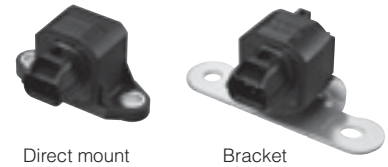


Electrostatic capacitance detection sensor 1-axis acceleration sensor

GF1



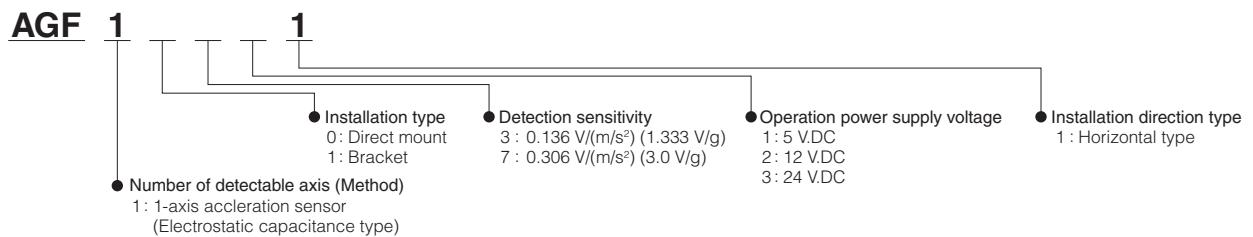
Features

- High precision, High reliability : Superior offset voltage temperature characteristics (± 33 mg (Typ.))
- High sensitivity : 1.333 to 3.0 V/g
- Compact size : 58×36.5×33 mm 2.283×1.437×1.299 inch (Direct-mount type)
- RoHS compliant

Typical Applications

- Automobiles : 4WD-ABS control, neutral control, idling stop system and suspension control
- Special vehicles : Inclination detection (for enhanced safety and operating efficiency) of agricultural machine, construction machine and welfare vehicles
- Photovoltaic generation : Sun tracking panels

Ordering Information



Product Types

Carton : 80 pcs. (Bracket), 150 pcs. (Direct mount)

| Product name | Operation power supply voltage | Acceleration detection range | Detection sensitivity | Installation type | Part number |
|--------------------------------|--------------------------------|---|---|-------------------|-------------|
| 1-axis acceleration sensor GF1 | 5 V.DC | ± 11.76 m/s ² (± 1.2 g) | 0.136 V/(m/s ²) (1.333 V/g) | Bracket | AGF11311 |
| | | ± 4.9 m/s ² (± 0.5 g) | 0.306 V/(m/s ²) (3.0 V/g) | Direct mount | AGF10711 |
| | 12 V.DC | ± 11.76 m/s ² (± 1.2 g) | 0.136 V/(m/s ²) (1.333 V/g) | Direct mount | AGF10321 |
| | | ± 4.9 m/s ² (± 0.5 g) | 0.306 V/(m/s ²) (3.0 V/g) | Direct mount | AGF10721 |
| | 24 V.DC | ± 11.76 m/s ² (± 1.2 g) | 0.136 V/(m/s ²) (1.333 V/g) | Direct mount | AGF10331 |
| | | ± 4.9 m/s ² (± 0.5 g) | 0.306 V/(m/s ²) (3.0 V/g) | Direct mount | AGF10731 |

Absolute Maximum Ratings

| Product name | Unit | Absolute maximum ratings | | | Remarks |
|------------------------------|-------|---|--|--|---------------------|
| | | AGF1□□11 (Power supply: 5 V.DC type) | AGF1□□21 (Power supply: 12 V.DC type) | AGF1□□31 (Power supply: 24 V.DC type) | |
| Maximum allowable voltage | V.DC | 7 | 16 | 30 | Max. Ta=25 °C 68 °F |
| Maximum applied acceleration | g | AGF1□3□1 | 15 | | Max. |
| | | AGF1□7□1 | 5 | | Max. |
| Storage temperature range | °C °F | -30 to 85 -22 to 185 | | | |
| Operation temperature range | °C °F | -30 to 85 -22 to 185 | | | |
| Anti-shock characteristic | g | 5,000 | | | Max. |
| Grade of protection * | | IP67 | | | |

Note : * Performance when matching connector is connected.

Electrical Characteristics

● AGF1□3□1 (Sensitivity : 1.333 V/g type)

| Item | Unit | Performance | | | Remarks |
|---|-------|---|--|--|---------------------------------------|
| | | AGF1□□11 (Power supply: 5 V.DC type) | AGF1□□21 (Power supply: 12 V.DC type) | AGF1□□31 (Power supply: 24 V.DC type) | |
| Operation power supply voltage | V.DC | 5 V.DC±5 % | 12 V.DC±10 % | 24 V.DC±10 % | -30 °C to +85 °C -22 °F to +185 °F |
| Acceleration detection range *1 | g (°) | ±1.2 (90) | | | |
| Current consumption | mA | 10 | 15 | | 0g, Ta=20 °C 68 °F, Max. |
| Sensitivity | V/g | 1.333±3 % | | | -30 °C to +85 °C -22 °F to +185 °F |
| Offset voltage (0g) | V | 2.5±0.1 | | | Ta=20 °C 68 °F |
| Offset voltage temperature characteristic | V | ±0.093 | | | -30 °C to +85 °C -22 °F to +185 °F |
| Other axis sensitivity | % | ±5 | | | Ta=20 °C 68 °F |
| Non-linearity *2 | %FS | ±1 | | | Ta=20 °C 68 °F |
| Frequency response | Hz | 10 to 15 | | | -3 dB point |
| Clamping voltage VH *3 | V | 4.5 | - | - | Typ. |
| Clamping voltage VL *3 | V | 0.5 | - | - | Typ. |

