

# Product data sheet

Specifications



## logic controller, Modicon M241, 24 IO, relay, Ethernet

TM241CE24R

**Product availability: Stock - Normally stocked in distribution facility**

### Main

|                           |  |
|---------------------------|--|
| Range of Product          | Modicon M241   |
| Product or Component Type | Logic controller   |
| [Us] rated supply voltage | 100...240 V AC   |
| Discrete input number     | 14, discrete input 8 fast input IEC 61131-2 Type 1   |
| Discrete output type      | Relay<br>Transistor  |
| Discrete output number    | 6 relay<br>4 transistor 4 fast output  |
| Discrete output voltage   | 5...125 V DC relay output<br>5...250 V AC relay output<br>24 V DC transistor output                        |
| Discrete output current   | 2 A relay output Q4...Q9)<br>0.1 A fast output (PTO mode) TR0...TR3)<br>0.5 A transistor output TR0...TR3) |

### Complementary

|  |  |
|--|--|
| Discrete I/O number                    | 24   |
| Maximum number of I/O expansion module | 7 (local I/O-Architecture)<br>14 (remote I/O-Architecture)                                 |
| Supply voltage limits                  | 85...264 V   |
| Network Frequency                      | 50/60 Hz   |
| Discrete input logic                   | Sink or source   |
| Discrete input voltage                 | 24 V   |
| Discrete input voltage type            | DC   |
| Voltage state 1 guaranteed             | $\geq 15$ V input  |
| Voltage state 0 guaranteed             | $\leq 5$ V input   |
| Discrete input current                 | 5 mA input   |
| Input impedance                        | 4.7 kOhm input   |
| Response time                          | 50 $\mu$ s turn-on, I0...I13 input   |
| Configurable filtering time            | 1 $\mu$ s fast input   |
| Discrete output logic                  | Positive logic (source)  |
| Output voltage limits                  | 125 V DC relay output<br>30 V DC transistor output<br>277 V AC relay output                |
| Maximum output frequency               | 1 kHz transistor output<br>20 kHz fast output (PWM mode)<br>100 kHz fast output (PLS mode) |

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

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|--|--|
| <b>Accuracy</b>                          | +/- 0.1 % 0.02...0.1 kHz fast output<br>+/- 1 % 0.1...1 kHz fast output  |
| <b>Protection type</b>                   | Short-circuit protection transistor output<br>Short-circuit and overload protection with automatic reset transistor output<br>Reverse polarity protection transistor output<br>Without protection relay output   |
| <b>Reset time</b>                        | 10 ms automatic reset output<br>12 s automatic reset fast output   |
| <b>Memory capacity</b>                   | 64 MB system memory RAM  |
| <b>Data backed up</b>                    | 128 MB built-in flash memory backup of user programs   |
| <b>Data storage equipment</b>            | <= 16 GB SD card optional)   |
| <b>Battery type</b>                      | BR2032 lithium non-rechargeable 4 year(s)  |
| <b>Backup time</b>                       | 2 years 77 °F (25 °C)  |
| <b>Execution time for 1 KInstruction</b> | 0.3 ms event and periodic task<br>0.7 ms other instruction   |
| <b>Application structure</b>             | 8 external event tasks<br>3 cyclic master tasks + 1 freewheeling task<br>8 event tasks<br>4 cyclic master tasks  |
| <b>Realtime clock</b>                    | With   |
| <b>Clock drift</b>                       | <= 60 s/month 77 °F (25 °C)  |
| <b>Positioning functions</b>             | PTO 4 100 kHz)   |
| <b>Counting input number</b>             | 4 fast input (HSC mode) 200 kHz<br>14 standard input 1 kHz   |
| <b>Control signal type</b>               | A/B 100 kHz fast input (HSC mode)<br>Pulse/direction 200 kHz fast input (HSC mode)<br>Single phase 200 kHz fast input (HSC mode)   |
| <b>Integrated connection type</b>        | Non isolated serial link serial 1 RJ45 RS232/RS485<br>Non isolated serial link serial 2 removable screw terminal block RS485<br>USB port mini B USB 2.0<br>Ethernet RJ45   |
| <b>Supply</b>                            | Serial 1)serial link supply 5 V, <200 mA   |
| <b>Transmission rate</b>                 | 1.2...115.2 kbit/s (115.2 kbit/s by default) 49.2 ft (15 m) RS485<br>1.2...115.2 kbit/s (115.2 kbit/s by default) 9.8 ft (3 m) RS232<br>480 Mbit/s 9.8 ft (3 m) USB<br>10/100 Mbit/s Ethernet  |
| <b>Communication port protocol</b>       | Non isolated serial link Modbus master/slave   |
| <b>Port Ethernet</b>                     | 10BASE-T/100BASE-TX - 1 copper cable   |
| <b>ethernet services</b>                 | FDR<br>DHCP server via TM4 Ethernet switch network module<br>DHCP client embedded Ethernet port<br>SMS notifications<br>Updating firmware<br>SNMP client/server<br>Programming<br>NGVL<br>Monitoring<br>IEC VAR ACCESS<br>FTP client/server<br>Downloading<br>SQL client<br>Modbus TCP client I/O scanner<br>Ethernet/IP originator I/O scanner embedded Ethernet port<br>Ethernet/IP target, Modbus TCP server and Modbus TCP slave<br>Send and receive email from the controller based on TCP/UDP library<br>Web server (WebVisu & XWeb system)<br>OPC UA server<br>DNS client |

