Product data sheet
Characteristics

TM241CE24U
controller M241 24 IO transistor NPN Ethernet

Green Premium

Product availability: Non-Stock - Not normally stocked in distribution facility

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 including 8 fast input conforming to IEC 61131-2 Type 1
Discrete output type	Transistor
Discrete output number	10 transistor including 4 fast output
Discrete output voltage	24 V DC transistor output
Discrete output current	0.5 A with Q0...Q9 terminal(s) transistor output 0.1 A with Q0...Q3 terminal(s) fast output (PTO mode)

Complementary

Discrete I/O number	24
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 input
Voltage state 0 guaranteed	<= 5 V input
Discrete input current	5 mA input 10.7 mA fast input
Input impedance	4.7 kOhm input 2.81 kOhm fast input
Response time	50 µs turn-on operation with I0...I13 terminal(s) input 50 µs turn-off operation with I0...I13 terminal(s) input <= 2 µs turn-on operation with I0...I7 terminal(s) fast input <= 2 µs turn-off operation with I0...I7 terminal(s) fast input <= 34 µs turn-on operation with Q0...Q9 terminal(s) output <= 250 µs turn-off operation with Q0...Q9 terminal(s) output <= 2 µs turn-on operation with Q0...Q3 terminal(s) fast output <= 2 µs turn-off operation with Q0...Q3 terminal(s) fast output
Configurable filtering time	1 µs fast input 12 ms fast input 0 ms input 1 ms input 4 ms input 12 ms input
Discrete output logic	Negative logic (sink)
Output voltage limits	30 V DC
Current per output common	<= 2 A with Q0...Q3 terminal for fast output <= 2 A with Q4...Q7 terminal for output <= 1 A with Q8...Q9 terminal for output
Output frequency	<= 20 kHz fast output (PWM mode) <= 100 kHz fast output (PLS mode) <= 1 kHz output
Accuracy	+/- 0.1 % at 0.02...0.1 kHz for fast output +/- 1 % at 0.1...1 kHz for fast output

Leakage current	<= 5 µA output
Voltage drop	<= 1 V
Tungsten load	<= 2.4 W
Protection type	Short-circuit and overload protection with automatic reset Reverse polarity protection fast output Short-circuit protection
Reset time	10 ms automatic reset output 12 s automatic reset fast output
Memory capacity	8 MB program 64 MB system memory RAM
Data backed up	128 MB built-in flash memory backup of user programs
Data storage equipment	<= 16 GB SD card optional
Battery type	BR2032 lithium non-rechargeable, battery life: 4 yr
Backup time	2 years at 77 °F (25 °C)
Execution time for 1 KInstruction	0.3 ms event and periodic task 0.7 ms 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 77 °F (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 signal at 100 kHz fast input (HSC mode) Pulse/Direction signal at 200 kHz fast input (HSC mode) Single phase signal at 200 kHz fast input (HSC mode)
Integrated connection type	USB port with connector mini B USB 2.0 Ethernet with connector RJ45 Non isolated serial link "serial 1" with connector RJ45 and interface RS232/RS485 Non isolated serial link "serial 2" with connector removable screw terminal block and interface RS485
Supply	Serial link supply "serial 1" at 5 V, <= 200 mA
Transmission rate	1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m - communication protocol: RS485 1.2...115.2 kbit/s (115.2 kbit/s by default) for bus length of 9.84 ft (3 m) - communication protocol: RS232 480 Mbit/s for bus length of 9.84 ft (3 m) - communication protocol: USB 10/100 Mbit/s - communication protocol: Ethernet
Communication port protocol	Modbus non isolated serial link with master/slave method
Port Ethernet	1 - 10BASE-T/100BASE-TX port with copper cable support
Ethernet services	FDR Downloading IEC VAR ACCESS Monitoring NGVL Programming Updating firmware SMS notifications DHCP server (via TM4 Ethernet switch network module) DHCP client (embedded Ethernet port) SNMP client/server FTP client/server 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 SD card access (SD) 1 LED red BAT 1 LED green SL1 1 LED green SL2 1 LED per channel green I/O state 1 LED red I/O error (I/O) 1 LED red bus fault on TM4 (TM4) 1 LED green Ethernet port activity 1 LED red module error (ERR) 1 LED green PWR 1 LED green RUN
Electrical connection	Removable screw terminal block for inputs and outputs (pitch 5.08 mm) Removable screw terminal block for connecting the 24 V DC power supply (pitch 5.08 mm)
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	500 V AC between fast input and internal logic Non-insulated between inputs 500 V AC between output and internal logic 500 V AC between fast output and internal logic Non-insulated between outputs 500 V AC between input and internal logic 500 V AC between output groups 500 V AC between supply and internal logic Non-insulated between supply and ground
Marking	CE
Surge withstand	1 kV power lines (DC) in common mode conforming to EN/IEC 61000-4-5 1 kV shielded cable in common mode conforming to EN/IEC 61000-4-5 0.5 kV power lines (DC) in differential mode conforming to EN/IEC 61000-4-5 1 kV relay output in differential mode conforming to EN/IEC 61000-4-5 1 kV input in common mode conforming to EN/IEC 61000-4-5 1 kV transistor output in common mode conforming to EN/IEC 61000-4-5
Web services	Web server
Maximum number of connections	8 connection(s) Modbus server 8 connection(s) SoMachine protocol 10 connection(s) web server 4 connection(s) FTP server 16 connection(s) Ethernet/IP target 8 connection(s) Modbus client
Number of slave	16 Ethernet/IP 64 Modbus TCP
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	3.54 in (90 mm)
Depth	3.74 in (95 mm)
Width	5.91 in (150 mm)
Product weight	1.17 lb(US) (0.53 kg)