● AGF1□7□1 (Sensitivity : 3.0 V/g type)

| Item | Unit | Performance | | | Remarks |
|---|-------|---|--|--|---------------------------------------|
| | | AGF1□□11 (Power supply: 5 V.DC type) | AGF1□□21 (Power supply: 12 V.DC type) | AGF1□□31 (Power supply: 24 V.DC type) | |
| Operation power supply voltage | V.DC | 5 V.DC±5 % | 12 V.DC±10 % | 24 V.DC±10 % | -30 °C to +85 °C -22 °F to +185 °F |
| Acceleration detection range *1 | g (°) | ±0.5 (30) | | | |
| Current consumption | mA | 10 | 15 | | 0g, Ta=20 °C 68 °F, Max. |
| Sensitivity | V/g | 3.0±3 % | | | -30 °C to +85 °C -22 °F to +185 °F |
| Offset voltage (0g) | V | 2.5±0.1 | | | Ta=20 °C 68 °F |
| Offset voltage temperature characteristic | V | ±0.21 | | | -30 °C to +85 °C -22 °F to +185 °F |
| Other axis sensitivity | % | ±5 | | | Ta=20 °C 68 °F |
| Non-linearity *2 | %FS | ±1 | | | Ta=20 °C 68 °F |
| Frequency response | Hz | 10 to 15 | | | -3 dB point |
| Clamping voltage VH *3 | V | 4.5 | - | - | Typ. |
| Clamping voltage VL *3 | V | 0.5 | - | - | Typ. |

Note : *1 The acceleration unit "g" means 9.8 m/s².

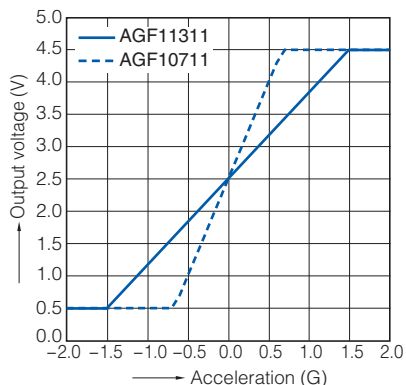
*2 Maximum error from linear output that connects +1.2 g and -1.2 g output. (AGF1□3□1)

Maximum error from linear output that connects +0.5 g and -0.5 g output. (AGF1□7□1)

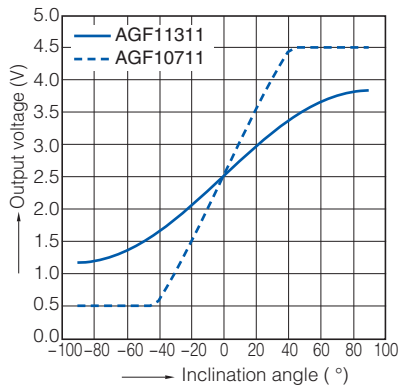
*3 The 12 V and 24 V.DC operating power supply voltage types can also be compatible with the clamping voltage. Please consult us.

Reference Data

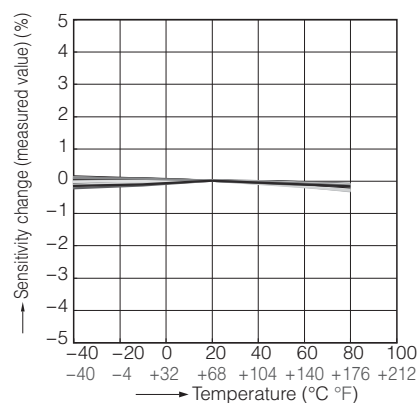
1. Output characteristics



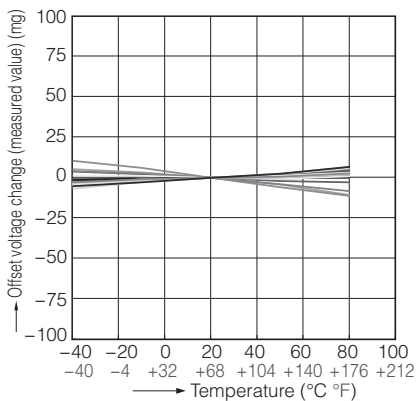
2. Inclination angle - Output voltage characteristics



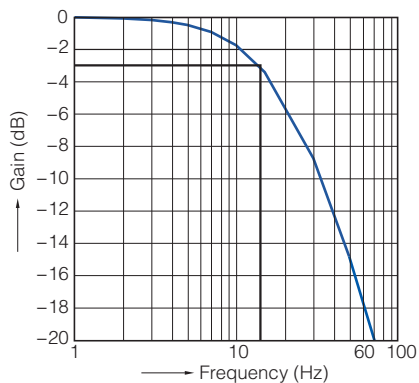
3. Sensitivity temperature characteristics



