Product data sheet

Specifications

logic controller, Modicon M241, 24 IO, transistor, NPN, Ethernet CAN master

TM241CEC24U

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	>= 15 V for input
Voltage state 0 guaranteed	<= 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 µs turn-on, I0...I13 terminal(s) for input 50 µs turn-off, I0...I13 terminal(s) for input <= 2 µs turn-on, I0...I7 terminal(s) for fast input <= 2 µs turn-off, I0...I7 terminal(s) for fast input <= 34 µs turn-on, Q0...Q9 terminal(s) for output <= 250 µs turn-off, Q0...Q9 terminal(s) for output <= 2 µs turn-on, Q0...Q3 terminal(s) for fast output <= 2 µs turn-off, Q0...Q3 terminal(s) for fast output

Configurable filtering time	1 s for fast input
	12 ms for fast input
	0 ms for input
	1 ms for input
	4 ms for input
	12 ms for input
Discrete output logic	Negative logic (sink)
Output voltage limits	30 V DC
Maximum current per output common	2 A with Q0...Q3 for fast output
	2 A with Q4...Q7 for output
	1 A with Q8...Q9 for output
Maximum output frequency	20 kHz for fast output (PWM mode)
	100 kHz for fast output (PLS mode)
	1 kHz for output
Accuracy	+/- 0.1 % at 0.02…0.1 kHz for fast output
	+/- 1 % at 0.1…1 kHz for fast output
Maximum leakage current	5 µA for output
Maximum voltage drop	<1 V
Maximum tungsten load	<2.4 W
Protection type	Short-circuit protection
	Short-circuit and overload protection with automatic reset
	Reverse polarity protection for fast 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	8 event tasks
	4 cyclic master tasks
	3 cyclic master tasks + 1 freewheeling task
	8 external event tasks
Realtime clock	With
Clock drift	<= 60 s/month at 25 °C
Positioning functions	PTO function 4 channel(s) (positioning frequency: 100 kHz)
	PTO function 4 channel(s) for transistor output (positioning frequency: 1 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

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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
	Between input and internal logic at 500 V AC
	Non-insulated between inputs
	Between fast input and internal logic at 500 V AC
	Between output and internal logic at 500 V AC
	Non-insulated between outputs
	Between fast output and internal logic at 500 V AC
Marking	CE
Surge withstand	1 kV power lines (DC) common mode conforming to IEC 61000-4-5
	1 kV shielded cable common mode conforming to IEC 61000-4-5
	0.5 kV power lines (DC) 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

Product 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
	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
	Radiated emissions - test level: 40 dBμV/m QP class A 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 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	11.39 cm
Package 1 Width	13.214 cm
Package 1 Length	18.704 cm
Package 1 Weight	661.0 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	6.14 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	54.48 kg

🔆 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	**914**
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**
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 www.P65Warnings.ca.gov**
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**

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Dimensions Drawings

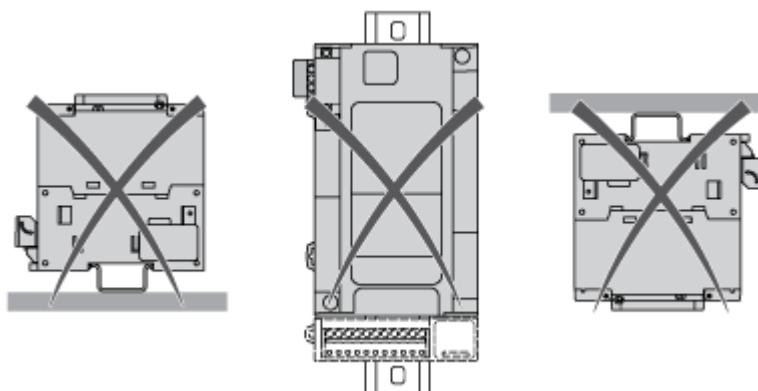**Dimensions**

mm
in.

