



## Main

|                           |                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range of product          | Modicon M241                                                                                                                                                |
| Product or component type | Logic controller                                                                                                                                            |
| [Us] rated supply voltage | 100...240 V AC                                                                                                                                              |
| Discrete input number     | 24 discrete input including 8 fast input conforming to IEC 61131-2 Type 1                                                                                   |
| Discrete output type      | Relay<br>Transistor                                                                                                                                         |
| Discrete output number    | 12 relay<br>4 transistor including 4 fast output                                                                                                            |
| Discrete output voltage   | 24 V DC transistor output<br>5...125 V DC relay output<br>5...250 V AC relay output                                                                         |
| Discrete output current   | 0.1 A with TR0...TR3 terminal(s) fast output (PTO mode)<br>2 A with Q4...Q15 terminal(s) relay output<br>0.5 A with TR0...TR3 terminal(s) transistor output |

## Complementary

|                                |                                                                                                                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discrete I/O number            | 40                                                                                                                                                                                                             |
| 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 input                                                                                                                                                                                                  |
| Voltage state 0 guaranteed     | <= 5 V input                                                                                                                                                                                                   |
| Discrete input current         | 7 mA input                                                                                                                                                                                                     |
| Input impedance                | 4.7 kOhm input                                                                                                                                                                                                 |
| Response time                  | 50 µs turn-on operation with I0...I15 terminal(s) input                                                                                                                                                        |
| Configurable filtering time    | 1 µs 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                                                                                                                                    |
| Output frequency               | <= 1 kHz transistor output<br><= 20 kHz fast output (PWM mode)<br><= 100 kHz fast output (PLS mode)                                                                                                            |
| 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 transistor output<br>Short-circuit and overload protection with automatic reset transistor output<br>Reverse polarity protection transistor output<br>Without protection relay output |
| Reset time                     | 10 ms automatic reset output<br>12 s automatic reset fast output                                                                                                                                               |
| Memory capacity                | 8 MB program<br>64 MB system memory RAM                                                                                                                                                                        |
| Data backed up                 | 128 MB built-in flash memory backup of user programs                                                                                                                                                           |
| Data storage equipment         | <= 16 GB SD card optional                                                                                                                                                                                      |
| Battery type                   | BR2032 lithium non-rechargeable, battery life: 4 yr                                                                                                                                                            |