|   |  |
|---|--|
| <b>Local signalling</b>                       | <ul style="list-style-type: none"> <li>1 LED (green) for PWR</li> <li>1 LED (green) for RUN</li> <li>1 LED (red) for module error (ERR)</li> <li>1 LED (red) for I/O error (I/O)</li> <li>1 LED (green) for SD card access (SD)</li> <li>1 LED (red) for BAT</li> <li>1 LED (green) for SL1</li> <li>1 LED (green) for SL2</li> <li>1 LED (red) for bus fault on TM4 (TM4)</li> <li>1 LED per channel (green) for I/O state</li> <li>1 LED (green) for Ethernet port activity</li> </ul> |
| <b>Electrical connection</b>                  | <ul style="list-style-type: none"> <li>removable screw terminal block for inputs and outputs pitch 5.08 mm)</li> <li>removable screw terminal block for connecting the 24 V DC power supply pitch 5.08 mm)</li> </ul>  |
| <b>Maximum cable distance between devices</b> | <ul style="list-style-type: none"> <li>Unshielded cable &lt;164.04 ft (50 m) input</li> <li>Shielded cable &lt;32.8 ft (10 m) fast input</li> <li>Unshielded cable &lt;164.04 ft (50 m) output</li> <li>Shielded cable &lt;9.8 ft (3 m) fast output</li> </ul>   |
| <b>Insulation</b>                             | <ul style="list-style-type: none"> <li>Between supply and internal logic 500 V AC</li> <li>Non-insulated between supply and ground</li> </ul>  |
| <b>Marking</b>                                | CE   |
| <b>Sensor power supply</b>                    | 24 V DC 400 mA supplied by the controller  |
| <b>Surge withstand</b>                        | <ul style="list-style-type: none"> <li>2 kV power lines (AC) common mode IEC 61000-4-5</li> <li>2 kV relay output common mode IEC 61000-4-5</li> <li>1 kV shielded cable common mode IEC 61000-4-5</li> <li>1 kV power lines (AC) differential mode IEC 61000-4-5</li> <li>1 kV relay output differential mode IEC 61000-4-5</li> <li>1 kV input common mode IEC 61000-4-5</li> <li>1 kV transistor output common mode IEC 61000-4-5</li> </ul>  |
| <b>Web services</b>                           | Web server   |
| <b>Maximum number of connections</b>          | <ul style="list-style-type: none"> <li>8 Modbus server</li> <li>8 SoMachine protocol</li> <li>10 web server</li> <li>4 FTP server</li> <li>16 Ethernet/IP target</li> <li>8 Modbus client</li> </ul>   |
| <b>Number of server device(s)</b>             | <ul style="list-style-type: none"> <li>64 Modbus TCP</li> <li>16 EtherNet/IP</li> </ul>  |
| <b>Cycle time</b>                             | <ul style="list-style-type: none"> <li>10 ms 16 EtherNet/IP</li> <li>64 ms 64 Modbus TCP</li> </ul>  |
| <b>Mounting support</b>                       | <ul style="list-style-type: none"> <li>Top hat type TH35-15 rail IEC 60715</li> <li>Top hat type TH35-7.5 rail IEC 60715</li> <li>plate or panel with fixing kit</li> </ul>  |
| <b>Height</b>                                 | 3.5 in (90 mm)   |
| <b>Depth</b>                                  | 3.7 in (95 mm)   |
| <b>Width</b>                                  | 5.9 in (150 mm)  |
| <b>Net Weight</b>                             | 1.17 lb(US) (0.53 kg)  |

