



### 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) 14 (remote)
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
Configurable filtering time	1 $\mu$ 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	$\pm 0.1$ % at 0.02...0.1 kHz for fast output $\pm 1$ % at 0.1...1 kHz for fast output

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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	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 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) 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
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
Communication port protocol	Non isolated serial link: Modbus master/slave
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
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 EN/IEC 61000-4-5 1 kV shielded cable common mode conforming to EN/IEC 61000-4-5 0.5 kV power lines (DC) 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
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 EN/IEC 61131-2:2007 Marine specification (LR, ABS, DNV, GL) UL 1604 UL 508
Product certifications	CULus IACS E10 CSA RCM
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 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 dB $\mu$ V/m QP ( power lines) at 10...150 kHz conforming to EN/IEC 55011 Conducted emissions - test level: 63 dB $\mu$ V/m QP ( power lines) at 1.5...30 MHz conforming to EN/IEC 55011 Radiated emissions - test level: 40 dB $\mu$ V/m QP class A at 30...230 MHz conforming to EN/IEC 55011 Conducted emissions - test level: 79...63 dB $\mu$ V/m QP ( power lines) at 150...1500 kHz conforming to EN/IEC 55011 Radiated emissions - test level: 47 dB $\mu$ V/m QP class A 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

Package 1 Weight	606.000 g
Package 1 Height	128.000 mm
Package 1 width	114.500 mm
Package 1 Length	186.000 mm

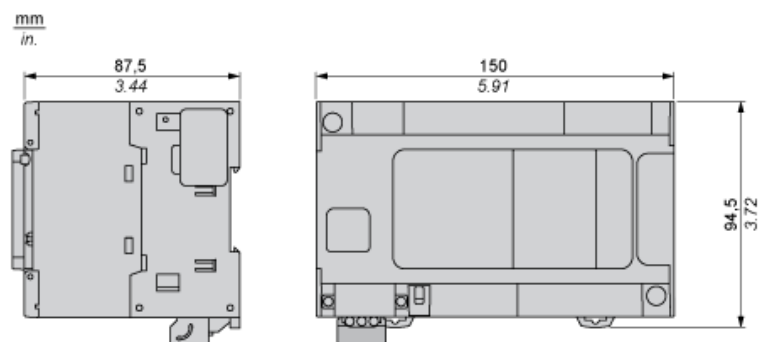
## Offer Sustainability

Sustainable offer status	Green Premium product
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
RoHS exemption information	<a href="#"> Yes</a>
China RoHS Regulation	<a href="#"> China RoHS Declaration</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

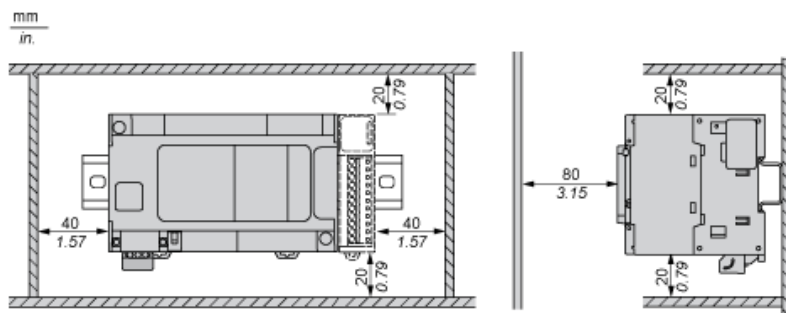
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Dimensions

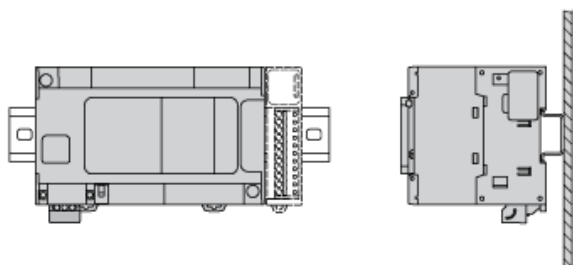
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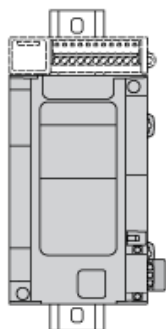
## Clearance



