

# Product datasheet

Specifications



## Logic controller. Modicon M241. 24 IO relay

TM241C24R

Price: 13,406.01 ZAR

### 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 conforming to IEC 61131-2 Type 1                                                          |
| Discrete Output Type      | Transistor<br>Relay                                                                                                       |
| Discrete Output Number    | 6 relay<br>4 transistor 4 fast output                                                                                     |
| Discrete Output Voltage   | 5...125 V DC for relay output<br>5...250 V AC for relay output<br>24 V DC for transistor output                           |
| Discrete Output Current   | 2 A for relay output (Q4...Q9)<br>0.1 A for fast output (PTO mode) (TR0...TR3)<br>0.5 A for 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             | >= 15 V for input                                                                                      |
| Voltage State 0 Guaranteed             | <= 5 V for input                                                                                       |
| Discrete Input Current                 | 5 mA for input                                                                                         |
| Input Impedance                        | 4.7 kOhm for input                                                                                     |
| Response Time                          | 50 µs turn-on, I0...I13 terminal(s) for input                                                          |
| Configurable Filtering Time            | 1 µs for 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 for transistor output<br>20 kHz for fast output (PWM mode)<br>100 kHz for fast output (PLS mode) |

Excluding VAT and subject to change. Please check with your local distributor through "Where to buy"

