

# Product datasheet

Specifications



## logic controller, Modicon M241, 24 IO, transistor, NPN, Ethernet

TM241CE24U

### 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) 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) 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	$\geq 15$ V for input
Voltage state 0 guaranteed	$\leq 5$ V for input
Discrete input current	5 mA for input 10.7 mA for fast input
Input impedance	4.7 kOhm for input 2.81 kOhm for fast input
Response time	50 $\mu$ s turn-on, I0...I13 terminal(s) for input 50 $\mu$ s turn-off, I0...I13 terminal(s) for input $\leq 2$ $\mu$ s turn-on, I0...I7 terminal(s) for fast input $\leq 2$ $\mu$ s turn-off, I0...I7 terminal(s) for fast input $\leq 34$ $\mu$ s turn-on, Q0...Q9 terminal(s) for output $\leq 250$ $\mu$ s turn-off, Q0...Q9 terminal(s) for output $\leq 2$ $\mu$ s turn-on, Q0...Q3 terminal(s) for fast output $\leq 2$ $\mu$ s turn-off, Q0...Q3 terminal(s) for fast output

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 12 ms for fast input 0 ms for input 1 ms for input 4 ms for input 12 ms for input
<b>Discrete output logic</b>	Negative logic (sink)
<b>Output voltage limits</b>	30 V DC
<b>Maximum current per output common</b>	2 A with Q0...Q3 for fast output 2 A with Q4...Q7 for output 1 A with Q8...Q9 for output
<b>Maximum output frequency</b>	20 kHz for fast output (PWM mode) 100 kHz for fast output (PLS mode) 1 kHz for output
<b>Accuracy</b>	+/- 0.1 % at 0.02...0.1 kHz for fast output +/- 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 Short-circuit and overload protection with automatic reset Reverse polarity protection for fast 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 4 cyclic master tasks 8 event tasks 3 cyclic master tasks + 1 freewheeling task
<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) 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 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>	<p>FDR</p> <p>DHCP server via TM4 Ethernet switch network module</p> <p>DHCP client embedded Ethernet port</p> <p>SMS notifications</p> <p>Updating firmware</p> <p>SNMP client/server</p> <p>Programming</p> <p>NGVL</p> <p>Monitoring</p> <p>IEC VAR ACCESS</p> <p>FTP client/server</p> <p>Downloading</p> <p>SQL client</p> <p>Modbus TCP client I/O scanner</p> <p>Ethernet/IP originator I/O scanner embedded Ethernet port</p> <p>Ethernet/IP target, Modbus TCP server and Modbus TCP slave</p> <p>Send and receive email from the controller based on TCP/UDP library</p> <p>Web server (WebVisu &amp; XWeb system)</p> <p>OPC UA server</p> <p>DNS client</p>
<b>Local signalling</b>	<p>1 LED (green) for PWR</p> <p>1 LED (green) for RUN</p> <p>1 LED (red) for module error (ERR)</p> <p>1 LED (red) for I/O error (I/O)</p> <p>1 LED (green) for SD card access (SD)</p> <p>1 LED (red) for BAT</p> <p>1 LED (green) for SL1</p> <p>1 LED (green) for SL2</p> <p>1 LED (red) for bus fault on TM4 (TM4)</p> <p>1 LED per channel (green) for I/O state</p> <p>1 LED (green) for Ethernet port activity</p>
<b>Electrical connection</b>	<p>removable screw terminal blockfor inputs and outputs (pitch 5.08 mm)</p> <p>removable screw terminal blockfor connecting the 24 V DC power supply (pitch 5.08 mm)</p>
<b>Maximum cable distance between devices</b>	<p>Unshielded cable: &lt;50 m for input</p> <p>Shielded cable: &lt;10 m for fast input</p> <p>Unshielded cable: &lt;50 m for output</p> <p>Shielded cable: &lt;3 m for fast output</p>
<b>Insulation</b>	<p>Between supply and internal logic at 500 V AC</p> <p>Non-insulated between supply and ground</p> <p>Between input and internal logic at 500 V AC</p> <p>Non-insulated between inputs</p> <p>Between fast input and internal logic at 500 V AC</p> <p>Between output and internal logic at 500 V AC</p> <p>Non-insulated between outputs</p> <p>Between fast output and internal logic at 500 V AC</p> <p>Between output groups at 500 V AC</p>
<b>marking</b>	CE
<b>Surge withstand</b>	<p>1 kV power lines (DC) common mode conforming to IEC 61000-4-5</p> <p>1 kV shielded cable common mode conforming to IEC 61000-4-5</p> <p>0.5 kV power lines (DC) differential mode conforming to IEC 61000-4-5</p> <p>1 kV relay output differential mode conforming to IEC 61000-4-5</p> <p>1 kV input common mode conforming to IEC 61000-4-5</p> <p>1 kV transistor output common mode conforming to IEC 61000-4-5</p>
<b>Web services</b>	Web server
<b>Maximum number of connections</b>	<p>8 Modbus server</p> <p>8 SoMachine protocol</p> <p>10 web server</p> <p>4 FTP server</p> <p>16 Ethernet/IP target</p> <p>8 Modbus client</p>
<b>Number of server device(s)</b>	<p>64 Modbus TCP:</p> <p>16 EtherNet/IP:</p>
<b>Cycle time</b>	<p>10 ms 16 EtherNet/IP</p> <p>64 ms 64 Modbus TCP</p>

