General Specifications

Model MS5D
Potentiometer Converter
(2-output, Free Range Type)

JUXTA

GS 77J04S05-02E

■ General

The MS5D is a plug-in type potentiometer converter that is used in combination with an instrument to transmit information for displacement of valve etc. by resistance change of potentiometer. It converts the resistance changes into isolated DC current or DC voltage signals.

- I/O range setting, burnout setting, output adjustment, I/O monitoring, and loop back test can be made using the optional Parameter Setting Tool (VJ77) or Handy Terminal (JHT200).
- The operation indicating lamp shows the operation status, abnormalities in a setting etc.
- Adjustment (input range 0%, 100% setting) of combination with potentiometer and output adjustment can be made using the switches on the front panel of the MS5D without a setting tool such as Handy Terminal.

■ Model and Suffix Codes

MS5D-02□-□□□ 0 /□

Model

Output
2: 2 outputs

Power supply
1: 15-40V DC (Operating range: 12 to 48 V)
6: 100-240 V AC/DC (Operating range: 85 to 264 V)

Input signal
1: Potentiometer resistance
(Total resistance 100 Ω to 10 kΩ)
Z: (Custom order)
Customized potentiometer resistance

Output-1 signal

A: 0 to 20 mA DC	Span is 5 mA or more
B: 0 to 5 mA DC	Span is 1 mA or more
1: –10 to +10 V DC	Span is 0.1 V or more
2: –100 to +100 mV DC	Span is 10 mV or more

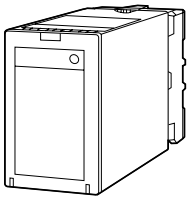
Z: (Custom order)
Customized current signals or voltage signals

Output-2 signal

A: 4 to 20 mA DC	1: 0 to 10 mV DC
B: 2 to 10 mA DC	2: 0 to 100 mV DC
C: 1 to 5 mA DC	3: 0 to 1 V DC
D: 0 to 20 mA DC	4: 0 to 10 V DC
E: 0 to 16 mA DC	5: 0 to 5 V DC
F: 0 to 10 mA DC	6: 1 to 5 V DC
G: 0 to 1 mA DC	7: –10 to +10 V DC

Z: (Custom order)
Customized current signals or voltage signals
* See "Customized Signal Specifications."

Optional specification
/SN: Without socket



■ Ordering Information

Specify the following when ordering.
- Model and suffix codes: e.g. MS5D-026-1AA0
- Total resistance: e.g. 2 kΩ
- Input range: e.g. 0 to 2 kΩ
- Output-1 range: e.g. 4 to 20 mA
- Burnout: e.g. Up

■ Input/Output Specifications

Input signal: Potentiometer resistance change (3-wire type)
Input signal setting range:
Total resistance: 100 Ω to 10 kΩ
Span: 80 Ω to 10 kΩ (50% of total resistance or more)
Zero elevation: 50% of total resistance or less
Allowable leadwire resistance: 150 Ω or less per wire (Resistance of each wire must be the same.)
Output signal: 2 points of DC current or DC voltage signals
Output-1 signal setting range:

Output-1 signal suffix code	Setting range
A	0 to 20 mA DC Span is 5 mA or more
B	0 to 5 mA DC Span is 1 mA or more
1	±10 V DC Span is 0.1 V or more
2	±100 mV DC Span is 10 mV or more

Allowable load resistance: (Common to output-1 and output-2)
Voltage output:
2 kΩ or more for ±5 V DC
10 kΩ or more for ±10 V DC
250 kΩ or more for ±100 mV DC
Current output:
Output-1: 15 (V)/max. output (A) (Ω) or less
Output-2: 7 (V)/max. output (A) (Ω) or less
Adjustment range: (Common to output-1 and output-2)
Output adjustment:
±5% of span or more (Zero/Span)

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■ Standard Performance

Accuracy rating: ±0.1% of span
However, the accuracy is not guaranteed for output levels less than 0.5% of the span of a 0 to X mA output range type.
The accuracy is limited according to the output-1 range setting.
• Accuracy Calculation
Compare the specified output-1 range with the output-1 range in the table below (narrower range) and choose accuracy calculation conditions.
However, ±0.1% is applied if an accuracy obtained from the expression is less than ±0.1%.

Accuracy = ±(0.05 × a/b + 0.05)%
(Output accuracy for output-2 is ±0.1%.)