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

|                                        |                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy                               | +/- 0.1 % at 0.02...0.1 kHz for fast output<br>+/- 1 % at 0.1...1 kHz for fast output                                                                                                                                                                                                                                          |
| Protection Type                        | Short-circuit protection for transistor output<br>Short-circuit and overload protection with automatic reset for transistor output<br>Reverse polarity protection for transistor output<br>Without protection for relay output                                                                                                 |
| Reset Time                             | 10 ms automatic reset output<br>12 s automatic reset fast output                                                                                                                                                                                                                                                               |
| Memory Capacity                        | 64 MB for system memory RAM                                                                                                                                                                                                                                                                                                    |
| Data Backed Up                         | 128 MB built-in flash memory for backup of user programs                                                                                                                                                                                                                                                                       |
| Data Storage Equipment                 | <= 16 GB SD card (optional)                                                                                                                                                                                                                                                                                                    |
| Battery Type                           | BR2032 lithium non-rechargeable, battery life: 4 year(s)                                                                                                                                                                                                                                                                       |
| Backup Time                            | 2 years at 25 °C                                                                                                                                                                                                                                                                                                               |
| Execution Time For 1 Kinstruction      | 0.3 ms for event and periodic task<br>0.7 ms for other instruction                                                                                                                                                                                                                                                             |
| Application Structure                  | 4 cyclic master tasks<br>3 cyclic master tasks + 1 freewheeling task<br>8 external event tasks<br>8 event tasks                                                                                                                                                                                                                |
| Realtime Clock                         | With                                                                                                                                                                                                                                                                                                                           |
| Clock Drift                            | <= 60 s/month at 25 °C                                                                                                                                                                                                                                                                                                         |
| Positioning Functions                  | PTO function 4 channel(s) (positioning frequency: 100 kHz)                                                                                                                                                                                                                                                                     |
| Counting Input Number                  | 4 fast input (HSC mode) at 200 kHz<br>14 standard input at 1 kHz                                                                                                                                                                                                                                                               |
| Control Signal Type                    | A/B at 100 kHz for fast input (HSC mode)<br>Pulse/direction at 200 kHz for fast input (HSC mode)<br>Single phase at 200 kHz for fast input (HSC mode)                                                                                                                                                                          |
| Integrated Connection Type             | Non isolated serial link serial 1 with RJ45 connector and RS232/RS485 interface<br>Non isolated serial link serial 2 with removable screw terminal block connector and RS485 interface<br>USB port with mini B USB 2.0 connector                                                                                               |
| Supply                                 | (serial 1)serial link supply: 5 V, <200 mA                                                                                                                                                                                                                                                                                     |
| Transmission Rate                      | 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m for RS485<br>1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 3 m for RS232<br>480 Mbit/s for bus length of 3 m for USB                                                                                                                      |
| Communication Port Protocol            | Non isolated serial link: Modbus master/slave                                                                                                                                                                                                                                                                                  |
| Local Signalling                       | 1 LED (green) for PWR<br>1 LED (green) for RUN<br>1 LED (red) for module error (ERR)<br>1 LED (red) for I/O error (I/O)<br>1 LED (green) for SD card access (SD)<br>1 LED (red) for BAT<br>1 LED (green) for SL1<br>1 LED (green) for SL2<br>1 LED (red) for bus fault on TM4 (TM4)<br>1 LED per channel (green) for I/O state |
| Electrical Connection                  | removable screw terminal blockfor inputs and outputs (pitch 5.08 mm)<br>removable screw terminal blockfor connecting the 24 V DC power supply (pitch 5.08 mm)                                                                                                                                                                  |
| Maximum Cable Distance Between Devices | Unshielded cable: <50 m for input<br>Shielded cable: <10 m for fast input<br>Unshielded cable: <50 m for output<br>Shielded cable: <3 m for fast output                                                                                                                                                                        |
| Insulation                             | Between supply and internal logic at 500 V AC<br>Non-insulated between supply and ground                                                                                                                                                                                                                                       |
| Marking                                | CE                                                                                                                                                                                                                                                                                                                             |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensor Power Supply | 24 V DC at 400 mA supplied by the controller                                                                                                                                                                                                                                                                                                                                                                                                                |
| Surge Withstand     | 2 kV power lines (AC) common mode conforming to IEC 61000-4-5<br>2 kV relay output common mode conforming to IEC 61000-4-5<br>1 kV shielded cable common mode conforming to IEC 61000-4-5<br>1 kV power lines (AC) differential mode conforming to IEC 61000-4-5<br>1 kV relay output differential mode conforming to IEC 61000-4-5<br>1 kV input common mode conforming to IEC 61000-4-5<br>1 kV transistor output common mode conforming to IEC 61000-4-5 |
| Mounting Support    | Top hat type TH35-15 rail conforming to IEC 60715<br>Top hat type TH35-7.5 rail conforming to IEC 60715<br>plate or panel with fixing kit                                                                                                                                                                                                                                                                                                                   |
| Height              | 90 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Depth               | 95 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Width               | 150 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Net Weight          | 0.53 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                             | ANSI/ISA 12-12-01<br>CSA C22.2 No 142<br>CSA C22.2 No 213<br>IEC 61131-2:2007<br>Marine specification (LR, ABS, DNV, GL)<br>UL 508                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Product Certifications                | RCM<br>cULus<br>CE<br>UKCA<br>DNV-GL<br>ABS<br>LR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Resistance To Electrostatic Discharge | 8 kV in air conforming to IEC 61000-4-2<br>4 kV on contact conforming to IEC 61000-4-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Resistance To Electromagnetic Fields  | 10 V/m 80 MHz...1 GHz conforming to IEC 61000-4-3<br>3 V/m 1.4 GHz...2 GHz conforming to IEC 61000-4-3<br>1 V/m 2 GHz...3 GHz conforming to IEC 61000-4-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Resistance To Fast Transients         | 2 kV (power lines) conforming to IEC 61000-4-4<br>2 kV (relay output) conforming to IEC 61000-4-4<br>1 kV (serial link) conforming to IEC 61000-4-4<br>1 kV (input) conforming to IEC 61000-4-4<br>1 kV (transistor output) conforming to IEC 61000-4-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Resistance To Conducted Disturbances  | 10 V 0.15...80 MHz conforming to IEC 61000-4-6<br>3 V 0.1...80 MHz conforming to 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) conforming to Marine specification (LR, ABS, DNV, GL)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electromagnetic Emission              | Conducted emissions - test level: 120...69 dBµV/m QP ( power lines) at 10...150 kHz conforming to IEC 55011<br>Conducted emissions - test level: 63 dBµV/m QP ( power lines) at 1.5...30 MHz conforming to IEC 55011<br>Conducted emissions - test level: 79 dBµV/m QP/66 dBµV/m AV ( power lines) at 0.15...0.5 MHz conforming to IEC 55011<br>Conducted emissions - test level: 73 dBµV/m QP/60 dBµV/m AV ( power lines) at 0.5...300 MHz conforming to IEC 55011<br>Radiated emissions - test level: 40 dBµV/m QP class A ( 10 m) at 30...230 MHz conforming to IEC 55011<br>Conducted emissions - test level: 79...63 dBµV/m QP ( power lines) at 150...1500 kHz conforming to IEC 55011<br>Radiated emissions - test level: 47 dBµV/m QP class A ( 10 m) at 230...1000 MHz conforming to IEC 55011 |
| Immunity To Microbreaks               | 10 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Ambient Air Temperature For Operation | -10...50 °C (vertical installation)<br>-10...55 °C (horizontal installation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Ambient Air Temperature For Storage   | -25...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                         |                                                                                                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relative Humidity       | 10...95 %, without condensation (in operation)<br>10...95 %, without condensation (in storage)                                                                           |
| Ip Degree Of Protection | IP20 with protective cover in place                                                                                                                                      |
| Pollution Degree        | 2                                                                                                                                                                        |
| Operating Altitude      | 0...2000 m                                                                                                                                                               |
| Storage Altitude        | 0...3000 m                                                                                                                                                               |
| Vibration Resistance    | 3.5 mm at 5...8.4 Hz on symmetrical rail<br>3 gn at 8.4...150 Hz on symmetrical rail<br>3.5 mm at 5...8.4 Hz on panel mounting<br>3 gn at 8.4...150 Hz on panel mounting |
| Shock Resistance        | 15 gn for 11 ms                                                                                                                                                          |

