Product Specification Sheet **Model: MS3972** **MS3900**

Chassis-Mount Programmable RTD Temperature Transmitter with Isolated Dual Output

DESCRIPTION

The MS3972 is a chassis-mount programmable RTD temperature transmitter that converts input signals from an RTD into mutually isolated dual channel DC output signals. The input and/or output settings of the unit can be easily configured using configuration software running on a personal computer.

- ▽ Features linearization and burnout protection.
- ▽ A multi-slot chassis provides ease of maintenance and high-density mounting.
- ▽ Input, output 1, output 2, and power circuits are all isolated from each other.
- ▽ Equipped with a fuse on the DC power line as standard.

ORDERING INFORMATION

Ordering Code
MS3972-□(□–□)-8□□-B□_ [1] [2] [3] [4][5]

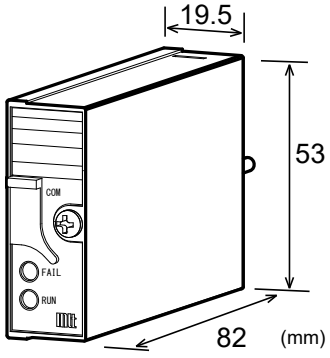
SPECIFICATIONS

POWER SECTION

Power Requirement	24V DC±10%
Power Sensitivity	Better than ±0.1% of span per 10% change in supply voltage
Power Line Fuse	300mA fuse
Current Consumption	55mA max. at 24V DC

INPUT SECTION

Input (Specify a code in the field [1].)	Input (Measuring temp. range) ····· Code ■ Pt 100Ω (ITS-90) (−200–660°C) ··· P1 ■ Pt 100Ω (IPTS-68) (−200–660°C) · P2 ■ JPt 100Ω (JIS'89) (−200–510°C) ···· J ■ Pt 50 Ω (JIS'81) (200–649°C) ····· P5 Note: For any other specifications, consult MTT.
Measuring Temp Range (Specify a range in the field [2].)	Specify a measuring temperature range in °C within the above temperature range.
Linearizer	Built-in linearizer (program)
Factory Default Settings	Unless otherwise requested, the following factory default settings are used: Input code: P1 (Pt 100Ω, ITS-90) Measuring temperature range: 0 to 100°C



OUTPUT SECTION

Output (Specify a code in the field [3].)	Output 1 / Output 2 ····· Code ■ 1–5V DC / 1–5V DC *1 ·····V1 ■ 0–5V DC / 0–5V DC *1 ·····V5 ■ 0–10V DC / 0–10V DC *1 ·····V6 ■ 1–5V DC / 4–20mA DC *2·····C1 *1: The output range can be changed. *2: Fixed outputs. The output range cannot be changed.
Allowable Output Load	Voltage output: 2mA max. Current output: 300Ω max.
Burnout Protection (Specify a code in the field [4].)	Upscale or downscale (if any of the three wires A, B, and B' is opened) ■ Upscale····· U ■ Downscale ····· D
Burnout Drive Time	10s max.
Factory Default Settings	Unless otherwise requested, the following factory default settings are used for voltage output models: Output code: V1 (1–5V DC / 1–5V DC) Burnout protection: Upscale

SOFTWARE CONFIGURATION PARAMETERS

Configurable Parameters	- RTD type - ADC range (Input range) - Measuring temperature range - Burnout protection - Output range - Zero/Span adjustment (Approx. ±4% of span) - PAUSE status (All of the above are configurable by PC via RS-232C.)

ADDITIONAL

Option [5]	■ Polyurethane conformal coating···· /H

PERFORMANCE

Accuracy Rating (Input accuracy + Output accuracy)

Input Accuracy (inversely proportional to input span)

Pt 100Ω (ITS-90)	Coefficient 0.01%
Pt 100Ω (IPTS-68)	Coefficient 0.01%
JPt 100Ω (JIS '89)	Coefficient 0.01%
Pt 50Ω (JIS '81)	Coefficient 0.02%

Input Accuracy List

RTD	Input Accuracy
Pt100 (JIS '97)	860°C / Input span (measuring temp) × ±0.01%
Pt100 (JIS '89)	860°C / Input span (measuring temp) × ±0.01%
JPt100 (JIS '89)	710°C / Input span (measuring temp) × ±0.01%
Pt50 (JIS '81)	849°C / Input span (measuring temp) × ±0.02%

