

# Product datasheet

Specifications



## controller M241 24 IO relay Ethernet CAN master

TM241CEC24R

EAN Code: 3606480648854

### 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 Relay
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	>= 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 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)

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

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	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 external event tasks 8 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 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 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 1000 kbit/s for bus length of 20 m for CANopen 800 kbit/s for bus length of 40 m for CANopen 500 kbit/s for bus length of 100 m for CANopen 250 kbit/s for bus length of 250 m for CANopen 125 kbit/s for bus length of 500 m for CANopen 50 kbit/s for bus length of 1000 m for CANopen 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 Modbus TCP slave device Modbus TCP server Modbus TCP client IEC VAR ACCESS FTP client/server SQL client DHCP client Ethernet/IP adapter 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 1 LED (green) for CANopen run 1 LED (green) for CANopen error
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 IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV power lines (AC) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV input common mode conforming to IEC 61000-4-5 1 kV transistor output common mode conforming to IEC 61000-4-5
Web Services	Web server
Maximum Number Of Connections	16 Ethernet/IP device 8 Modbus server
Canopen Feature Profile	DR 303-1 DS 301 V4.02
Number Of Server Device(S)	63 CANopen:
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	150 mm
Net Weight	0.53 kg

## Environment

Standards	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
Product Certifications	RCM cULus CE UKCA DNV-GL ABS LR
Resistance To Electrostatic Discharge	8 kV in air conforming to IEC 61000-4-2 4 kV on contact conforming to IEC 61000-4-2

Resistance To Electromagnetic Fields	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
Resistance To Fast Transients	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
Resistance To Conducted Disturbances	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)
Electromagnetic Emission	Conducted emissions - test level: 120...69 dBµV/m QP ( power lines) at 10...150 kHz conforming to IEC 55011 Conducted emissions - test level: 63 dBµV/m QP ( power lines) at 1.5...30 MHz conforming to IEC 55011 Conducted emissions - test level: 79 dBµV/m QP/66 dBµV/m AV ( power lines) at 0.15...0.5 MHz conforming to IEC 55011 Conducted emissions - test level: 73 dBµV/m QP/60 dBµV/m AV ( power lines) at 0.5...300 MHz conforming to IEC 55011 Radiated emissions - test level: 40 dBµV/m QP class A ( 10 m) at 30...230 MHz conforming to IEC 55011 Conducted emissions - test level: 79...63 dBµV/m QP ( power lines) at 150...1500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBµV/m QP class A ( 10 m) at 230...1000 MHz conforming to 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	11.335 cm
Package 1 Width	13.188 cm
Package 1 Length	18.727 cm
Package 1 Weight	780.0 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	7.06 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	64.8 kg

## Contractual warranty

Warranty	18 months
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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

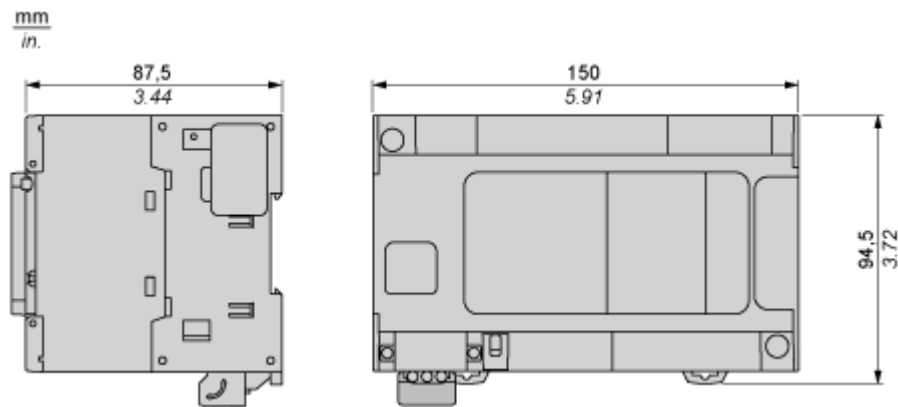
✓	Mercury Free	
✓	Rohs Exemption Information	Yes
✓	Pvc Free	