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. 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. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Backup time                       | 2 years at 77 °F (25 °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Execution time for 1 KInstruction | 0.3 ms event and periodic task<br>0.7 ms other instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Application structure             | 8 event tasks<br>4 cyclic master tasks<br>3 cyclic master tasks + 1 freewheeling task<br>8 external event tasks                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Realtime clock                    | With                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Clock drift                       | <= 60 s/month at 77 °F (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 signal at 100 kHz fast input (HSC mode)<br>Pulse/direction signal at 200 kHz fast input (HSC mode)<br>Single phase signal at 200 kHz fast input (HSC mode)                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Integrated connection type        | USB port with connector mini B USB 2.0<br>Ethernet with connector RJ45<br>Non isolated serial link "serial 1" with connector RJ45 and interface RS232/RS485<br>Non isolated serial link "serial 2" with connector removable screw terminal block and interface RS485                                                                                                                                                                                                                                                                                                                   |
| Supply                            | Serial link supply "serial 1" at 5 V, <= 200 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Transmission rate                 | 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m - communication protocol: RS485<br>1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 9.84 ft (3 m) - communication protocol: RS232<br>480 Mbit/s for bus length of 9.84 ft (3 m) - communication protocol: USB<br>10/100 Mbit/s - communication protocol: Ethernet                                                                                                                                                                                                                                    |
| Communication port protocol       | Modbus non isolated serial link with master/slave method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Port Ethernet                     | 1 - 10BASE-T/100BASE-TX port with copper cable support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Communication service             | FDR<br>Downloading<br>IEC VAR ACCESS<br>Monitoring<br>NGVL<br>Programming<br>Updating firmware<br>SMS notifications<br>DHCP server (via TM4 Ethernet switch network module)<br>DHCP client (embedded Ethernet port)<br>SNMP client/server<br>FTP client/server<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 |
| Local signalling                  | 1 LED red module error (ERR)<br>1 LED green PWR<br>1 LED green RUN<br>1 LED green SD card access (SD)<br>1 LED red BAT<br>1 LED green SL1<br>1 LED green SL2<br>1 LED per channel green I/O state<br>1 LED red I/O error (I/O)<br>1 LED red bus fault on TM4 (TM4)<br>1 LED green Ethernet port activity                                                                                                                                                                                                                                                                               |
| Electrical connection             | Removable screw terminal block for inputs and outputs (pitch 5.08 mm)<br>Removable screw terminal block for connecting the 24 V DC power supply (pitch 5.08 mm)                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 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                        | 500 V AC between supply and internal logic<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) in common mode conforming to EN/IEC 61000-4-5<br>2 kV relay output in common mode conforming to EN/IEC 61000-4-5<br>1 kV shielded cable in common mode conforming to EN/IEC 61000-4-5<br>1 kV power lines (AC) in differential mode conforming to EN/IEC 61000-4-5<br>1 kV relay output in differential mode conforming to EN/IEC 61000-4-5<br>1 kV input in common mode conforming to EN/IEC 61000-4-5<br>1 kV transistor output in common mode conforming to EN/IEC 61000-4-5 |
| Web services                  | Web server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum number of connections | 8 connection(s) Modbus server<br>8 connection(s) SoMachine protocol<br>10 connection(s) web server<br>4 connection(s) FTP server<br>16 connection(s) Ethernet/IP target<br>8 connection(s) Modbus client                                                                                                                                                                                                                                                                                              |
| Number of slave               | 16 Ethernet/IP<br>64 Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Cycle time                    | 10 ms 16 Ethernet/IP<br>64 ms 64 Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 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                        | 3.54 in (90 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Depth                         | 3.74 in (95 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Width                         | 7.48 in (190 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Product weight                | 1.37 lb(US) (0.62 kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Environment