4. Offset voltage temperature characteristics



5. Frequency characteristics

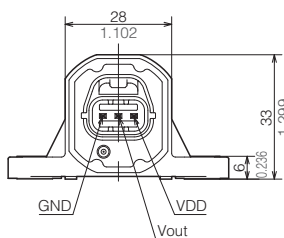
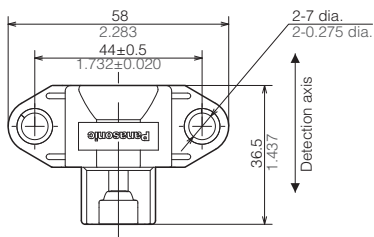


Dimensions

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/>

● Direct mount (AGF10□□1)

CAD Data

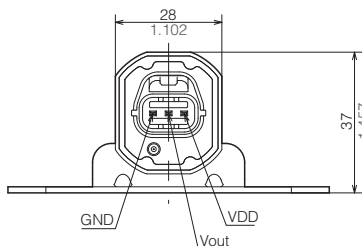
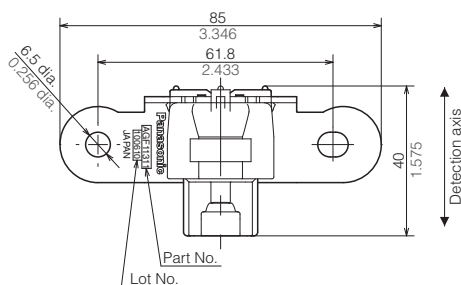
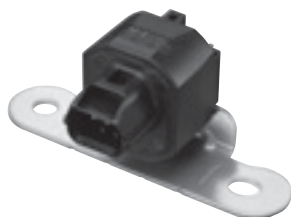


Matching connector:
Manufacturing company : Yazaki Corporation
Housing : 7283-8730-30

unit : mm inch

● Bracket (AGF11□□1)

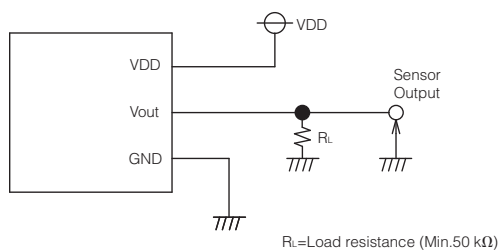
CAD Data



Matching connector :
Manufacturing company : Yazaki Corporation
Housing : 7283-8730-30

unit : mm inch

Wiring Diagram



NOTES

■ Before using the products, carefully check the quality under actual use conditions to enhance stability.

■ Wire connection

Correctly wire as in the connection diagram. Reverse connection may damage the product and degrade the performance.

■ Cleaning

Avoid ultrasonic cleaning as this may cause disconnection of the wire.

■ Environment

- Avoid use and storage in the corrosive gas (organic solvent, sulfurous acid and hydrogen sulfide gases) which negatively affects the product.
- Use surge absorbers as applying the external surge voltage may damage the internal circuit.
- Malfunction may occur near electric noises from static electricity, lightning, broadcast or amateur radio stations and mobile phones.
- Avoid use in an environment where these products cause dew condensation. When water attached to the sensor chip freezes, the sensor output may be fluctuated or damaged.
- Do not apply high-frequency oscillation, such as ultrasonic waves, to the product.
- Do not use in direct sunlight or other comparable light.

■ Other precautions

These specifications are for individual components. Before use, carefully check the performance and quality under actual use conditions to enhance stability.

- Misconnection and the wrong range of acceleration detection may invite the risk of accidents.
- Avoid use beyond the specified acceleration range, as such use may damage the product.
- Carefully handle as static electricity may damage the product.

■ Special notes

We exert maximum efforts for quality control of the product, Please mind also about the following.

- 1) To prevent occurrence of unexpected circumstances, please inform us of the specifications of your product, customers, use conditions and details of the attachment position.
- 2) Have sufficient margin values of driving/performance guarantee described in the specifications and apply safety measures with double circuits, if serious effects on human lives or property are predicted due to a quality failure of the product. Those countermeasures are also for the product liability.
- 3) A warranty period is one year after the delivery to your company. Quality assurance is limited to the items and the scopes described in the specifications.

If a defect is found after the delivery, we will promptly provide a replacement or change/repair the defect part at the place of delivery in good faith. Exceptions are below.

- Damages by a failure or a defect which arose after the delivery.
- After the delivery, when storing and transporting, if conditions other than conditions in the specifications are applied to the product.
- Damages by unforeseen phenomenon which cannot be predicted with the technologies available at the time of delivery.
- Damages by natural and anthropogenic disasters, such as earthquake, flood, fire and war, which are beyond our reasonable control.

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[832M1-0500](#) [8101-0040X-120](#) [810M1-0025X](#) [805M1-0020](#) [ADXL700WBRWZ-RL](#) [834M1-6000](#)