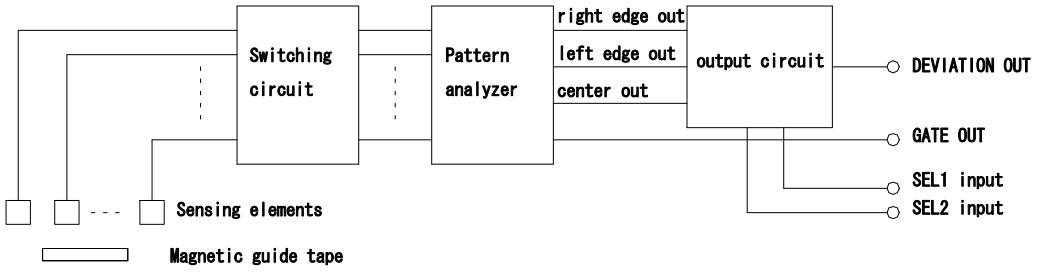
GS-2744B Guide Sensor
INSTRUCTIONS
(CE marked)

1. Summary

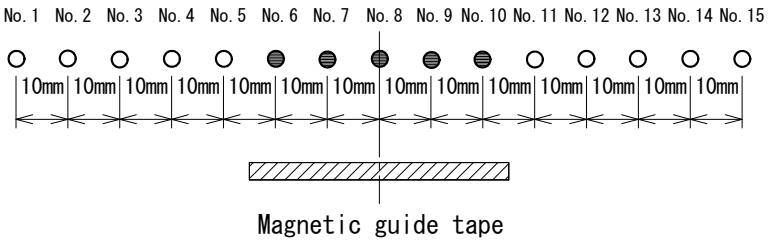
GS-2744B is step analog voltage output type magnetic navigation sensor for AGV. GS-2744B is composed of 15 bit MACOME original magnetic sensor elements “saturable coil”, encoder and D/A converter. The step analog voltage (DEVIATION OUT) changes proportional to relative position between GS-2744B and magnetic guide tape. GS-2744B has branch selection function (SELECTION IN/straight, right or left) at junction. By input branch selection signal the step voltage changes according to the instruction signal. Gate signal (GATE OUT) indicates that GS-2744B is within controllable area of magnetic guide tape.



Internal 15 magnetic switches detect magnetic flux from magnetic guide tape as follows.

Built-in sensing element arrangement ○ =OFF bit ● =ON bit

(ex. magnetic tape MGL-50 series / airgap 30mm)



Patterns of activated sensors are analyzed and 3 types of control signal (DEVIATION OUT/Step analog output) for AGV are generated.