## Mounting Position

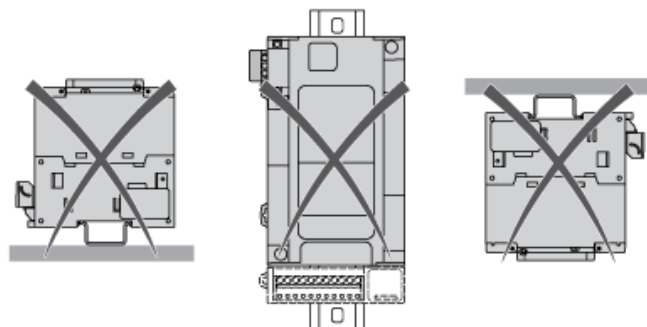


## Acceptable Mounting



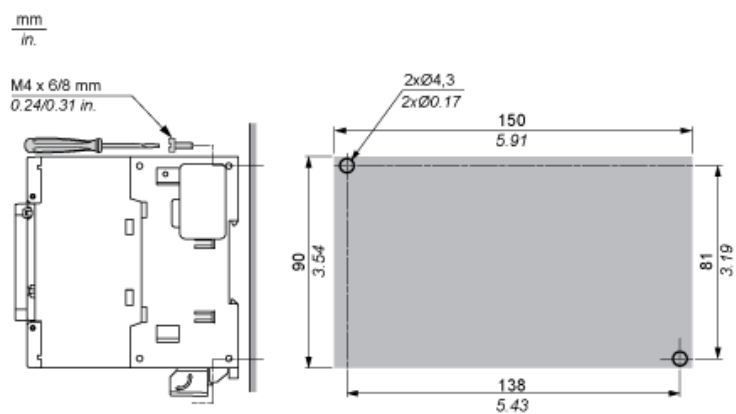
NOTE: Expansion modules must be mounted above the logic controller.

## Incorrect Mounting



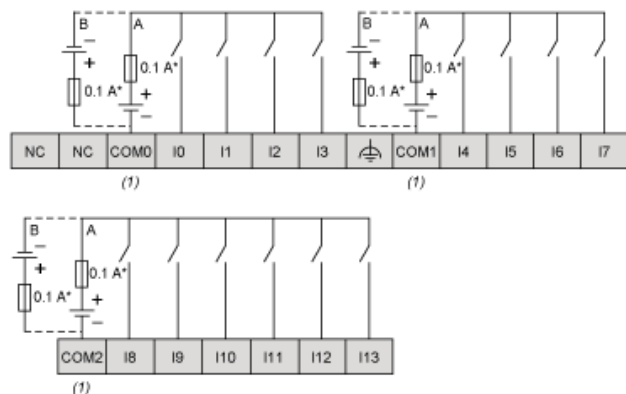
## Direct Mounting On a Panel Surface

## Mounting Hole Layout



## Digital Inputs

### Wiring Diagram



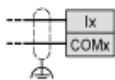
(\*) : Type T fuse

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

(A) : Sink wiring (positive logic)

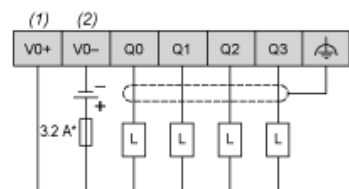
(B) : Source wiring (negative logic)

### Fast Input Wiring (I0...I7)



## Fast Transistor Outputs

### Wiring Diagram



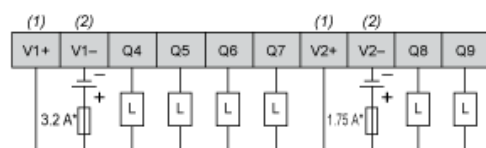
(\*) : Type T fuse

(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



