

# Product data sheet

Specifications



## Logic controller, Modicon M241, 40 IO relay Ethernet

TM241CE40R

### Main

Range of product	Modicon M241
Product or component type	Logic controller
[Us] rated supply voltage	100...240 V AC
Discrete input number	24, discrete input 8 fast input conforming to IEC 61131-2 Type 1
Discrete output type	Relay Transistor
Discrete output number	4 transistor 4 fast output 12 relay
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	0.1 A for fast output (PTO mode) (TR0...TR3) 2 A for relay output (Q4...Q15) 0.5 A for transistor output (TR0...TR3)

### Complementary

Discrete I/O number	40
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	>= 15 V for input
Voltage state 0 guaranteed	<= 5 V for input
Discrete input current	7 mA for input
Input impedance	4.7 kOhm for input
Response time	50 µs turn-on, I0...I15 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 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)
Accuracy	+/- 0.1 % at 0.02...0.1 kHz for fast output +/- 1 % at 0.1...1 kHz for fast output
Protection type	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
Reset time	10 ms automatic reset output 12 s automatic reset fast output
Memory capacity	8 MB for program 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)
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 0.7 ms for other instruction
Application structure	4 cyclic master tasks 8 event tasks 8 external event tasks 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 14 standard input at 1 kHz
Control signal type	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)
Integrated connection type	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
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 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
Communication port protocol	Non isolated serial link: Modbus master/slave
Port Ethernet	10BASE-T/100BASE-TX - 1 port(s) copper cable
Ethernet services	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
Local signalling	1 LED (green) for PWR 1 LED (green) for RUN 1 LED (red) for module error (ERR) 1 LED (red) for I/O error (I/O) 1 LED (green) for SD card access (SD) 1 LED (red) for BAT

	1 LED (green) for SL1 1 LED (green) for SL2 1 LED (red) for bus fault on TM4 (TM4) 1 LED per channel (green) for I/O state 1 LED (green) for Ethernet port activity
Electrical connection	removable screw terminal blockfor inputs and outputs (pitch 5.08 mm) 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 Shielded cable: <10 m for fast input Unshielded cable: <50 m for output Shielded cable: <3 m for fast output
Insulation	Between supply and internal logic at 500 V AC 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 2 kV relay output common mode conforming to EN/IEC 61000-4-5 1 kV shielded cable common mode conforming to EN/IEC 61000-4-5 1 kV power lines (AC) differential mode conforming to EN/IEC 61000-4-5 1 kV relay output differential mode conforming to EN/IEC 61000-4-5 1 kV input common mode conforming to EN/IEC 61000-4-5 1 kV transistor output common mode conforming to EN/IEC 61000-4-5
Web services	Web server
Maximum number of connections	8 Modbus server 8 SoMachine protocol 10 web server 4 FTP server 16 Ethernet/IP target 8 Modbus client
Number of slave	64 Modbus TCP: 16 EtherNet/IP:
Cycle time	10 ms 16 EtherNet/IP 64 ms 64 Modbus TCP
Mounting support	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
Height	90 mm
Depth	95 mm
Width	190 mm
Net weight	0.62 kg
Environment	
Standards	ANSI/ISA 12-12-01 CSA C22.2 No 142 CSA C22.2 No 213 EN/IEC 61131-2:2007 Marine specification (LR, ABS, DNV, GL) UL 1604 UL 508
Product certifications	RCM CSA cULus IACS E10
Resistance to electrostatic discharge	8 kV in air conforming to EN/IEC 61000-4-2 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 3 V/m 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3 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 2 kV (relay output) conforming to EN/IEC 61000-4-4 1 kV (Ethernet line) conforming to EN/IEC 61000-4-4 1 kV (serial link) conforming to EN/IEC 61000-4-4 1 kV (input) conforming to EN/IEC 61000-4-4 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 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)

Electromagnetic emission	Conducted emissions - test level: 120...69 dBµV/m QP ( power lines) at 10...150 kHz conforming to EN/ IEC 55011 Conducted emissions - test level: 63 dBµV/m QP ( power lines) at 1.5...30 MHz conforming to EN/IEC 55011 Conducted emissions - test level: 79 dBµV/m QP/66 dBµV/m AV ( power lines) at 0.15...0.5 MHz conforming to EN/IEC 55011 Conducted emissions - test level: 73 dBµV/m QP/60 dBµV/m AV ( power lines) at 0.5...300 MHz conforming to EN/IEC 55011 Radiated emissions - test level: 40 dBµV/m QP class A ( 10 m) at 30...230 MHz conforming to EN/IEC 55011 Conducted emissions - test level: 79...63 dBµV/m QP ( power lines) at 150...1500 kHz conforming to EN/IEC 55011 Radiated emissions - test level: 47 dBµV/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) -10...55 °C (horizontal installation)
Ambient air temperature for storage	-25...70 °C
Relative humidity	10...95 %, without condensation (in operation) 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 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
Shock resistance	15 gn for 11 ms