## Packing Units

|                              |           |
|------------------------------|-----------|
| Unit Type Of Package 1       | PCE       |
| Number Of Units In Package 1 | 1         |
| Package 1 Height             | 11.253 cm |
| Package 1 Width              | 13.231 cm |
| Package 1 Length             | 18.673 cm |
| Package 1 Weight             | 750.0 g   |
| Unit Type Of Package 2       | S03       |
| Number Of Units In Package 2 | 8         |
| Package 2 Height             | 30 cm     |
| Package 2 Width              | 30 cm     |
| Package 2 Length             | 40 cm     |
| Package 2 Weight             | 6.91 kg   |
| Unit Type Of Package 3       | P06       |
| Number Of Units In Package 3 | 64        |
| Package 3 Height             | 75.0 cm   |
| Package 3 Width              | 60.0 cm   |
| Package 3 Length             | 80.0 cm   |
| Package 3 Weight             | 60.64 kg  |

Sustainability



**Green Premium™ label** is Schneider Electric’s commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

[Learn more about Green Premium >](#)

[Guide to assess a product’s sustainability >](#)



Transparency   RoHS/REACH

Well-being performance

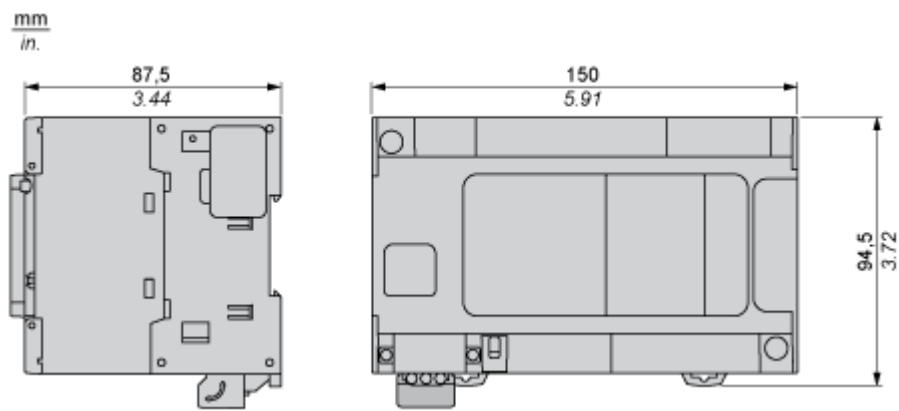
|   |                            |     |
|---|----------------------------|-----|
| ✓ | Mercury Free               |     |
| ✓ | Rohs Exemption Information | Yes |
| ✓ | Pvc Free                   |     |

Certifications & Standards

|                          |                                                                                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Reach Regulation         | <a href="#">REACH Declaration</a>                                                                                           |
| Eu Rohs Directive        | Pro-active compliance (Product out of EU RoHS legal scope)                                                                  |
| China Rohs Regulation    | <a href="#">China RoHS declaration</a>                                                                                      |
| Environmental Disclosure | <a href="#">Product Environmental Profile</a>                                                                               |
| Weee                     | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |
| Circularity Profile      | <a href="#">End of Life Information</a>                                                                                     |

