

# Product datasheet

Specifications

## controller M241 24 IO relay Ethernet



TM241CE24R

EAN Code: 3606480648830

### 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	Relay Transistor
Discrete output number	6 relay 4 transistor 4 fast output
Discrete output voltage	5...125 V DC for relay output 5...250 V AC for relay output 24 V DC for transistor output
Discrete output current	2 A for relay output (Q4...Q9) 0.1 A for fast output (PTO mode) (TR0...TR3) 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) 14 (remote I/O-Architecture)
Supply voltage limits	85...264 V
Network frequency	50/60 Hz
Discrete input logic	Sink or source
Discrete input voltage	24 V
Discrete input voltage type	DC
Voltage state 1 guaranteed	$\geq 15$ V for input
Voltage state 0 guaranteed	$\leq 5$ V for input
Discrete input current	5 mA for input
Input impedance	4.7 kOhm for input
Response time	50 $\mu$ s turn-on, I0...I13 terminal(s) for input
Configurable filtering time	1 s for fast input
Discrete output logic	Positive logic (source)
Output voltage limits	125 V DC relay output 30 V DC transistor output 277 V AC relay output
Maximum output frequency	1 kHz for transistor output 20 kHz for fast output (PWM mode) 100 kHz for fast output (PLS mode)

<b>Accuracy</b>	+/- 0.1 % at 0.02...0.1 kHz for fast output +/- 1 % at 0.1...1 kHz for fast output
<b>Protection type</b>	Short-circuit protection for transistor output Short-circuit and overload protection with automatic reset for transistor output Reverse polarity protection for transistor output Without protection for relay output
<b>Reset time</b>	10 ms automatic reset output 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 0.7 ms for other instruction
<b>Application structure</b>	8 external event tasks 3 cyclic master tasks + 1 freewheeling task 8 event tasks 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)
<b>Counting input number</b>	4 fast input (HSC mode) at 200 kHz 14 standard input at 1 kHz
<b>Control signal type</b>	A/B at 100 kHz for fast input (HSC mode) Pulse/direction at 200 kHz for fast input (HSC mode) 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 Non isolated serial link serial 2 with removable screw terminal block connector and RS485 interface USB port with mini B USB 2.0 connector 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 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 3 m for RS232 480 Mbit/s for bus length of 3 m for USB 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 DHCP server via TM4 Ethernet switch network module DHCP client embedded Ethernet port SMS notifications Updating firmware SNMP client/server Programming NGVL Monitoring IEC VAR ACCESS FTP client/server Downloading SQL client Modbus TCP client I/O scanner Ethernet/IP originator I/O scanner embedded Ethernet port Ethernet/IP target, Modbus TCP server and Modbus TCP slave Send and receive email from the controller based on TCP/UDP library Web server (WebVisu & XWeb system) OPC UA server DNS client

