Product datasheet

Specification





logic controller, Modicon M221, 16 IO, 8 DI, 8 DO, relay, Ethernet

TM221ME16R

Main

Range Of Product	Modicon M221	
Product Or Component Type	Logic controller	
[Us] Rated Supply Voltage	24 V DC	
Discrete Input Number	8, discrete input conforming to IEC 61131-2 Type 1	
Analogue Input Number	2 at 010 V	
Discrete Output Type	Relay normally open	
Discrete Output Number	8 relay	
Discrete Output Voltage	5125 V DC 5250 V AC	
Discrete Output Current	2 A	

Complementary

Discrete I/O Number	16
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	35 A
Maximum Power Consumption In W	23.3 W at 24 V (with max number of I/O expansion module) 4.3 W at 24 V (without I/O expansion module)
Power Supply Output Current	0.52 A 5 V for expansion bus 0.46 A 24 V for 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 for analogue input analog input
Permitted Overload On Inputs	+/- 30 V DC for 5 min (maximum) for analog input +/- 13 V DC (permanent) for analog input
Voltage State 1 Guaranteed	>= 15 V for input
Voltage State 0 Guaranteed	<= 5 V for input
Discrete Input Current	7 mA for discrete input 5 mA for fast input

Input Impedance	100 kOhm for analog input 3.4 kOhm for input
	4.9 kOhm for fast input
Response Time	35 μs turn-off, I2I5 terminal(s) for input
	5 μs turn-on, I0, I1, I6, I7 terminal(s) for fast input
	35 μs turn-on, other terminals terminal(s) for input
	5 μs turn-off, I0, I1, I6, I7 terminal(s) for fast input
	100 μs turn-off, other terminals terminal(s) for input
	5 μs turn-on, turn-off, Q0Q1 terminal(s) for output
	50 μs turn-on, turn-off, Q2Q3 terminal(s) for output 300 μs turn-on, turn-off, other terminals terminal(s) for output
Configurable Filtering Time	0 ms for input
	3 ms for input
	12 ms for input
Output Voltage Limits	125 V DC 277 V AC
Maximum Current Per Output Common	7 A
Absolute Accuracy Error	+/- 1 % of full scale for analog input
Electrical Durability	100000 cycles AC-12, 120 V, 240 VA, resistive
	100000 cycles AC-12, 240 V, 480 VA, resistive
	300000 cycles AC-12, 120 V, 80 VA, resistive
	300000 cycles AC-12, 240 V, 160 VA, resistive
	100000 cycles AC-15, cos phi = 0.35, 120 V, 60 VA, inductive 100000 cycles AC-15, cos phi = 0.35, 240 V, 120 VA, inductive
	300000 cycles AC-15, cos phi = 0.35, 120 V, 120 VA, inductive
	300000 cycles AC-15, cos phi = 0.35, 240 V, 36 VA, inductive
	100000 cycles AC-14, cos phi = 0.7, 120 V, 120 VA, inductive
	100000 cycles AC-14, cos phi = 0.7, 240 V, 240 VA, inductive
	300000 cycles AC-14, cos phi = 0.7, 120 V, 36 VA, inductive
	300000 cycles AC-14, cos phi = 0.7, 240 V, 72 VA, inductive
	100000 cycles DC-12, 24 V, 48 W, resistive
	300000 cycles DC-12, 24 V, 16 W, resistive
	100000 cycles DC-13, 24 V, 24 W, inductive (L/R = 7 ms) 300000 cycles DC-13, 24 V, 7.2 W, inductive (L/R = 7 ms)
Switching Frequency	20 switching operations/minute with maximum load
Mechanical Durability	20000000 cycles for relay output
Minimum Load	1 mA at 5 V DC for relay output
Protection Type	Without protection at 5 A
Reset Time	1 s
Memory Capacity	256 kB for user application and data RAM with 10000 instructions 256 kB for internal variables RAM
Data Backed Up	256 kB built-in flash memory for backup of application and data
Data Storage Equipment	2 GB SD card (optional)
Battery Type	BR2032 or CR2032X lithium non-rechargeable
Backup Time	1 year at 25 °C (by interruption of power supply)
Execution Time For 1 Kinstruction	0.3 ms for event and periodic task 0.7 ms for other instruction
Execution Time Per Instruction	0.2 μs Boolean
Exct Time For Event Task	60 μs response time
Application Structure	4 configurable frequency finally religions
Application Structure	configurable freewheeling/cyclic master task cyclic auxiliary task interrupt tasks
Maximum Size Of Object Areas	512 V KW constant words
maximum size of object Areas	512 %KW constant words 255 %C counters
	8000 %MW memory words
	255 %TM timers
	512 %M memory bits
Realtime Clock	With