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2. Specifications

<table>
<tr><th>Item</th><th>Content</th></tr>
<tr><td>Power supply</td><td>DC+10.8 V to +30V, ripple 1% max.</td></tr>
<tr><td>Power consumption</td><td>30mA max.</td></tr>
<tr><td>Operation temperature</td><td>-10 to +60℃ (storage; -20 to +70℃)</td></tr>
<tr><td>Operation humidity</td><td>35% to 90%RH (non-condensing)</td></tr>
<tr><td>Housing</td><td>IP-54 (neither splash nor water-proof)</td></tr>
<tr><td>Operation Air gap</td><td>5 to 40mm (with MGL-50, MG-611A, etc.)</td></tr>
<tr><td>Target Magnet</td><td>MGL-50 series MGR series and MG-611A
(North pole side of magnet should face GS-2744B.)</td></tr>
<tr><td>Insulation resistance</td><td>100MΩ(between current-carrying portion + shield cord and case under DC500V)</td></tr>
<tr><td>Conformable Standard</td><td>EU Directive
Electromagnetic compatibility (EMC) Directive
2004/108/EC EN61326-1</td></tr>
<tr><td>DEVIATION OUT</td><td>(Fig.1)</td></tr>
<tr><td>Output element</td><td>Operational amplifier</td></tr>
<tr><td>Load resistance</td><td>2kΩ min.</td></tr>
<tr><td>Output impedance</td><td>6.5Ωmax. (Ta=23℃)</td></tr>
<tr><td>Short circuit protection</td><td>between output and GND</td></tr>
<tr><td>Response</td><td>2.5ms</td></tr>
<tr><td>Voltage range</td><td>2V to 8V</td></tr>
<tr><td>Center voltage</td><td>5V</td></tr>
<tr><td>Step pitch</td><td>Straight mode; 0mm to 10mm±30% (page 5/10)
Right or Left branch mode; 10mm±30% (page 6/10 & 7/10)</td></tr>
<tr><td>Step voltage</td><td>Straight mode; 0.167V
Right or Left branch mode; 0.333V</td></tr>
<tr><td>Voltage accuracy</td><td>±10mV (at Power supply DC+24V, no-load on GATE, cord;2m, Ta=23℃)</td></tr>
<tr><td>GATE OUT</td><td>(Fig.2)</td></tr>
<tr><td>Area</td><td>±95mm from center of magnet</td></tr>
<tr><td>Operation Air gap</td><td>0 to 45mm</td></tr>
<tr><td>Output logic</td><td>Negative</td></tr>
<tr><td>Circuit</td><td>Transistor open collector
DC 30V max. sink current 100mA max</td></tr>
<tr><td>Response</td><td>2.5ms</td></tr>
<tr><td>SELECTION IN</td><td>(Fig.3)</td></tr>
<tr><td>Combination</td><td>L: short to GND H: open
<table>
<tr><th>Mode</th><th>SEL1</th><th>SEL2</th></tr>
<tr><td>Straight</td><td>L</td><td>L</td></tr>
<tr><td>Right branch</td><td>L</td><td>H</td></tr>
<tr><td>Left branch</td><td>H</td><td>L</td></tr>
<tr><td>not selected</td><td>H</td><td>H</td></tr>
</table>
←DEVIATION=5V, GATE=OFF</td></tr>
<tr><td>Response</td><td>2.5ms</td></tr>
</table>

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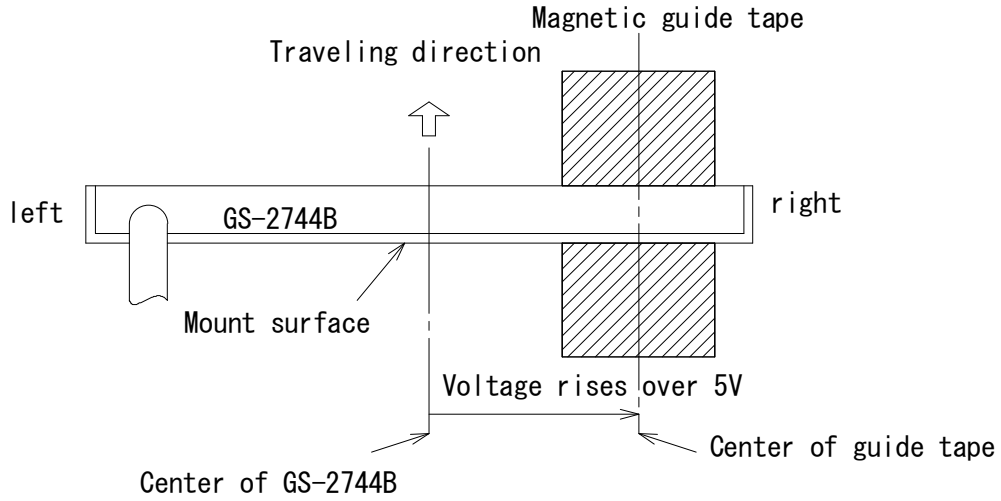
Fig.1 (Deviation voltage output)



* View from AGV to floor
* Deviation voltage rises as a magnetic tape shifting to right side of GS-2744B.

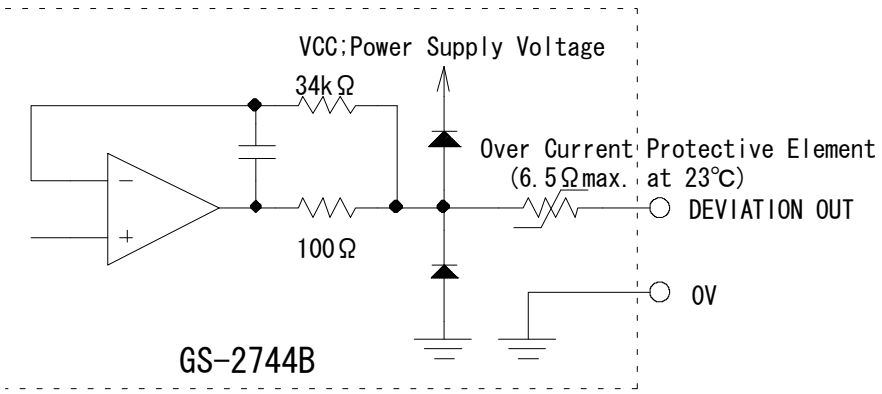


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Fig.2 (GATE output)

