

# Product datasheet

Specifications



Logic controller. Modicon M221.  
24 Input/Output. transistor PNP.  
Ethernet

TM241CE24T

Price: 14,793.10 ZAR

## Main

|                           |                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------|
| Range Of Product          | Modicon M241                                                                        |
| Product Or Component Type | Logic controller                                                                    |
| [Us] Rated Supply Voltage | 24 V DC                                                                             |
| Discrete Input Number     | 14, discrete input 8 fast input conforming to IEC 61131-2 Type 1                    |
| Discrete Output Type      | Transistor                                                                          |
| Discrete Output Number    | 10 transistor 4 fast output                                                         |
| Discrete Output Voltage   | 24 V DC for transistor output                                                       |
| Discrete Output Current   | 0.5 A for transistor output (Q0...Q9)<br>0.1 A for fast output (PTO mode) (Q0...Q3) |

## 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                  | 20.4...28.8 V                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Inrush Current                         | 50 A                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Power Consumption In W                 | 32.6...40.4 W (with max number of I/O expansion module)                                                                                                                                                                                                                                                                                                                                                                                   |
| 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<br>10.7 mA for fast input                                                                                                                                                                                                                                                                                                                                                                                                  |
| Input Impedance                        | 4.7 kOhm for input<br>2.81 kOhm for fast input                                                                                                                                                                                                                                                                                                                                                                                            |
| Response Time                          | 50 µs turn-on, IO...I13 terminal(s) for input<br>50 µs turn-off, IO...I13 terminal(s) for input<br><= 2 µs turn-on, IO...I7 terminal(s) for fast input<br><= 2 µs turn-off, IO...I7 terminal(s) for fast input<br><= 34 µs turn-on, Q0...Q9 terminal(s) for output<br><= 250 µs turn-off, Q0...Q9 terminal(s) for output<br><= 2 µs turn-on, Q0...Q3 terminal(s) for fast output<br><= 2 µs turn-off, Q0...Q3 terminal(s) for fast output |

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

|                                          |                                                                                                                                                                                                                                                                  |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Configurable Filtering Time</b>       | 1 µs for fast input<br>12 ms for fast input<br>0 ms for input<br>1 ms for input<br>4 ms for input<br>12 ms for input                                                                                                                                             |
| <b>Discrete Output Logic</b>             | Positive logic (source)                                                                                                                                                                                                                                          |
| <b>Output Voltage Limits</b>             | 30 V DC                                                                                                                                                                                                                                                          |
| <b>Maximum Current Per Output Common</b> | 2 A with Q0...Q3 for fast output<br>2 A with Q4...Q7 for output<br>1 A with Q8...Q9 for output                                                                                                                                                                   |
| <b>Maximum Output Frequency</b>          | 20 kHz for fast output (PWM mode)<br>100 kHz for fast output (PLS mode)<br>1 kHz for output                                                                                                                                                                      |
| <b>Accuracy</b>                          | +/- 0.1 % at 0.02...0.1 kHz for fast output<br>+/- 1 % at 0.1...1 kHz for fast output                                                                                                                                                                            |
| <b>Maximum Leakage Current</b>           | 5 µA for output                                                                                                                                                                                                                                                  |
| <b>Maximum Voltage Drop</b>              | <1 V                                                                                                                                                                                                                                                             |
| <b>Maximum Tungsten Load</b>             | <2.4 W                                                                                                                                                                                                                                                           |
| <b>Protection Type</b>                   | Short-circuit protection<br>Short-circuit and overload protection with automatic reset<br>Reverse polarity protection for fast output                                                                                                                            |
| <b>Reset Time</b>                        | 10 ms automatic reset output<br>12 s automatic reset fast output                                                                                                                                                                                                 |
| <b>Memory Capacity</b>                   | 64 MB for system memory RAM                                                                                                                                                                                                                                      |
| <b>Data Backed Up</b>                    | 128 MB built-in flash memory for backup of user programs                                                                                                                                                                                                         |
| <b>Data Storage Equipment</b>            | <= 16 GB SD card (optional)                                                                                                                                                                                                                                      |
| <b>Battery Type</b>                      | BR2032 lithium non-rechargeable, battery life: 4 year(s)                                                                                                                                                                                                         |
| <b>Backup Time</b>                       | 2 years at 25 °C                                                                                                                                                                                                                                                 |
| <b>Execution Time For 1 Kinstruction</b> | 0.3 ms for event and periodic task<br>0.7 ms for other instruction                                                                                                                                                                                               |
| <b>Application Structure</b>             | 8 external event tasks<br>8 event tasks<br>3 cyclic master tasks + 1 freewheeling task<br>4 cyclic master tasks                                                                                                                                                  |
| <b>Realtime Clock</b>                    | With                                                                                                                                                                                                                                                             |
| <b>Clock Drift</b>                       | <= 60 s/month at 25 °C                                                                                                                                                                                                                                           |
| <b>Positioning Functions</b>             | PTO function 4 channel(s) (positioning frequency: 100 kHz)<br>PTO function 4 channel(s) for transistor output (positioning frequency: 1 kHz)                                                                                                                     |
| <b>Counting Input Number</b>             | 4 fast input (HSC mode) at 200 kHz<br>14 standard input at 1 kHz                                                                                                                                                                                                 |
| <b>Control Signal Type</b>               | 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)                                                                                                            |
| <b>Integrated Connection Type</b>        | 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<br>Ethernet with RJ45 connector |
| <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) 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<br>10/100 Mbit/s for Ethernet                          |