<b>Mounting support</b>	Top hat type TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.5 rail conforming to IEC 60715 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 CSA C22.2 No 142 CSA C22.2 No 213 IEC 61131-2:2007 Marine specification (LR, ABS, DNV, GL) UL 508
<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 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 Radiated emissions - test level: 40 dB $\mu$ V/m QP class A 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 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>	11.606 cm
<b>Package 1 Width</b>	13.17 cm
<b>Package 1 Length</b>	18.76 cm
<b>Package 1 Weight</b>	650.0 g
<b>Unit Type of Package 2</b>	S03
<b>Number of Units in Package 2</b>	8
<b>Package 2 Height</b>	30 cm
<b>Package 2 Width</b>	30 cm
<b>Package 2 Length</b>	40 cm
<b>Package 2 Weight</b>	6.06 kg
<b>Unit Type of Package 3</b>	P06
<b>Number of Units in Package 3</b>	64
<b>Package 3 Height</b>	75.0 cm
<b>Package 3 Width</b>	40.0 cm
<b>Package 3 Length</b>	80.0 cm
<b>Package 3 Weight</b>	53.6 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** [REACH Declaration](#)

**Eu Rohs Directive** Pro-active compliance (Product out of EU RoHS legal scope)

**China Rohs Regulation** [China RoHS declaration](#)

**Environmental Disclosure** [Product Environmental Profile](#)

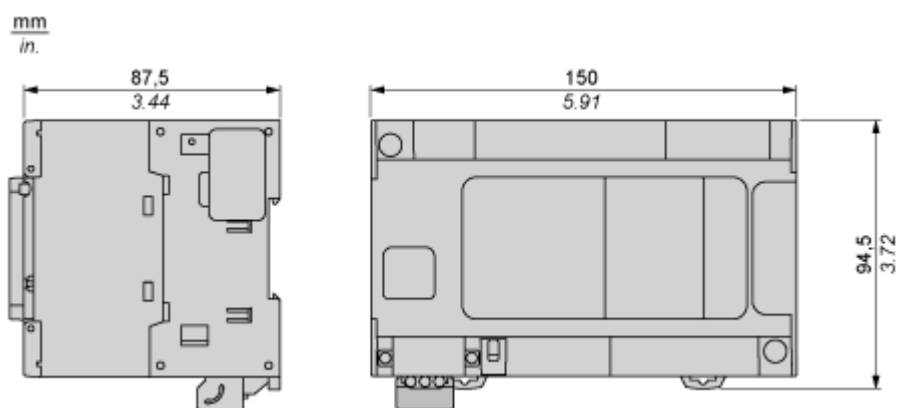
**Weee** The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