Output-1 signal suffix code		Accuracy calculation condition	
	Output range	a	b
A	0 to 20 mA DC	10(mA)	Output span
B	0 to 5 mA DC	2.5(mA)	
1	±2.5 V DC	1(V)	
	Outside of ±2.5 V DC and within ±10 V DC	4(V)	
2	±25 mV DC	10(mV)	
	Outside of ±25 mV DC and within ±100 mV DC	40(mV)	

Burnout: Up, Down or Off; the maximum burnout time is specified as 60 seconds.
Response speed: 150 ms, 63% response (10 to 90%)
Effect of power supply voltage fluctuations:
±0.1% of span or less for the fluctuation within the operating range of each power supply voltage specification.
Effect of ambient temperature change:
±0.15% of span or less for a temperature change of 10°C.

■ Power Supply and Isolation

Power supply rated voltage:
15-40 V DC ⎓ or
100-240 V AC/DC ≂ 50/60 Hz
Power supply input voltage:
15-40 V DC ⎓ (±20%) or
100-240 V AC/DC ≂ (–15, +20%) 50/60 Hz
Power consumption:
24 V DC 2.3 W, 110 V DC 2.2 W
100 V AC 4.6 VA, 200 V AC 6.4 VA
Insulation resistance:
100 MΩ at 500 V DC between input, output, power supply, and grounding terminals mutually.
Withstand voltage:
2000 V AC for 1 minute between input, output, power supply and grounding terminals mutually.
1000 V AC for 1 minute between output-1 and output-2.

■ Environmental Conditions

Operating temperature range: 0 to 50°C
Operating humidity range: 5 to 90% RH (no condensation)
Operating conditions: Avoid installation in such environments as corrosive gas like sulfide hydrogen, dust, sea breeze and direct sunlight.
Installation altitude: 2000 m or less above sea level.

■ Mounting and Dimensions

Construction: Plug-in type
Material: Main unit : ABS resin (black), UL94 V-0
ABS resin + polycarbonate resin (black), UL94 V-0
PBT resin, including glass fiber (black), UL94 V-0
Socket: Modified polyphenylene oxide resin, including glass fiber (black), UL94 V-1
Mounting: Wall or DIN rail mounting
Connection: M3.5 screw terminals
External dimensions: 86.5 (H)×51 (W)×123 (D) mm (including a socket)
Weight: Main unit: approx. 200 g
Socket: approx. 80 g

■ Accessories

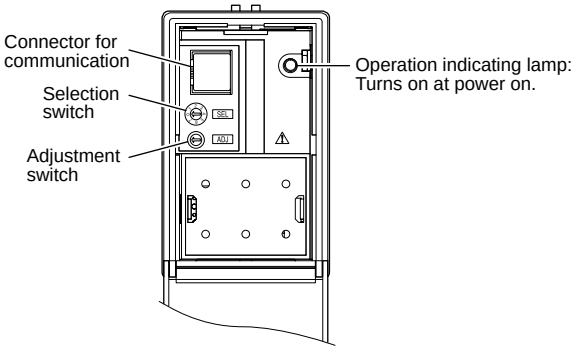
Spacer: One (for DIN rail mounting)
Range label: One

■ Customized Signal Specifications

Output-2	Current signal	Voltage signal
Output range (DC)	0 to 20 mA	–10 to +10 V
Span (DC)	1 to 20 mA	10 mV to 20 V

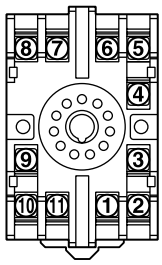
■ Front Panel

Output can be adjusted and input range can be set using the selection switch and adjustment switch.