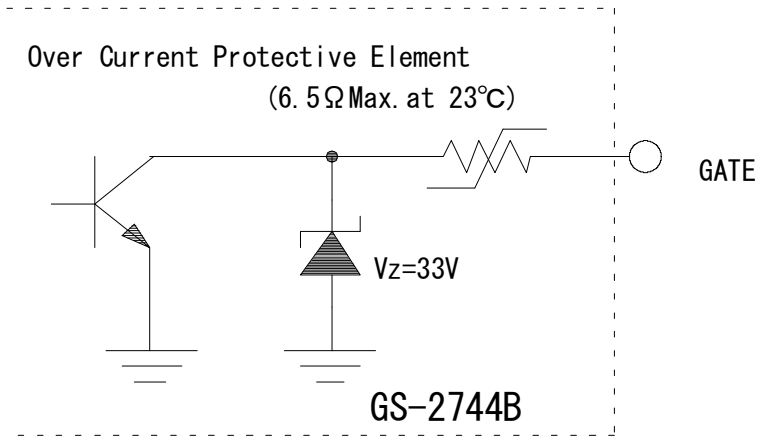
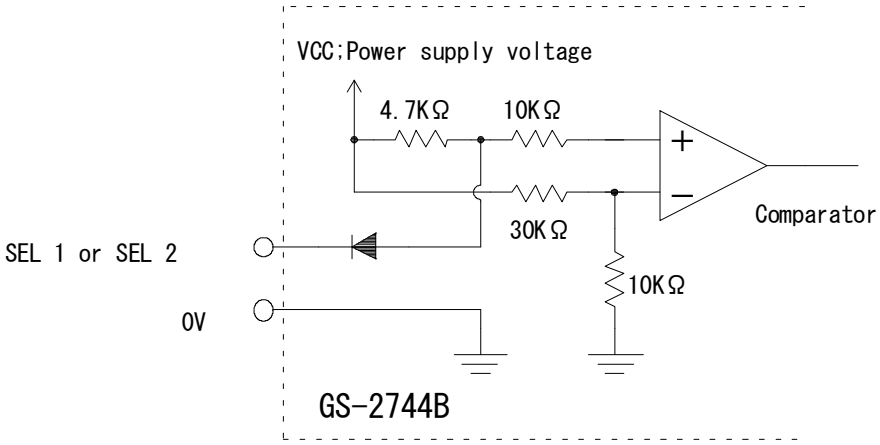


Fig.3 (Branch selection input)



＊Threshold; approx. VCC/4 [V]

＊SEL 1 input and SEL 2 are identical.