* Minimum input span: 25°C

Output Accuracy	Better than ±0.04%
Temperature Effect	100ppm/°C
Response Time	Approx. 260ms max. (0 to 90%) with a step input at 100%.
CMRR	100dB min. (500V AC, 50/60Hz)
Effect of Wiring Resistance	±5μV max. per 100Ω
Isolation	4-way isolation between input, output 1, output 2, and power.
Insulation Resistance	100MΩ min. (@ 500V DC) between input, output 1, output 2, and power.
Dielectric Strength	[Input, RS-232C Port] / [Output 1, Output 2, Power]: 1500V AC for 1 minute (Cutoff current: 0.5mA) Output 1 / Output 2 / Power: 500V AC for 1 minute (Cutoff current: 0.5mA) Input / RS-232C Port: 50V DC for 1 minute (Cutoff current: 1.0mA)
Surge Withstand Capability	Tested as per ANSI/IEEE C37.90.1-1989.
Operating Environment	Ambient temperature: −5 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	−10 to 60°C

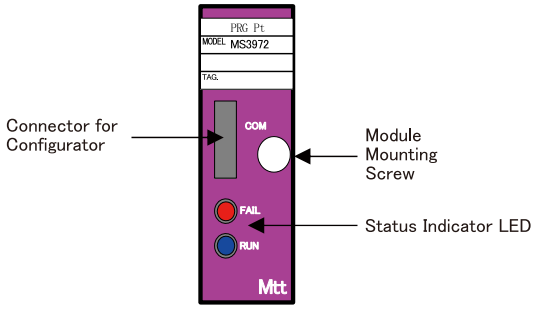
PHYSICAL

Installation	Mounted in an optional chassis (RC3900A-☐☐AI or RS3900-01TB).
Wiring	Wired to an optional chassis (RC3900A-☐☐AI or RS3900-01TB).
External Dimensions	W19.5 × H53 × D82 mm
Weight	70g

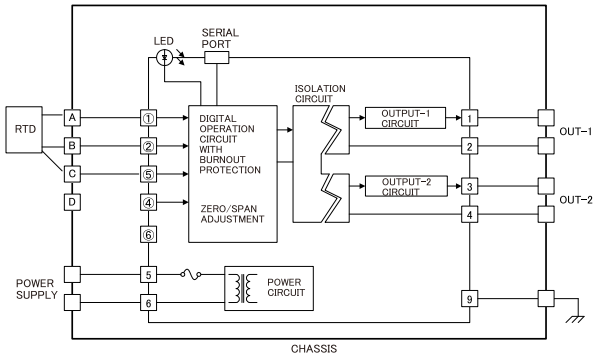
MATERIAL

Housing	ABS resin
PC Board	Glass fabric, epoxy resin (FR-4: UL 94V-0)

FRONT VIEW



BLOCK DIAGRAM



CONNECTOR

COM (CONNECTOR FOR CONFIGURATOR)

The COM port is used to connect the transmitter to a personal computer through serial communication (RS-232C).
An optional communication cable, MTT's MS-CBL01 is required for the connection.
If the USB port is used, it is recommended that a USB conversion adapter, REX-USB60F (made by RATOC Systems) be used with the MS-CBL01.

Connector Pin Assignments

Pin No.	Signal Name	Pin No.	Signal Name
1	DVdd	5	TX
2	SHDN	6	RX
3	N.C.	7	ISOCOM
4	N.C.	8	ISOCOM

LED STATUS INDICATORS

INDICATOR LIGHT PATTERNS

Module Status	Description	LED		Remarks
		Blue (RUN)	Red (FAIL)	
INIT		●	●	
RUN		●	-	
PAUSE	Common to all commands.	◎	-	Blink pattern: ●●●●○○○○
ERROR	ADC error	-	◎	Blink pattern: ●●●●○○○○●○
	DA output error	-	◎	Blink pattern: ●●●●○○○○●○●○
	Burnout	-	◎	Blink pattern: ●●●●○○○○●○●○●○
	Power error	-	◎	Blink pattern: ●●●●○○○○
HALT	WDT	-	●	May fail to turn ON.
	Memory	-	●	May fail to turn ON.
	Power error	-	●	May fail to turn ON.

Notes:
1. OFF: - or ○, ON: ●, Blinking: ◎
2. Each of the circle symbols (○, ●) shown in the Remarks column indicates a duration of 0.25 s.