

Main

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|------------------------------|---|
| Range of product | Modicon M168 logic controller |
| Product or component type | Base controller |
| Product specific application | Air cooled chiller |
| Variant | Ready to use without PC |
| Communication port protocol | Modbus BACnet MS/TP (optional) BACnet IP (optional) |
| Input/output number | 23 |
| Input/output number | 7 discrete input(s) 5 configurable analog input(s) 8 discrete output(s) 1 dedicated PWM output(s) 2 configurable analog output(s) |

Complementary

| | |
|-------------------------------|--|
| Discrete input number | 7 |
| Discrete input logic | Sink or source (positive/negative) |
| Discrete input voltage | 24 V |
| Discrete input voltage type | AC/DC |
| Sensor power supply | 4.4...5 V DC 18...36 V DC |
| Input impedance | <= 10 kOhm discrete input(s) |
| Network frequency | 50...60 Hz +/- 3 Hz discrete input |
| Discrete output number | 5 (8 mA) 3 (5 mA) |
| Contacts type and composition | 7 NO discrete output(s) 1 C/O discrete output(s) |
| Minimum load | 10 mA at 12 V |
| Discrete output current | 8 mA for relay output 5 mA for relay output |
| Load current | 8 A at 5...30 V DC 8 A at 24...250 V AC 5 A at 5...30 V DC 5 A at 24...250 V AC |
| Mechanical durability | >= 10000000 cycles for relay output |
| Electrical durability | >= 120000 cycles DC-12 braking current: 8 A at 30 V, 2 A >= 6000 cycles DC-13 braking current: 8 A at 24 V, 2 A, L/R = 300 ms >= 300000 cycles AC-12 braking current: 8 A at 250 V, 2.5 A >= 6000 cycles AC-15 braking current: 8 A at 250 V, 3 A, cos phi = 0.3 >= 120000 cycles DC-12 braking current: 5 A at 30 V, 2 A >= 200000 cycles DC-13 braking current: 5 A at 24 V, 1 A, L/R = 48 ms >= 300000 cycles AC-12 braking current: 5 A at 250 V, 2.5 A >= 50000 cycles AC-15 braking current: 5 A at 250 V, 3 A, cos phi = 0.4 |
| Operating rate in Hz | <= 10 Hz - off load for discrete output 8 mA <= 0.1 Hz - operating current for discrete output 8 mA <= 20 Hz - off load for discrete output 5 mA <= 0.1 Hz - operating current for discrete output 5 mA |
| Response time | 10 ms on closing for discrete output 8 mA 5 ms on opening for discrete output 8 mA 8 ms on closing for discrete output 5 mA 4 ms on opening for discrete output 5 mA |
| Analogue input number | 5 |
| Analogue input type | Voltage 0...10 V or 0...5 V ratio - resolution: 0.01 V Current 0...20 mA/4...20 mA - resolution: 0.01 mA Temperature probe -100...+200 °C - resolution: 0.5 °C - Pt 1000 probe |

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Temperature probe -50...+120 °C - resolution: 0.1 °C - NTC probe
 Temperature probe -50...+150 °C - resolution: 0.1 °C - PTC probe

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|--------------------------------|--|
| Analogue output number | 2 |
| Analogue output type | Voltage 0...10 V - resolution: 0.01 V Current 0-20 mA or 4-20 mA - resolution: 0.05 mA |
| Load impedance ohmic | >= 1000 Ohm voltage 40...300 Ohm current |
| Absolute accuracy error | -5 %...+2 % of full scale 1...5 kOhm analog output voltage +/- 2 % of full scale > 5 kOhm analog output voltage +/- 3 % of full scale analog output current +/- 0.5 % of full scale analog input |
| LSB value | 10 mV analog output voltage 0.02 mA analog output current 0.07 °C analog input NTC 0.5 °C analog input Pt 1000 5 mV analog input voltage 0.01 mA analog input current |
| Communication service | Open collector synchro on AC power supply |
| Protection type | Reverse polarity protection analog input voltage Overload protection analog output voltage Reverse polarity protection power supply |
| [Us] rated supply voltage | 24 V 20...40 V DC |
| Supply voltage limits | 20.4...27.6 V |
| Network frequency | 50/60 Hz |
| Network frequency limits | 47...63 Hz |
| Immunity to microbreaks | 10 ms |
| Power consumption in W | <= 22 W |
| Power consumption in VA | 30 VA at 24 V |
| Memory capacity | 544 kB |
| Realtime clock | With clock, clock drift <= 30 s/month |
| Data backed up | Date and hour (internal battery autonomy: 3 days) |
| Number of port | 1 Modbus RJ45connector slave,transmission rate : 1.2...57.6 kbit/s 1 Modbus RJ45connector master/slave,transmission rate : 1.2...57.6 kbit/s 1 expansion bus terminal blockconnector master/slave |
| Electrical connection | 1 removable screw terminal block (9 terminals) analog input (AI1 to AI5, GND, +5 V, 24 V) 1 removable screw terminal block (8 terminals) discrete input (DI1 to DI7, COM) 1 removable screw terminal block (2 terminals) fan output (FAN+, FAN-) 1 removable screw terminal block (5 terminals) expansion bus (+24 V, GND, CAN-, CAN+) 1 removable screw terminal block (2 terminals) power supply (L/+, N/-) 1 removable screw terminal block (5 terminals) discrete output (NO1 to NO3, COM 1-2, COM 3) 1 removable screw terminal block (6 terminals) discrete output (NO4 to NO7, COM 6-7, COM 4-5) 1 removable screw terminal block (3 terminals) discrete output (NO8, NC8, COM8) 1 removable screw terminal block (3 terminals) analog output (AO1, AO2, GND) |
| Cable distance between devices | 2 twisted pair cables: 1000 m for expansion bus 30 m for power supply 100 m for embedded sensor PS 100 m for analog input 100 m for relay digital output 30 m for configurable analog output 1 m for PWM analog output 1000 m for SL1 bus 1000 m for SL2 bus 100 m for isolated digital input 100 m for no isolated digital input USB: 3 m for PC programming tool TTL: 3 m for PC programming tool 30 m for supply for remote display |
| Display type | Integrated LCD display |
| Local signalling | 1 LED green PWR 1 LED green RUN 1 LED red alarm status 1 LED red expansion bus 1 LED red user |
| Mounting support | 35 mm symmetrical DIN rail |

