

MS-2102

The MS-2102 is a two-circuit, microprocessor-based electrical heat trace controller. It expands on the features of the dual-circuit TraceMate II-CTR to give the user additional control and flexibility in their EHT applications. MS-2102 adds interface, communication and statistics menu options to provide a comprehensive, field-ready, and easy to install EHT control solution.

Models

- MS-2102
- MS-2102-E3
- MS-2102-BAC
- MS-2102-E3-BAC
- MS-2102-ETH
- MS-2102-E3-ETH



Specifications¹

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 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 option BAC only
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

MODBUS TCP Ethernet Communication

Models:	Models with option ETH only
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

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

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

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 (LCD: -20°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)

PowerLimit: 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