

Scheinder Electric TM221C40R

TM221C40R - logic controller, Modicon M221, 40 IO, relay

Main

Range of product Modicon M221

Product or component type Logic controller

[Us] rated supply voltage 100...240 V AC

Discrete input number 24 discrete input conforming to IEC 61131-2 Type

1

Analogue input number 2 at input range: 0...10 V

Discrete output type Relay normally open

Discrete output number 16 relay

Discrete output voltage 5...125 V DC

5...250 V AC

Discrete output current 2 A

Complementary

Discrete I/O number 40

Number of I/O expansion module ≤ 7 relay output

Supply voltage limits 85...264 V

Network frequency 50/60 Hz

Inrush current ≤ 40 A

Power consumption in VA ≤ 67 VA at 100...240 V with max number of I/O expansion module

≤ 37 VA at 100...240 V without I/O expansion module

Power supply output current 0.52 A at 5 V expansion bus

0.24 A at 24 V expansion bus

Discrete input logic Sink or source (positive/negative)

Discrete input voltage 24 V

Discrete input voltage type DC

Analogue input resolution 10 bits

LSB value 10 mV

Conversion time 1 ms per channel + 1 controller cycle time analog input

Permitted overload on inputs ± 30 V DC analog input with 5 min maximum

± 13 V DC analog input permanent

Voltage state 1 guaranteed ≥ 15 V input

Voltage state 0 guaranteed ≤ 5 V input

Discrete input current 7 mA discrete input

5 mA fast input

Input impedance 4.9 kOhm fast input

3.4 kOhm discrete input

100 kOhm analog input

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Response time 10 ms turn-on operation output
35 μ s turn-off operation input; I2...I5 terminal
10 ms turn-off operation output
5 μ s turn-on operation fast input; I0, I1, I6, I7 terminal
35 μ s turn-on operation input; other terminals terminal
5 μ s turn-off operation fast input; I0, I1, I6, I7 terminal
100 μ s turn-off operation input; other terminals terminal
Configurable filtering time 0 ms input
12 ms input
3 ms input
Output voltage limits 125 V DC
277 V AC
Current per output common 7 A
Absolute accuracy error +/- 1 % of full scale analog input

Electrical durability Inductive AC-15, ($\cos \phi = 0.35$) 240 V/ 120 VA: 100000 cycles
Resistive DC-12, 24 V/ 48 W: 100000 cycles
Resistive AC-12, 120 V/ 240 VA: 100000 cycles
Inductive AC-15, ($\cos \phi = 0.35$) 240 V/ 36 VA: 300000 cycles
Resistive AC-12, 120 V/ 80 VA: 300000 cycles
Inductive (L/R = 7 ms) DC-13, 24 V/ 24 W: 100000 cycles
Resistive DC-12, 24 V/ 16 W: 300000 cycles
Inductive (L/R = 7 ms) DC-13, 24 V/ 7.2 W: 300000 cycles
Inductive AC-14, ($\cos \phi = 0.7$) 240 V/ 240 VA: 100000 cycles
Inductive AC-15, ($\cos \phi = 0.35$) 120 V/ 60 VA: 100000 cycles
Inductive AC-14, ($\cos \phi = 0.7$) 240 V/ 72 VA: 300000 cycles
Inductive AC-15, ($\cos \phi = 0.35$) 120 V/ 18 VA: 300000 cycles
Resistive AC-12, 240 V/ 480 VA: 100000 cycles
Inductive AC-14, ($\cos \phi = 0.7$) 120 V/ 120 VA: 100000 cycles
Resistive AC-12, 240 V/ 160 VA: 300000 cycles
Inductive AC-14, ($\cos \phi = 0.7$) 120 V/ 36 VA: 300000 cycles
Switching frequency 20 switching operations/minute with maximum load
Mechanical durability ≥ 20000000 cycles relay output
Minimum load 1 mA at 5 V DC relay output
Protection type Without protection at 5 A
Reset time 1 s
Memory capacity 256 kB user application and data RAM with 10000 instructions
256 kB internal variables RAM
Data backed up 256 kB built-in flash memory backup of application and data
Data storage equipment 2 GB SD card optional
Battery type BR2032 lithium non-rechargeable, battery life: 4 yr

