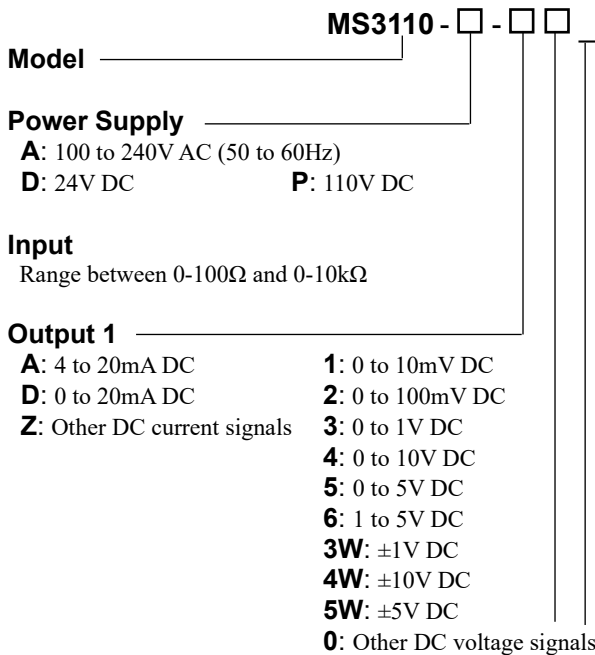


**DESCRIPTION**

The MS3110 is a terminal block type potentiometer transmitter that detects changes in the resistance of potentiometric sensors, converts them into commonly used DC signals and provides an isolated dual output.

**ORDERING CODE**

**Model**
**Power Supply**
**A:** 100 to 240V AC (50 to 60Hz)

**D:** 24V DC

**P:** 110V DC

**Input**

Range between 0-100Ω and 0-10kΩ

**Output 1**
**A:** 4 to 20mA DC

**D:** 0 to 20mA DC

**Z:** Other DC current signals

**1:** 0 to 10mV DC

**2:** 0 to 100mV DC

**3:** 0 to 1V DC

**4:** 0 to 10V DC

**5:** 0 to 5V DC

**6:** 1 to 5V DC

**3W:** ±1V DC

**4W:** ±10V DC

**5W:** ±5V DC

**0:** Other DC voltage signals

**Output 2**
**The codes are the same as for Output 1.**

Note 1: When a voltage output is selected for Output 1, a current output cannot be selected for Output 2.

Note 2: When the code A (4 to 20mA) is selected for both of the two outputs, the output load will be 550Ω maximum for Output 1 and 350Ω maximum for Output 2.

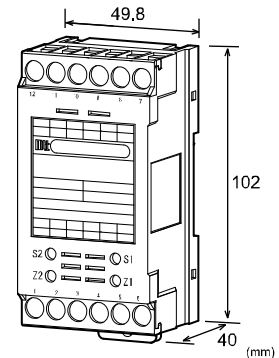
**Options**
**No code:** None

**/K:** Fast response (0 to 90% response time: 10ms max.)

**/H:** Polyurethane conformal coating

**/X:** Others (Special order)

\* For non-standard options, ask MTT for availability.


**ORDERING INFORMATION**

To place an order, please use the ordering code format as shown on the left.

(e.g.) MS3110-A-A6

\* Factory default: Factory testing is carried out with an input range of 0 to 5kΩ.

**Other Ordering Examples:**

For an output code of "0": MS3110-A-00 (Output: 2 to 5V)

For a specific resistance range: MS3110-A-AA (0 to 500Ω)

(When you specify a resistance range, our factory performs the test accordingly, the fact of which will be indicated in the label attached.)

For an option code of "X": MS3110-A-AA/X (Response frequency: 50Hz)

Note: If you wish to include multiple options in your order, specify the option codes in series (e.g. /KX).

**SPECIFICATIONS**
**POWER SECTION**

|                                  |  |              |              |
|----------------------------------|--|--------------|--------------|
| <b>Power Requirements</b>        | 100 to 240V AC: 85 to 264V AC (47 to 63Hz)             |              |              |
|                                  | 24V DC: 24V DC±10%                                     |              |              |
|                                  | 110V DC: 90 to 121V DC                                 |              |              |
| <b>Power Sensitivity</b>         | Better than ±0.1% of span for each power supply range. |              |              |
| <b>Power Line Fuse</b>           | 160mA fuse   |              |              |
| <b>Maximum Power Consumption</b> |  |              |              |
| Power                            | 100-240V AC  | 24V DC       | 110V DC      |
|                                  | Approx. 7.0VA  | Approx. 1.5W | Approx. 2.5W |

**INPUT SECTION**

|                                       |  |
|---------------------------------------|--|
| <b>Input Signal</b>                   | Range between 0-100Ω and 0-10kΩ.   |
| <b>Measuring Voltage</b>              | Approx. 0.5V   |
| <b>Allowable Lead Wire Resistance</b> | 10% or less of total resistance per wire. (The resistance of all three wires must be equal.) |