Clock Drift	<= 30 s/month at 25 °C	
Regulation Loop	Adjustable PID regulator up to 14 simultaneous loops	
Function Available	Frequency generator PWM PLS	
Counting Input Number	4 fast input (HSC mode) at 100 kHz 32 bits	
Counter Function	Single phase A/B Pulse/direction	
Integrated Connection Type	USB port with mini B USB 2.0 connector Non isolated serial link serial 1 with RJ45 connector and RS232/RS485 interface 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 USB	
Communication Port Protocol	USB port: USB - SoMachine-Network Non isolated serial link: Modbus master/slave - RTU/ASCII or SoMachine-Network Ethernet	
Port Ethernet	10BASE-T/100BASE-TX 1 port with 100 m copper cable	
Communication Service	DHCP client Modbus TCP slave device Ethernet/IP adapter Modbus TCP client Modbus TCP server	
Local Signalling	1 LED (green) for PWR 1 LED (green) for RUN 1 LED (red) for module error (ERR) 1 LED (green) for SD card access (SD) 1 LED (red) for BAT 1 LED per channel (green) for I/O state 1 LED (green) for SL Ethernet network activity (green) for ACT Ethernet network link (yellow) for Link (Link Status)	
Electrical Connection	terminal block, 3 terminal(s) for connecting the 24 V DC power supply connector, 4 terminal(s) for analogue inputs Mini B USB 2.0 connector for a programming terminal removable screw terminal block, 10 terminal(s) for inputs removable screw terminal block, 11 terminal(s) for outputs	
Maximum 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 Shielded cable: <3 m for fast output	
Insulation	Between input and internal logic at 500 V AC Between fast input and internal logic at 500 V AC Non-insulated between inputs Between output and internal logic at 500 V AC Between output groups at 500 V AC Non-insulated between analogue input and internal logic Non-insulated between analogue inputs	
Marking	CE	
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	70 mm	
Width	70 mm	
Net Weight	0.264 kg	