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>

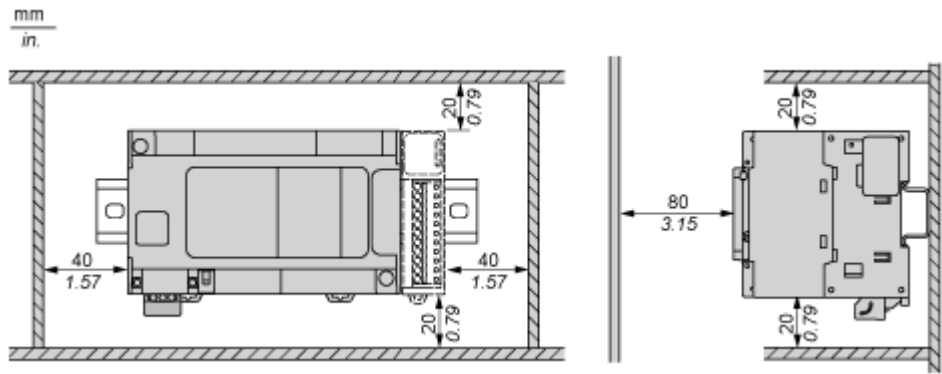
Dimensions Drawings

Dimensions



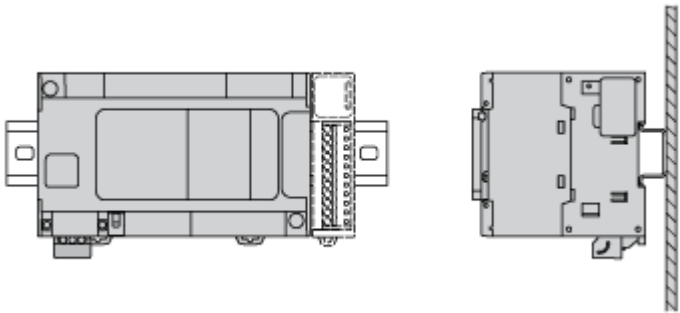
Mounting and Clearance

Clearance

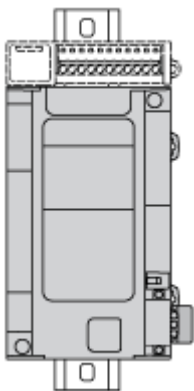


Mounting Position

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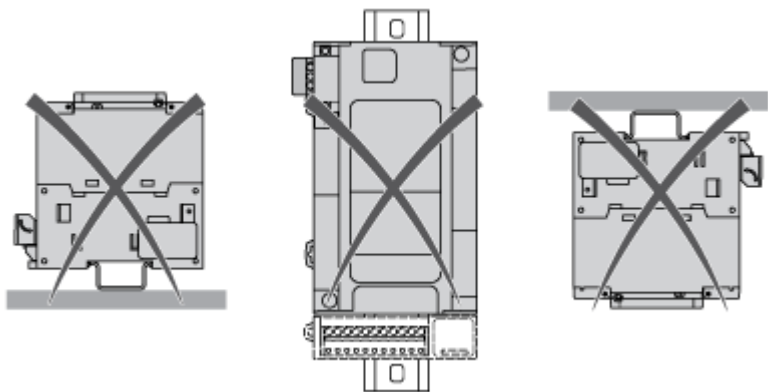


Acceptable Mounting



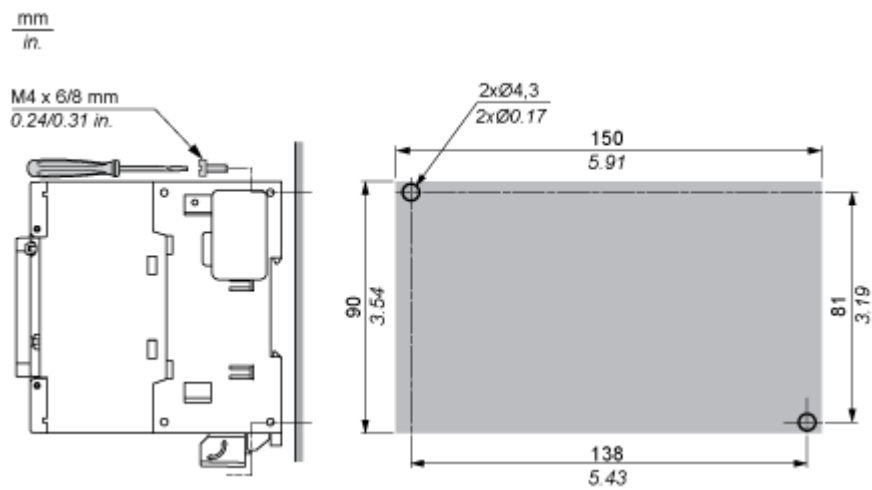
**NOTE:** Expansion modules must be mounted above the logic controller.

