**GP-A Series**

High Accuracy Eddy Current Type Displacement Sensor

- **Accurate measurement of minute displacements**
  - Minute displacement of metallic objects can be accurately measured with a resolution of 0.04 % F.S.
    - [GP-A5S (For 1 mm 0.039 in sensing type)]
    - Resolution: 0.4 μm 0.016 mil

- **Linearity ± 0.5 % F.S.**
  - Displacement is accurately output since it incorporates a high accuracy linearity correction circuit.

- **The sensor head protected as per IP67g (JEM)**
  - With IP67g environment resistance, variegated measurements are rendered possible under many different conditions.

- **Sensor heads can be mounted in narrow spaces**
  - If mounting standard types and different frequency types parallel to each other, they use up one-third the space needed for mounting compared to the same models. In addition, the GP-A14F type can be mounted close together and the sensor heads can be set in a narrow range for distortion and other difficult measurements.

- **Easy hookup connector type**
  - Because the sensor heads and the amplifier are connected with a connector, they can be set up with one touch. This resolves the problem of measurements impaired by connection resistance fluctuations occurring with terminal types.

- **Stable temperature characteristics**
  - These sensor heads boast a 2 mm 0.079 in or more sensing range enabling 0.03 % F.S./°C. (Excluding the different frequency type)
    - [GP-A8S (For 2 mm 0.079 in sensing type)]
    - Temperature characteristics: 0.6 μm /°C
    - 0.024 mil /°C

- **Choice of sensor heads**
  - You can choose from among 5 types of sensor heads depending on the mounting space available and the application. Also, their cable joints are equipped with a special protector that helps prevent the cable from severing as a result of bending or other mishap.

- **Sensors can be customized for metals other than steel**
  - It is now possible to customize sensors to meet your metal measurement requirements.

- **Performance may vary depending on conditions. Please contact our office.**

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**GP-A5S(I)**
- 5.4 mm 0.213 in

**GP-A8S(I)**
- 8 mm 0.315 in

**GP-A10ML(I)**
- M10

**GP-A14F(I)**
- 5.4 mm 0.213 in
- 34 mm 1.339 in
- 15 mm 0.591 in

**GP-A12ML(I)**
- M12

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**High accuracy analog sensing of minute displacement**

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986 sunx
APPLICATIONS

Measuring iron sheet thickness
In combination with the digital panel controller CA series, it is optimally suited for measuring thickness of continuous iron sheets.

Measuring gap between rollers
Fine gap measurement is possible to control the gap between rollers.

Measuring parallelism of chassis
Even a slight tilt can be reliably detected.

Equipped with a zero-adjustment function
By pressing the zero-adjustment button, you can reset the output voltage to 0 V with one touch. (Resets the current output to 4 mA)
This function comes in handy when performing tolerance diagnosis of a masterwork to be used as the standard. Easy adjustment for product changes.
Remote operation is also possible by way of an external input.

Fine adjustment of output
Fine adjustment according to the sensing conditions is possible with shift and span functions.

Equipped with useful indicators
The amplifier is equipped with an ALARM indicator (yellow), which lights up in case of sensor head cable disconnection or sensor head damage, and an OVER indicator (orange), which lights up in case the sensing range is exceeded.

Compact amplifier
The amplifier has a W53 × H90 × D67 mm W2.087 × H3.543 × D2.638 in compact size. Of course, it is mountable on a 35 mm 1.378 in width DIN rail.

Suitable for various analog control devices
It is suitable for various analog control devices since it is equipped with two outputs, analog voltage (0 to 5 V) and analog current (4 to 20 mA).
### ORDER GUIDE

Please ensure to order the sensor head and the amplifier as a set. The set is calibrated and delivered.