### Packing Units

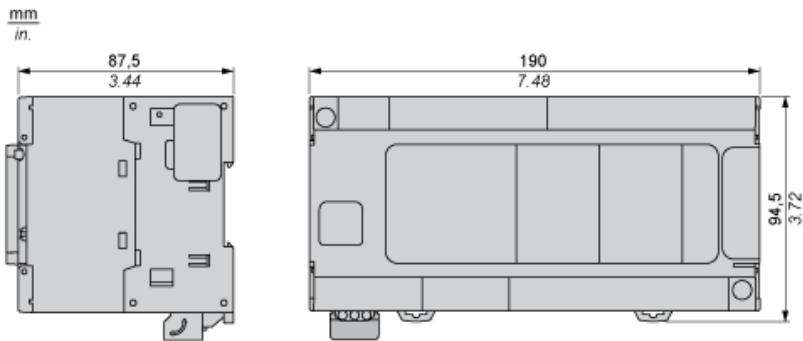
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	12.8 cm
Package 1 Width	22.6 cm
Package 1 Length	11.5 cm
Package 1 Weight	933.0 g
Unit Type of Package 2	S03
Number of Units in Package 2	6
Package 2 Height	30 cm
Package 2 Width	30 cm
Package 2 Length	40 cm
Package 2 Weight	5.827 kg
Unit Type of Package 3	P06
Number of Units in Package 3	48
Package 3 Height	75.0 cm
Package 3 Width	40.0 cm
Package 3 Length	80.0 cm
Package 3 Weight	60 kg

### Offer Sustainability

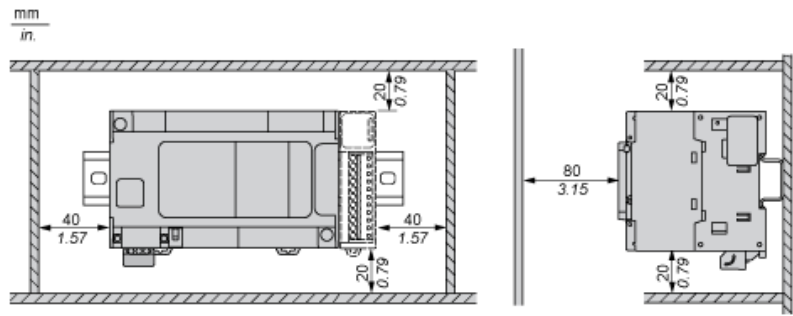
Sustainable offer status	Green Premium product
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REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a>
RoHS exemption information	<a href="#">Yes</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
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

