



### Main

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

### Complementary

|  |  |
|--|--|
| Discrete I/O number                    | 24   |
| Maximum number of I/O expansion module | 7 (local I/O-Architecture)<br>14 (remote I/O-Architecture)   |
| Supply voltage limits                  | 85...264 V   |
| Network frequency                      | 50/60 Hz   |
| Discrete input logic                   | Sink or source   |
| Discrete input voltage                 | 24 V   |
| Discrete input voltage type            | DC   |
| Voltage state 1 guaranteed             | >= 15 V for input  |
| Voltage state 0 guaranteed             | <= 5 V for input   |
| Discrete input current                 | 5 mA for input   |
| Input impedance                        | 4.7 kOhm for input   |
| Response time                          | 50 µs turn-on, I0...I13 terminal(s) for input  |
| Configurable filtering time            | 1 µs for fast input  |
| Discrete output logic                  | Positive logic (source)  |
| Output voltage limits                  | 125 V DC relay output<br>30 V DC transistor output<br>277 V AC relay output  |
| Maximum output frequency               | 1 KHz for transistor output<br>20 KHz for fast output (PWM mode)<br>100 kHz for fast output (PLS mode)   |
| Accuracy                               | +/- 0.1 % at 0.02...0.1 kHz for fast output<br>+/- 1 % at 0.1...1 kHz for fast output  |
| Protection type                        | Short-circuit protection for transistor output<br>Short-circuit and overload protection with automatic reset for transistor output<br>Reverse polarity protection for transistor output<br>Without protection for relay output |
| Reset time                             | 10 Ms automatic reset output<br>12 s automatic reset fast output   |
| Memory capacity                        | 8 MB for program<br>64 MB for system memory RAM  |
| Data backed up                         | 128 MB built-in flash memory for backup of user programs   |
| Data storage equipment                 | <= 16 GB SD card (optional)  |

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|--|--|
| Battery type                           | BR2032 lithium non-rechargeable, battery life: 4 year(s)   |
| Backup time                            | 2 years at 25 °C   |
| Execution time for 1 KInstruction      | 0.3 Ms for event and periodic task<br>0.7 ms for other instruction   |
| Application structure                  | 4 cyclic master tasks<br>8 external event tasks<br>8 event tasks<br>3 cyclic master tasks + 1 freewheeling task  |
| Realtime clock                         | With   |
| Clock drift                            | <= 60 s/month at 25 °C   |
| Positioning functions                  | PTO function 4 channel(s) (positioning frequency: 100 kHz)   |
| Counting input number                  | 4 fast input (HSC mode) at 200 kHz<br>14 standard input at 1 kHz   |
| Control signal type                    | A/B at 100 kHz for fast input (HSC mode)<br>Pulse/Direction at 200 kHz for fast input (HSC mode)<br>Single phase at 200 kHz for fast input (HSC mode)  |
| Integrated connection type             | Non isolated serial link serial 1 with RJ45 connector and RS232/RS485 interface<br>Non isolated serial link serial 2 with removable screw terminal block connector and RS485 interface<br>USB port with mini B USB 2.0 connector<br>Ethernet with RJ45 connector<br>CANopen J1939 with male SUB-D 9 connector  |
| Supply                                 | (serial 1)serial link supply: 5 V, <200 mA   |
| Transmission rate                      | 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m for RS485<br>1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 3 m for RS232<br>480 Mbit/s for bus length of 3 m for USB<br>10/100 Mbit/s for Ethernet<br>1000 kbit/s for bus length of 20 m for CANopen<br>800 kbit/s for bus length of 40 m for CANopen<br>500 kbit/s for bus length of 100 m for CANopen<br>250 kbit/s for bus length of 250 m for CANopen<br>125 kbit/s for bus length of 500 m for CANopen<br>50 kbit/s for bus length of 1000 m for CANopen<br>20 kbit/s for bus length of 2500 m for CANopen |
| Communication port protocol            | Non isolated serial link: Modbus master/slave  |
| Port Ethernet                          | 10BASE-T/100BASE-TX - 1 port(s) copper cable   |
| Ethernet services                      | SNMP client/server<br>Modbus TCP slave device<br>Modbus TCP server<br>Modbus TCP client<br>IEC VAR ACCESS<br>FTP client/server<br>SQL client<br>DHCP client<br>Ethernet/IP adapter<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 (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<br>1 LED (green) for CANopen run<br>1 LED (green) for CANopen error   |
| Electrical connection                  | Removable screw terminal blockfor inputs and outputs (pitch 5.08 mm)<br>Removable screw terminal blockfor connecting the 24 V DC power supply (pitch 5.08 mm)  |
| Maximum cable distance between devices | Unshielded cable: <50 m for input<br>Shielded cable: <10 m for fast input<br>Unshielded cable: <50 m for output<br>Shielded cable: <3 m for fast output  |
| Insulation                             | Between supply and internal logic at 500 V AC<br>Non-insulated between supply and ground   |
| Marking                                | CE   |