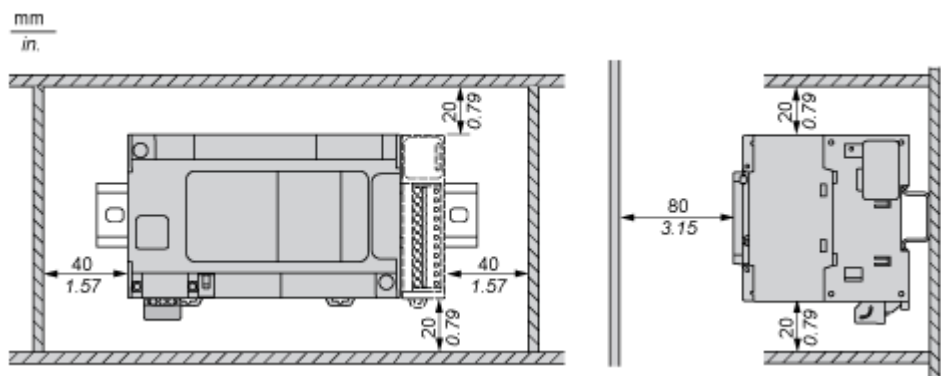
Dimensions Drawings

Dimensions



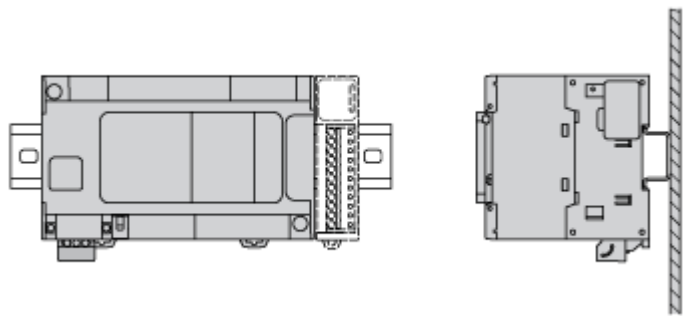
Mounting and Clearance

Clearance

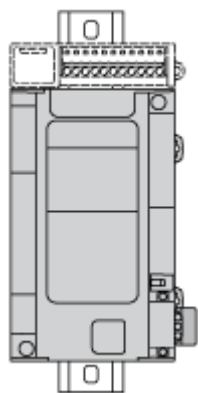


Mounting Position

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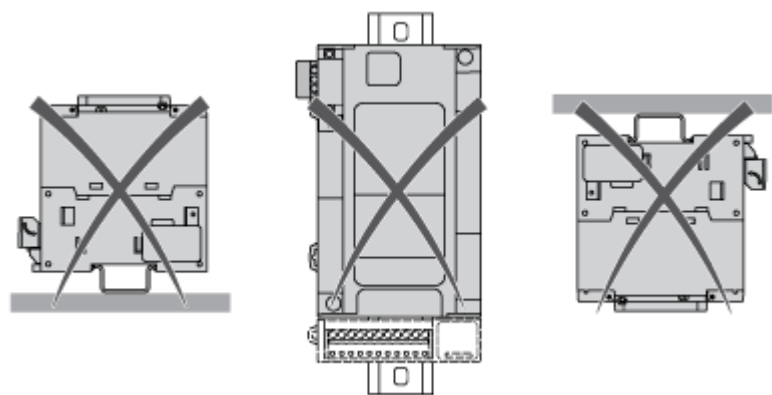


