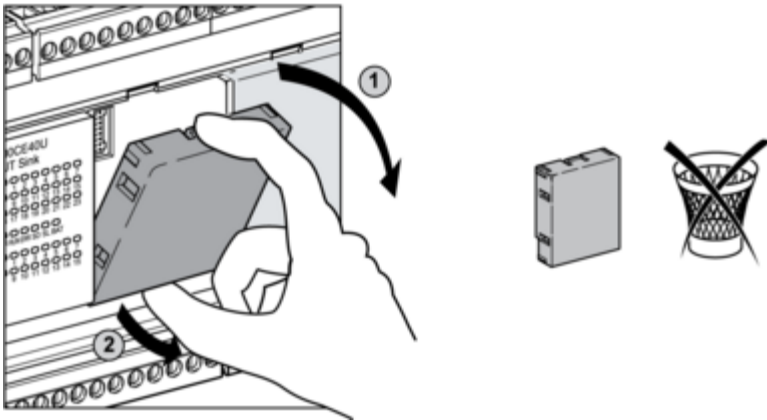
Clearance

mm  
in.

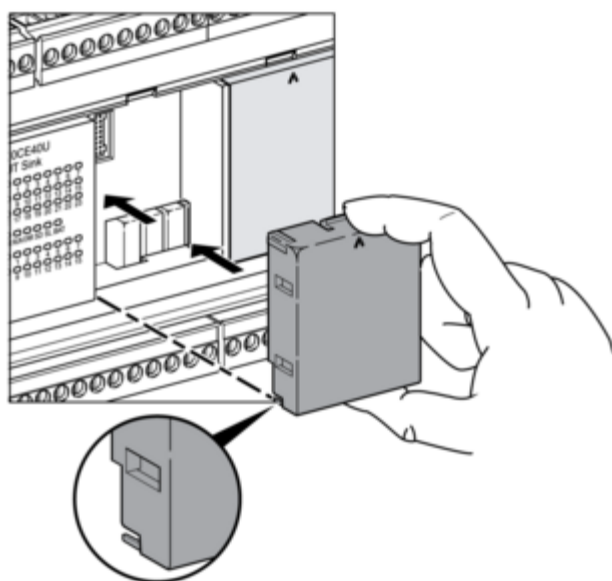
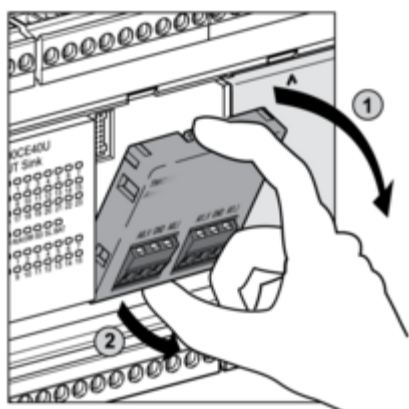
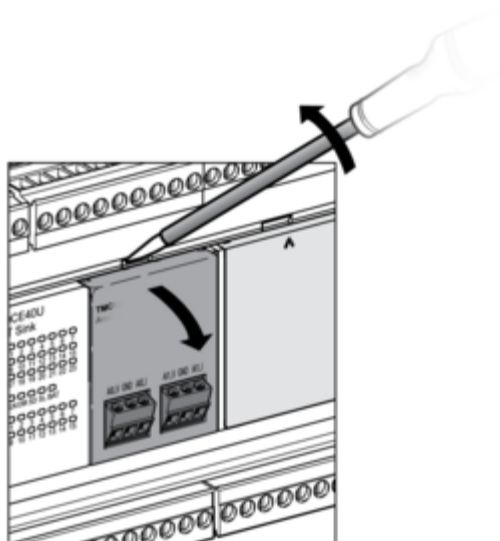