Environment

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ANS/ISA 12-12-01 L R cULus DNV-GL RCM EAC ABS CE UKCA CULus HazLoc CEnvironmental Characteristic Ordinary and hazardous location Resistance To Electrostatic Blocharge Resistance To Electrostatic Ordinary and hazardous location Resistance To Electromagnetic Fields 30 Vim 14 Other. 2 Ordinary and processing to IEC 61000-4-2 4 KV on contract conforming to IEC 61000-4-3 3 Vim 14 Other. 2 Ordinary and ISC 61000-4-3 1 Vim 22 To IEC conforming to IEC 61000-4-3 2 Vim 22 Conforming to IEC 61000-4-3 3 Vim 14 Other. 2 Ordinary and ISC 61000-4-3 4 KV (General Invited Conforming to IEC 61000-4-4 4 KV (General Invited Conforming to IEC 61000-4-5 4 KV Power Invited Conforming to IEC 61000-4-5 4 KV Shelded calde common mode conforming to IEC 61000-4-5 4 KV Shelded calde common mode conforming to IEC 61000-4-5 4 KV Power Invited Conforming to IEC		
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Resistance To Electromagnetic rields 10 V/m 80 MHz1 GHz conforming to IEC 61000-4-3 3 V/m 1.4 GHz 2 GHz conforming to IEC 61000-4-3 1 V/m 22.7 GHz conforming to IEC 61000-4-8 2 kV (power lines) conforming to IEC 61000-4-4 1 kV (I/O) common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV power lines (I/C) differential mode conforming to IEC 61000-4-5 1 kV po		
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Resistance To Magnetic Fields 30 A/m 50/60 Hz conforming to IEC 61000-4-8 2 kV (power lines) conforming to IEC 61000-4-8 2 kV (relay output) conforming to IEC 61000-4-4 1 kV ((E) conforming to IEC 61000-4-4 1 kV (E) conforming to IEC 61000-4-5 2 kV power lines (AC) common mode conforming to IEC 61000-4-5 1 kV I/O common mode conforming to IEC 61000-4-5 1 kV I/O common mode conforming to IEC 61000-4-5 1 kV power lines (C) differential mode conforming to IEC 61000-4-5 1 kV power lines (C) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 2 kV relay output differential mode conforming to IEC 61000-4-5 2 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 2 kV relay output differential mode conforming to IEC 61000-4-5 2 kV relay output differential mode conforming to IEC 61000-4-5 2 kV relay output differential mode conforming to IEC 61000-4-5 2 kV re		10 V/m 80 MHz1 GHz conforming to IEC 61000-4-3
Resistance To Magnetic Fields 30 A/m 50/60 Hz conforming to IEC 61000-4-8 2 kV (power lines) conforming to IEC 61000-4-4 2 kV (relay output) conforming to IEC 61000-4-4 1 kV (ICH) conforming to IEC 61000-4-4 1 kV (ICH) conforming to IEC 61000-4-4 1 kV (ICH) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV IV/O common mode conforming to IEC 61000-4-5 1 kV IV/O common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 2 kV power lines (DC) conforming to IEC 61000-4-6 3 v 0.1.5.80 MHz conforming to IEC 55011 Conducted emissions - test level: 79 dBpV/m QP (power lines) AV (power lines (AC)) at 0.530 MHz conforming to IEC 55011 Conducted emissions - test level: 63 dBpV/m QP (power lines) at 1530 MHz conforming to IEC 55011 Radiated emissions - test level: 79.63 dBpV/m QP (power lines) at 1501500	rielas	3 V/m 1.4 GHz2 GHz conforming to IEC 61000-4-3
Resistance To Fast Transients 2 kV (power lines) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (Serial link) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-6 3 v 0.180 MHz conforming to IEC 65011 Conducted emissions - test level: 40 dBpV/m QP (power lines) at 10150 kHz conforming to IEC 65011 Conducted emissions - test level: 9063 dBpV/m QP (power lines) at 1501500 kHz conforming to IEC 65011 Radiated emissions - t		1 V/m 22.7 GHz conforming to IEC 61000-4-3
Resistance To Fast Transients 2 kV (power lines) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (Serial link) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-6 3 v 0.180 MHz conforming to IEC 65011 Conducted emissions - test level: 40 dBpV/m QP (power lines) at 10150 kHz conforming to IEC 65011 Conducted emissions - test level: 9063 dBpV/m QP (power lines) at 1501500 kHz conforming to IEC 65011 Radiated emissions - t	Resistance To Magnetic Fields	30 A/m 50/60 Hz conforming to IEC 61000-4-8
2 kV (relay output) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV vivo common mode conforming to IEC 61000-4-5 1 kV vivo common mode conforming to IEC 61000-4-5 1 kV vivo common mode conforming to IEC 61000-4-5 1 kV power lines (OC) differential mode conforming to IEC 61000-4-5 1 kV relay output differential		
2 kV (relay output) conforming to IEC 61000-4-4 1 kV (I/O) conforming to IEC 61000-4-4 1 kV (Ethernet line) conforming to IEC 61000-4-4 1 kV (Ethernet line) conforming to IEC 61000-4-4 1 kV (Ethernet line) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV I/O common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV i/O common mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-6 3 v o. 1, 2, 3, 4, 6, 2, 2, 2, 12, 6, 16, 5, 18, 8, 22, 25 lMHz) conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-6 3 v o. 1, 2, 3, 4, 6, 2, 8, 2, 12, 6, 16, 5, 18, 8, 22, 25 lMHz) conforming to IEC 61000-4-6 3 v o. 1, 2, 3, 4, 6, 2, 8, 2, 12, 6, 16, 5, 18, 8, 22, 25 lMHz) conforming t	Resistance To Fast Transients	2 kV (power lines) conforming to IEC 61000-4-4