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|----------------|-----------------------|
| Width | 9.88 in (251 mm) |
| Height | 5.09 in (129.19 mm) |
| Depth | 2.42 in (61.5 mm) |
| Product weight | 1.74 lb(US) (0.79 kg) |

Environment

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|---------------------------------------|--|
| standards | EN/IEC 61000-6-3 EN/IEC 60730-1 EN/IEC 61000-6-1 |
| product certifications | RoHS REACH UL 60730-1A CSA 60730-1 |
| marking | CE |
| ambient air temperature for operation | 14...140 °F (-10...60 °C) 14...131 °F (-10...55 °C) for UL conformance |
| ambient air temperature for storage | -22...158 °F (-30...70 °C) |
| relative humidity | 5...95 % without condensation |
| IP degree of protection | IP20 IP40 on front face |
| pollution degree | 2 |
| overvoltage category | III |
| operating altitude | 0...6561.68 ft (0...2000 m) |
| storage altitude | 0...10000 ft (0...3048 m) |
| vibration resistance | 3.5 mm constant amplitude 5...< 8.4 Hz 1 gn constant amplitude 8.4...150 Hz |
| shock resistance | 15 gn 11 ms |

Offer Sustainability

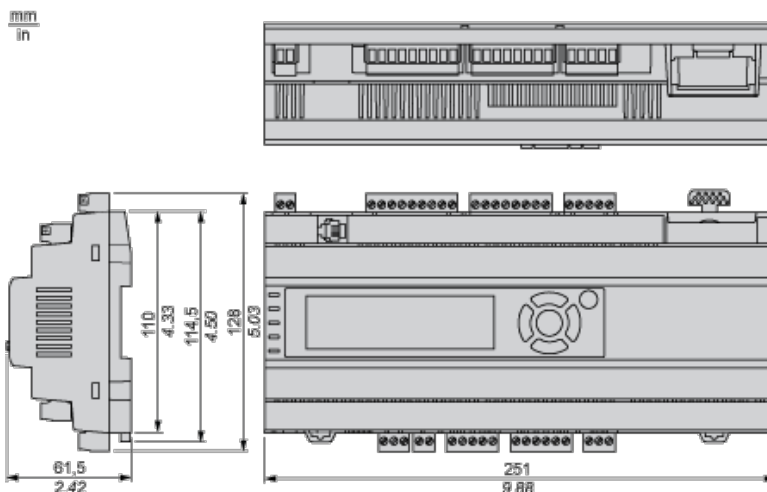
| | |
|---|---|
| Green Premium product | Green Premium product |
| Compliant - since 1041 - Schneider Electric declaration of conformity | Compliant - since 1041 - Schneider Electric declaration of conformity |
| Reference not containing SVHC above the threshold | Reference not containing SVHC above the threshold |
| Available | Available |
| Available | Available |

Contractual warranty

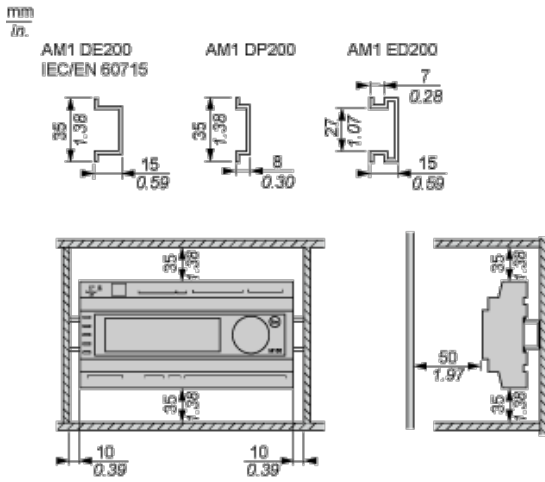
| | |
|-----------------|-----------|
| Warranty period | 18 months |
|-----------------|-----------|