<b>Local signalling</b>	<ul style="list-style-type: none"> <li>1 LED (green) for PWR</li> <li>1 LED (green) for RUN</li> <li>1 LED (red) for module error (ERR)</li> <li>1 LED (red) for I/O error (I/O)</li> <li>1 LED (green) for SD card access (SD)</li> <li>1 LED (red) for BAT</li> <li>1 LED (green) for SL1</li> <li>1 LED (green) for SL2</li> <li>1 LED (red) for bus fault on TM4 (TM4)</li> <li>1 LED per channel (green) for I/O state</li> <li>1 LED (green) for Ethernet port activity</li> </ul>
<b>Electrical connection</b>	<ul style="list-style-type: none"> <li>removable screw terminal blockfor inputs and outputs (pitch 5.08 mm)</li> <li>removable screw terminal blockfor connecting the 24 V DC power supply (pitch 5.08 mm)</li> </ul>
<b>Maximum cable distance between devices</b>	<ul style="list-style-type: none"> <li>Unshielded cable: &lt;50 m for input</li> <li>Shielded cable: &lt;10 m for fast input</li> <li>Unshielded cable: &lt;50 m for output</li> <li>Shielded cable: &lt;3 m for fast output</li> </ul>
<b>Insulation</b>	<ul style="list-style-type: none"> <li>Between supply and internal logic at 500 V AC</li> <li>Non-insulated between supply and ground</li> </ul>
<b>Marking</b>	CE
<b>Sensor power supply</b>	24 V DC at 400 mA supplied by the controller
<b>Surge withstand</b>	<ul style="list-style-type: none"> <li>2 kV power lines (AC) common mode conforming to IEC 61000-4-5</li> <li>2 kV relay output common mode conforming to IEC 61000-4-5</li> <li>1 kV shielded cable common mode conforming to IEC 61000-4-5</li> <li>1 kV power lines (AC) differential mode conforming to IEC 61000-4-5</li> <li>1 kV relay output differential mode conforming to IEC 61000-4-5</li> <li>1 kV input common mode conforming to IEC 61000-4-5</li> <li>1 kV transistor output common mode conforming to IEC 61000-4-5</li> </ul>
<b>Web services</b>	Web server
<b>Maximum number of connections</b>	<ul style="list-style-type: none"> <li>8 Modbus server</li> <li>8 SoMachine protocol</li> <li>10 web server</li> <li>4 FTP server</li> <li>16 Ethernet/IP target</li> <li>8 Modbus client</li> </ul>
<b>Number of server device(s)</b>	<ul style="list-style-type: none"> <li>64 Modbus TCP:</li> <li>16 EtherNet/IP:</li> </ul>
<b>Cycle time</b>	<ul style="list-style-type: none"> <li>10 ms 16 EtherNet/IP</li> <li>64 ms 64 Modbus TCP</li> </ul>
<b>Mounting support</b>	<ul style="list-style-type: none"> <li>Top hat type TH35-15 rail conforming to IEC 60715</li> <li>Top hat type TH35-7.5 rail conforming to IEC 60715</li> <li>plate or panel with fixing kit</li> </ul>
<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>	<ul style="list-style-type: none"> <li>ANSI/ISA 12-12-01</li> <li>CSA C22.2 No 142</li> <li>CSA C22.2 No 213</li> <li>IEC 61131-2:2007</li> <li>Marine specification (LR, ABS, DNV, GL)</li> <li>UL 508</li> </ul>
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<b>Product certifications</b>	RCM cULus CE UKCA DNV-GL ABS LR
<b>Resistance to electrostatic discharge</b>	8 kV in air conforming to IEC 61000-4-2 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 3 V/m 1.4 GHz...2 GHz conforming to IEC 61000-4-3 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 2 kV (relay output) conforming to IEC 61000-4-4 1 kV (Ethernet line) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-4 1 kV (input) conforming to IEC 61000-4-4 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 3 V 0.1...80 MHz conforming to Marine specification (LR, ABS, DNV, GL) 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 dB $\mu$ V/m QP ( power lines) at 10...150 kHz conforming to IEC 55011 Conducted emissions - test level: 63 dB $\mu$ V/m QP ( power lines) at 1.5...30 MHz conforming to IEC 55011 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 IEC 55011 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 IEC 55011 Radiated emissions - test level: 40 dB $\mu$ V/m QP class A ( 10 m) at 30...230 MHz conforming to IEC 55011 Conducted emissions - test level: 79...63 dB $\mu$ V/m QP ( power lines) at 150...1500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dB $\mu$ V/m QP class A ( 10 m) 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) -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) 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
<b>Vibration resistance</b>	3.5 mm at 5...8.4 Hz on symmetrical rail 3 gn at 8.4...150 Hz on symmetrical rail 3.5 mm at 5...8.4 Hz on panel mounting 3 gn at 8.4...150 Hz on panel mounting
<b>Shock resistance</b>	15 gn for 11 ms

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	11.208 cm
<b>Package 1 Width</b>	13.04 cm
<b>Package 1 Length</b>	18.656 cm

Package 1 Weight	760.0 g
Unit Type of Package 2	S03
Number of Units in Package 2	8
Package 2 Height	30 cm
Package 2 Width	30 cm
Package 2 Length	40 cm
Package 2 Weight	6.97 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	66 kg

## Logistical informations

Country of origin	ID
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## Contractual warranty

Warranty	18 months
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## Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)

### Environmental footprint

Total lifecycle Carbon footprint 2276

Environmental Disclosure [Product Environmental Profile](#)

### Use Better

#### Materials and Substances

Packaging made with recycled cardboard Yes

Packaging without single use plastic Yes

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

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

REACH Regulation [REACH Declaration](#)

PVC free Yes

### Use Again

#### Repack and remanufacture

End of life manual availability [End of Life Information](#)