|                               |  |
|-------------------------------|--|
| Sensor power supply           | 24 V DC at 400 mA supplied by the controller   |
| Surge withstand               | 2 KV power lines (AC) common mode conforming to EN/IEC 61000-4-5<br>2 KV relay output common mode conforming to EN/IEC 61000-4-5<br>1 KV shielded cable common mode conforming to EN/IEC 61000-4-5<br>1 KV power lines (AC) differential mode conforming to EN/IEC 61000-4-5<br>1 KV relay output differential mode conforming to EN/IEC 61000-4-5<br>1 KV input common mode conforming to EN/IEC 61000-4-5<br>1 kV transistor output common mode conforming to EN/IEC 61000-4-5 |
| Web services                  | Web server   |
| Maximum number of connections | 16 Ethernet/IP device<br>8 Modbus server   |
| CANopen feature profile       | DR 303-1<br>DS 301 V4.02   |
| Number of slave               | 63 CANopen:  |
| Mounting support              | Top hat type TH35-15 rail conforming to IEC 60715<br>Top hat type TH35-7.5 rail conforming to IEC 60715<br>Plate or panel with fixing kit  |
| Height                        | 90 mm  |
| Depth                         | 95 mm  |
| Width                         | 150 mm   |
| Net weight                    | 0.53 kg  |

## Environment

|                                       |  |
|---------------------------------------|--|
| Standards                             | ANSI/ISA 12-12-01<br>CSA C22.2 No 142<br>CSA C22.2 No 213<br>EN/IEC 61131-2:2007<br>Marine specification (LR, ABS, DNV, GL)<br>UL 1604<br>UL 508   |
| Product certifications                | CSA<br>IACS E10<br>RCM<br>cULus  |
| Resistance to electrostatic discharge | 8 KV in air conforming to EN/IEC 61000-4-2<br>4 kV on contact conforming to EN/IEC 61000-4-2   |
| Resistance to electromagnetic fields  | 10 V/M 80 MHz...1 GHz conforming to EN/IEC 61000-4-3<br>3 V/M 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3<br>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 dB $\mu$ V/m QP ( power lines) at 10...150 kHz conforming to EN/IEC 55011<br>Conducted emissions - test level: 63 dB $\mu$ V/m QP ( power lines) at 1.5...30 MHz conforming to EN/IEC 55011<br>Conducted emissions - test level: 79 dB $\mu$ V/m QP/66 dB $\mu$ V/m AV ( power lines) at 0.15...0.5 MHz conforming to EN/IEC 55011<br>Conducted emissions - test level: 73 dB $\mu$ V/m QP/60 dB $\mu$ V/m AV ( power lines) at 0.5...300 MHz conforming to EN/IEC 55011<br>Radiated emissions - test level: 40 dB $\mu$ V/m QP class A ( 10 m) at 30...230 MHz conforming to EN/IEC 55011<br>Conducted emissions - test level: 79...63 dB $\mu$ V/m QP ( power lines) at 150...1500 kHz conforming to EN/IEC 55011<br>Radiated emissions - test level: 47 dB $\mu$ V/m QP class A ( 10 m) at 230...1000 MHz conforming to EN/IEC 55011 |
| Immunity to microbreaks               | 10 ms  |
| Ambient air temperature for operation | -10...50 °C (vertical installation)<br>-10...55 °C (horizontal installation)   |
| Ambient air temperature for storage   | -25...70 °C  |
| Relative humidity                     | 10...95 %, without condensation (in operation)<br>10...95 %, without condensation (in storage)   |

|                         |  |
|-------------------------|--|
| IP degree of protection | IP20 with protective cover in place  |
| Pollution degree        | 2  |
| Operating altitude      | 0...2000 m   |
| Storage altitude        | 0...3000 m   |
| Vibration resistance    | 3.5 mm at 5...8.4 Hz on symmetrical rail<br>3 gn at 8.4...150 Hz on symmetrical rail<br>3.5 mm at 5...8.4 Hz on panel mounting<br>3 gn at 8.4...150 Hz on panel mounting |
| Shock resistance        | 15 gn for 11 ms  |

### Packing Units

|                              |           |
|------------------------------|-----------|
| Unit Type of Package 1       | PCE       |
| Number of Units in Package 1 | 1         |
| Package 1 Weight             | 780.0 g   |
| Package 1 Height             | 11.335 cm |
| Package 1 width              | 13.188 cm |
| Package 1 Length             | 18.727 cm |
| Unit Type of Package 2       | S03       |
| Number of Units in Package 2 | 8         |
| Package 2 Weight             | 7.06 kg   |
| Package 2 Height             | 30.0 cm   |
| Package 2 width              | 30.0 cm   |
| Package 2 Length             | 40.0 cm   |