|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Communication Port Protocol</b>            | Non isolated serial link: Modbus master/slave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Port Ethernet</b>                          | 10BASE-T/100BASE-TX - 1 port(s) 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>                       | 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<br>1 LED (green) for Ethernet port activity                                                                                                                                                                                                       |
| <b>Electrical Connection</b>                  | 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)                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Maximum Cable Distance Between Devices</b> | 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                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Insulation</b>                             | Between supply and internal logic at 500 V AC<br>Non-insulated between supply and ground<br>Between input and internal logic at 500 V AC<br>Non-insulated between inputs<br>Between fast input and internal logic at 500 V AC<br>Between output and internal logic at 500 V AC<br>Non-insulated between outputs<br>Between fast output and internal logic at 500 V AC<br>Between output groups at 500 V AC                                                                                                                                                                       |
| <b>Marking</b>                                | CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Surge Withstand</b>                        | 1 kV power lines (DC) common mode conforming to IEC 61000-4-5<br>1 kV shielded cable common mode conforming to IEC 61000-4-5<br>0.5 kV power lines (DC) 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                                                                                                                                                                                 |
| <b>Web Services</b>                           | Web server                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Maximum Number Of Connections</b>          | 8 Modbus server<br>8 SoMachine protocol<br>10 web server<br>4 FTP server<br>16 Ethernet/IP target<br>8 Modbus client                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Number Of Server Device(S)</b>             | 64 Modbus TCP:<br>16 EtherNet/IP:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Cycle Time</b>                             | 10 ms 16 EtherNet/IP<br>64 ms 64 Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                         |                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mounting Support</b> | 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 |
| <b>Height</b>           | 90 mm                                                                                                                                     |
| <b>Depth</b>            | 95 mm                                                                                                                                     |
| <b>Width</b>            | 150 mm                                                                                                                                    |
| <b>Net Weight</b>       | 0.53 kg                                                                                                                                   |

## Environment

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards</b>                             | 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                                                                                                                                                                                                                                                                                                                                                                                                       |
| <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 conforming to IEC 61000-4-2<br>4 kV on contact conforming to IEC 61000-4-2                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Resistance To Electromagnetic Fields</b>  | 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                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Resistance To Fast Transients</b>         | 2 kV (power lines) conforming to IEC 61000-4-4<br>1 kV (Ethernet line) 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                                                                                                                                                                                                                                                                                 |
| <b>Resistance To Conducted Disturbances</b>  | 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)                                                                                                                                                                                                                                                                                  |
| <b>Electromagnetic Emission</b>              | 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>Radiated emissions - test level: 40 dBμV/m QP class A 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 at 230...1000 MHz conforming to IEC 55011 |
| <b>Immunity To Microbreaks</b>               | 10 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Ambient Air Temperature For Operation</b> | -10...50 °C (vertical installation)<br>-10...55 °C (horizontal installation)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Ambient Air Temperature For Storage</b>   | -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...2000 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Storage Altitude</b>                      | 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             | 11.33 cm  |
| Package 1 Width              | 13.095 cm |
| Package 1 Length             | 18.689 cm |
| Package 1 Weight             | 640.0 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             | 5.801 kg  |
| Unit Type Of Package 3       | P06       |
| Number Of Units In Package 3 | 64        |
| Package 3 Height             | 75.0 cm   |
| Package 3 Width              | 40.0 cm   |
| Package 3 Length             | 80.0 cm   |
| Package 3 Weight             | 58.4 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