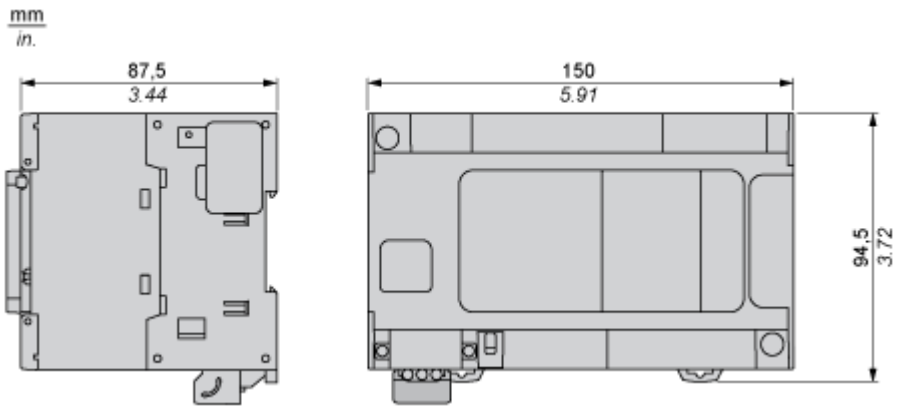
Take-back No

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

Dimensions Drawings

Dimensions

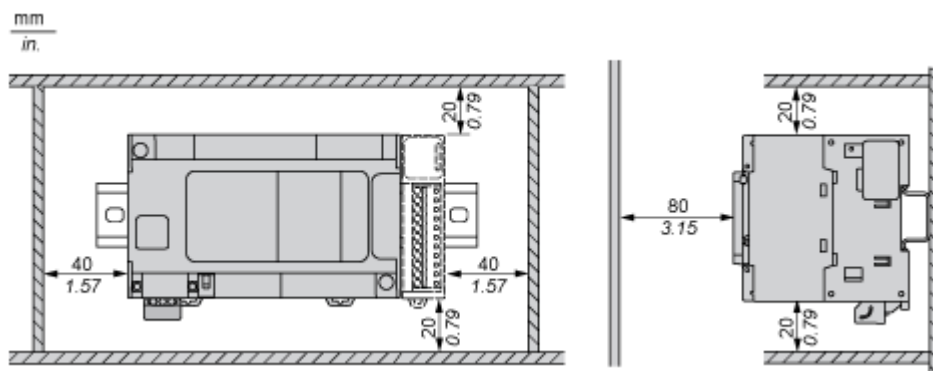
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Mounting and Clearance

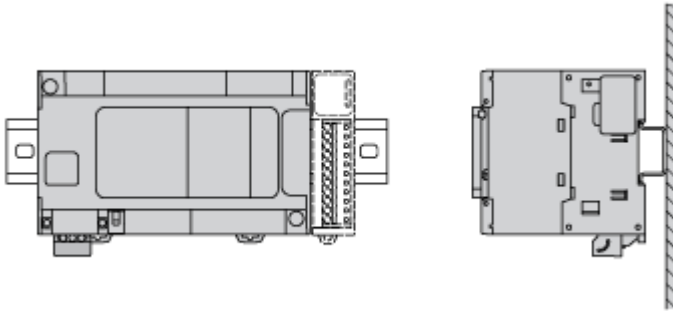
Clearance

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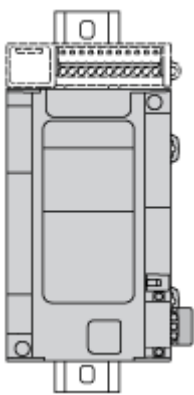


**Mounting Position**

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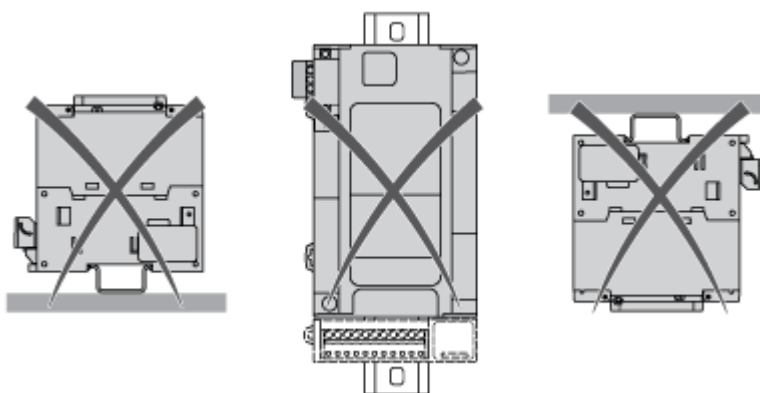