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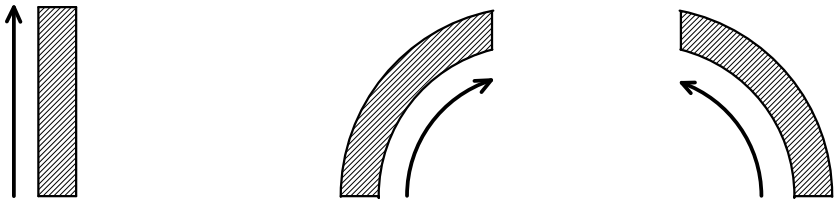
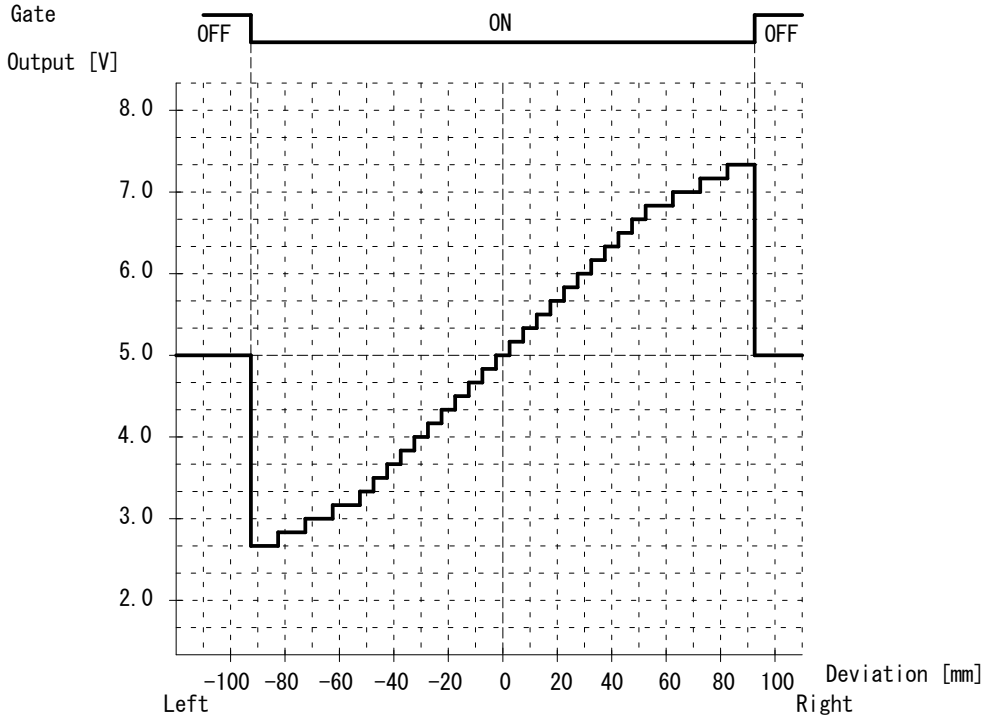
3. Branch selection

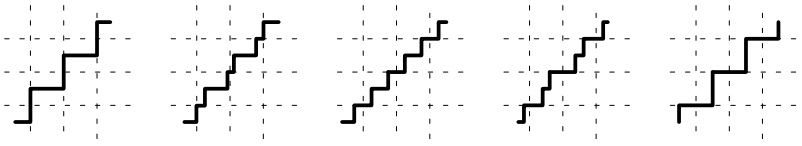
1) Straight mode

Normally this mode should be selected.





Above graph shows typical voltage output characteristic. Each voltage step pitch may change at air gap fluctuation as follows.