**Circularity Profile** [End of Life Information](#)

Dimensions Drawings

Dimensions

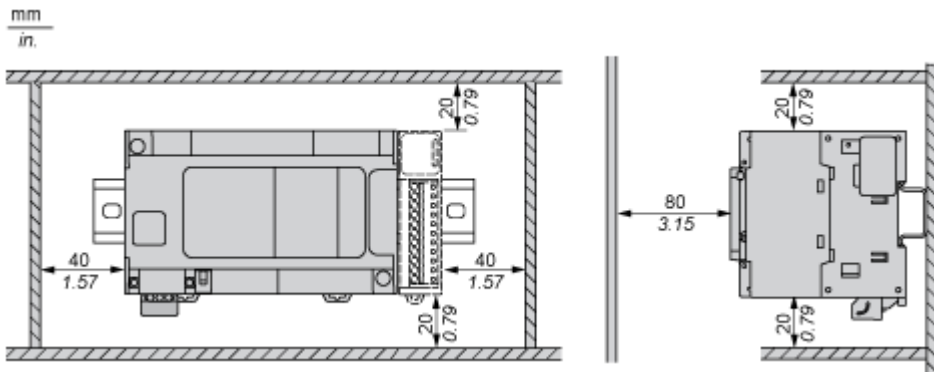
---



Mounting and Clearance

Clearance

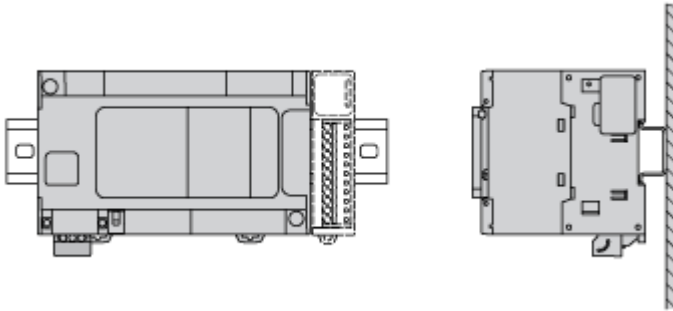
---



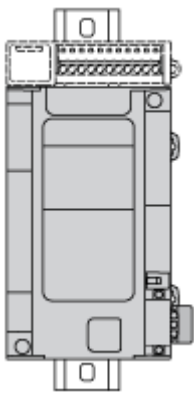


**Mounting Position**

---

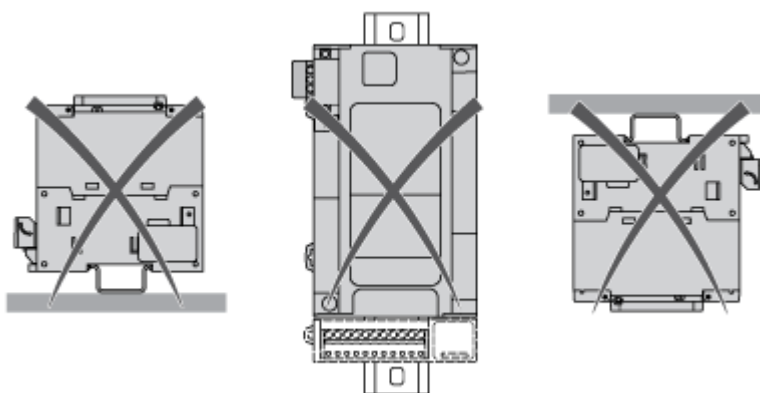


**Acceptable Mounting**



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

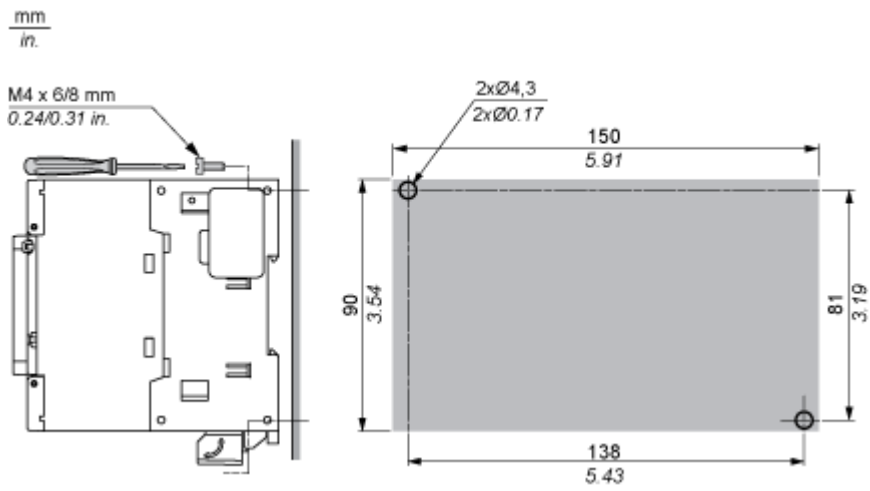
**Incorrect Mounting**



Direct Mounting On a Panel Surface

---

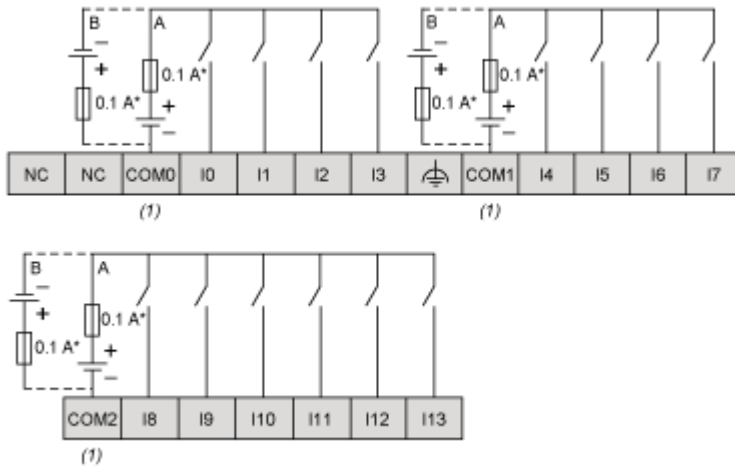
Mounting Hole Layout



Connections and Schema