87,5
3.44

150
5.91

94,5
3.72
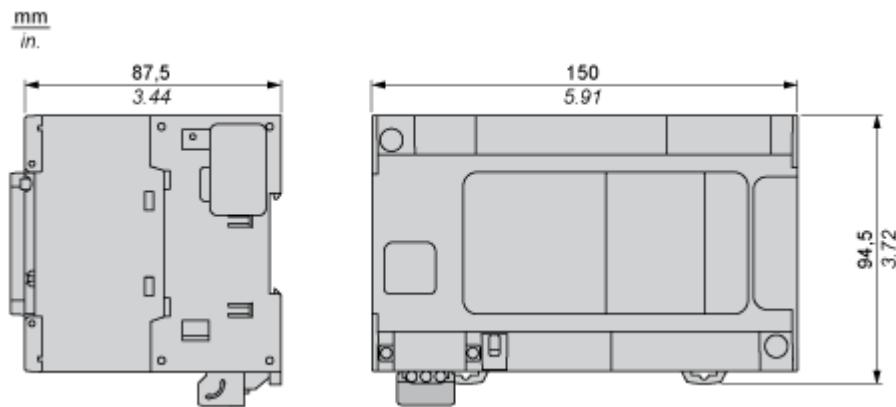
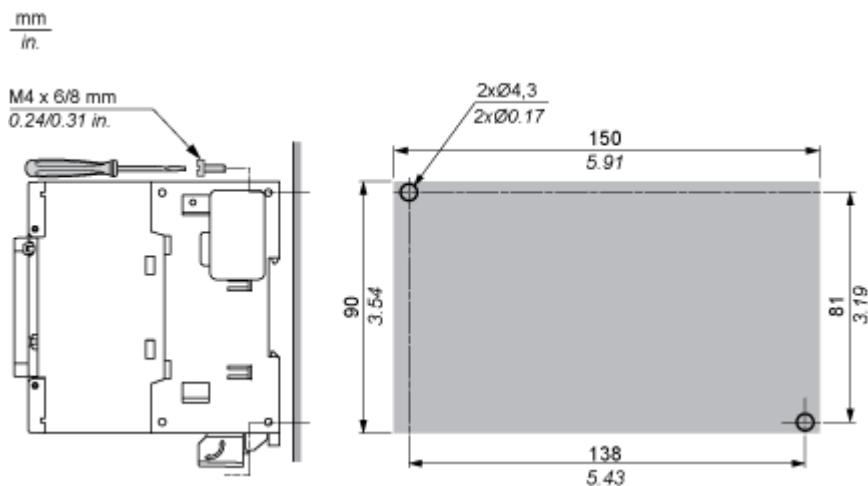Mounting and Clearance

Clearance
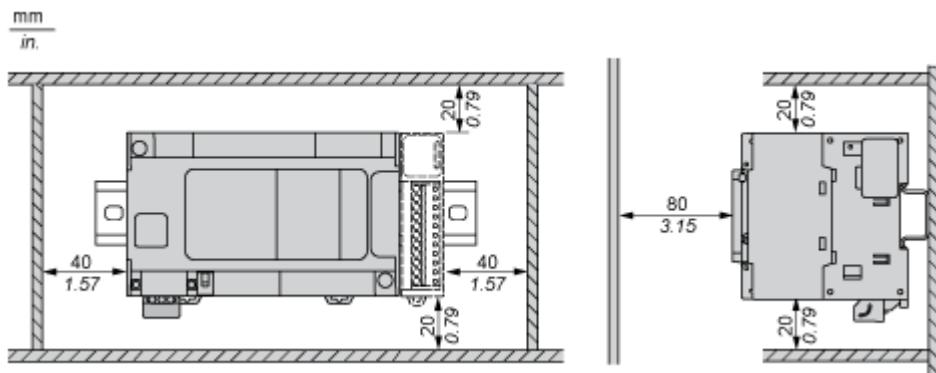
Mounting Position
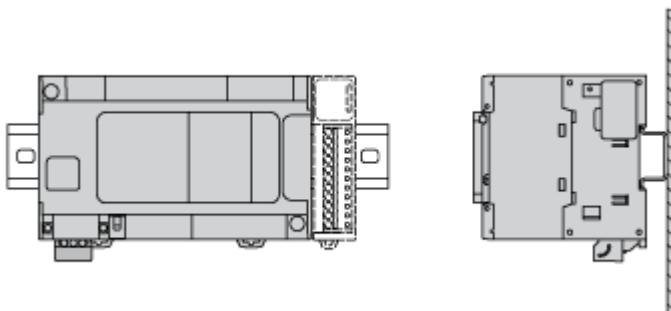
Acceptable Mounting
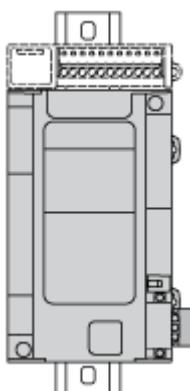
NOTE: Expansion modules must be mounted above the logic controller.