Incorrect Mounting



Direct Mounting On a Panel Surface

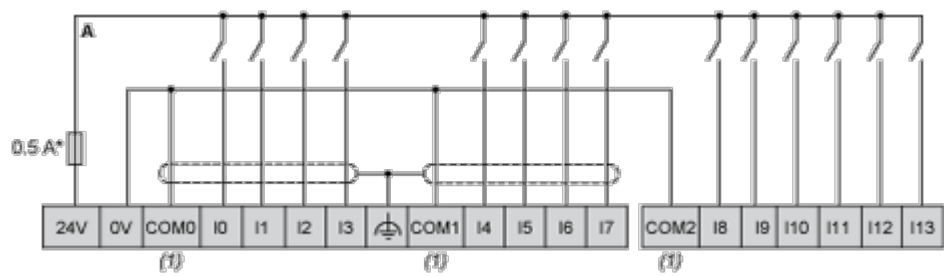
Mounting Hole Layout



Connections and Schema

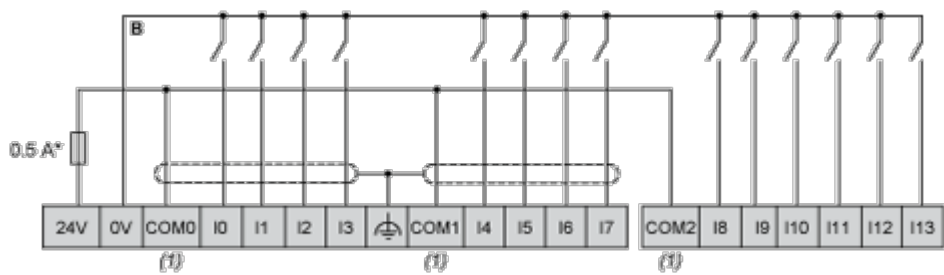
Digital Inputs

Wiring Diagram (Positive Logic)



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

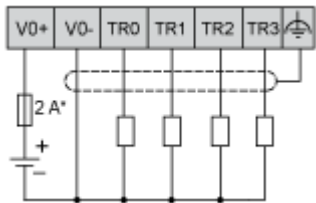
Wiring Diagram (Negative Logic)



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

Fast Transistor Outputs

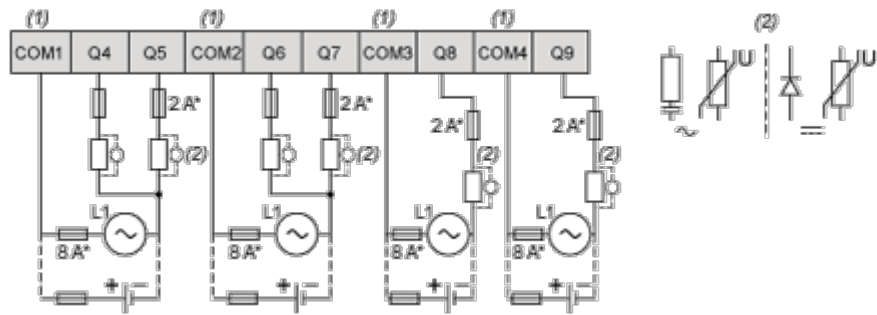
Wiring Diagram



(\*) : 2 A fast-blow fuse

Relay Outputs

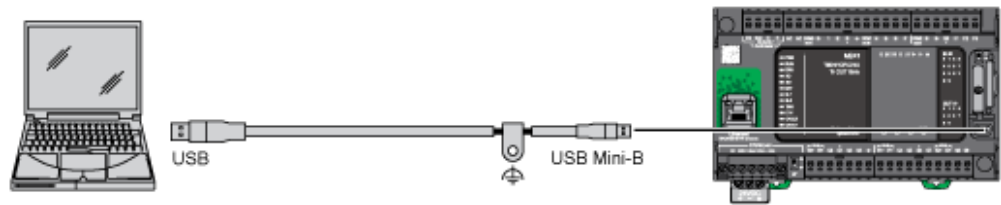
Wiring Diagram



- (\*) : 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

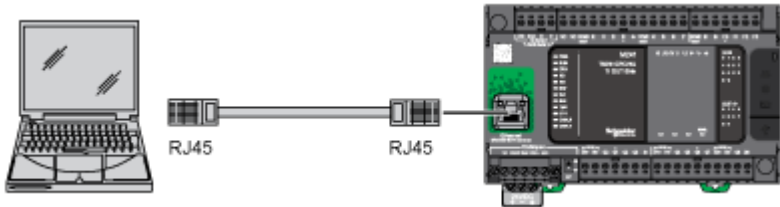
USB Mini-B Connection

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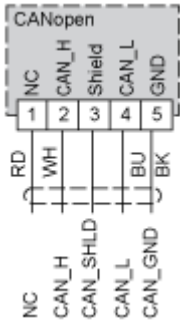
Ethernet Connection to a PC

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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