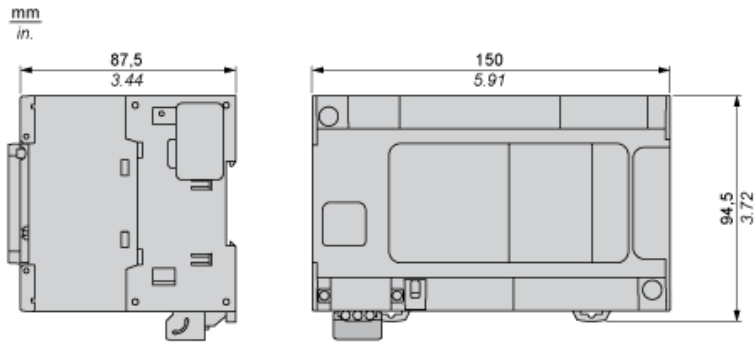
### Offer Sustainability

|                            |   |
|----------------------------|---|
| Sustainable offer status   | Green Premium product   |
| REACH Regulation           | <a href="#">REACH Declaration</a>   |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>                              |
| Mercury free               | Yes   |
| RoHS exemption information | <a href="#">Yes</a>   |
| China RoHS Regulation      | <a href="#">China RoHS Declaration</a>  |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>   |
| Circularity Profile        | <a href="#">End Of Life Information</a>   |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |
| PVC free                   | Yes   |

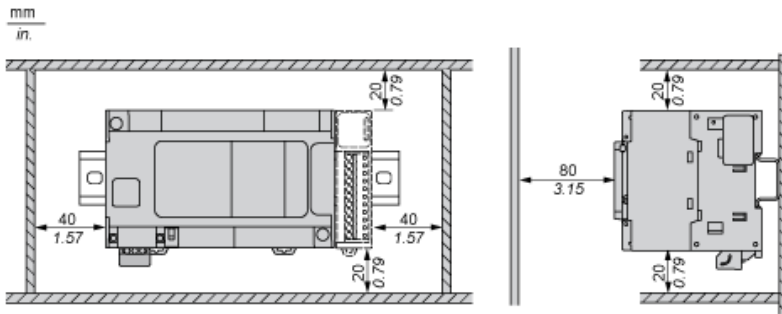
### Contractual warranty

|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

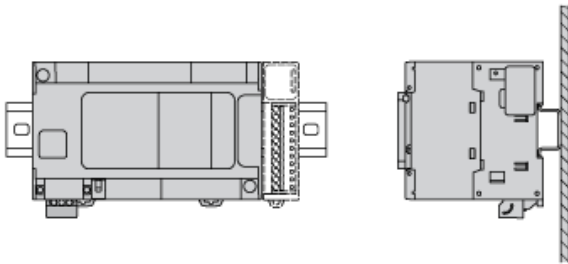
Dimensions



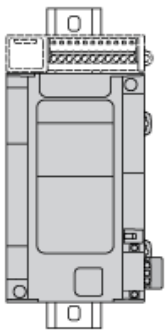
Clearance



Mounting Position

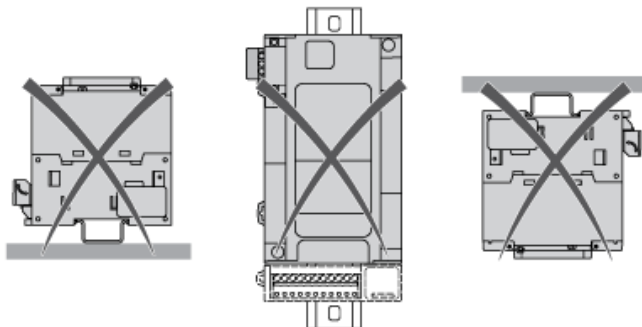


Acceptable Mounting



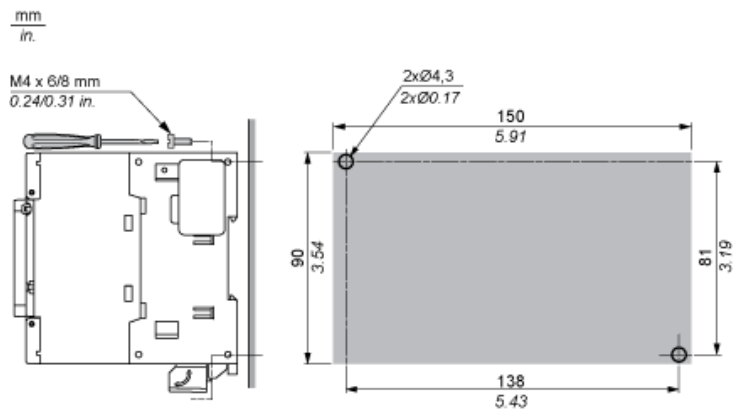
NOTE: Expansion modules must be mounted above the logic controller.