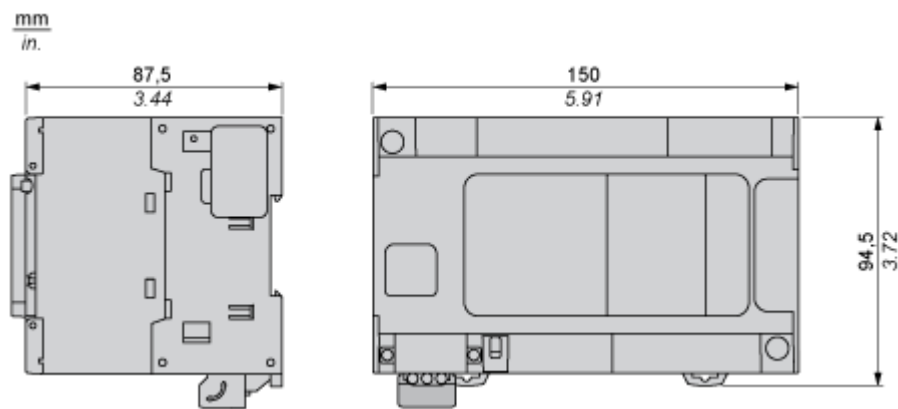
|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
|  Mercury Free               |     |
|  Rohs Exemption Information | 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>                                                                                     |