## Environment

|                  |  |
|------------------|--|
| <b>Standards</b> | <ul style="list-style-type: none"> <li>ANSI/ISA 12-12-01</li> <li>CSA C22.2 No 142</li> <li>CSA C22.2 No 213</li> <li>IEC 61131-2:2007</li> <li>Marine specification (LR, ABS, DNV, GL)</li> <li>UL 508</li> </ul> |
|------------------|--|

|  |   |
|--|---|
| <b>Product Certifications</b>                | RCM<br>cULus<br>CE<br>UKCA<br>DNV-GL<br>ABS<br>LR   |
| <b>Resistance to electrostatic discharge</b> | 8 kV in air IEC 61000-4-2<br>4 kV on contact IEC 61000-4-2  |
| <b>Resistance to electromagnetic fields</b>  | 9.1 V/m (10 V/m) 80 MHz...1 GHz IEC 61000-4-3<br>2.7 V/m (3 V/m) 1.4 GHz...2 GHz IEC 61000-4-3<br>0.9 V/m (1 V/m) 2 GHz...3 GHz IEC 61000-4-3   |
| <b>Resistance to fast transients</b>         | 2 kV IEC 61000-4-4 power lines)<br>2 kV IEC 61000-4-4 relay output)<br>1 kV IEC 61000-4-4 Ethernet line)<br>1 kV IEC 61000-4-4 serial link)<br>1 kV IEC 61000-4-4 input)<br>1 kV IEC 61000-4-4 transistor output)   |
| <b>Resistance to conducted disturbances</b>  | 10 V 0.15...80 MHz IEC 61000-4-6<br>3 V 0.1...80 MHz Marine specification (LR, ABS, DNV, GL)<br>10 V spot frequency (2, 3, 4, 6.2, 8.2, 12.6, 16.5, 18.8, 22, 25 MHz) Marine specification (LR, ABS, DNV, GL)   |
| <b>Electromagnetic emission</b>              | Conducted emissions 120...69 dB $\mu$ V/m QP power lines)10...150 kHz IEC 55011<br>Conducted emissions 63 dB $\mu$ V/m QP power lines)1.5...30 MHz IEC 55011<br>Conducted emissions 79 dB $\mu$ V/m QP/66 dB $\mu$ V/m AV power lines)0.15...0.5 MHz IEC 55011<br>Conducted emissions 73 dB $\mu$ V/m QP/60 dB $\mu$ V/m AV power lines)0.5...300 MHz IEC 55011<br>Radiated emissions 40 dB $\mu$ V/m QP class A 10 m)30...230 MHz IEC 55011<br>Conducted emissions 79...63 dB $\mu$ V/m QP power lines)150...1500 kHz IEC 55011<br>Radiated emissions 47 dB $\mu$ V/m QP class A 10 m)230...1000 MHz IEC 55011 |
| <b>Immunity to microbreaks</b>               | 10 ms   |
| <b>Ambient air temperature for operation</b> | 14...122 °F (-10...50 °C) vertical installation)<br>14...131 °F (-10...55 °C) horizontal installation)  |
| <b>Ambient Air Temperature for Storage</b>   | -13...158 °F (-25...70 °C)  |
| <b>Relative humidity</b>                     | 10...95 %, without condensation in operation)<br>10...95 %, without condensation in storage)  |
| <b>IP degree of protection</b>               | IP20 with protective cover in place   |
| <b>pollution degree</b>                      | 2   |
| <b>Operating altitude</b>                    | 0...6561.68 ft (0...2000 m)   |
| <b>Storage altitude</b>                      | 0...9842.5 ft (0...3000 m)  |
| <b>Vibration resistance</b>                  | 3.5 mm 5...8.4 Hz symmetrical rail<br>3 gn 8.4...150 Hz symmetrical rail<br>3.5 mm 5...8.4 Hz panel mounting<br>3 gn 8.4...150 Hz panel mounting  |
| <b>Shock resistance</b>                      | 15 gn 11 ms   |