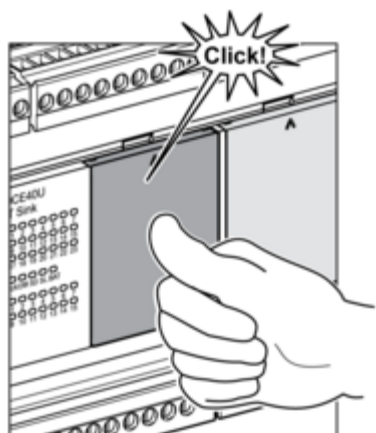
TMCR2•••Installation





**TMCR2... De-Installation**

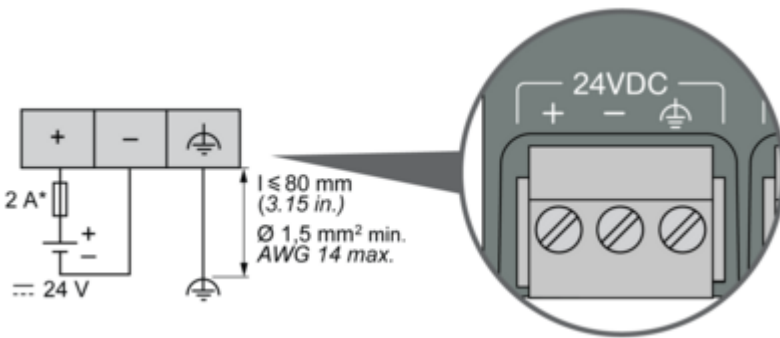
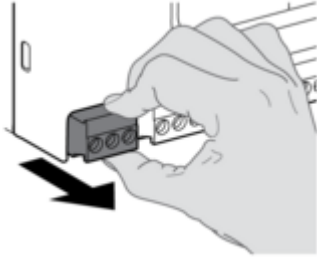




Connections and Schema

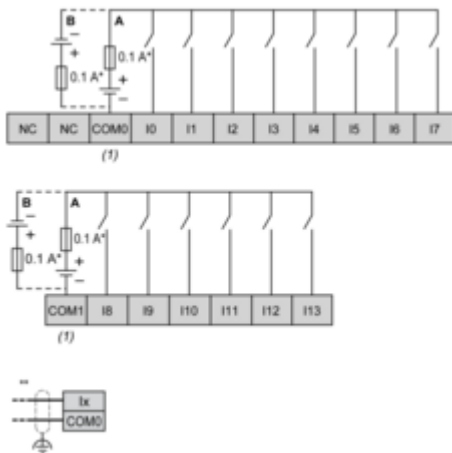
Wiring Diagram / Connections Schema

DC Power Supply



(\*) Type T fuse

Digital Inputs (Sink or Source)



(\*) Type T fuse

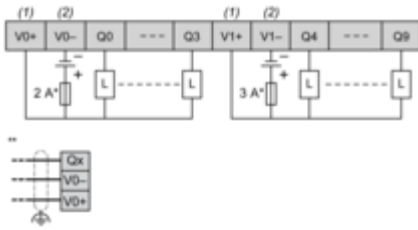
(\*\*) Fast inputs

A : Sink wiring (positive logic)

B : Source wiring (negative logic)

(1) The COM0 and COM1 terminals are **not** connected internally.

Regular and Fast Transistor Output



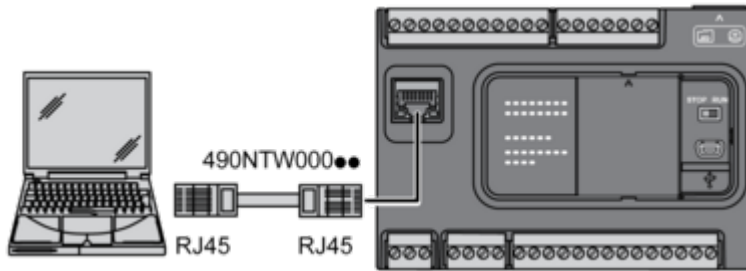
(\*) Type T fuse

(\*\*) Fast inputs

(1) The V0+ and V1+ terminals are not connected internally.