Controller with Communication Slot

Dimensions

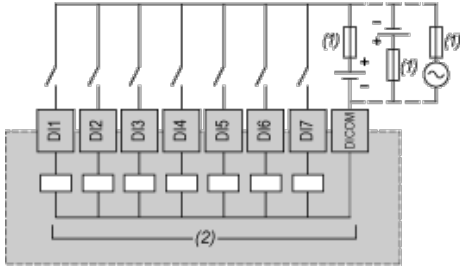


Mounting and Clearance

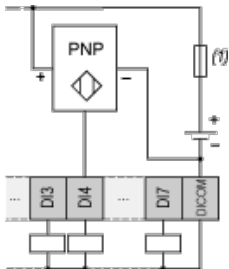


Digital Inputs

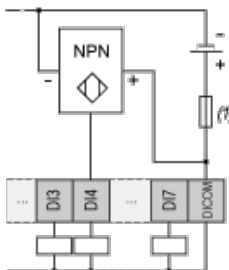
Sink/Source Inputs, External Power



Connection Example for 3-wire PNP Active Switch

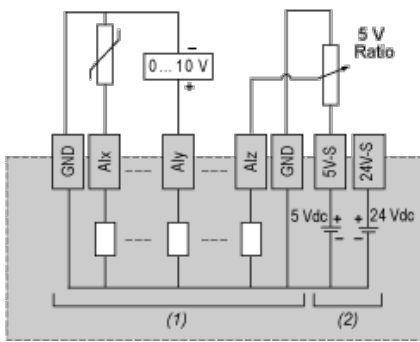


Connection Example for 3-wire NPN Active Switch



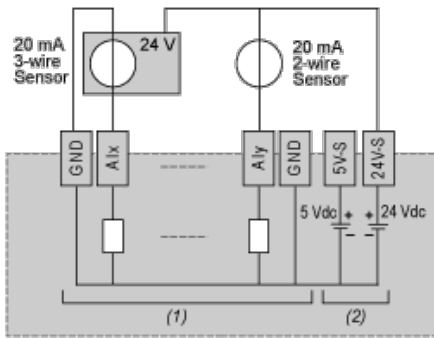
Analog Inputs

Voltage Mode



- (1) Analog inputs
- (2) To sensor

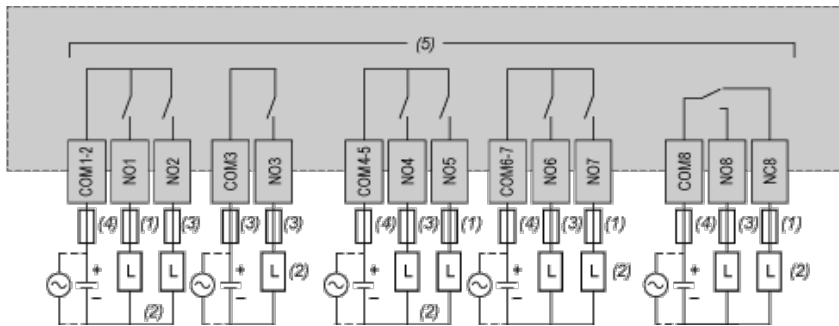
Current Mode



- (1) Analog inputs
- (2) To sensor

Digital Outputs

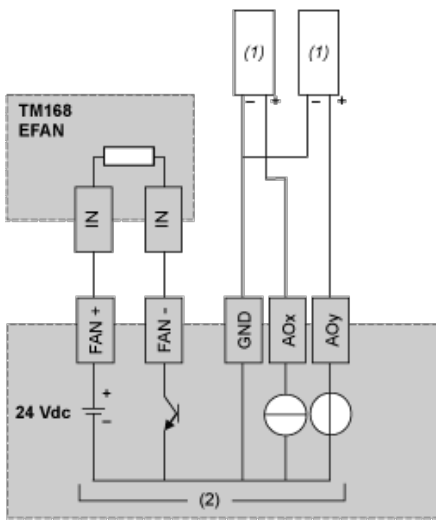
Wiring Diagram



- (1) 5 A Max fuse
- (2) Protection for inductive load
- (3) 8 A Max fuse
- (4) 10 A Max fuse
- (5) Relay outputs

Analog Outputs

Wiring Diagram



- (1) Voltage/current actuator
- (2) Controller or expansion module analog outputs

Wiring Requirements

Cable Types and Wire Sizes

| mm Ø | | | | |
|-----------------|------------|------------|------------|---------------------|
| mm ² | 0,08...2,5 | 0,25...2,5 | 0,25...1,5 | 2 x 0,25...2 x 0,75 |
| AWG | 28...14 | 24...14 | 24...16 | 2 x 24...2 x 18 |

Use copper conductors only. Use shielded cables for Modbus.



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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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