## Ordering and shipping details

|                          |               |
|--------------------------|---------------|
| <b>Category</b>          | US10MSX22533  |
| <b>Discount Schedule</b> | 0MSX          |
| <b>GTIN</b>              | 3606480648830 |
| <b>Returnability</b>     | Yes           |
| <b>Country of origin</b> | ID            |

## Packing Units

|                               |     |
|-------------------------------|-----|
| <b>Unit Type of Package 1</b> | PCE |
|-------------------------------|-----|

|                                     |                        |
|-------------------------------------|------------------------|
| <b>Number of Units in Package 1</b> | 1                      |
| <b>Package 1 Height</b>             | 4.41 in (11.208 cm)    |
| <b>Package 1 Width</b>              | 5.13 in (13.04 cm)     |
| <b>Package 1 Length</b>             | 7.34 in (18.656 cm)    |
| <b>Package 1 Weight</b>             | 26.8 oz (760.0 g)      |
| <b>Unit Type of Package 2</b>       | S03                    |
| <b>Number of Units in Package 2</b> | 8                      |
| <b>Package 2 Height</b>             | 11.81 in (30 cm)       |
| <b>Package 2 Width</b>              | 11.81 in (30 cm)       |
| <b>Package 2 Length</b>             | 15.75 in (40 cm)       |
| <b>Package 2 Weight</b>             | 15.37 lb(US) (6.97 kg) |
| <b>Unit Type of Package 3</b>       | P06                    |
| <b>Number of Units in Package 3</b> | 64                     |
| <b>Package 3 Height</b>             | 29.53 in (75.0 cm)     |
| <b>Package 3 Width</b>              | 15.75 in (40.0 cm)     |
| <b>Package 3 Length</b>             | 31.50 in (80.0 cm)     |
| <b>Package 3 Weight</b>             | 145.5 lb(US) (66 kg)   |



## 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

Carbon footprint (kg CO2 eq, Total Life cycle) 2276

Environmental Disclosure [Product Environmental Profile](#)

## Use Better

### Materials and Substances

Packaging made with recycled cardboard Yes

Packaging without single use plastic Yes

[EU RoHS Directive](#) Pro-active compliance (Product out of EU RoHS legal scope)

SCIP Number 3d1fb974-648d-4978-8c59-b7dcc486f5a5

REACH Regulation [REACH Declaration](#)

California proposition 65 **WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

PVC free Yes

## Use Again

### Repack and remanufacture

Circularity Profile [End of Life Information](#)

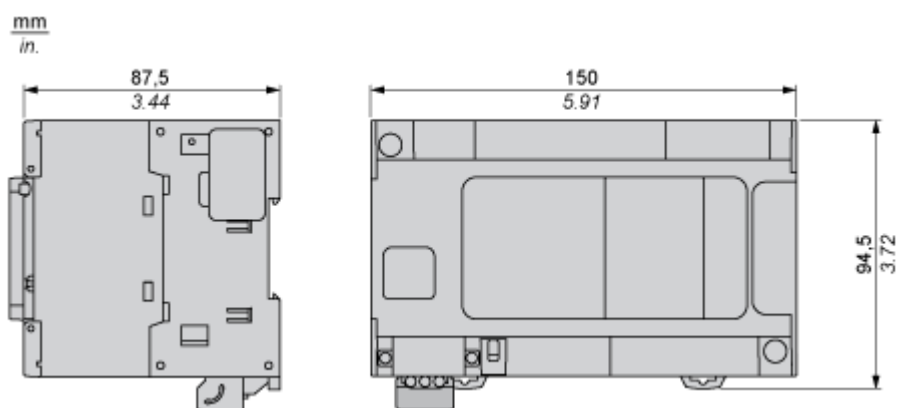
Take-back No

WEEE  The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

Dimensions Drawings

Dimensions

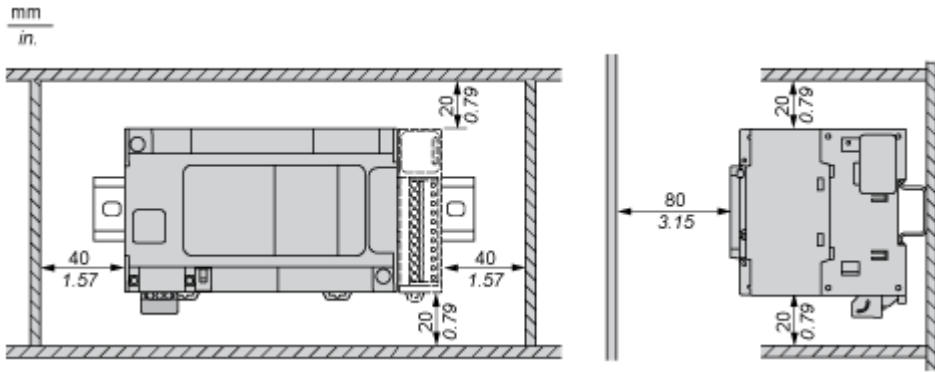
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Mounting and Clearance