1 kV (I/O) conforming to IEC 61000-4-4 1 kV (Setrial link) conforming to IEC 61000-4-4 1 kV (Setrial link) conforming to IEC 61000-4-4 1 kV (Setrial link) 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 shielded cable common mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay ou		
1 kV (Ethernet line) conforming to IEC 61000-4-4 1 kV (serial link) conforming to IEC 61000-4-5 2 kV relay output common mode conforming to IEC 61000-4-5 1 kV l/O common mode conforming to IEC 61000-4-5 1 kV l/O common mode conforming to IEC 61000-4-5 1 kV shielded cable common mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 2 kV power lines (DC) common mode conforming to IEC 61000-4-5 3 V 0.180 MHz conforming to Marine specification (LR, ABS, DNV, GL) 10 V spot frequency (2, 3, 4, 6, 2, 8, 12, 6, 16.5, 18.8, 22, 25 MHz) conforming to Marine specification (LR, ABS, DNV, GL) Conducted emissions - test level: 79 dBμV/m QP/66 dBμV/m AV (power lines (AC)) at 0.150.5 MHz conforming to IEC 55011 Conducted emissions - test level: 73 dBμV/m QP (power lines) at 10150 kHz conforming to IEC 55011 Conducted emissions - test level: 12069 dBμV/m QP (power lines) at 10150 kHz conforming to IEC 55011 Conducted emissions - test level: 40 dBμV/m QP (power lines) at 1530 MHz conforming to IEC 55011 Radiated emissions - test level: 7963 dBμV/m QP (power lines) at 151500 kHz conforming to IEC 55011 Radiated emissions - test level: 7963 dBμV/m QP (power lines) at 1501500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBμV/m QP (power lines) at 1501500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBμV/m QP (power lines) at 1501500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBμV/m QP (power lines) at 1501500 kHz conforming to IEC 55011 Radiated emissions - test level: 47 dBμV/m QP (power lines) at		
1 kV (serial link) conforming to IEC 61000-4-4 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 iV 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 power lines (CQ) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 6100-4-5 0.5 kV power lines (DC) common mode conforming to IEC 6100-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 0.5 kV power lines		
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 shielded cable common mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (CC) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 1 kV power lines (DC) look did look di		
2 kV relay output common mode conforming to IEC 61000-4-5 1 kV I/O 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 (CC) differential mode conforming to IEC 61000-4-5 1 kV power lines (AC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) differential mode conforming to IEC 61000-4-5 1 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 0.5 kV powe		(*********************************
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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 power lines (AC) differential mode conforming to IEC 61000-4-5 1 kV relay output differential mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-5 0.5 kV power lines (DC) common mode conforming to IEC 61000-4-6 3 v 0.180 MHz conforming to IEC 61000-4-6 3 v 0.180 MHz conforming to IEC 61000-4-6 0 v on 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 IEC 61000-4-6 0 v on Marine specification (LR, ABS, DNV, GL) Conducted emissions - test level: 79 dBpV/m QP/66 dBpV/m AV (power lines (AC)) at 0.1505 MHz conforming to IEC 55011 Conducted emissions - test level: 73 dBpV/m QP (power lines) at 10150 kHz conforming to IEC 65011 Conducted emissions - test level: 40 dBpV/m QP (power lines) at 1530 MHz conforming to IEC 55011 Conducted emissions - test level: 40 dBpV/m QP (power lines) at 1530 MHz conforming to IEC 55011 Conducted emissions - test level: 7963 dBpV/m QP (power lines) at 1501500 kHz conforming to IEC 55011 Conducted emissions - test level: 47 dBpV/m QP class A (10 m) at 2001000 MHz conforming to IEC 55011 Radiated emissions - test level: 47 dBpV/m QP class A (10 m) at 2001000 MHz conforming to IEC 55011 Radiated emissions - test level: 47 dBpV/m QP class A (10 m) at 2001000 MHz conforming to IEC 55011 Number Air Temperature For -1055 °C (horizontal installation) -1035 °C (vertical installation) -1035 °C (vertical installation) -1095 %, without condensation (in operation) 1095 %, without condensation (in storage)		2 kV relay output common mode conforming to IEC 61000-4-5
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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 (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 2001000 MHz conforming to IEC 55011 mmunity To Microbreaks 10 ms Ambient Air Temperature For Operation -1035 °C (horizontal installation) -1035 °C (vertical installation) -2570 °C Ambient Air Temperature For Storage Relative Humidity 1095 %, without condensation (in operation) 1095 %, without condensation (in storage)		
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Relative Humidity 1095 %, without condensation (in operation) 1095 %, without condensation (in storage) p Degree Of Protection IP20 with protective cover in place		-2570 °C
p Degree Of Protection IP20 with protective cover in place		10 95 % without condensation (in operation)
Pollution Degree <= 2	p Degree Of Protection	IP20 with protective cover in place
	Pollution Dearee	<= ?
		<u>-</u>