Environment

Standards	CSA C22.2 No 142 ANSI/ISA 12-12-01 UL 1604 CSA C22.2 No 213 EN/IEC 61131-2 : 2007 Marine specification (LR, ABS, DNV, GL) UL 508
Product certifications	RCM IACS E10 CSA cULus
Resistance to electrostatic discharge	4 kV on contact conforming to EN/IEC 61000-4-2 8 kV in air conforming to EN/IEC 61000-4-2
Resistance to electromagnetic fields	9.14 V/yd (10 V/m) (80 MHz...1 GHz) conforming to EN/IEC 61000-4-3 2.74 V/yd (3 V/m) (1.4 GHz...2 GHz) conforming to EN/IEC 61000-4-3 0.91 V/yd (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 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, condition of test: power lines (radio frequency: 10...150 kHz) conforming to EN/IEC 55011 Conducted emissions, test level: 63 dBµV/m QP, condition of test: power lines (radio frequency: 1.5...30 MHz) conforming to EN/IEC 55011 Radiated emissions, test level: 40 dBµV/m QP with class A (radio frequency: 30...230 MHz) conforming to EN/IEC 55011 Conducted emissions, test level: 79...63 dBµV/m QP, condition of test: power lines (radio frequency: 150...1500 kHz) conforming to EN/IEC 55011 Radiated emissions, test level: 47 dBµV/m QP with class A (radio frequency: 230...1000 MHz) conforming to EN/IEC 55011
Immunity to microbreaks	10 ms
Ambient air temperature for operation	14...131 °F (-10...55 °C) horizontal installation 14...122 °F (-10...50 °C) vertical installation
Ambient air temperature for storage	-13...158 °F (-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...6561.68 ft (0...2000 m)
Storage altitude	0...9842.52 ft (0...3000 m)
Vibration resistance	3.5 mm (vibration frequency: 5...8.4 Hz) on symmetrical rail 3 gn (vibration frequency: 8.4...150 Hz) on symmetrical rail 3.5 mm (vibration frequency: 5...8.4 Hz) on panel mounting 3 gn (vibration frequency: 8.4...150 Hz) on panel mounting
Shock resistance	15 gn 11 ms