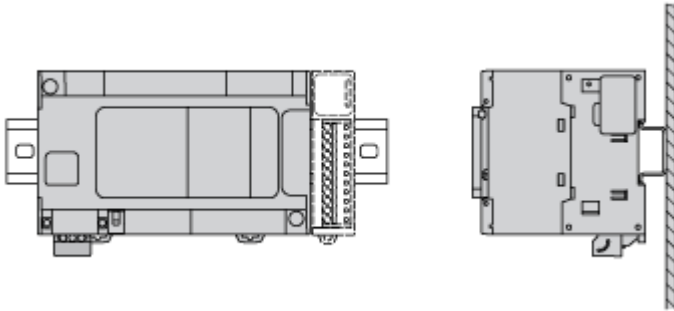
Clearance

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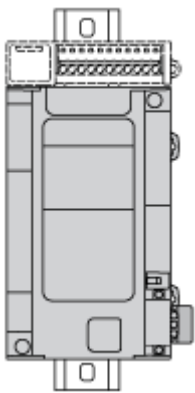


**Mounting Position**

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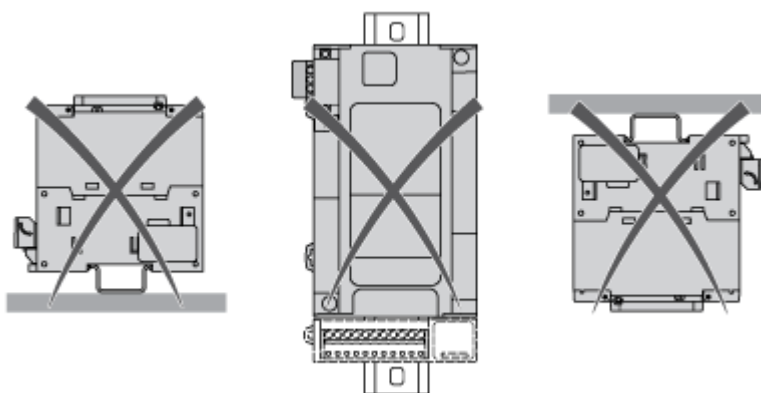