<table>
<thead>
<tr>
<th>Type</th>
<th>Sensor heads</th>
<th>Amplifier</th>
<th>Sensing range</th>
<th>Set model No.</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 1 mm</td>
<td>GP-A5S</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 0.039 in</td>
<td>GP-A5SI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 2 mm</td>
<td>GP-A8S</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 0.079 in</td>
<td>GP-A8SI</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 2 mm</td>
<td>GP-A10M</td>
<td>Analog voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 0.079 in</td>
<td>GP-A10MI</td>
<td>Output voltage: 1 to 5 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 5 mm</td>
<td>GP-A12ML</td>
<td>Analog current</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 0.197 in</td>
<td>GP-A12MLI</td>
<td>Output current: 4 to 20 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 3 mm</td>
<td>GP-A14F</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 to 0.118 in</td>
<td>GP-A14FI</td>
<td></td>
</tr>
</tbody>
</table>

### OPTIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>Model No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor head mounting bracket</td>
<td>MS-SS5</td>
<td>Mounting bracket for GP-A5S(I)</td>
</tr>
<tr>
<td>Sensor head mounting bracket</td>
<td>MS-SS8</td>
<td>Mounting bracket for GP-A8S(I)</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA2-T1</td>
<td>NPN open-collector transistor</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA2-T4</td>
<td>NPN open-collector transistor</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-R1</td>
<td>Relay-contact</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-R4</td>
<td>Relay-contact</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-T1</td>
<td>NPN open-collector transistor</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-T4</td>
<td>NPN open-collector transistor</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-B1</td>
<td>NPN open-collector transistor With BCD output</td>
</tr>
<tr>
<td>Digital panel controller (Note)</td>
<td>CA-B4</td>
<td>NPN open-collector transistor</td>
</tr>
</tbody>
</table>

**Sensor head mounting bracket**
- MS-SS5
- MS-SS8

It enables easy fixing of the sensor head.

**Digital panel controller**
- CA2 series
- CA series

Note: For further details, refer to p.864 for the ultra-compact digital panel controller CA2 series, and to p.854 for the digital panel controller CA series.
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Set model No.</th>
<th>Non-threaded type sensor head</th>
<th>Threaded type sensor head</th>
<th>Front sensing type sensor head</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Non-threaded type sensor head</td>
<td>Threaded type sensor head</td>
<td>Front sensing type sensor head</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Different frequency</td>
<td>Different frequency</td>
<td>Different frequency</td>
</tr>
<tr>
<td>Sensing range</td>
<td>GP-A5S</td>
<td>0 to 1 mm (0.039 in)</td>
<td>0 to 2 mm (0.079 in)</td>
<td>0 to 5 mm (0.197 in)</td>
</tr>
<tr>
<td>Standard sensing object</td>
<td>GP-A5SI</td>
<td>Iron sheet 8 × 8 × 11 mm (0.315 × 0.315 × 1.039 in)</td>
<td>Iron sheet 12 × 12 × 11 mm (0.472 × 0.472 × 1.039 in)</td>
<td>Iron sheet 30 × 30 × 11 mm (1.181 × 1.181 × 1.039 in)</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>GP-A8S</td>
<td>24 V DC ± 10 % Ripple P-P 10 % or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>GP-A8SI</td>
<td>150 mA or less</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog output (Analog voltage output)</td>
<td>GP-A10M</td>
<td>NPN open-collector transistor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplifier</td>
<td>GP-A10MI</td>
<td>- Output voltage: 0 to 5 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm indicator</td>
<td>GP-A12ML</td>
<td>- Output impedance: 100 Ω approx.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over indicator</td>
<td>GP-A12MLI</td>
<td>- Load resistance: 0 to 350 Ω</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm indicator</td>
<td>GP-A14F</td>
<td>- Span adjustment (by 14-turn adjuster)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustments</td>
<td>GP-A14FI</td>
<td>- Shift adjustment (by push-buttons), 2) Span adjustment (by 14-turn adjuster)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature characteristics (Note 1)</td>
<td>Sensor head</td>
<td>Sensor head</td>
<td>Sensor head</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 μm/°C</td>
<td>0.6 μm/°C</td>
<td>1 μm/°C</td>
<td>0.6 μm/°C</td>
</tr>
<tr>
<td></td>
<td>0.020 mil/°C</td>
<td>0.024 mil/°C</td>
<td>0.039 mil/°C</td>
<td>0.024 mil/°C</td>
</tr>
<tr>
<td></td>
<td>0.016 mil/°C</td>
<td>0.031 mil/°C</td>
<td>0.031 mil/°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.4 μm/°C</td>
<td>0.8 μm/°C</td>
<td>2.0 μm/°C</td>
<td>0.2 μm/°C</td>
</tr>
<tr>
<td>Protection</td>
<td>Sensor head</td>
<td>IP67 (IEC), IP67 (JEM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Sensor head</td>
<td>-10 to +55 °C</td>
<td>-14 to +131 °F</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>Sensor head</td>
<td>20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>Sensor head</td>
<td>10 to 55 Hz frequency, 1.5 mm 0.059 in amplitude in X, Y and Z directions for two hours each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock resistance</td>
<td>Sensor head</td>
<td>10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude in X, Y and Z directions for two hours each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Sensor head</td>
<td>500 m/s² acceleration (50 G approx.) in X, Y and Z directions for five times each</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable</td>
<td>Connector attached high frequency coaxial cable, 3 m 9.843 ft long</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable length (Note 2)</td>
<td>Amplifier</td>
<td>Up to total 100 m 328.084 ft with 0.3 mm², or more, cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Sensor head</td>
<td>40 g approx.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) These values are for a range which is 20 to 60 % of the maximum sensing distance.
2) Take care that the output voltage is reduced due to the resistance of the wiring cable.
3) The given weight of the threaded type sensor head is the value including the weight of the nuts and the toothed lock washer.
GP-A