**Acceptable Mounting**



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

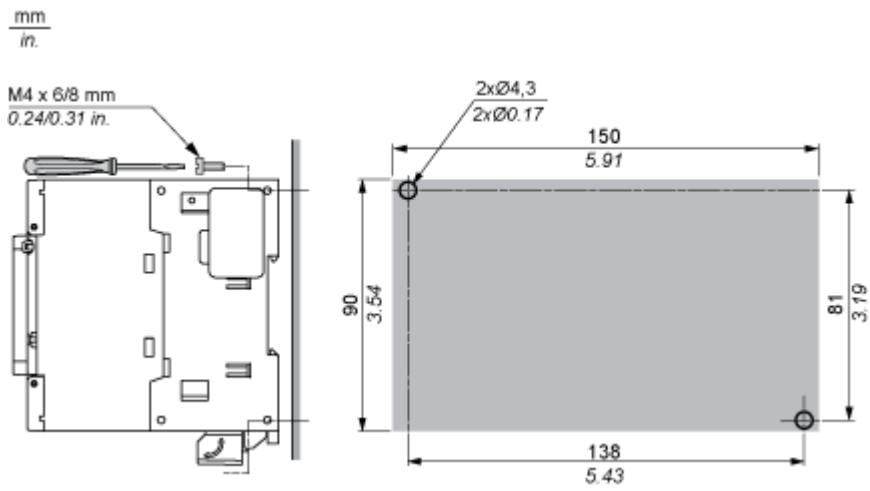
**Incorrect Mounting**



Direct Mounting On a Panel Surface

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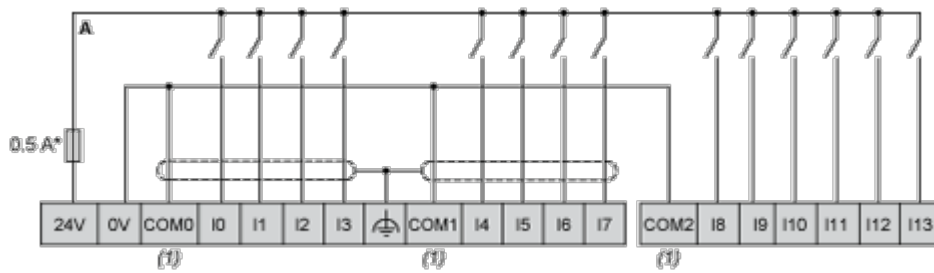
Mounting Hole Layout



Connections and Schema

Digital Inputs

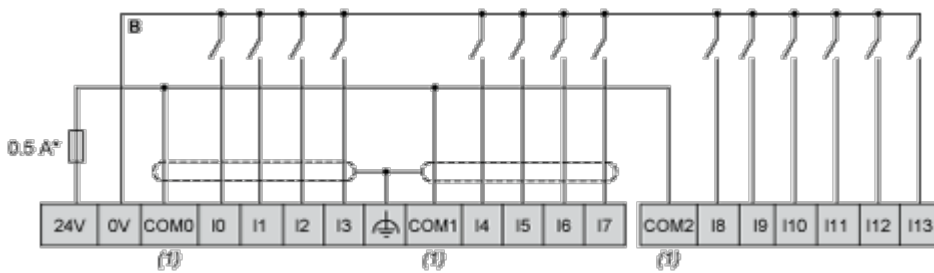
Wiring Diagram (Positive Logic)



(\*) : Type T fuse

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

Wiring Diagram (Negative Logic)



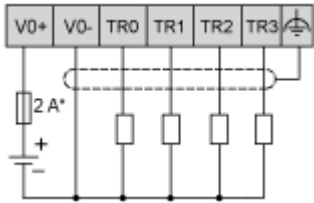
(\*) : Type T fuse

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

Fast Transistor Outputs

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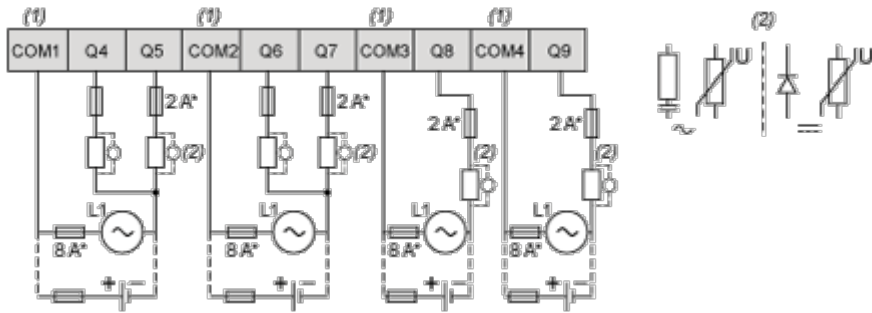
Wiring Diagram



(\*) : 2 A fast-blow fuse

Relay Outputs

Wiring Diagram



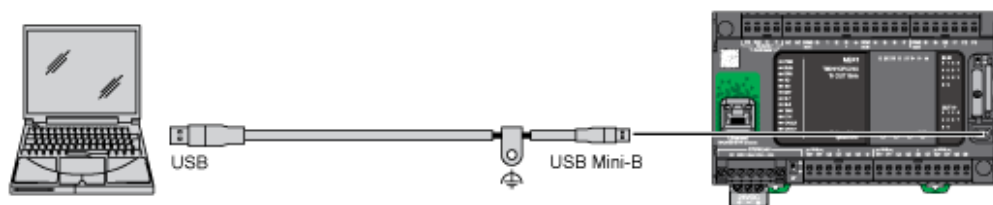
(\*) : Type T fuse

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

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

USB Mini-B Connection

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Ethernet Connection to a PC

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