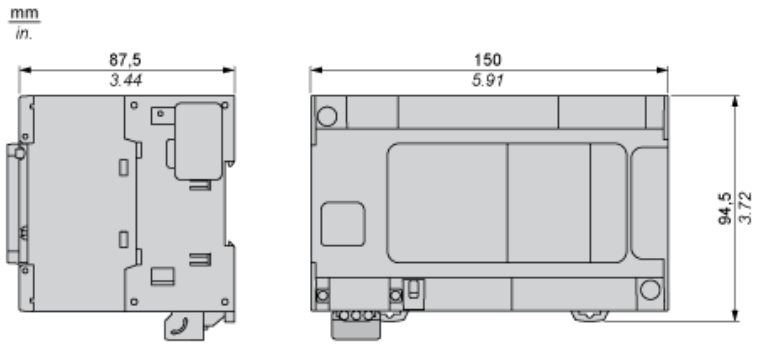
Ordering and shipping details

Category	22533 - M2XX PLC & ACCESSORIES
Discount Schedule	MSX
GTIN	003606480611155
Nbr. of units in pkg.	1
Package weight(Lbs)	1.4299999999999999
Returnability	N
Country of origin	ID

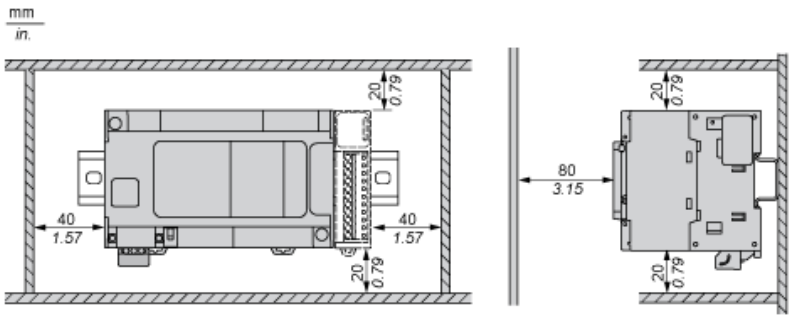
Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1330 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference contains SVHC above the threshold - Go to CaP for more details- Go to CaP for more details
Product environmental profile	Available
Product end of life instructions	Available
California proposition 65	WARNING: This product can expose you to chemicals including:
- - - - - - - Substance 1	Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm.
- - - - - - - More information	For more information go to www.p65warnings.ca.gov