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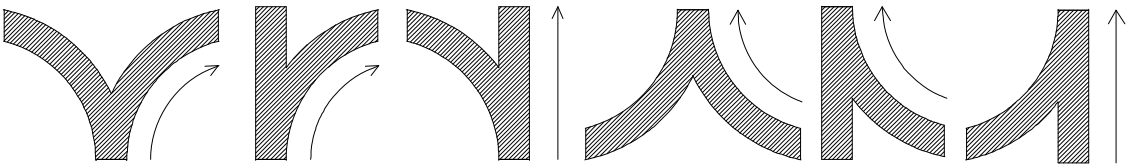
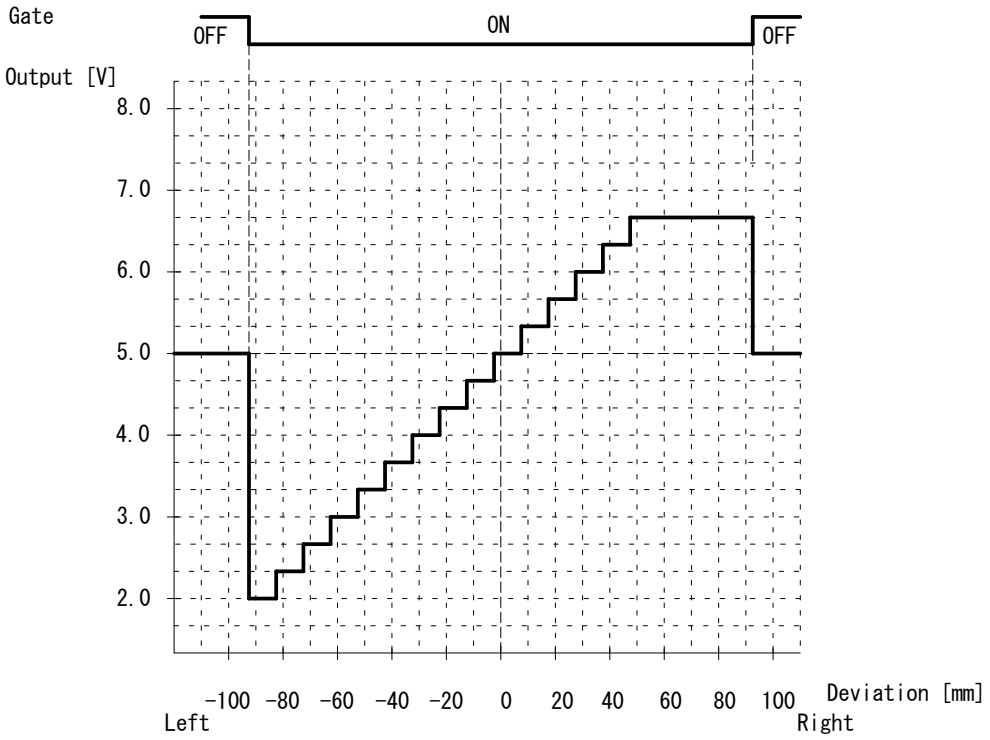
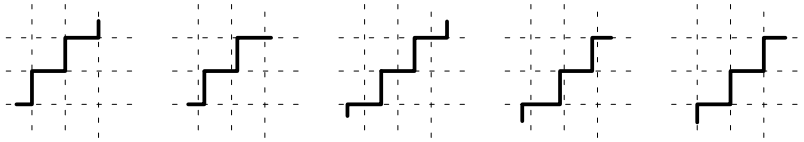
2) Right branch selection mode

This mode should be selected to choose right branch or to merge from right branch at junction.





Above graph shows typical voltage output characteristic. Each voltage step pitch may change at air gap fluctuation as follows.



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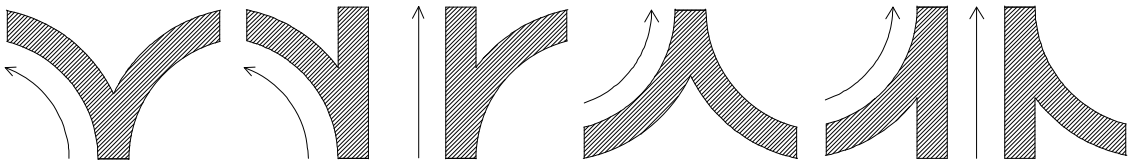
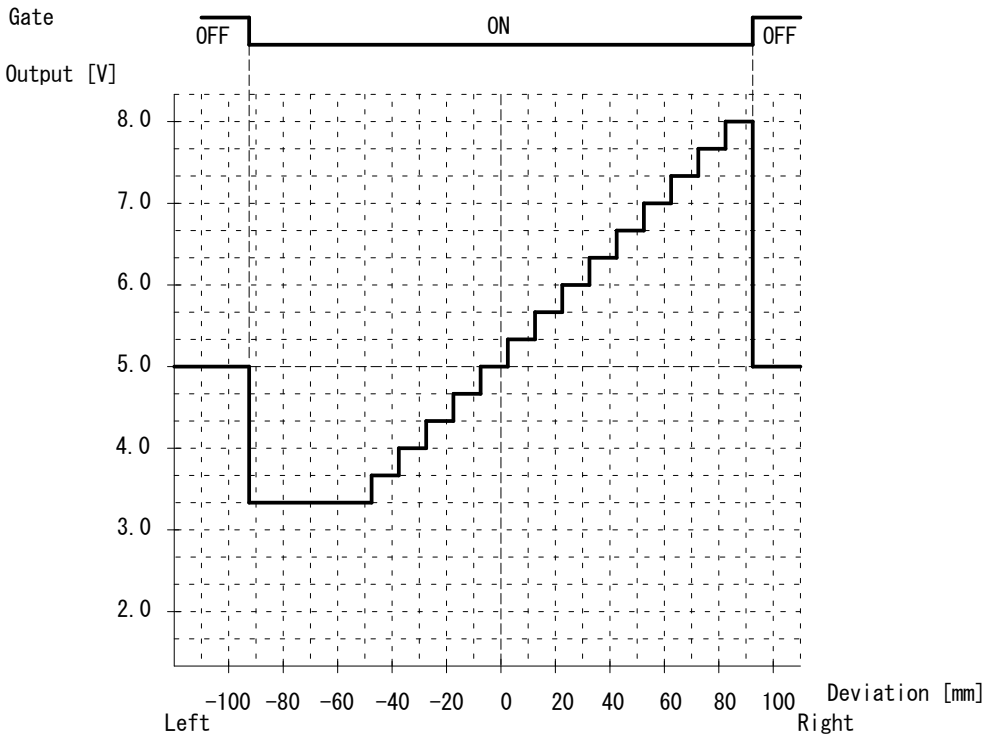
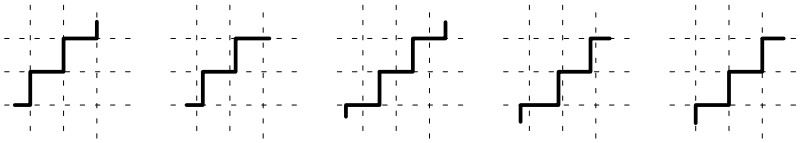
3) Left Branch selection mode