**Acceptable Mounting**



**NOTE:** Expansion modules must be mounted above the logic controller.

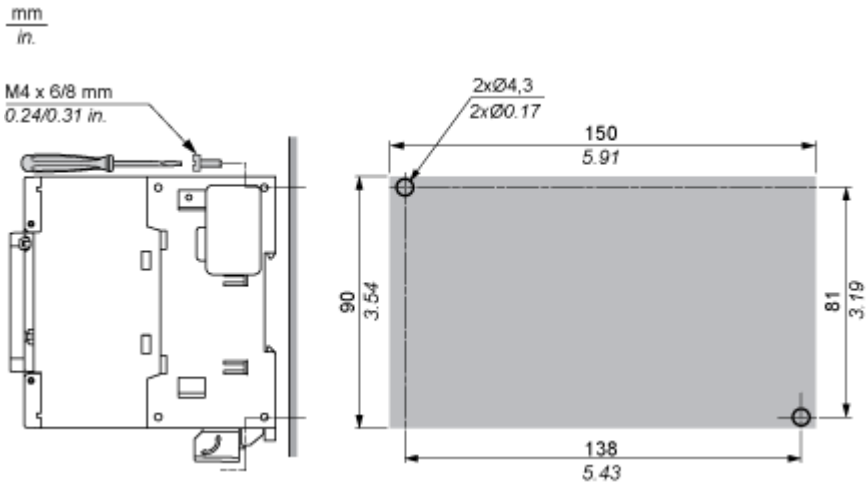
**Incorrect Mounting**



Direct Mounting On a Panel Surface

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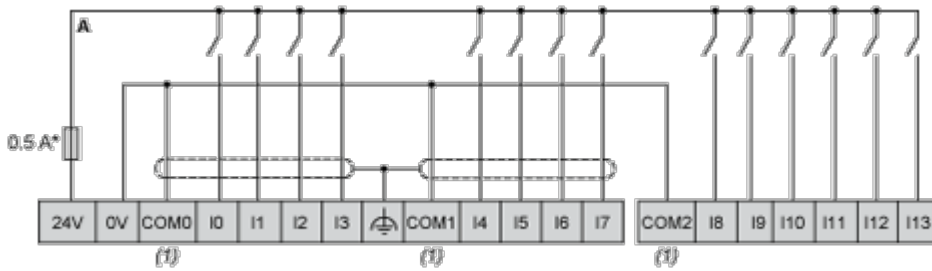
Mounting Hole Layout



Connections and Schema

Digital Inputs

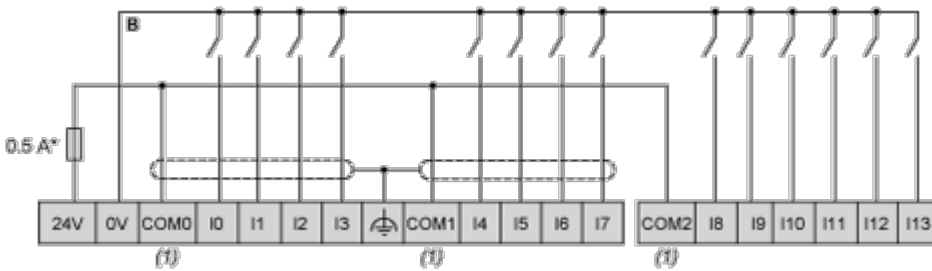
Wiring Diagram (Positive Logic)



(\*) : Type T fuse

(1) : The COM0, COM1 and COM2 terminals are not connected internally.

Wiring Diagram (Negative Logic)



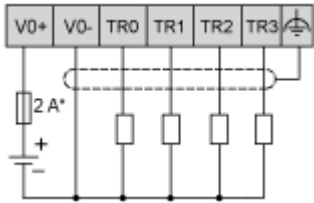
(\*) : Type T fuse

(1) : The COM0, COM1 and COM2 terminals are not connected internally.

Fast Transistor Outputs

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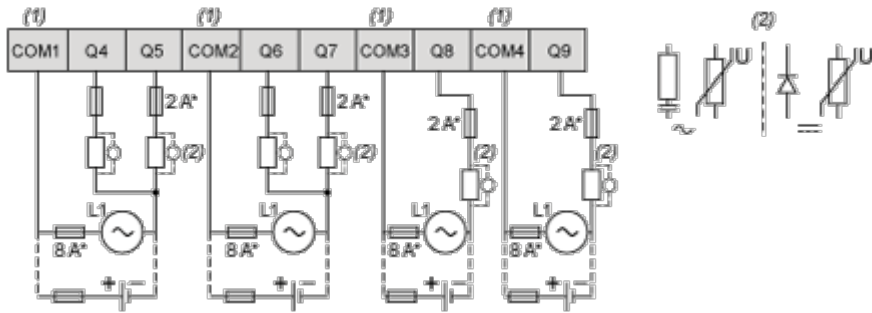
Wiring Diagram



(\*) : 2 A fast-blow fuse

Relay Outputs

Wiring Diagram



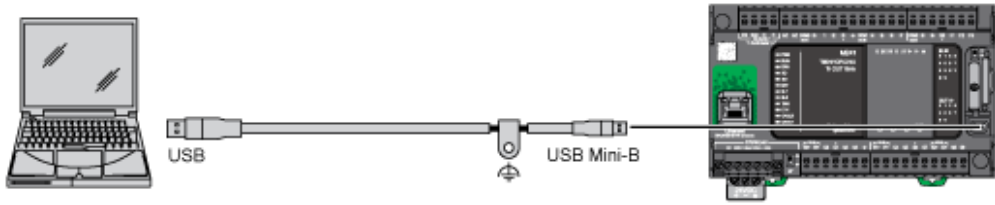
(\*) : Type T fuse

(1) : The terminals COM1 to COM4 are not connected internally.

(2) : To improve the life time of the contacts, and to protect from potential inductive load damage, you must connect a free wheeling diode in parallel to each inductive DC load or an RC snubber in parallel of each inductive AC load

USB Mini-B Connection

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Ethernet Connection to a PC

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