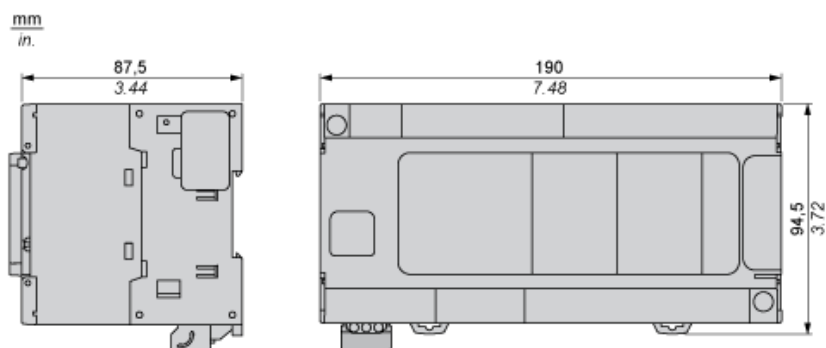
|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| standards                             | UL 508<br>CSA C22.2 No 142<br>ANSI/ISA 12-12-01<br>UL 1604<br>CSA C22.2 No 213<br>EN/IEC 61131-2 : 2007<br>Marine specification (LR, ABS, DNV, GL)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| product certifications                | CSA<br>CULus<br>IACS E10<br>RCM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| resistance to electrostatic discharge | 4 kV on contact conforming to EN/IEC 61000-4-2<br>8 kV in air conforming to EN/IEC 61000-4-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| resistance to electromagnetic fields  | 9.14 V/yd (10 V/m) (80 MHz...1 GHz) conforming to EN/IEC 61000-4-3<br>2.74 V/yd (3 V/m) (1.4 GHz...2 GHz) conforming to EN/IEC 61000-4-3<br>0.91 V/yd (1 V/m) (2 GHz...3 GHz) conforming to EN/IEC 61000-4-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| resistance to fast transients         | 2 kV power lines conforming to EN/IEC 61000-4-4<br>2 kV relay output conforming to EN/IEC 61000-4-4<br>1 kV Ethernet line conforming to EN/IEC 61000-4-4<br>1 kV serial link conforming to EN/IEC 61000-4-4<br>1 kV input conforming to EN/IEC 61000-4-4<br>1 kV transistor output conforming to EN/IEC 61000-4-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| resistance to conducted disturbances  | 10 V (0.15...80 MHz) conforming to EN/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, condition of test: power lines (radio frequency: 10...150 kHz) conforming to EN/IEC 55011<br>Conducted emissions, test level: 63 dBμV/m QP, condition of test: power lines (radio frequency: 1.5...30 MHz) conforming to EN/IEC 55011<br>Conducted emissions, test level: 79 dBμV/m QP/66 dBμV/m AV, condition of test: power lines (radio frequency: 0.15...0.5 MHz) conforming to EN/IEC 55011<br>Conducted emissions, test level: 73 dBμV/m QP/60 dBμV/m AV, condition of test: power lines (radio frequency: 0.5...300 MHz) conforming to EN/IEC 55011<br>Radiated emissions, test level: 40 dBμV/m QP with class A, condition of test: 10 m (radio frequency: 30...230 MHz) conforming to EN/IEC 55011<br>Conducted emissions, test level: 79...63 dBμV/m QP, condition of test: power lines (radio frequency: 150...1500 kHz) conforming to EN/IEC 55011<br>Radiated emissions, test level: 47 dBμV/m QP with class A, condition of test: 10 m (radio frequency: 230...1000 MHz) conforming to EN/IEC 55011 |
| immunity to microbreaks               | 10 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ambient air temperature for operation | 14...131 °F (-10...55 °C) horizontal installation<br>14...122 °F (-10...50 °C) vertical installation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                     |                                                                                                                                                                                                                                                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ambient air temperature for storage | -13...158 °F (-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...6561.68 ft (0...2000 m)                                                                                                                                                                                                                              |
| storage altitude                    | 0...9842.52 ft (0...3000 m)                                                                                                                                                                                                                              |
| vibration resistance                | 3.5 mm (vibration frequency: 5...8.4 Hz) on symmetrical rail<br>3 gn (vibration frequency: 8.4...150 Hz) on symmetrical rail<br>3.5 mm (vibration frequency: 5...8.4 Hz) on panel mounting<br>3 gn (vibration frequency: 8.4...150 Hz) on panel mounting |
| shock resistance                    | 15 gn 11 ms                                                                                                                                                                                                                                              |

