## MODEL & SUFFIX CODE SELECTION

<table>
<thead>
<tr>
<th>MODEL</th>
<th>FUNCTION</th>
<th>POWER INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>S : Transmitter</td>
<td>R : Receiver</td>
<td>DC Power</td>
</tr>
<tr>
<td>AC Power</td>
<td>G : 200V AC</td>
<td>S : 12V DC*</td>
</tr>
<tr>
<td>C : 110V AC</td>
<td>H : 220V AC</td>
<td>R : 24V DC*</td>
</tr>
<tr>
<td>D : 115V AC</td>
<td>J : 240V AC</td>
<td></td>
</tr>
<tr>
<td>F : 120V AC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*24V DC (Code R) and 12V DC (Code S) are not approved by Japan Approvals Institute for Telecommunications Equipment. Therefore an individual application will be necessary for using the TMA on NTT telecom. line.

## ORDERING INFORMATION

Specify code number. (e.g. TMA-S-B)

## GENERAL SPECIFICATIONS

- **Construction**: plug-in
- **Connection**: M3.5 screw terminals
- **Housing material**: flame-resistant resin (black)
- **Isolation**: input to output to power
- **Front adjustments**: zero and span; ±5%

## INPUT & OUTPUT

### TRANSmitter (model: TMA-S)

- **Input**: 1 – 5V DC
  - For a current input, specify a resistance value to convert it into 1 – 5V when ordering.
  - **Input resistance**: 1MΩ minimum
- **Output**: 1 – 5mA DC
  - **Load resistance**: 3kΩ maximum

### RECEIVER (model: TMA-R)

- **Input**: 1 – 5mA DC
  - Shunt resistor attached to input terminals (included in the product package)
  - **Input resistance**: 10Ω
- **Output**: 4 – 20mA DC
  - **Load resistance**: 750Ω maximum
### INSTALLATION

**Power input**
- **AC:** operational voltage range: rating ±10%, 50/60 ±2 Hz, approx. 2VA
- **DC:** operational voltage range: rating ±10% (ripple 10% p-p max.)
  - approx. 80mA at 24V
  - approx. 160mA at 12V

**Operating temperature:** -5 to +60°C (23 to 140°F)

**Operating humidity:** 30 to 90% RH (non-condensing)

**Mounting:** surface or DIN rail

**Dimensions:** W50×H80×D123 mm (1.97”×3.15”×4.84”)

**Weight:** 400 g (0.88 lbs)

### PERFORMANCE in percentage of span

**Accuracy:** ±0.1%

**Temp. coefficient:** ±0.015%/°C (±0.008%/°F)

**Response time:** ≤0.5 seconds (0 – 90%)

**Line voltage effect:** ±0.1% over voltage range

**Insulation resistance:** ≥100MΩ with 500V DC

**Dielectric strength:** 1000V AC @1 minute
  - (input to output to power)
  - 2000V AC @1 minute (input to ground)
  - 2000V AC @1 minute (output to ground)

### EXPLANATIONS

- The TMA Telemetering Module provides 1 to 5mA DC current signal. The current signal has a high impedance of 5MΩ and thus the signal level is not affected by leadwire resistance of cable connected to the receiving instrument, the receiving resistor receives a current signal proportional to the input signal 1 to 5V DC. The current varies only by 0.02% (=1kΩ / 5MΩ) when the leadwire resistance value changes from 0Ω to 1kΩ.

- **AVAILABLE NTT LINE**
  Among the several circuit lines opened by NTT (Nippon Telephone & Telegraph), the TMA utilizes the “special DC line” of 50 b/s.
  The following shows the conditions to use this line.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission speed</td>
<td>50 b/s max.</td>
</tr>
<tr>
<td>Technical configuration</td>
<td>2-wire (metallic return)</td>
</tr>
<tr>
<td>Communication</td>
<td>Uni-directional, full-duplex</td>
</tr>
<tr>
<td>Intersection</td>
<td>Not allowed</td>
</tr>
<tr>
<td>Circuit protection</td>
<td>Required</td>
</tr>
<tr>
<td>Electrical characteristics</td>
<td>Current 45mA max.</td>
</tr>
<tr>
<td></td>
<td>Voltage between lines 100V max.</td>
</tr>
<tr>
<td></td>
<td>Voltage to ground 50V max.</td>
</tr>
</tbody>
</table>

- **LEADWIRE RESISTANCE**
  Most popular wire size among the cables for city telecommunication lines is that of 0.65 mm diameter. This wire has about 100Ω of leadwire resistance for 1 kilometer with return, thus 3kΩ is for about 30 kilometers.

<table>
<thead>
<tr>
<th>Cable size</th>
<th>mm</th>
<th>0.65</th>
<th>0.90</th>
<th>1.25</th>
<th>2.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approx. Resistance (Ω/km; including return)</td>
<td>100</td>
<td>55</td>
<td>35</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
INSTALLATION INSTRUCTIONS

■ LIGHTNING PROTECTION

Long distance transmission system via cables are often destroyed by inductive surge of lightning. In order to prevent lightning surges entering through power supply line and signal line, proper procedure will be required. Specify M-System’s special lightning arrester M-RESTER for this purpose. Fuses provided by NTT do not meet the protecting purpose of transmission cable.

■ CABLE RESISTANCE OF NTT SPECIAL LINE

Check that cable resistance (including return) of the NTT special line is within 3kΩ. In general, it is around 1kΩ and does not cause any problem.

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SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

*Input shunt resistor attached for current input.
Specifications subject to change without notice.