Incorrect Mounting



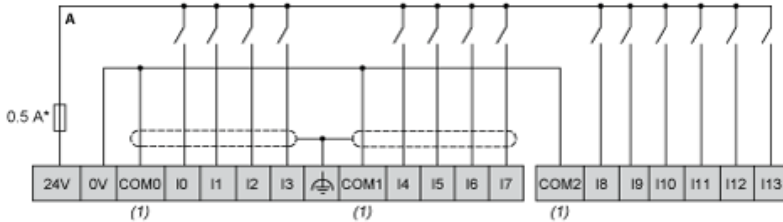
Direct Mounting On a Panel Surface

## Mounting Hole Layout



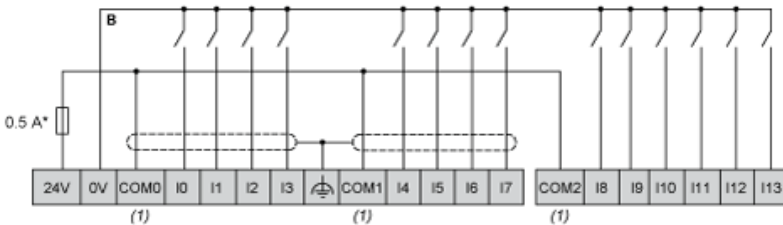
Digital Inputs

Wiring Diagram (Positive Logic)



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

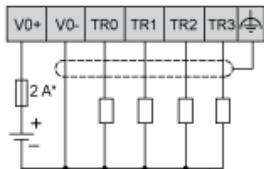
Wiring Diagram (Negative Logic)



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

Fast Transistor Outputs

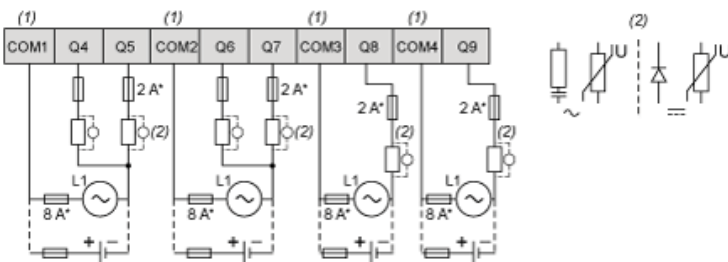
Wiring Diagram



- (\*) : 2 A fast-blow fuse

Relay Outputs

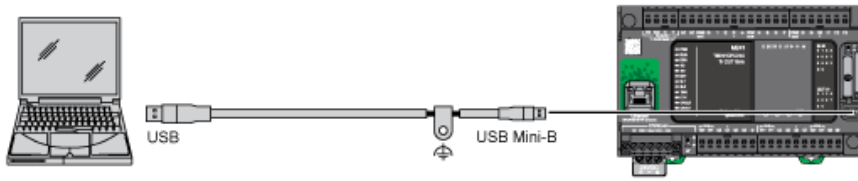
Wiring Diagram



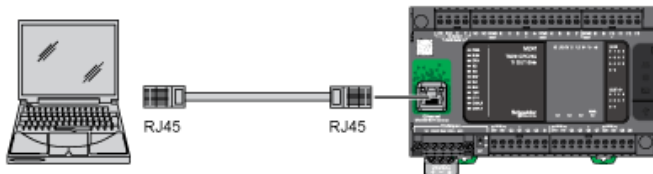
- (\*) : Type T fuse
- (1) : The terminals COM1 to COM4 are not connected internally.
- (2) : To improve the life time of the contacts, and to protect from potential inductive load damage, you must connect a free wheeling diode in parallel to each inductive DC load or an RC snubber in parallel of each inductive AC load



## USB Mini-B Connection

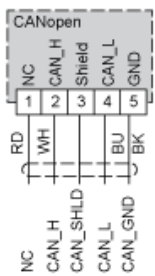


## Ethernet Connection to a PC



## CANopen Connection

### Wiring Diagram



| Pin | Signal   | Description                    | Marking | Color of Cable |
|-----|----------|--------------------------------|---------|----------------|
| 1   | Not used | Reserved                       | NC      | red            |
| 2   | CAN_H    | CAN_H bus line (dominant high) | CAN_H   | white          |
| 3   | CAN_SHLD | Optional CAN shield            | Shield  | -              |
| 4   | CAN_L    | CAN_L bus line (dominant low)  | CAN_L   | blue           |
| 5   | CAN_GND  | CAN Ground                     | GND     | black          |