This mode should be selected to choose left branch or to merge from left branch at junction.





Above graph shows typical voltage output characteristic. Each voltage step pitch may change at air gap fluctuation as follows.



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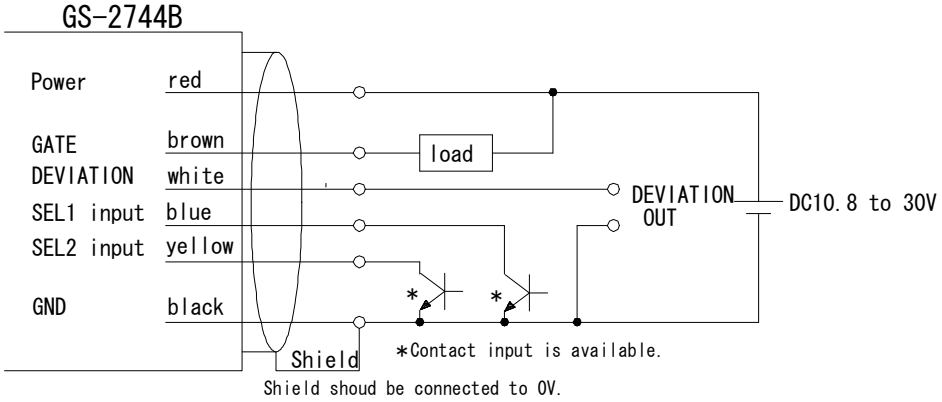
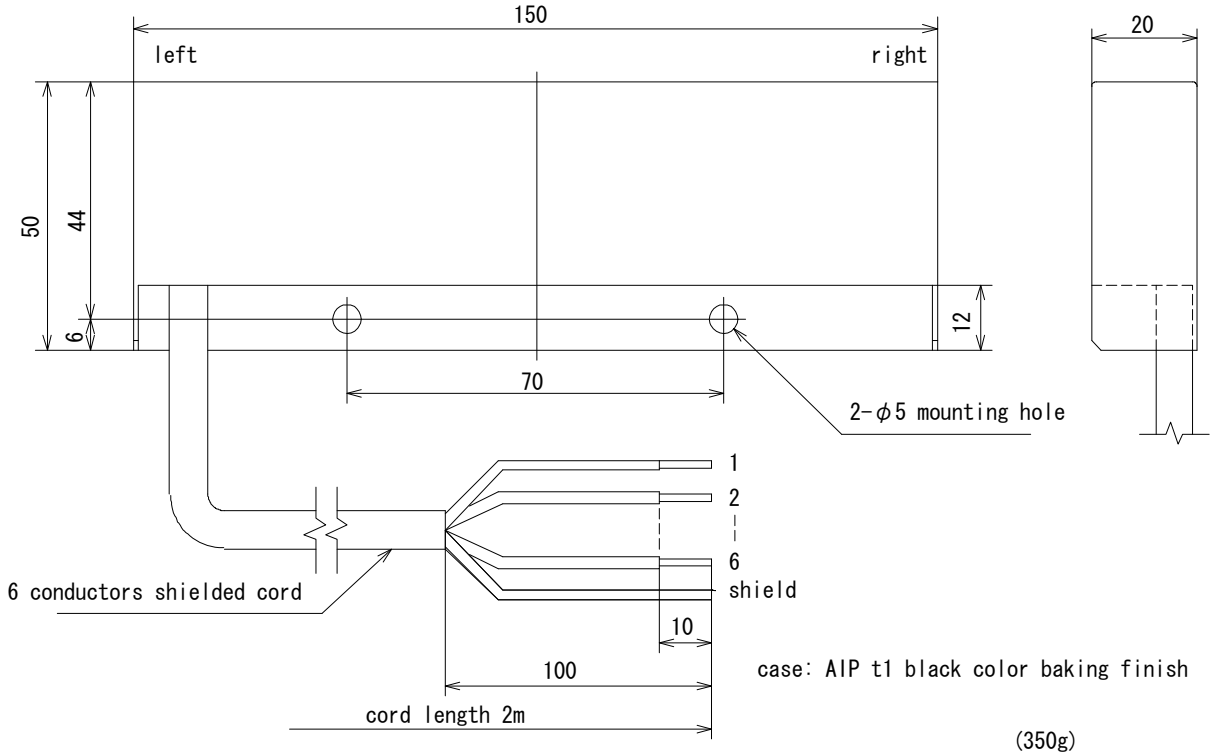
4. Wiring