I/O CIRCUIT AND WIRING DIAGRAMS

I/O circuit diagram

Wiring diagram

Notes: 1) In case of using the analog voltage output, connect a device having a high input impedance. Also, take care that the output voltage is reduced due to the resistance of the wiring cable.

2) The alarm output is not incorporated with a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

Symbols... D1: Input protection diode
D2: Reverse supply polarity protection diode
ZD: Surge absorption zener diode
Tr: NPN output transistor

Non-voltage contact or NPN open-collector transistor

Low (0 to 1 V) (duration 30 ms or more): External zero-adjustment setting
High (5 to 30 V, or open): External zero-adjustment ineffective

SENSE CHARACTERISTICS (TYPICAL)

Correlation between material and output voltage / current

The GP-A series is made for all types of standard iron sensing objects. The graph below describes the output discrepancies that occur when detecting different types of metals. It is now possible to customize sensors to meet your metal measurement requirements. For more details, please contact our office.

GP-A5S(I)

GP-A8S(I) GP-A10M(I)
Magnetic Displacement Sensors

MEASUREMENT SENSORS
HL-C1
LH-50
LM10
HL-T1
LA-300
LA
LD

SENSING CHARACTERISTICS (TYPICAL)

Correlation between material and output voltage / current

GP-A12ML(I)

GP-A14F(I)

PRECAUTIONS FOR PROPER USE

This product is not a safety sensor. Its use is not intended or designed to protect life and prevent body injury or property damage from dangerous parts of machinery. It is a normal object detection sensor.

• Make sure to use in combination the sensor head and amplifier which have the same production serial number (5 digit). Since adjustment is done before shipment, if items with different production serial numbers are combined, the sensing characteristics will deteriorate even if they have the same model number.
• The length of the sensor head cable cannot be changed.