Storage Altitude	03000 m
Vibration Resistance	3.5 mm at 58.4 Hz on symmetrical rail 3.5 mm at 58.4 Hz on panel mounting 1 gn at 8.4150 Hz on symmetrical rail 1 gn at 8.4150 Hz on panel mounting
Shock Resistance	98 m/s² for 11 ms

Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	10.7 cm
Package 1 Width	12.8 cm
Package 1 Length	9.7 cm
Package 1 Weight	442.0 g
Unit Type Of Package 2	S04
Number Of Units In Package 2	24
Package 2 Height	30 cm
Package 2 Width	40 cm
Package 2 Length	60 cm
Package 2 Weight	11.398 kg
Unit Type Of Package 3	P12
Number Of Units In Package 3	288
Package 3 Height	105.0 cm
Package 3 Width	120.0 cm
Package 3 Length	80.0 cm
Package 3 Weight	142 kg



Green PremiumTM 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-CO₂ 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	
②	Rohs Exemption Information	Yes
	Pvc Free	

Certifications & Standards

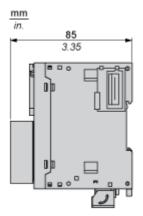
Circularity Profile	End of Life Information	
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins	
Environmental Disclosure	Product Environmental Profile	
China Rohs Regulation	China RoHS declaration	
Eu Rohs Directive	Pro-active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

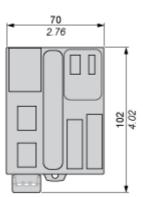
Product datasheet

TM221ME16R

Dimensions Drawings

Dimensions



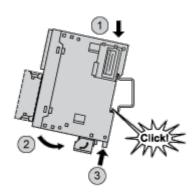


Product datasheet

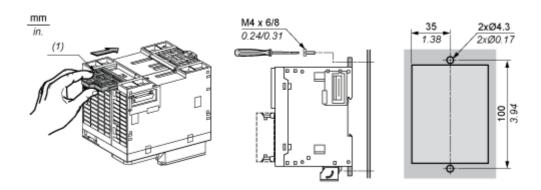
TM221ME16R

Mounting and Clearance

Mounting on a Rail



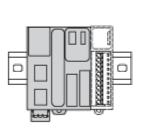
Direct Mounting on a Panel Surface

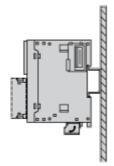


(1) Install a mounting strip

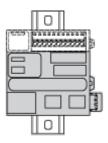
Mounting

Correct Mounting Position



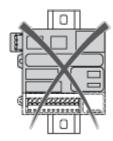


Acceptable Mounting Position



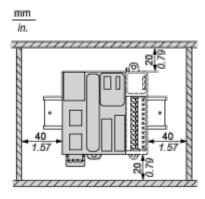
Incorrect Mounting Position

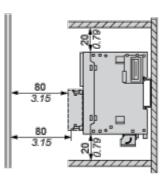






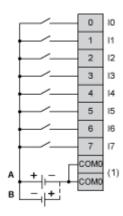
Clearance





Connections and Schema

Digital Inputs



(1) The COM0 terminals are connected internally.

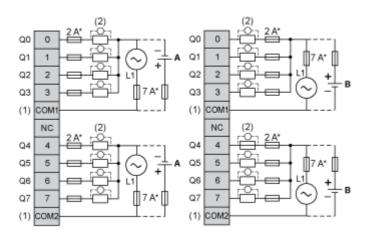
A: Sink wiring (positive logic).

B: Source wiring (negative logic).



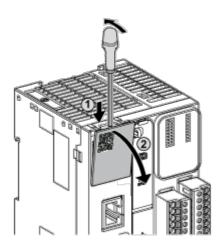
lx 10, 11, 16, 17

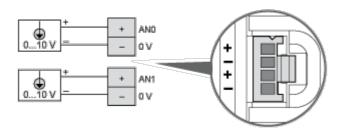
Digital Outputs



- (*) Type T fuse
- (1) The COM1 and COM2 terminals 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
- A: Source wiring (negative logic).
- B: Sink wiring (positive logic).

Analog Inputs

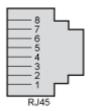




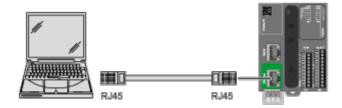
The (-) poles are connected internally.

Pin	Wire Color
AN0 / AN1	Red
0 V	Black

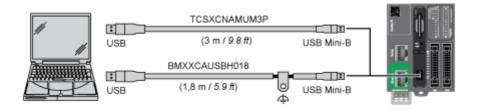
Ethernet Connection



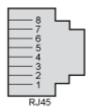
Pin N °	Signal
1	TD+
2	TD-
3	RD+
4	-
5	-
6	RD-
7	-
8	-



USB Mini-B Connection



SL1 Connection



SL1

Ν°	RS 232	RS 485
1	RxD	N.C.
2	TxD	N.C.
3	RTS	N.C.
4	N.C.	D1
5	N.C.	D0
6	стѕ	N.C.
7	N.C.*	5 Vdc
8	Common	Common

N.C.: not connected

 $[\]ensuremath{^*}$: 5 Vdc delivered by the controller. Do not connect.