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Backup time 1 year at 77 ° F (25 ° C) by interruption of power supply
Execution time for 1 KInstruction 0.3 ms event and periodic task
Execution time per instruction 0.2 µs Boolean
Exct time for event task 60 µs response time
Maximum size of object areas 512 %M memory bits
8000 %MW memory words
512 %KW constant words
255 %TM timers
255 %C counters
Realtime clock With
Clock drift <= 30 s/month at 77 ° F (25 ° C)
Regulation loop Adjustable PID regulator up to 14 simultaneous loops
Counting input number 4 fast input (HSC mode) (counting frequency: 100 kHz), counting capacity:
32 bits
Control signal type A/B
Pulse/direction
Single phase
Integrated connection type USB port with connector mini B USB 2.0
Non isolated serial link "serial 1" with connector RJ45 and interface RS485
Non isolated serial link "serial 2" with connector RJ45 and interface RS232/RS485
Supply Serial serial link supply 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 - communication protocol: USB
Communication port protocol USB port: USB protocol - SoMachine-Network
Non isolated serial link: Modbus protocol master/slave - RTU/ASCII or SoMachineNetwork
Local signalling 1 LED red module error (ERR)
1 LED green PWR
1 LED green RUN
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
Electrical connection Mini B USB 2.0 connector for a programming terminal
Terminal block, 3 terminal(s) for connecting the 24 V DC power supply
Connector, 4 terminal(s) for analogue inputs
Removable screw terminal block for inputs

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Removable screw terminal block for outputs

Cable distance between devices Shielded cable: 10 m for fast input

Unshielded cable: 30 m for output

Unshielded cable: 30 m for digital input

Unshielded cable: 1 m for analog input

Insulation 2300 V AC between output and internal logic

Non-insulated between analogue inputs

500 V AC between input and internal logic

Non-insulated between analogue input and internal logic

1500 V AC between supply and ground

500 V AC between sensor power supply and ground

500 V AC between input and ground

1500 V AC between output and ground

2300 V AC between supply and internal logic

500 V AC between sensor power supply and internal logic

500 V AC between Ethernet terminal and internal logic

2300 V AC between supply and sensor power supply

Marking CE

Sensor power supply 24 V DC at 250 mA supplied by the controller

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 2.76 in (70 mm)

Width 6.3 in (160 mm)

Product weight 1.01 lb(US) (0.456 kg)

Environment

standards EN/IEC 60664-1

EN/IEC 61131-2

EN/IEC 61010-2-201

product certifications ABS

CSA

CULus

LR

IACS E10

RCM

EAC

DNV-GL

environmental characteristic Ordinary and hazardous location

resistance to electrostatic discharge 4 kV on contact conforming to EN/IEC 61000-4-2

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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
 1 V/m (2...2.7 GHz) conforming to EN/IEC 61000-4-3
 resistance to magnetic fields 30 A/m 50/60 Hz conforming to EN/IEC 61000-4-8
 resistance to fast transients 2 kV power lines conforming to EN/IEC 61000-4-4
 2 kV relay output 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 I/O conforming to EN/IEC 61000-4-4
 surge withstand 2 kV power lines (AC) in common mode conforming to EN/IEC 61000-4-5
 2 kV relay output in common mode conforming to EN/IEC 61000-4-5
 1 kV I/O 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 power lines (AC) in differential mode conforming to EN/IEC 61000-4-5
 1 kV relay output in differential mode conforming to EN/IEC 61000-4-5
 0.5 kV power lines (DC) in common mode conforming to EN/IEC 61000-4-5
 resistance to conducted disturbances 10 Vrms (0.15...80 MHz) conforming to EN/IEC 61000-4-6
 3 Vrms (0.1...80 MHz) conforming to Marine specification (LR, ABS, DNV, GL)
 10 Vrms (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 conforming to EN/IEC 55011 power lines (AC), 0.15...0.5 MHz:
 79 dB μ V/m QP/66 dB μ V/m AV
 Conducted emissions conforming to EN/IEC 55011 power lines (AC), 0.5...300 MHz:
 73 dB μ V/m QP/60 dB μ V/m AV
 Conducted emissions conforming to EN/IEC 55011 power lines, 10...150 kHz:
 120...69 dB μ V/m QP
 Conducted emissions conforming to EN/IEC 55011 power lines, 1.5...30 MHz: 63 dB μ V/m QP
 Radiated emissions conforming to EN/IEC 55011 class A 10 m, 30...230 MHz: 40 dB μ V/m QP
 Conducted emissions conforming to EN/IEC 55011 power lines, 150...1500 kHz : 79...63 dB μ V/m QP
 Radiated emissions conforming to EN/IEC 55011 class A 10 m, 200...1000 MHz : 47 dB μ V/m QP
 immunity to microbreaks 10 ms

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ambient air temperature for operation 14...131 ° F (-10...55 ° C) horizontal installation
-10...35 ° 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
1 gn (vibration frequency: 8.4...150 Hz) on symmetrical rail
3.5 mm (vibration frequency: 5...8.4 Hz) on panel mounting
1 gn (vibration frequency: 8.4...150 Hz) on panel mounting
shock resistance 98 m/s² (test wave duration:11 ms)
Offer Sustainability
Green Premium product Green Premium product
Compliant - since 1415 - Schneider Electric declaration
of conformity
Compliant - since 1415 - Schneider Electric declaration of conformity
Reference not containing SVHC above the threshold Reference not containing SVHC above the
threshold
Available Available
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