5. External Dimensions



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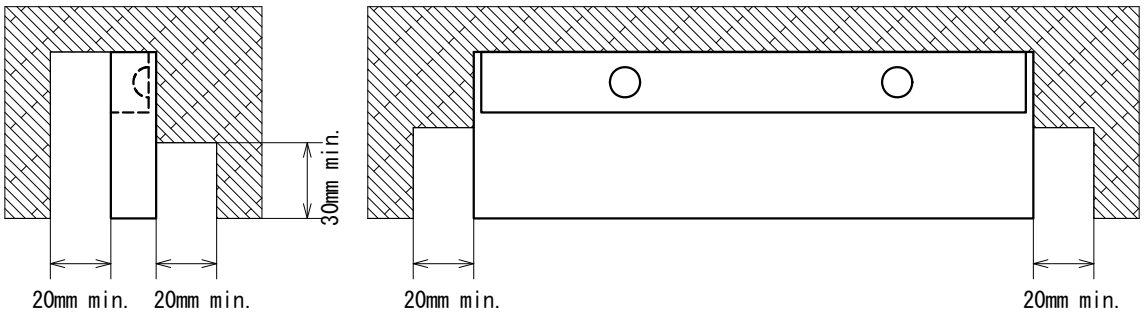
6. Mounting

GS-2744B should keep distance from magnetism generators such as motor. Vicinity of magnetic material causes GS-2744B inaccurate output. In case of mounting GS-2744B on magnetic material, keep distance from the material as follows. Use non-magnetic screws in any case.



7. Notices

(1) Avoid neither noise nor excessive surge on DEVIGATION OUT and GATE OUT, SELECTION IN.
(2) GATE OUT may ON momentary at power is supplied.
(3) Strong tension or repeatable bending to input/output cord may cause snapping of wires.
(4) Keep away from water since the housing is neither water nor splash proof. Avoid condensation.
(5) Keep away from solvent chemicals (acetone, thinner), since case or cord may be deformed by those substances.
(6) Should not be operated where N-pole and S-pole route mixed existing area. Since S-pole magnetic flux strength of more than 6mT may cause an improper output.

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8. Warranty

Goods are warranted (exchange or repair) return to factory basis against defects in workmanship and material for a period of one year from a date of delivery.

The damage caused by following reasons is out of the warranty.

(1) Inappropriate installation and usage.

(2) Abnormal effect from peripheral equipment.

(3) Alternation or repair without us.

(4) Force majeure.

The Induced damage is out of the warranty.

9. Range of service

Prices on the price list are not including following fees. Consult us for the fees.

(1) Adjustment, instruction and presence at installation.

(2) Maintenance and repair.

(3) Technical advice and training.

* Specifications are subject to change without notice. *

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