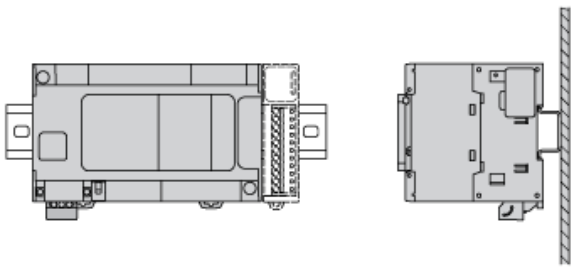
Dimensions



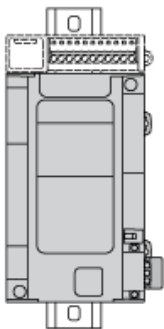
Clearance



Mounting Position

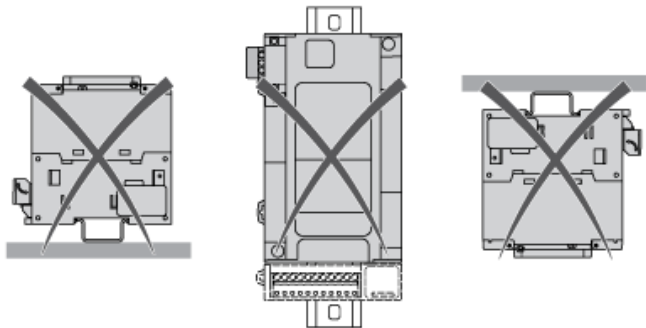


Acceptable Mounting



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

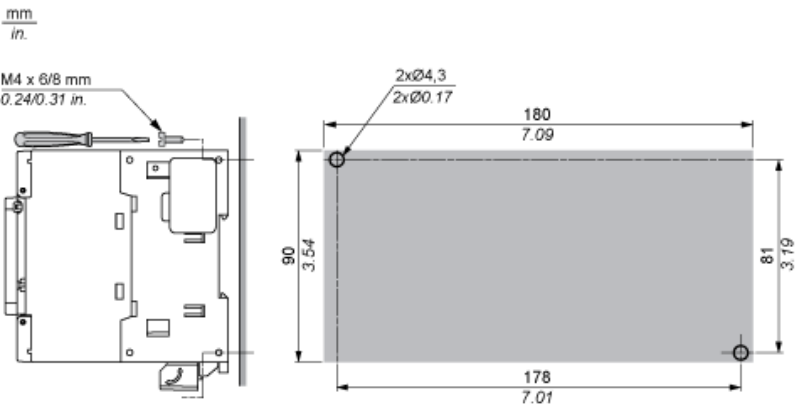
Incorrect Mounting





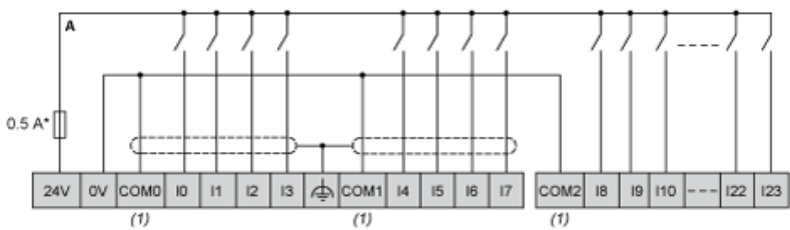
Direct Mounting On a Panel Surface

Mounting Hole Layout



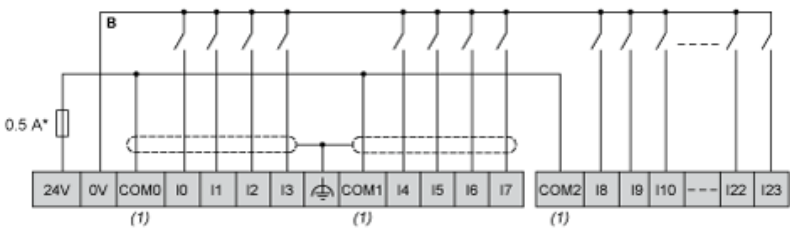
Digital Inputs

Wiring Diagram (Positive Logic)



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

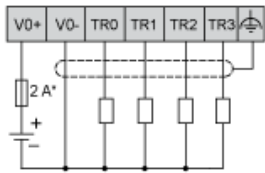
Wiring Diagram (Negative Logic)



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

Fast Transistor Outputs

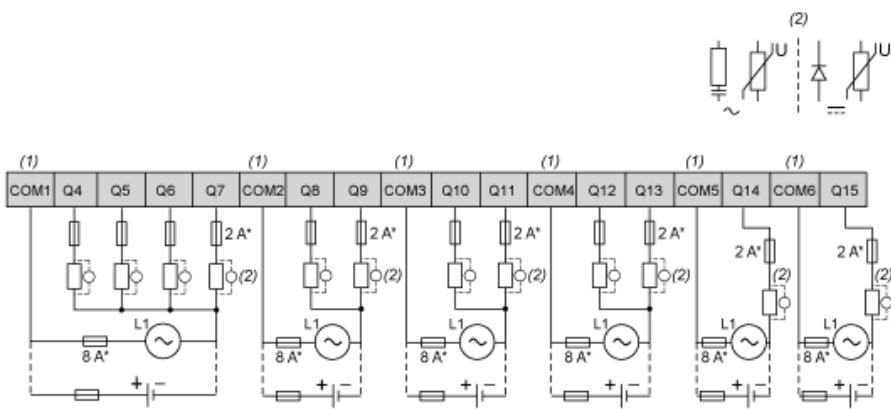
Wiring Diagram



(\*) : 2 A fast-blow fuse

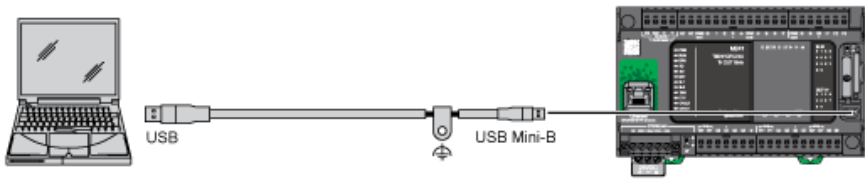
Relay Outputs

Wiring Diagram

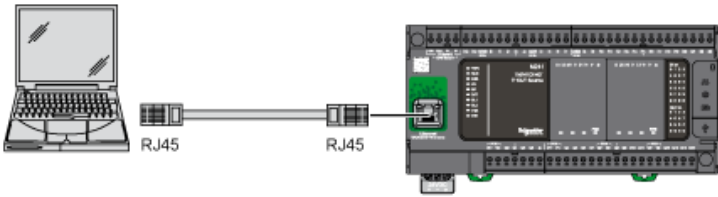


- (\*) : Type T fuse
- (1) : The terminals COM1 to COM6 are not connected internally.
- (2) : To improve the life time of the contacts, and to protect from potential inductive load damage, you must connect a free wheeling diode in parallel to the load.

USB Mini-B Connection



Ethernet Connection to a PC



Recommended replacement(s)