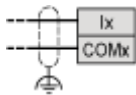
Digital Inputs

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)

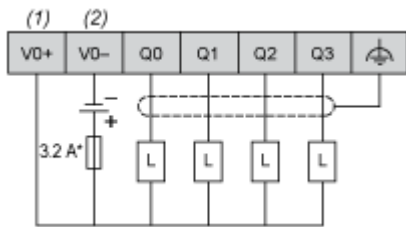
Fast Input Wiring (I0...I7)



Fast Transistor Outputs

---

Wiring Diagram



(\*) : Type T fuse

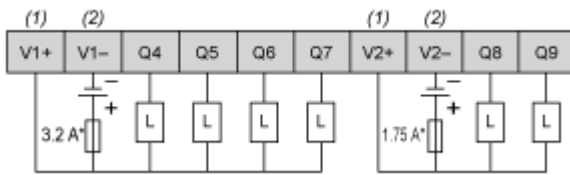
(1) The V0+, V1+, V2+ and V3+ terminals are not connected internally.

(2) The V0-, V1-, V2- and V3- terminals are not connected internally.

Transistor Outputs

---

Wiring Diagram



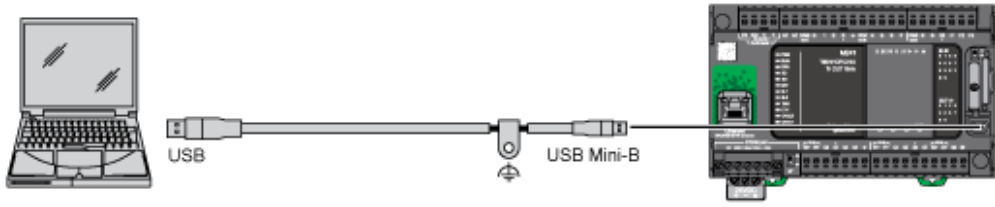
(\*) : Type T fuse

(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

---