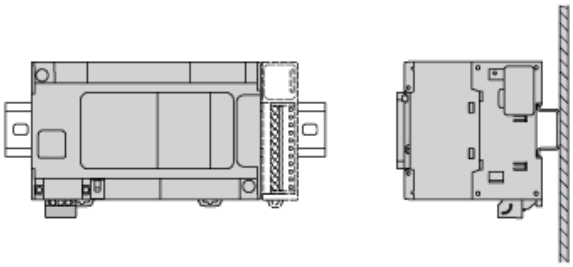
Dimensions



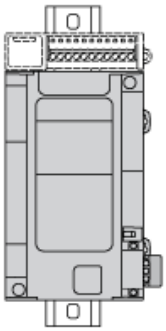
Clearance



Mounting Position

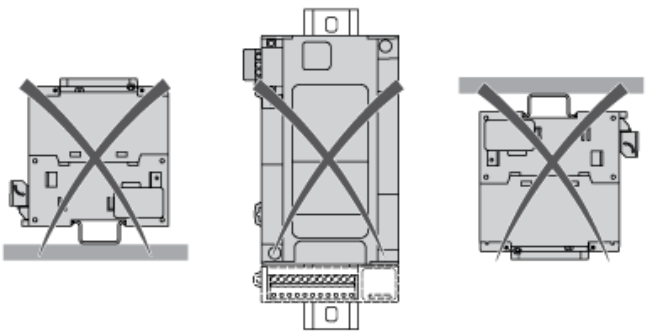


Acceptable Mounting



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

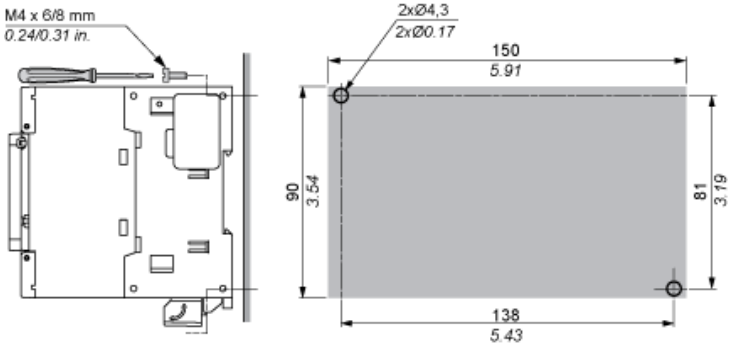
Incorrect Mounting



Direct Mounting On a Panel Surface

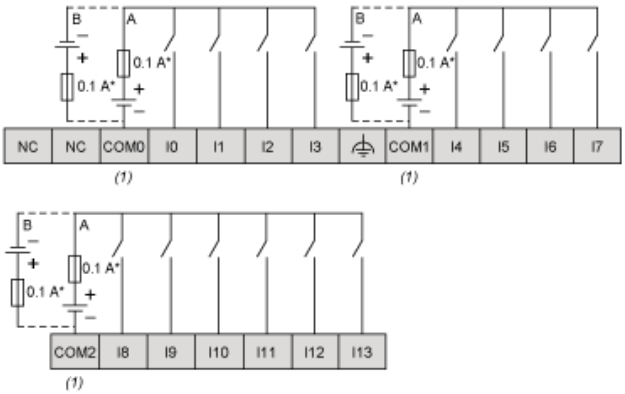
Mounting Hole Layout

mm
in.



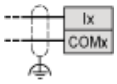
Digital Inputs

Wiring Diagram



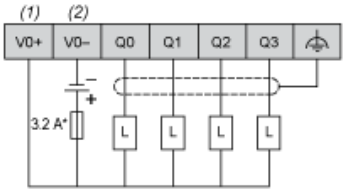
(*) : Type T fuse
(1) : The COM0, COM1 and COM2 terminals are not connected internally
(A) : Sink wiring (positive logic)
(B) : Source wiring (negative logic)

Fast Input Wiring (I0...I7)



Fast Transistor Outputs

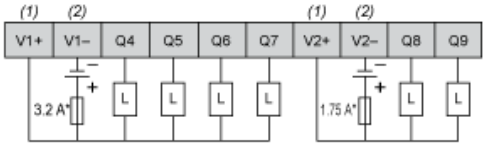
Wiring Diagram



(*) : 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.

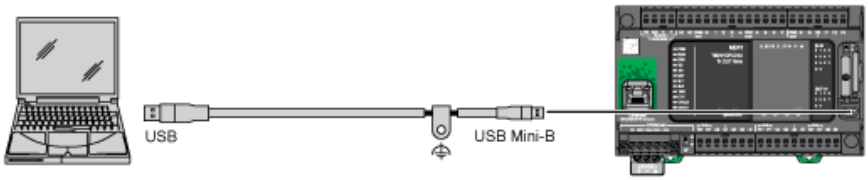
Transistor Outputs

Wiring Diagram

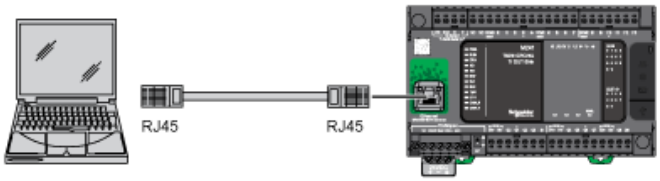


(*) : Type T fuse
(1) : The V1+ and V2+ terminals are not connected internally.
(2) : The V1– and V2– terminals are not connected internally.

USB Mini-B Connection



Ethernet Connection to a PC



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