

Specifications¹

Models: MS-2102, MS-2102-E3, MS-2102-BAC, MS-2102-BAC1, MS-2102-E3-BAC, MS-2102-E3-BAC1, MS-2102-ETH, MS-2102-ETH1, MS-2102-E3-ETH, MS-2102-E3-ETH1

Temperature Input

Range: -50 to +500°C (-58 to 932°F)
 Accuracy: ±2°C
 Repeatability: ±1°C
 RTD: Two, 100 ohm platinum, 3-wire RTD
 20 ohms maximum lead resistance

Heater Switching

Configuration: Two circuit, single-pole, one SCR per circuit, 800 amp 1 cycle inrush
 Ratings: 85-280Vac, 30A continuous
 Line Frequency: 50 or 60Hz
 Current Measurement: 0.1 to 30A 3%±0.2A
 GF Measurement: 10 to 1000mA 5%±2mA
 Voltage Measurement: 0 to 300Vac 3%±2V (only for heater 1)

Control Power

Power Requirement: Control power from heater 1 voltage 85-280VAC, 10VA max
 Protection: Control power from heater 1 voltage protected by 2A fuse
 MOV transient protection

Communication

Port: 1 Serial network connection
 Type: RS485
 Protocol: Modbus® RTU.
 Transmission Rate: 600,1200, 2400, 4800, 9600 baud.
 Interconnect: 2-wire, shielded, twisted pair.
 Highway Distance: 4,000 feet without repeater.
 Modules per Highway: 32 Control Modules.

BACnet/IP Ethernet Communication

Models: Models with options BAC/BAC1
 Gateway: 1 configured & assembled MasterTrace Modbus to BACnet/IP gateway, separated from MS-2102 module
 Serial Connection: To be connected to serial ports @ 9600 baud on modules via RS485 cable
 Ethernet Connection: To be connected to Ethernet network via Ethernet cable
 Enclosure: FRP enclosure with option BAC1 only

MODBUS TCP Ethernet Communication

Models: Models with options ETH/ETH1
 Gateway: 1 configured & assembled MasterTrace Modbus to Modbus TCP gateway, separated from MS-2102 module
 Serial Connection: To be connected to serial ports @ 1200~9600 baud on modules via RS485 cable
 Ethernet Connection: To be connected to Ethernet network via Ethernet cable
 Enclosure: FRP enclosure with option ETH1 only

Measured Values

Temperature: -50 to 500°C (-58 to 932°F)
 Minimum Temperature: -50 to 500°C (-58 to 932°F)
 Maximum Temperature: -50 to 500°C (-58 to 932°F)
 Heater Current: 0.1 to 30A
 Ground Fault Current: 10 to 1000mA
 Min. Heater Voltage: 85 to 300Vac
 Max. Heater Voltage: 85 to 300Vac
 Power Consumption: 0 to 1,000 MWh
 Operating Cost: 0 to \$1,000,000.00

User Interface

Display: 16-character x 2-line LCD display
 Keypad: 9 tactile keys, polyester faceplate
 - Setpoint, measured, status
 - Message Up, Message Down
 - Value Up, Value Down, Reset, Store

Contrast: Adjustable by potentiometer
 Panel Indicators: Power on, Heater on, Communication active, System fail, Process alarm
 Security: Controller parameters switch-protected

Environment

Approvals: CSA C/US, Class I, Div. 2, Groups A, B, C, D; Class I, Zone 2, Groups IIC; Class II, Div. 2, Groups F & G; Class III
 Operating Temperature: -40°C to +50°C
 Conformal Coating: Boards conformal coated for hostile environments

Enclosure

Type: Models with option E3: Nema-4X stainless steel, painted black
 Models without option E3: Nema-4X steel, painted black
 Size: 10"Hx8"Wx6"D
 Features: Quick release latches to open door
 Flat aluminum plate to act as heatsink and mounting flange for mounting on Uni-Strut.
 One 3/4" conduit knockout for power and three 1/2" conduit knockouts for RTD and signal wiring.

Alarm Output

Alarm: Programmable for NO or NC contact
 One Mechanical (dry) contact
 Alarm Rating: Mechanical contact: 30Vdc/100mA, 120Vac/0.52A, 62.5W Max
 Alarm Output: LED Indicator: 5Vdc/50mA

Alarm Function

Temperature: High Temp Alarm, Low Temp Alarm
 Current: Low Current Alarm, High Current Alarm
 Ground Fault Current: Ground Fault Current Alarm
 Ground Fault Current Trip
 Voltage: Low Voltage Alarm
 Hardware: Self-Check Failure, Relay Failure, RTD Open, RTD Short

User-Definable Options

Heater Status: Enable or Disable
 Heater Name or Tag: 16 Character Alphanumeric
 Temperature Units: °C or °F
 Proportional Control: on or off
 Deadband: 1 to 50°C (2 to 90°F)
 Power Limit: 0.1 to 30A, off
 TraceCheck: 1 to 24hrs, off
 Temperature Setpoint: -50 to 500°C (-58 to 932°F), off, none
 High Temp Alarm: -50 to 500°C (-58 to 932°F), off
 Low Temp Alarm: -50 to 500°C (-58 to 932°F), off
 High Current Alarm: 0.1 to 30A, off
 Low Current Alarm: 0.1 to 30A, off
 Ground Fault Alarm: 10 to 1000mA, off
 Ground Fault Trip: 10 to 1000mA, off
 Low Voltage Alarm: 85V to 300V, off
 RTD Fail-safe: Heater On or Heater Off
 Override: On or Off
 Alarm Contacts: NO or NC for mechanical contact
 Alarm Light: Alarm on, Alarm off, Flash during alarm then on, Flash during alarm then off

Ground Fault

Maximum Trip Time: 7.4 seconds

1. This is a precise specification for MS2102 controller. For MS2102 panels, there could be some variations.