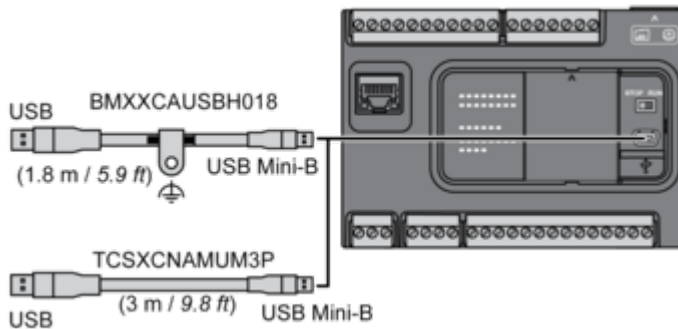
(2) The V0- and V1- terminals are not connected internally.

**Ethernet Connection**

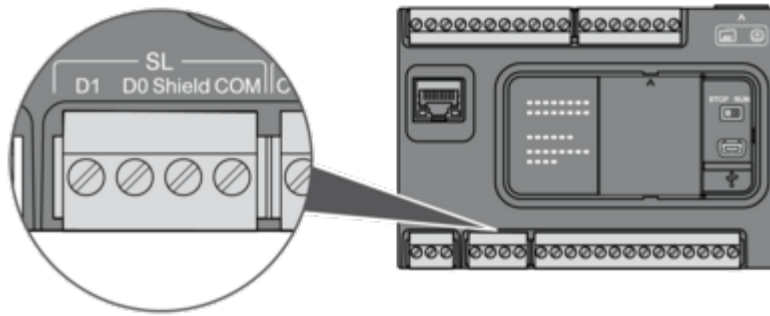


Pin N°	Signal
1	TD +
2	TD —
3	RD+
4	—
5	—
6	RD —
7	—
8	—

**USB Mini-B Connection**



SL1 Connection



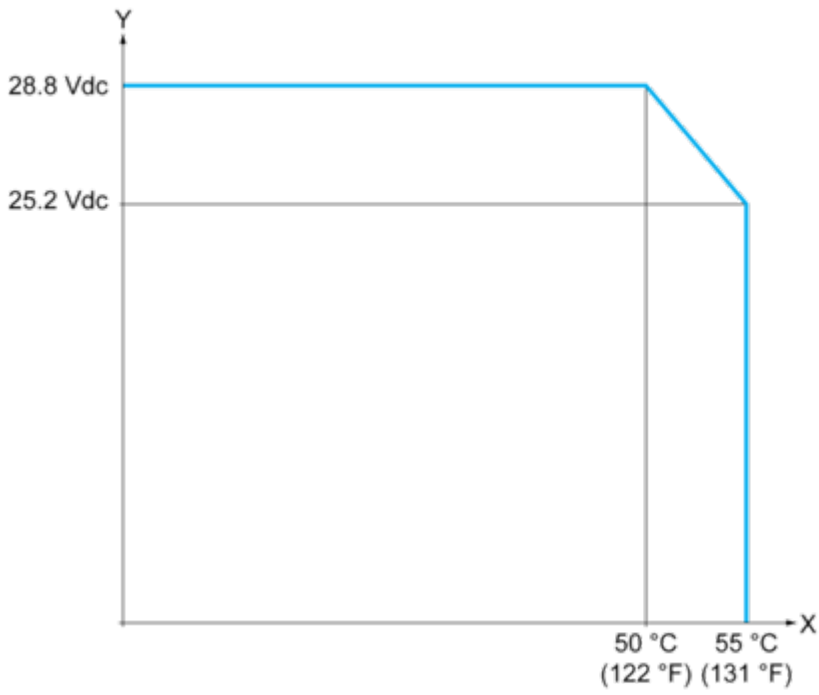
- D1** : D1 (A+)
- D0** : D0 (B-)
- Shield** : Shield
- COM** : 0 V Com

Performance Curves

Derating Curves

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Digital Inputs



X : Ambient temperature (°C / °F)  
Y : Input voltage (V)