● **OUTPUT SECTION**

|  |  |   |
|--|--|---|
| <b>Allowable Output Load</b>   |  |   |
| Voltage Output (DC)  | 1V span and up<br>10mV<br>100mV  | 2mA max.<br>10kΩ min.<br>100kΩ min.                           |
| Current Output (DC)  | 4-20mA single output<br>4-20mA dual output   | 750Ω max.<br>Output 1:<br>550Ω max.<br>Output 2:<br>350Ω max. |
| Zero Adjustment  | Output 1: Approx. 0 to 30% of total resistance.<br>Output 2: Approx. ±5% of span. (Adjustable by the front-accessible trimmers.)   |   |
| Span Adjustment  | Output 1: Approx. 70 to 100% of total resistance.<br>Output 2: Approx. ±5% of span. (Adjustable by the front-accessible trimmers.) |   |
| <b>Ranges Available</b>  |  |   |
|  | Current Signal   | Voltage Signal  |
| Output Range (DC)  | 0 to 20mA  | -10 to 10V  |
| Output Span (DC)   | 4 to 20mA  | 10mV to 20V   |
| Output Bias  | 0 to 100%  | -100 to 100%  |
| * For current output signals, the accuracy of any current output smaller than 0.1mA is not guaranteed. |  |   |
| Output Spec. Ex. 1: For 4 to 20mA output, the output span is 16mA and the bias +25%.                   |  |   |
| Output Spec. Ex. 2: For -1 to 4V output, the output span is 5V and the bias -20%.                      |  |   |

● **PERFORMANCE**

|                            |   |
|----------------------------|---|
| Accuracy Rating            | Better than ±0.2% of span (at 25°C±5°C).  |
| Temperature Effect         | Better than ±0.2% of span per 10°C change in ambient.   |
| Response Time              | 170ms max. (0 to 90%) with a step input at 100%.  |
| CMRR                       | 100dB min. (500V AC, 50/60Hz)   |
| Isolation                  | 4-way isolation between input, output 1, output 2, and power.   |
| Insulation Resistance      | 100MΩ min. (@ 500V DC) between input, output 1, output 2, power, and ground.  |
| Dielectric Strength        | Input / [Output 1, Output 2] / [Power, Ground]: 2000V AC for 1 minute (Cutoff current: 0.5mA)<br>Power / Ground: 2000V AC for 1 minute (Cutoff current: 5mA)<br>Output 1 / Output 2: 500V AC for 1 minute (Cutoff current: 0.5mA) |
| Surge Withstand Capability | Tested as per ANSI/IEEE C37.90.1-1989.  |
| Operating Environment      | Ambient temperature: -5 to 55°C<br>Humidity: 5 to 90% RH (non-condensing)   |
| Storage Temperature        | -10 to 60°C   |

● **PHYSICAL**

|                     |   |
|---------------------|---|
| Installation        | DIN rail mounting                                       |
| Wiring              | M3.5 screw terminal connection (with drop-proof screws) |
| Screwing Torque     | 0.8 to 1.0 [Nm] * Recommended                           |
| External Dimensions | W49.8 × H102.0 × D40.0 mm (including DIN rail)          |
| Weight              | 140g max.   |

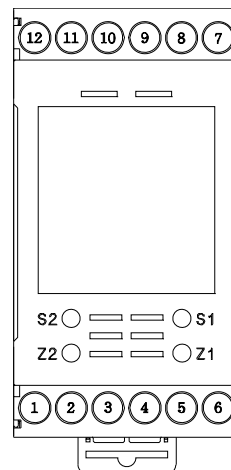
● **MATERIAL**

|                       |  |
|-----------------------|--|
| Housing               | ABS resin (UL 94V-0)                       |
| Screw Terminal        | Nickel-plated steel                        |
| Printed Circuit Board | Glass fabric, epoxy resin (FR-4: UL 94V-0) |

● **STANDARDS CONFORMITY**

|                         |  |
|-------------------------|--|
| EC Directive Conformity | EMC Directive (2014/30/EU) EN61326-1:2013<br>Low Voltage Directive (2014/35/EU) IEC61010-1 EN61010-1:2010/A1:2019<br>Installation Category II<br>Pollution Degree 2<br>Maximum operating voltage 300V<br>Reinforced insulation between [input/output/GND] and power. |
|-------------------------|--|

**TERMINAL ASSIGNMENTS**



|   |            |       |
|---|------------|-------|
| ① | + OUTPUT 2 |       |
| ② | - OUTPUT 2 |       |
| ③ | N.C.       |       |
| ④ | P (+)      | POWER |
| ⑤ | N (-)      |       |
| ⑥ | GND        |       |
| ⑦ | A          |       |
| ⑧ | B          |       |
| ⑨ | C          |       |
| ⑩ | N.C.       |       |
| ⑪ | + OUTPUT 1 |       |
| ⑫ | - OUTPUT 1 |       |

BLOCK DIAGRAM