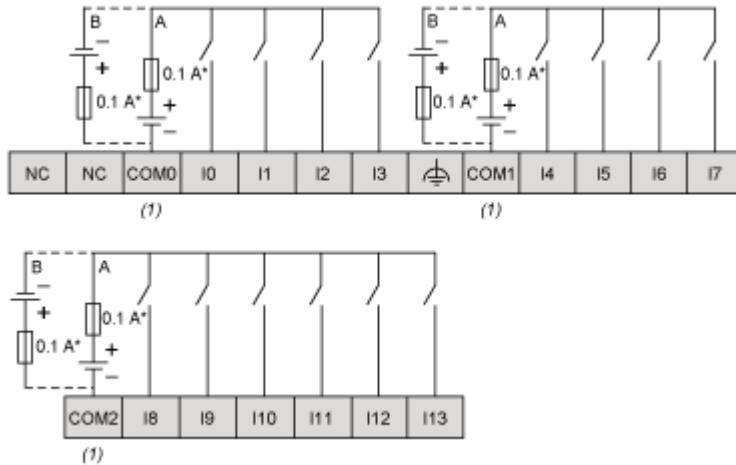**Incorrect Mounting**

Direct Mounting On a Panel Surface

Mounting Hole Layout

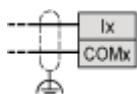Connections and Schema

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)
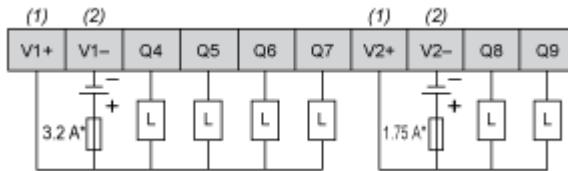
Fast Transistor Outputs
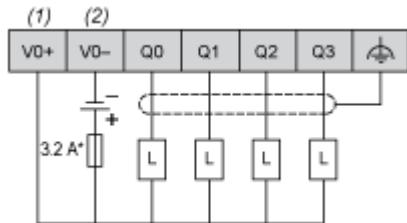
Wiring Diagram

(*) :   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.
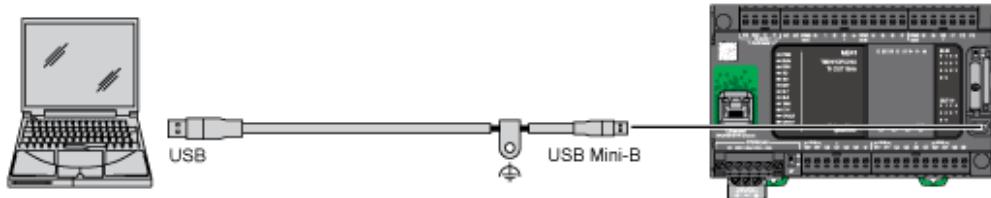
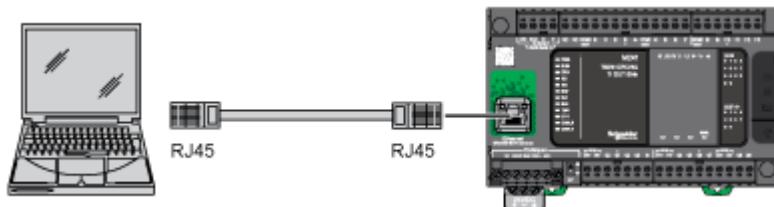## Transistor Outputs
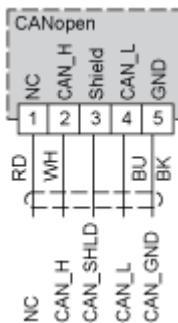
Wiring Diagram

(*) :   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

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