# **Product datasheet**

Specification





# logic controller, Modicon M241, 40 IO, transistor, PNP, Ethernet

TM241CE40T

### Main

Range of product	Modicon M241	
product or component type	Logic controller	
[Us] rated supply voltage	24 V DC	
Discrete input number	24, discrete input 8 fast input conforming to IEC 61131-2 Type 1	
Discrete output type	Transistor	
Discrete output number	16 transistor 4 fast output	
Discrete output voltage	24 V DC for transistor output	
Discrete output current	ut current 0.1 A for fast output (PTO mode) (Q0Q3) 0.5 A for transistor output (Q0Q15)	

# Complementary

Discrete I/O number	40
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	10.7 mA for fast input 7 mA for input
Input impedance	4.7 kOhm for input 2.81 kOhm for fast input
Response time	<= 2 µs turn-on, I0I7 terminal(s) for fast input <= 2 µs turn-off, I0I7 terminal(s) for fast input <= 2 µs turn-on, Q0Q3 terminal(s) for fast output <= 2 µs turn-off, Q0Q3 terminal(s) for fast output 50 µs turn-on, I0I15 terminal(s) for input 50 µs turn-off, I0I15 terminal(s) for input <= 34 µs turn-on, Q0Q15 terminal(s) for output

<= 250 µs turn-off, Q0...Q15 terminal(s) for output

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	Positive logic (source)	
Output voltage limits	30 V DC	
Maximum current per output common	2 A	
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	
Trottouch 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	
Neset unie	12 s automatic reset 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	3 cyclic master tasks + 1 freewheeling task	
	8 external event tasks	
	4 cyclic master tasks 8 event tasks	
Realtime clock	With	
Clock drift	<= 60 s/month at 25 °C	
	~ 00 S/HOHHI 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 16 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	
g. atoa cominguit type	Non isolated serial link serial 2 with removable screw terminal block connector and	
	RS485 interface	
	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	1.2115.2 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 10/100 Mbit/s for Ethernet	
	10/100 Mibit 3 10/ Ethernet	
Communication port protocol	Non isolated serial link: Modbus master/slave	

Port Ethernet	10BASE-T/100BASE-TX - 1 port(s) copper cable
ethernet services	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 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 Between output groups 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
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	90 mm	
Depth	95 mm		
Width	190 mm		
net weight	0.62 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 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 (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 0.1580 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 an for 11 ms

# **Packing Units**

•	
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	11.259 cm
Package 1 Width	13.069 cm
Package 1 Length	22.934 cm
Package 1 Weight	770.0 g
Unit Type of Package 2	S03
Number of Units in Package 2	6
Package 2 Height	30 cm
Package 2 Width	30 cm
Package 2 Length	40 cm
Package 2 Weight	5.461 kg
Unit Type of Package 3	P06
Number of Units in Package 3	48
Package 3 Height	75.0 cm
Package 3 Width	40.0 cm
Package 3 Length	80.0 cm
Package 3 Weight	54 kg



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Transparency RoHS/REACh

### Well-being performance

<b>Ø</b>	Mercury Free	
<b>⊘</b>	Rohs Exemption Information	Yes
<b>⊘</b>	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
<b>Environmental Disclosure</b>	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

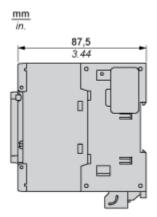
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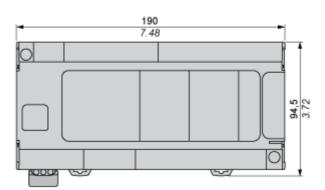
# **Product datasheet**

# **TM241CE40T**

# **Dimensions Drawings**

### **Dimensions**

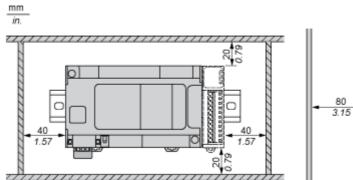


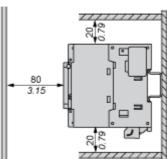


# **TM241CE40T**

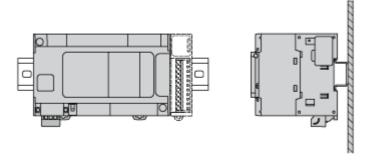
Mounting and Clearance

### Clearance

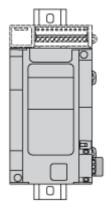




#### **Mounting Position**

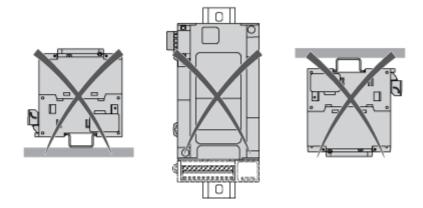


#### **Acceptable Mounting**



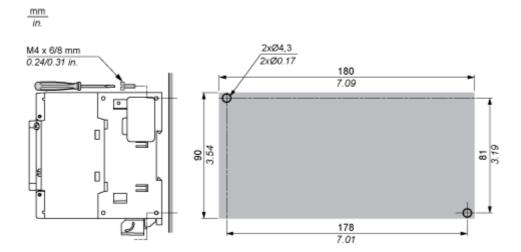
NOTE: Expansion modules must be mounted above the logic controller.

#### **Incorrect Mounting**



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

#### **Mounting Hole Layout**

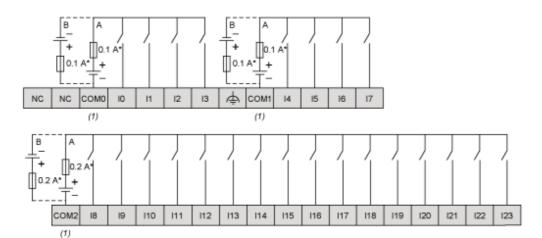


#### **TM241CE40T**

#### 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)

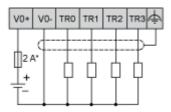
(B): Source wiring (negative logic)

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



#### **Fast Transistor Outputs**

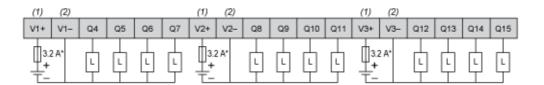
#### Wiring Diagram



(\*): 2 A fast-blow fuse

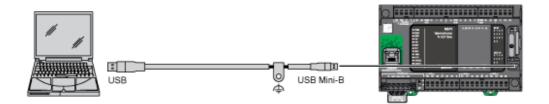
#### **Transistor Outputs**

#### Wiring Diagram



- (\*): Type T fuse
- (1): The V1+, V2+ and V3+ terminals are not connected internally.
- (2): The V1-, V2- and V3- terminals are not connected internally.

### **USB Mini-B Connection**



### **Ethernet Connection to a PC**

