Product data sheet
Characteristics

TM241CE24R
logic controller, Modicon M241, 24 IO, relay, Ethernet



Main

Range of product	Modicon M241
Product or component type	Logic controller
[Us] rated supply voltage	100...240 V AC
Discrete input number	14, discrete input 8 fast input conforming to IEC 61131-2 Type 1
Discrete output type	Relay Transistor
Discrete output number	6 relay 4 transistor 4 fast output
Discrete output voltage	5...125 V DC for relay output 5...250 V AC for relay output 24 V DC for transistor output
Discrete output current	2 A for relay output (Q4...Q9) 0.1 A for fast output (PTO mode) (TR0...TR3) 0.5 A for transistor output (TR0...TR3)

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	85…264 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, I0...I13 terminal(s) for input
Configurable filtering time	1 s 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 0.02…0.1 kHz for fast output +/- 1 % at 0.1…1 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	8 external event tasks 3 cyclic master tasks + 1 freewheeling task 8 event tasks 4 cyclic master 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 interfac USB port with mini B USB 2.0 connector Ethernet with RJ45 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 10/100 Mbit/s for Ethernet
Communication port protocol	Non isolated serial link: Modbus master/slave
Port Ethernet	10BASE-T/100BASE-TX - 1 port(s) copper cable
Communication service	FDR DHCP server via TM4 Ethernet switch network module DHCP client embedded Ethernet port SMS notifications Updating firmware SNMP client/server Programming NGVL Monitoring IEC VAR ACCESS FTP client/server Downloading 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) 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
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
Web services	Web server
Maximum number of connections	8 Modbus server 8 SoMachine protocol 10 web server 4 FTP server 16 Ethernet/IP target 8 Modbus client
Number of server device(s)	64 Modbus TCP: 16 EtherNet/IP:
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	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[RETURN]cULus[RETURN]CE[RETURN]UKCA[RETURN]DNV-GL[RETURN]ABS[RETUR
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 2 KV (relay output) 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 spec
Electromagnetic emission	Conducted emissions - test level: 120...69 dBµV/m QP (power lines) at 10…150 kHz conformi Conducted emissions - test level: 63 dBµV/m QP (power lines) at 1.5…30 MHz conforming to Conducted emissions - test level: 79 dBµV/m QP/66 dBµV/m AV (power lines) at 0.15…0.5 M Conducted emissions - test level: 73 dBµV/m QP/60 dBµV/m AV (power lines) at 0.5…300 MH Radiated emissions - test level: 40 dBµV/m QP class A (10 m) at 30…230 MHz conforming to Conducted emissions - test level: 79...63 dBµV/m QP (power lines) at 150…1500 kHz conform Radiated emissions - test level: 47 dBµV/m QP class A (10 m) at 230…1000 MHz conforming
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	11.208 Cm
Package 1 Width	13.04 Cm
Package 1 Length	18.656 Cm
Package 1 Weight	760.0 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	6.97 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	66 Kg

Offer Sustainability

Recyclability potential, in %	0
Total lifecycle Carbon footprint	2 276 kg CO2 eq.
Carbon footprint of the manufacturing phase [A1 to A3]	52.918438958826194
Carbon footprint of the manufacturing phase [A1 to A3]	53 kg CO2 eq.
Carbon footprint of the distribution phase [A4]	4.100122933549426
Carbon footprint of the distribution phase [A4]	4 kg CO2 eq.
Carbon footprint of the installation phase [A5]	0.021298222272208407
Carbon footprint of the installation phase [A5]	0 kg CO2 eq.
Carbon footprint of the use phase [B2, B3, B4, B6]	2217.2281293821015
Carbon footprint of the use phase [B2, B3, B4, B6]	2 217 kg CO2 eq.
Mercury free	Yes
Sustainable packaging	Yes
Carbon footprint of the end-of-life phase [C1 to C4]	1.9399071772167593
Carbon footprint of the end-of-life phase [C1 to C4]	2 kg CO2 eq.
Environmental Disclosure	Product Environmental Profile
Total lifecycle Carbon footprint	2276
Packaging made with recycled cardboard	Yes
Packaging without single use plastic	Yes
SCIP Number	3d1fb974-648d-4978-8c59-b7dcc486f5a5
REACh Regulation	Reference contains Substances of Very High Concern above the threshold
EU RoHS Directive	Compliant By Exemption
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which
PVC free	Yes
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 a

Contractual warranty

Warranty (in months)	18

Product Life Status : Commercialised