Linearity in case of disc-shaped or cylindrical objects
• In case the sensing object is disc-shaped or cylindrical, the linearity of the analog output varies with the sensing object size. In such a case, conduct zero adjustment when close mounting and, by adjusting to the maximum sensing distance and to 5 V as the voltage output (current output 20 mA), linearity (±0.5 % F.S.) can be attained on a full-scale if the sensing object’s size is larger than those described in the table below.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Iron disc diameter φ (mm)</th>
<th>Iron cylinder diameter φ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP-ASS(I)</td>
<td>12 0.472</td>
<td>10 0.394</td>
</tr>
<tr>
<td>GP-A8S(I)</td>
<td>12 0.472</td>
<td>10 0.394</td>
</tr>
<tr>
<td>GP-A10M(I)</td>
<td>12 0.472</td>
<td>10 0.394</td>
</tr>
<tr>
<td>GP-A12ML(I)</td>
<td>30 1.118</td>
<td>50 1.969</td>
</tr>
<tr>
<td>GP-A14F(I)</td>
<td>12 0.472</td>
<td>10 0.394</td>
</tr>
</tbody>
</table>

Mounting sensor head
• The tightening torque should be under the value given below.

Mounting with set screw
• Make sure to use an M3 or smaller set screw having a cup-point.

<Non-threaded type Sensor head>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>A (mm)</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP-ASS(I)</td>
<td>5 0.197</td>
<td>0.44 N-m</td>
</tr>
<tr>
<td>GP-A8S(I)</td>
<td>5 0.197</td>
<td>0.58 N-m</td>
</tr>
</tbody>
</table>

Note: Do not apply excess torque.

Mounting with nut

<Threaded type Sensor head>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>B (mm)</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP-A10M(I)</td>
<td>7 0.276</td>
<td>9.8 N-m</td>
</tr>
<tr>
<td>GP-A12ML(I)</td>
<td>14 0.551</td>
<td>20 N-m</td>
</tr>
</tbody>
</table>

Note: Install in such a way so that the nut does not protrude from the screw.

Mounting GP-A14F(I)

Mounting plate

<In case of disc>

<In case of cylinder>

Iron disc

Iron cylinder

Iron cylinder (mm)

Iron disc (mm)

Output voltage (V)

Output current (mA)

Setting distance L (mm)
**PRECAUTIONS FOR PROPER USE**

**Distance from surrounding metal**
- As metal around the sensor may affect the sensing performance, pay attention to the following points.

- **<Embedding of the sensor in metal>**
  - Since the analog output may change if the sensor is completely embedded in metal, keep the minimum distance specified in the table below. **GP-A14F(I)** can be used by being completely embedded in metal. However, the surrounding metal should not protrude beyond the sensing face.

- **<Front sensing type sensor head>**
  - When two or more sensor heads are installed in parallel or face to face, since the specifications may not be met, keep the minimum separation distance specified in the table below.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>E (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 'T' type and non-'T' type</td>
<td>Between two 'T' types or two non-'T' types</td>
</tr>
<tr>
<td>GP-A5S(I)</td>
<td>11.433</td>
</tr>
<tr>
<td>GP-A8S(I)</td>
<td>11.433</td>
</tr>
<tr>
<td>GP-A10M(I)</td>
<td>14.551</td>
</tr>
<tr>
<td>GP-A12ML(I)</td>
<td>0</td>
</tr>
</tbody>
</table>

  Notes: 1) 'T' type is different frequency type.
  2) If the required resolution is lower than the specification (0.04 % F.S.), it is possible to bring the sensor heads nearer than the separation distances given in the table above. For further details, please contact our office.

**Mounting amplifier**

**Mounting on DIN rail**
1. With the stopper pressed in the direction of the arrow (it locks), fit the front portion of the mounting section of the amplifier on the 35 mm 1.378 in width DIN rail.
2. Lightly press the grooved section of the stopper downwards when pressing the stopper in.
3. Press and fit the rear portion of the mounting section on the 35 mm 1.378 in width DIN rail.

