Product datasheet

Specification





logic controller, Modicon M241, 24 IO, relay

TM241C24R

Main

Range of product Modicon M241	
product or component type	Logic controller
[Us] rated supply voltage	100240 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	5125 V DC for relay output 5250 V AC for relay output 24 V DC for transistor output
Discrete output current	2 A for relay output (Q4Q9) 0.1 A for fast output (PTO mode) (TR0TR3) 0.5 A for transistor output (TR0TR3)

Complementary

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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	85264 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, I0I13 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)	

Accuracy	+/- 0.1 % at 0.020.1 kHz for fast output +/- 1 % at 0.11 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 3 cyclic master tasks + 1 freewheeling task 8 external event tasks 8 event tasks	
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	
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 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
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	10 V/m 80 MHz1 GHz conforming to IEC 61000-4-3
fields	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
	2 kV (relay output) 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	10 V 0.1580 MHz conforming to IEC 61000-4-6
disturbances	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
	Conducted emissions - test level: 79 dBµV/m QP/66 dBµV/m AV (power lines) at
	0.150.5 MHz conforming to IEC 55011
	Conducted emissions - test level: 73 dBμV/m QP/60 dBμV/m AV (power lines) at 0.5300 MHz conforming to IEC 55011
	Radiated emissions - test level: 40 dBµV/m QP class A (10 m) 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 (10 m) at 2301000 MHz
	conforming to IEC 55011
Immunity to microbreaks	10 ms
	10 ms
Immunity to microbreaks Ambient air temperature for operation	10 ms -1050 °C (vertical installation) -1055 °C (horizontal installation)

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	11.253 cm
Package 1 Width	13.231 cm
Package 1 Length	18.673 cm
Package 1 Weight	750.0 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	6.91 kg
Unit Type of Package 3	P06
Number of Units in Package 3	64
Package 3 Height	75.0 cm
Package 3 Width	60.0 cm
Package 3 Length	80.0 cm
Package 3 Weight	60.64 kg



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Guide to assess a product's sustainability >





Transparency RoHS/REACh

Well-being performance

	Mercury Free	
⊘	Rohs Exemption Information	Yes
	Pvc Free	

Certifications & Standards

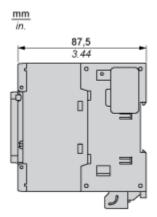
Reach Regulation	REACh Declaration
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)
China Rohs Regulation	China RoHS declaration
Environmental Disclosure	Product Environmental Profile
Weee	The product must be disposed on European Union markets following specific waste collection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

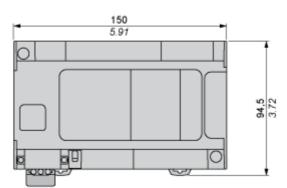
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Dimensions Drawings

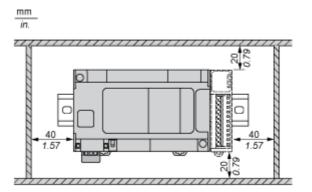
Dimensions

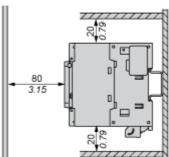




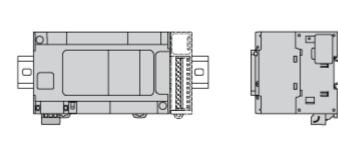
Mounting and Clearance

Clearance

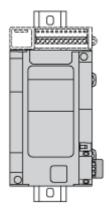




Mounting Position

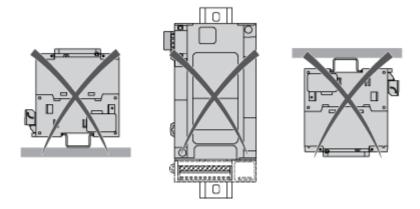


Acceptable Mounting



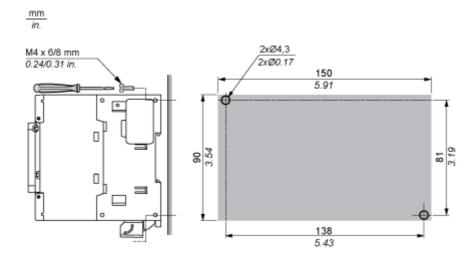
NOTE: Expansion modules must be mounted above the logic controller.

Incorrect Mounting



Direct Mounting On a Panel Surface

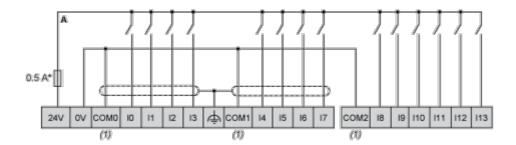
Mounting Hole Layout



Connections and Schema

Digital Inputs

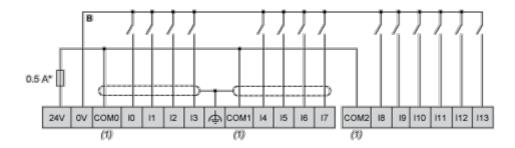
Wiring Diagram (Positive Logic)



(*): Type T fuse

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

Wiring Diagram (Negative Logic)

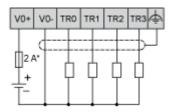


(*): Type T fuse

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

Fast Transistor Outputs

Wiring Diagram



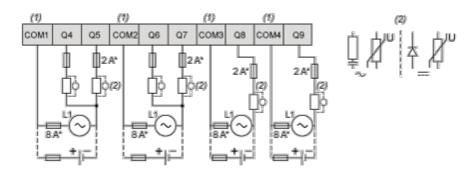
(*): 2 A fast-blow fuse

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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