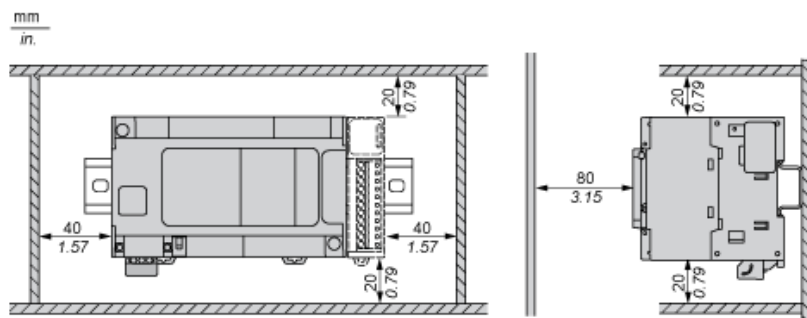
## Offer Sustainability

|                                                                                                                                  |                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Green Premium product                                                                                                            | Green Premium product                                                                                                            |
| Compliant - since 1350 - Schneider Electric declaration of conformity                                                            | Compliant - since 1350 - Schneider Electric declaration of conformity                                                            |
| Reference contains SVHC above the threshold - go to CaP for more details                                                         | Reference contains SVHC above the threshold                                                                                      |
| Available                                                                                                                        | Available                                                                                                                        |
| Available                                                                                                                        | Available                                                                                                                        |
| WARNING: This product can expose you to chemicals including:                                                                     | 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. | 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 <a href="http://www.p65warnings.ca.gov">www.p65warnings.ca.gov</a>                                    | For more information go to <a href="http://www.p65warnings.ca.gov">www.p65warnings.ca.gov</a>                                    |

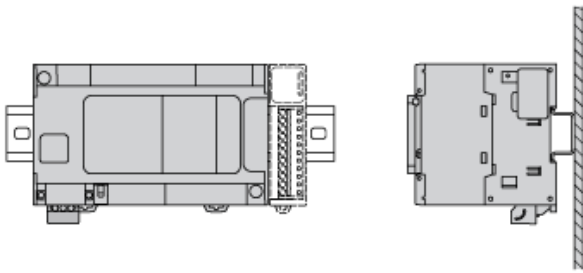
## Dimensions



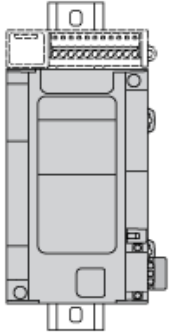
## Clearance



## Mounting Position

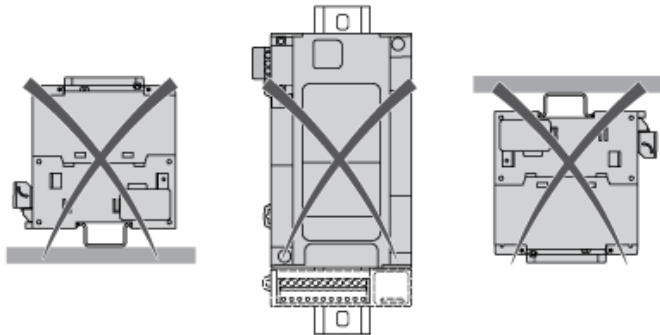


### Acceptable Mounting



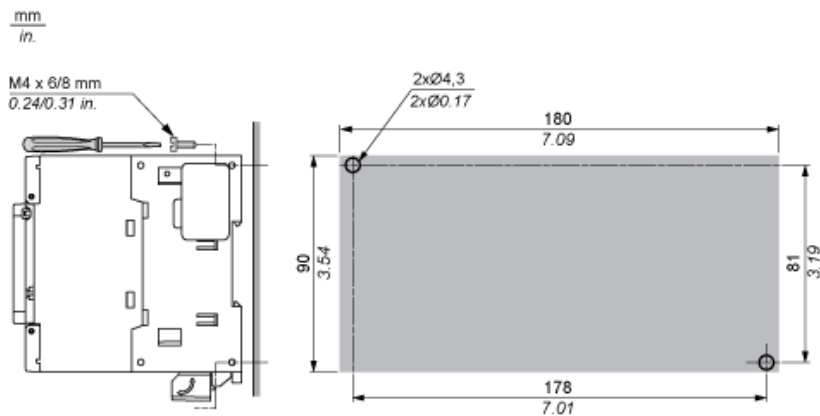
NOTE: Expansion modules must be mounted above the logic controller.