**Wiring**
- Make sure that the power supply is off while wiring.
- Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of the sensor head or the amplifier, connect the frame ground (F.G.) inverter motor, etc.) is used in the vicinity of the sensor head or the amplifier, connect the frame ground (F.G.) terminal of the equipment to an actual ground. Power lines or put them in the same raceway. This can cause malfunction due to induction.
PRECAUTIONS FOR PROPER USE

Functional description

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Power indicator (Green)</td>
<td>Lights up when the power is ON.</td>
</tr>
<tr>
<td>2 Over indicator (Orange)</td>
<td>Lights up when the sensing range is exceeded.</td>
</tr>
<tr>
<td>3 Alarm indicator (Yellow)</td>
<td>Lights up when the sensor head connection is improper or the sensor head cable is disconnected.</td>
</tr>
<tr>
<td>4 Span adjuster</td>
<td>Analog output’s output voltage range and output current range can be adjusted. It is a 14-turn potentiometer.</td>
</tr>
<tr>
<td>5 Zero-adjustment button</td>
<td>The zero-point of the analog output can be set. Further, if it is pressed continuously for 3 sec., or more, the zero-point value can be erased.</td>
</tr>
<tr>
<td>6 Shift-up button</td>
<td>Analog output’s offset value can be increased. If both the buttons are pressed simultaneously for 3 sec., or more, the set value can be erased.</td>
</tr>
<tr>
<td>7 Shift-down button</td>
<td>Analog output’s offset value can be decreased.</td>
</tr>
<tr>
<td>8 Button operation effective/ineffective selection switch</td>
<td>If it is set to the ‘LOCK’ side, the operation of the zero-adjustment button, the shift-up button and the shift-down button is ineffective. Set it to the ‘FREE’ side during adjustment, and to the ‘LOCK’ side during sensing. The values of zero-point setting and shift adjustment are stored in an EEPROM (memory) whenever the switch is changed from the ‘FREE’ side to the ‘LOCK’ side.</td>
</tr>
<tr>
<td>9 Connector for sensor head connection</td>
<td>It is the connector for sensor head connection.</td>
</tr>
</tbody>
</table>

Alarm output

• It is output when the sensor head connection is improper or the sensor head cable is disconnected.
• The alarm output is not incorporated with a short-circuit protection circuit. Do not connect it directly to a power supply or a capacitive load.

External zero-adjustment input

• The external zero-adjustment input should be applied 30 min., or more, after the power supply is switched on.
• Zero-adjustment can be remotely done by an external input by using the zero-adjustment input terminals (terminal Nos. 5 and 6).
• If the external zero-adjustment input terminals (terminal Nos. 5 and 6) are short-circuited for 30 ms, or more, the analog voltage output and the analog current output are forcibly set to 0 V and 4 mA, respectively.

Others

• Do not use during the initial transient time (0.5 sec.) after the power supply is switched on.
• Do not use the sensor at places having intense vibrations, as this can cause malfunction.
• Avoid dust, dirt, and steam.
• Take care that the product does not come in direct contact with water, oil, grease, or organic solvents, such as, thinner, etc.
• Take care that the sensing face is not covered with metal dust, scrap, or spatter etc., as this can cause malfunction.
PRECAUTIONS FOR PROPER USE

Adjustment

• This product is delivered after being adjusted with the standard sensing object. However, since there is some difference due to the sensing object being used, carry out the adjustment as per the following procedure, using a voltmeter or ammeter, oscilloscope, etc.

1. Switch on the power supply after confirming that proper connection has been made to the external device to which GP-A is to be connected.

2. Start the adjustment 30 min. or more, after switching on the power supply.

3. Open the cover on the top of the amplifier and set the ‘button operation effective / ineffective selection switch’ to the ‘FREE’ side.

4. Touching the sensor head to the sensing object, press the ‘zero-adjustment button’ and set the zero-point. At this time, the analog voltage output and the analog current output are forcibly set to 0 V and 4 mA, respectively.

