Specifications





# controller M241 24 IO transistor NPN

TM241C24U

EAN Code: 3606480611131

## 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 (Q0Q9) 0.1 A for fast output (PTO mode) (Q0Q3)

# 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	20.428.8 V
Inrush Current	50 A
Power Consumption In W	32.640.4 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, 10113 terminal(s) for input 50 μs turn-off, 10113 terminal(s) for input <= 2 μs turn-on, 1017 terminal(s) for fast input <= 2 μs turn-off, 1017 terminal(s) for fast input <= 34 μs turn-on, 2029 terminal(s) for output <= 250 μs turn-off, 2029 terminal(s) for output <= 2 μs turn-on, 2023 terminal(s) for fast output

<= 2 µs turn-off, Q0...Q3 terminal(s) for fast output

Configurable Filtering Time	4 up fan fant innut
Configurable Filtering Time	1 μs 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	2 A with Q0Q3 for fast output
Common	2 A with Q4Q7 for output 1 A with Q8Q9 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 0.020.1 kHz for fast output
	+/- 1 % at 0.11 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	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
J	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	1.2115.2 kbit/s (115.2 kbit/s by default) for bus length of 15 m for RS485
	1.2115.2 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	Unshielded cable: <50 m for input
Between Devices	Shielded cable: <10 m for fast input
	Unshielded cable: <50 m for output
	Shielded cable: <3 m for fast output
nsulation	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
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
Height Depth	
-	90 mm

# 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 MHz1 GHz conforming to IEC 61000-4-3 3 V/m 1.4 GHz2 GHz conforming to IEC 61000-4-3 1 V/m 2 GHz3 GHz conforming to IEC 61000-4-3
Resistance To Fast Transients	2 kV (power lines) 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 0.1580 MHz conforming to IEC 61000-4-6 3 V 0.180 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: 12069 dBµV/m QP ( power lines) at 10150 kHz conforming to IEC 55011 Conducted emissions - test level: 63 dBµV/m QP ( power lines) at 1.530 MHz conforming to IEC 55011 Radiated emissions - test level: 40 dBµV/m QP class A at 30230 MHz conforming to IEC 55011 Conducted emissions - test level: 7963 dBµV/m QP ( power lines) at 1501500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBµV/m QP class A at 2301000 MHz conforming to IEC 55011	
Immunity To Microbreaks	10 ms	
Ambient Air Temperature For Operation	-1050 °C (vertical installation) -1055 °C (horizontal installation)	
Ambient Air Temperature For Storage	-2570 °C	
Relative Humidity	1095 %, without condensation (in operation) 1095 %, without condensation (in storage)	
Ip Degree Of Protection	IP20 with protective cover in place	
Pollution Degree	2	
Operating Altitude	02000 m	
Storage Altitude	03000 m	
Vibration Resistance	3.5 mm at 58.4 Hz on symmetrical rail 3 gn at 8.4150 Hz on symmetrical rail 3.5 mm at 58.4 Hz on panel mounting 3 gn at 8.4150 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	11.45 cm
Package 1 Length	18.6 cm
Package 1 Weight	799.0 g
Unit Type Of Package 2	S03
Number Of Units In Package 2	12
Package 2 Height	30 cm
Package 2 Width	30 cm
Package 2 Length	40 cm
Package 2 Weight	9.588 kg

# **Contractual warranty**

Warranty

18 months

# Sustainability Screen Premium

**Green Premium<sup>TM</sup> label** is Schneider Electric's commitment to delivering products with best-inclass 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

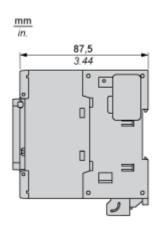
Mercury Free
Rohs Exemption Information Yes
Pvc Free

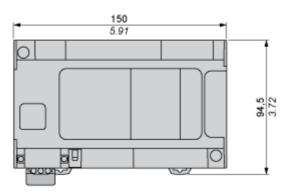
## **Certifications & Standards**

Reach Regulation	REACh Declaration
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)
China Rohs Regulation	China RoHS declaration
Environmental Disclosure	Product Environmental Profile
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Circularity Profile	End of Life Information

## **Dimensions Drawings**

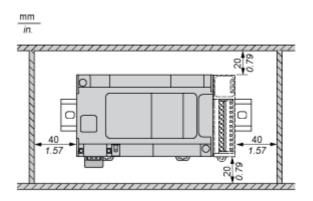
## Dimensions

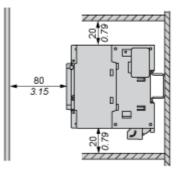




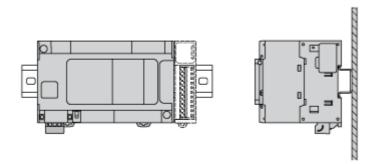
Mounting and Clearance

## Clearance

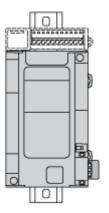




**Mounting Position** 

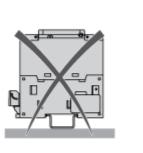


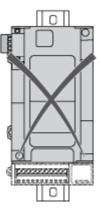
## Acceptable Mounting



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

## **Incorrect Mounting**

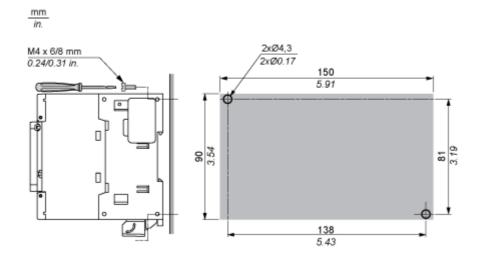






#### **Direct Mounting On a Panel Surface**

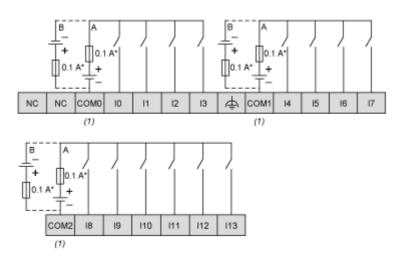
#### Mounting Hole Layout



Connections and Schema

## **Digital Inputs**

#### Wiring Diagram



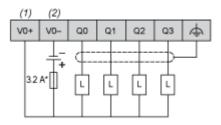
- (\*): Type T fuse
- (1): The COM0, COM1 and COM2 terminals are not connected internally
- (A) : Sink wiring (positive logic)
- (B): Source wiring (negative logic)

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



#### Fast Transistor Outputs

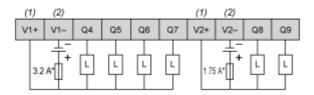
#### Wiring Diagram



- (\*): 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