Acceptable Mounting



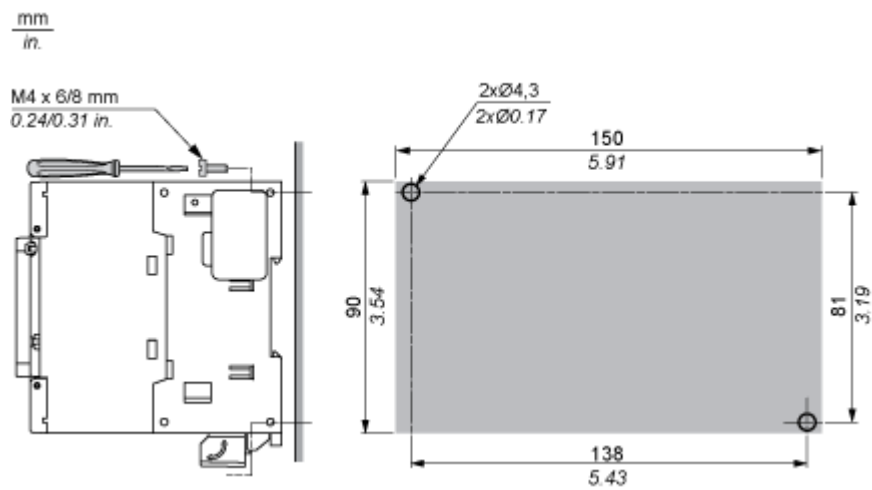
**NOTE:** Expansion modules must be mounted above the logic controller.

Incorrect Mounting



Direct Mounting On a Panel Surface

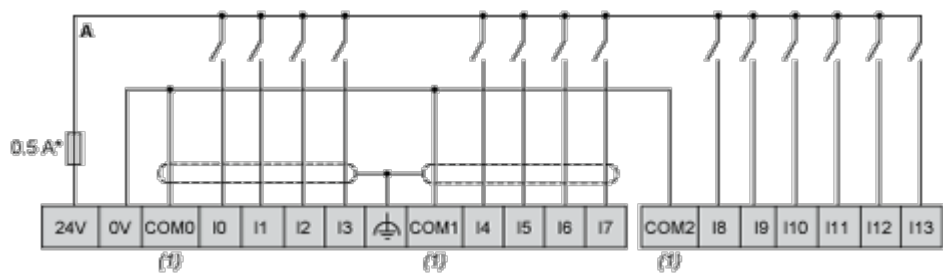
Mounting Hole Layout



Connections and Schema

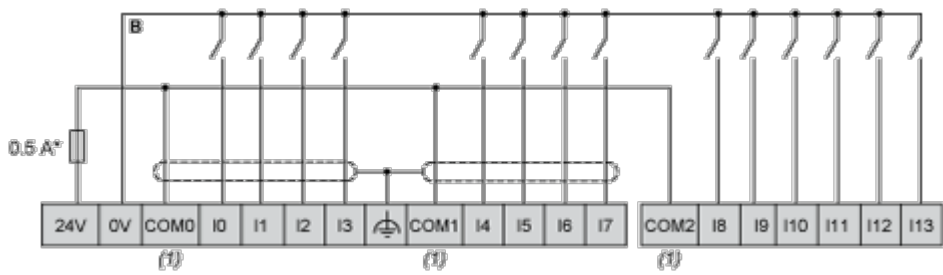
Digital Inputs

Wiring Diagram (Positive Logic)



- (\*) : Type T fuse
- (1) : The COM0, COM1 and COM2 terminals are not connected internally.

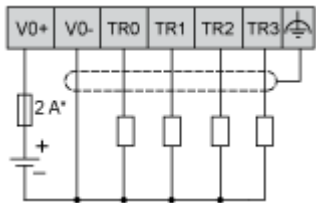
Wiring Diagram (Negative Logic)



- (\*) : Type T fuse
- (1) : The COM0, COM1 and COM2 terminals are not connected internally.

Fast Transistor Outputs

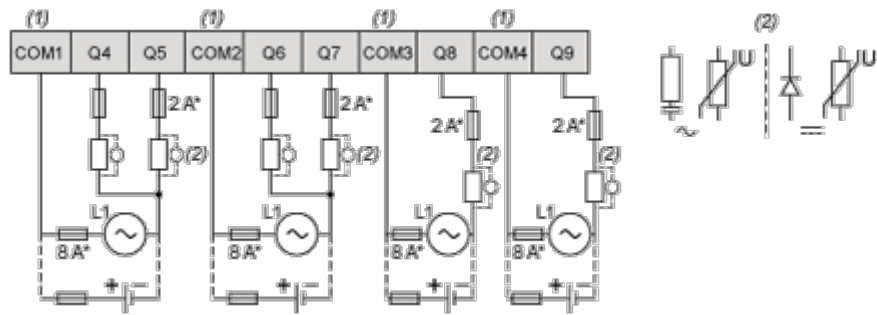
Wiring Diagram



(\*) : 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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