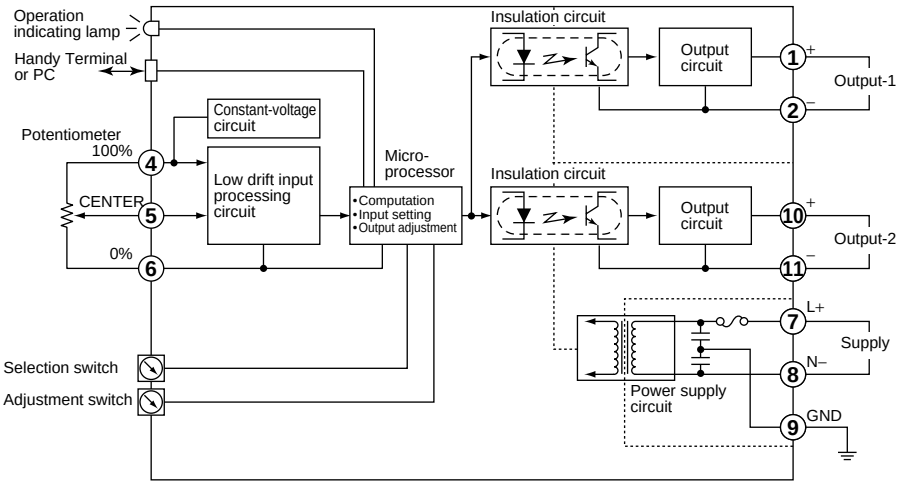
Position of selection switch	Item to be adjusted
0	No function
1	Output-1 zero adjustment
2	Output-1 span adjustment
3	Output-2 zero adjustment
4	Output-2 span adjustment
5	Input setting (0% value)
6	Input setting (100% value)

■ Terminal Assignments



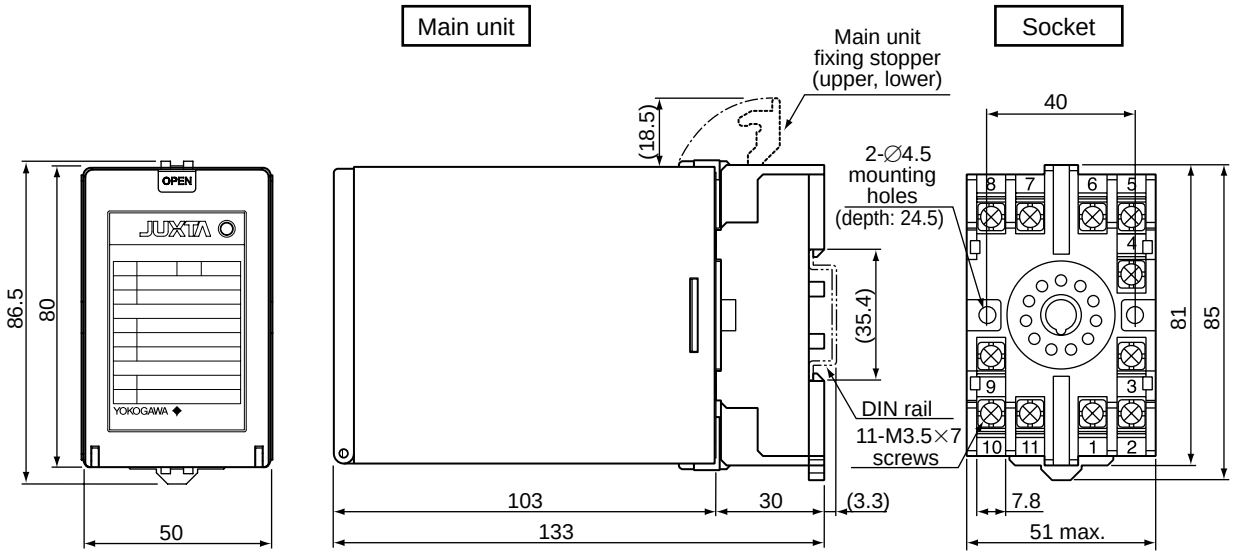
1	OUTPUT-1	(+)
2	OUTPUT-1	(–)
3	N.C.	
4	INPUT	(100%)
5	INPUT	(CENTER)
6	INPUT	(0%)
7	SUPPLY	(L+)
8	SUPPLY	(N–)
9	GND	(GND)
10	OUTPUT-2	(+)
11	OUTPUT-2	(–)

■ Block Diagrams

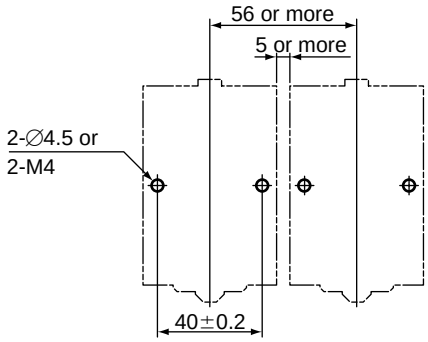


■ External Dimensions

Unit: mm



<Mounting Dimensions>



Note:
- When mounting the units close together, leave a space of at least 5 mm between them.
- Use the supplied spacer to keep a space of 5 mm for DIN rail mounting.

- The information covered in this document is subject to change without notice for reasons of improvements in quality and/or performance.