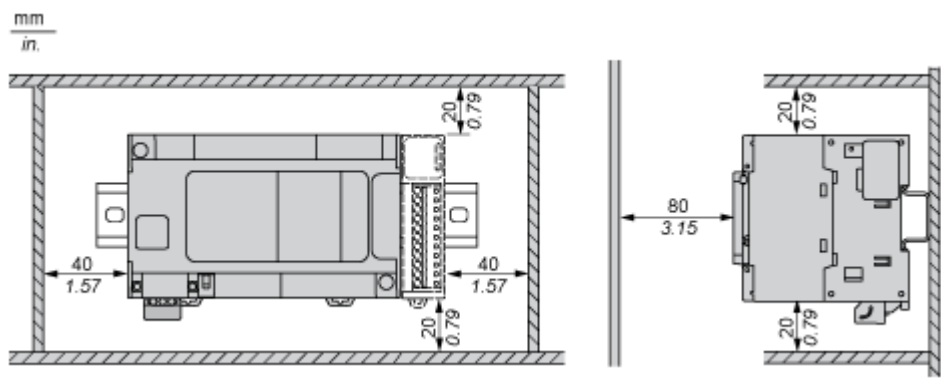
Dimensions Drawings

Dimensions



Mounting and Clearance

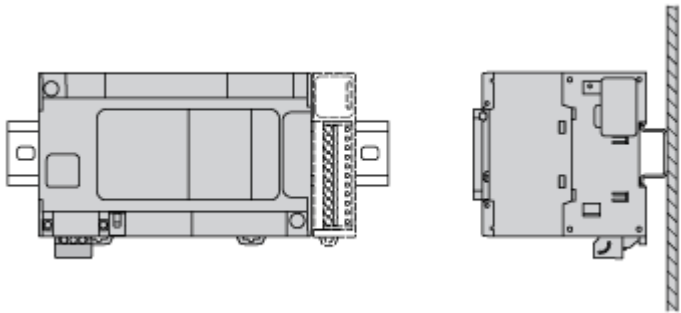
Clearance



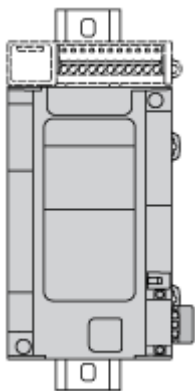


Mounting Position

---

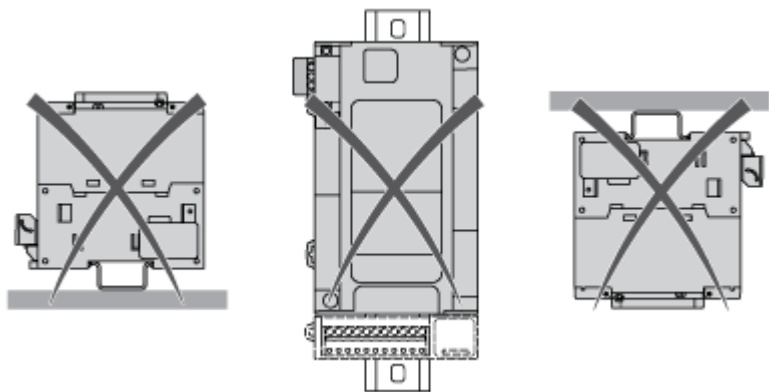


Acceptable Mounting



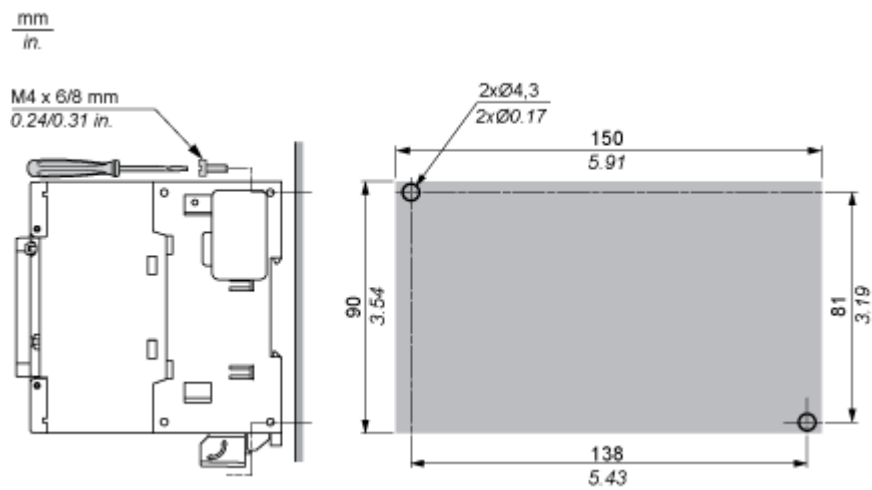
**NOTE:** Expansion modules must be mounted above the logic controller.

Incorrect Mounting



Direct Mounting On a Panel Surface

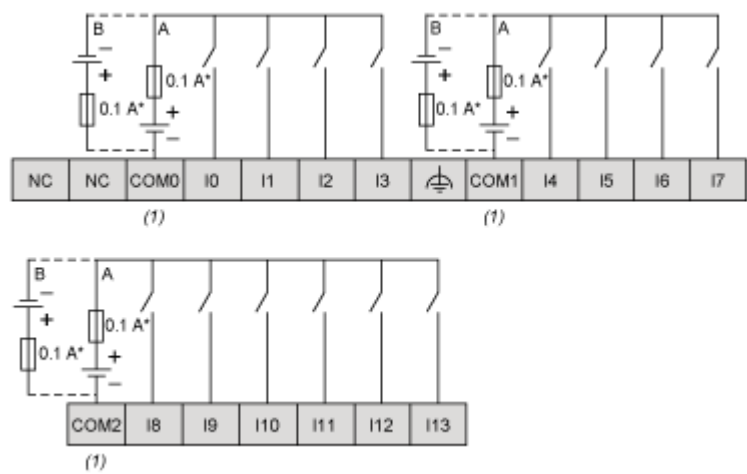
Mounting Hole Layout



Connections and Schema

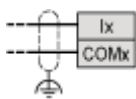
Digital Inputs

Wiring Diagram



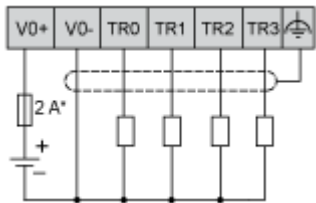
- (\*) : Type T fuse
- (1) : The COM0, COM1 and COM2 terminals are not connected internally
- (A) : Sink wiring (positive logic)
- (B) : Source wiring (negative logic)

Fast Input Wiring (I0...I7)



Fast Transistor Outputs

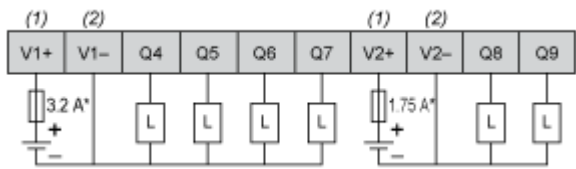
Wiring Diagram



(\*) : 2 A fast-blow fuse

Transistor Outputs

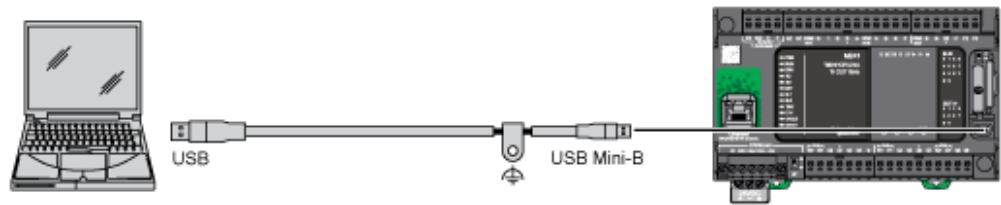
Wiring Diagram



- (\*) : Type T fuse
- (1) : The V1+ and V2+ terminals are not connected internally.
- (2) : The V1- and V2- terminals are not connected internally.

USB Mini-B Connection

---



Ethernet Connection to a PC

---