### Incorrect Mounting



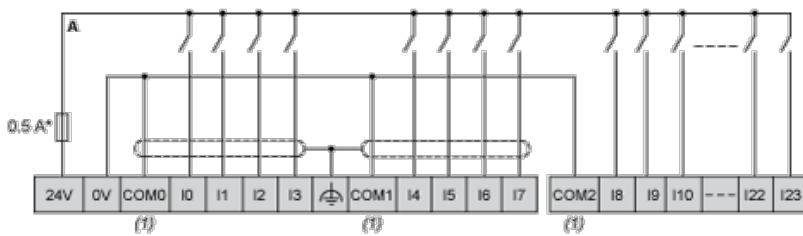
## Direct Mounting On a Panel Surface

### Mounting Hole Layout



## Digital Inputs

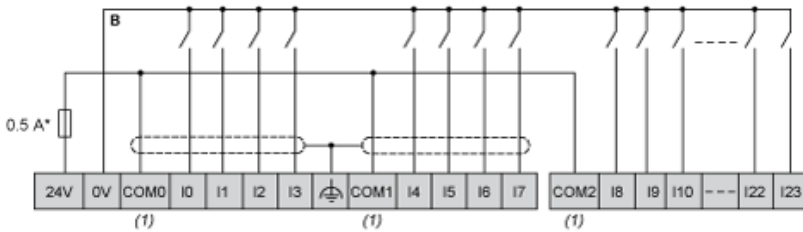
### Wiring Diagram (Positive Logic)



(\*) : Type T fuse

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

### Wiring Diagram (Negative Logic)

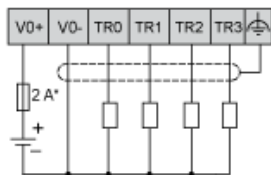


(\*) : Type T fuse

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

## Fast Transistor Outputs

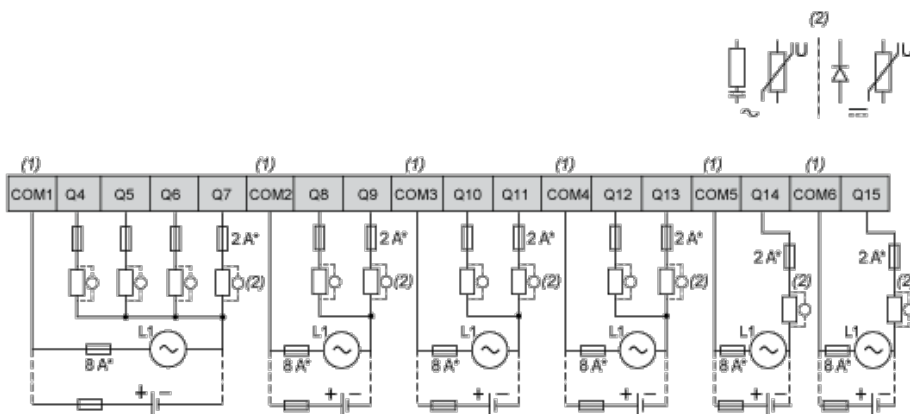
### Wiring Diagram



(\*) : 2 A fast-blow fuse

## Relay Outputs

### Wiring Diagram

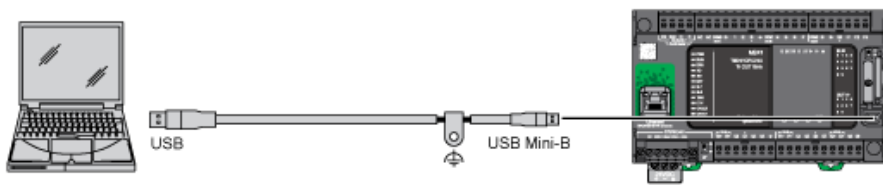


(\*) : Type T fuse

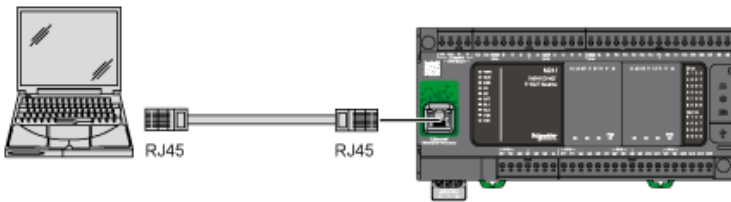
(1) : The terminals COM1 to COM6 are not connected internally.

(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



## Ethernet Connection to a PC



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