

MS-2101

Product Specifications

Specifications

Models: MS-2101, MS-2101-E3, MS-2101-BAC, MS-2101-BAC1, MS-2101-E3-BAC, MS-2101-E3-BAC1, MS-2101-ETH, MS-2101-ETH1, MS-2101-E3-ETH, MS-2101-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: One circuit, Two-pole, one SCR per phase, 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

Control Power

Power Requirement: Control power from heater voltage, 85-280VAC, 10VA max
Protection: Control power from heater 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-2101 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 option ETH/ETH1
Gateway: 1 configured & assembled MasterTrace Modbus to Modbus TCP gateway, separated from MS-2101 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 60A
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 Alpha numeric 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 password protected

Environment

Approvals: CSA NRTL/C and FM; Class I, Div. 2, Groups A,B,C,D; Class I, Zone 2, Groups IIC; Class II, Div. 2, Groups F and 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 SS steel, painted black
Models without option E3: Nema-4X steel, painted black
Size: 0"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: High Voltage Alarm, Low Voltage Alarm
Hardware: Self-Check Failure, Switch Shorted, RTD Open, RTD Shorted, Continuity

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)
PowerLimit: 0.1 to 30A, off
SoftStart: 10 to 999s, 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
High Voltage Alarm: 85V to 300V, off
Low Voltage Alarm: 85V to 300V, off
RTD Definition: Single, Backup, Highest, Lowest, Average or High Temperature Cutout
RTD Fail-safe: Heater On or Heater Off
Heat Trace Curve: disable, user, LT3, 5, 8, 10, HLT3, 5, 8, 10, 12, 15, 18, 20
Override: On or Off
Alarm Contacts: NO or NC for each contact
Alarm Light: Alarm on, Alarm off, Flash during alarm then on, Flash during alarm then off

Ground Fault

Maximum Trip Time: 3.7 seconds