5. Set the sensor head at the maximum distance [GP-A5S(I): 1 mm 0.039 in, GP-A6S(I) and GP-A10M(I): 2 mm 0.079 in, GP-A12ML(I): 5 mm 0.197 in and GP-A14FL(I): 3 mm 0.118 in] from the sensing object.

At this time, adjust the analog voltage output to ±5 V or the analog current output to 20 mA with the ‘span adjuster’.

6. Once again, touch the sensor head to the sensing object, and confirm that the analog voltage output and the analog current output are 0 V and 4 mA, respectively. In case they are not, repeat the adjustment from step 4.

7. The following shift adjustment and span adjustment can be done if required.

Shift adjustment range

- Using the ‘shift-up button’ and the ‘shift-down button’, it is possible to adjust the offset value for the analog voltage output by ±0.5 V and that for the analog current output by ±1.6 mA.

- As long as the sensing object is within the sensing range, the analog voltage output and the analog current output can be adjusted to 0 V and 4 mA, respectively, with the ‘zero-adjustment button’.  

Note: The analog current output is limited to a lower limit of 3 mA and an upper limit of 23 mA by a control circuit.

Span adjustment range

- The output span (slope) can be adjusted with the ‘span adjuster’ over a range of 0.7 to 1.3 times than that for the standard sensing object.

Note: Since the span adjustment can be done irrespective of the ‘button operation effective / ineffective selection switch’ position, do not operate the span adjuster after the adjustment.

After the adjustment, make sure to set the ‘button operation effective / ineffective selection switch’ to the ‘LOCK’ side and close the cover on top of the amplifier.

• The values of zero-point setting and shift adjustment get stored in an EEPROM when the switch is set to the ‘LOCK’ side. The values stored in the EEPROM are not erased even when the power supply is switched off. However, kindly note that the EEPROM has a life span and its guaranteed life is 100,000 write operation cycles.

Notes: 1) The set values are not stored in the EEPROM if the power supply is switched off when the switch is on the ‘FREE’ side.

2) If the switch is set to the ‘LOCK’ side before adjustment, the set values cannot be changed.
**DIMENSIONS (Unit: mm in)**  
The CAD data in the dimensions can be downloaded from the SUNX website: http://www.sunx.co.jp/

### Sensor head

- **GP-A5S(I)**
  - 2 φ2.5 φ0.098 high frequency coaxial cable, 3 m 9.843 ft long
  - Connector
  - M10 X 1.0 0.039

- **GP-A8S(I)**
  - 2 φ2.5 φ0.098 high frequency coaxial cable, 3 m 9.843 ft long
  - Connector
  - Toothed lock washer (internal tooth)

- **GP-A10M(I)**
  - 2 φ2.5 φ0.098 high frequency coaxial cable, 3 m 9.843 ft long
  - Connector
  - M12 X 1.0 0.039

- **GP-A12ML(I)**
  - 2 φ2.5 φ0.098 high frequency coaxial cable, 3 m 9.843 ft long
  - Connector
  - Toothed lock washer (internal tooth)

- **GP-A14F(I)**
  - 2 φ2.5 φ0.098 high frequency coaxial cable, 3 m 9.843 ft long
  - Connector
  - Center of sensing

### Amplifier

- **All models**
  - Power indicator (Green)
  - Over indicator (Orange)
  - Alarm indicator (Yellow)
  - Connector for sensor head connection
  - 2 φ5 0.197 mounting holes
  - Shift-up button
  - Span adjuster
  - Button operation effective / ineffective selection switch

### Cover removed condition

- **MS-SS5 MS-SS8**
  - Mounting bracket for GP-A5S(I) (Optional), mounting bracket for GP-A8S(I) (Optional)

<table>
<thead>
<tr>
<th>Item</th>
<th>Model No.</th>
<th>MS-SS5</th>
<th>MS-SS8</th>
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<td>GP-A8S(I)</td>
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Material: Nylon 66