



Direct mount



Bracket

RoHS compliant

FEATURES

- **High reliability:** superior offset voltage temperature characteristics (33 mg (Typ.))
- **Fast response:** 15 ms (Typ.)
- **Compact size:** 58×36.5×33mm 2.283×1.437×1.299inch (Direct mount)

APPLICATIONS

- **Inclination detection (for improved safety and operability)** in agricultural machine, construction machine and mobility vehicles
- **Photovoltaic station power plant:** Solar tracking for panels
- **Automotive:** 4WD ABS control, neutral control, idling stop system and suspension control

ORDERING INFORMATION

AGF 1 □ □ □ 1

Number of detectable axis (Method)

1: 1-axis accelerometer (Electrostatic capacitance type)

Installation type

0: Direct mount

1: Bracket

Detection sensitivity

3: 0.136V/(m/s²) (1.333V/g)

7: 0.306V/(m/s²) (3.0V/g)

Operation power supply voltage

1: 5 V DC

2: 12 V DC

3: 24 V DC

Installation direction type

1: Horizontal type

PRODUCT TYPES

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

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

ABSOLUTE MAXIMUM RATINGS

Item	Unit	Absolute maximum ratings			Remarks
		AGF1**11 (Power supply: 5V type)	AGF1**21 (Power supply: 12V type)	AGF1**31 (Power supply: 24V type)	
Maximum allowable voltage	V	7	16	30	Max. Ta=20°C 68°F
Maximum applied acceleration	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.

AGF1

ELECTRICAL CHARACTERISTICS

1. AGF1*3*1 (Sensitivity: 1.333V/g type)

Item	Unit	Performance			Remarks
		AGF1**11 (Power supply: 5V type)	AGF1**21 (Power supply: 12V type)	AGF1**31 (Power supply: 24V type)	
Operation power supply voltage	V	5V DC±5%	12V DC±10%	24V DC±10%	-30 to +85°C -22 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 to +85°C -22 to +185°F
Offset voltage (0 g)	V	2.5±0.1			Ta=20°C 68°F
Offset voltage temperature characteristic	V	±0.093			-30 to +85°C -22 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			-3dB point
Clamping voltage VH*3	V	4.5	—	—	Typ.
Clamping voltage VL*3	V	0.5	—	—	Typ.

2. AGF1*7*1 (Sensitivity: 3.0V/g type)

Item	Unit	Performance			Remarks
		AGF1**11 (Power supply: 5V type)	AGF1**21 (Power supply: 12V type)	AGF1**31 (Power supply: 24V type)	
Operation power supply voltage	V	5V DC±5%	12V DC±10%	24V DC±10%	-30 to +85°C -22 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 to +85°C -22 to +185°F
Offset voltage (0 g)	V	2.5±0.1			Ta=20°C 68°F
Offset voltage temperature characteristic	V	±0.21			-30 to +85°C -22 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			-3dB point
Clamping voltage VH*3	V	4.5	—	—	Typ.
Clamping voltage VL*3	V	0.5	—	—	Typ.

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

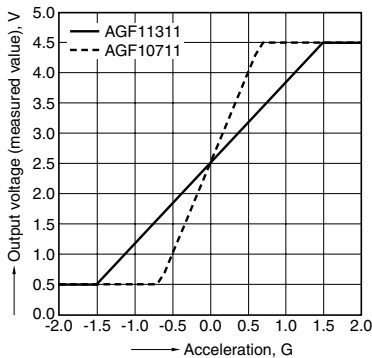
*2. Maximum error from linear output that connects +1.2 g and -1.2 g output. (AGF1*3*1)

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

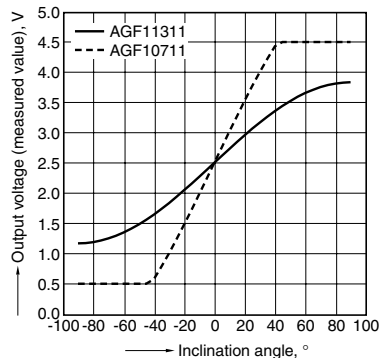
*3. The 12 V and 24 V DC operating power supply voltage types can also be compatible with the clamping voltage. Please consult us.

REFERENCE DATA

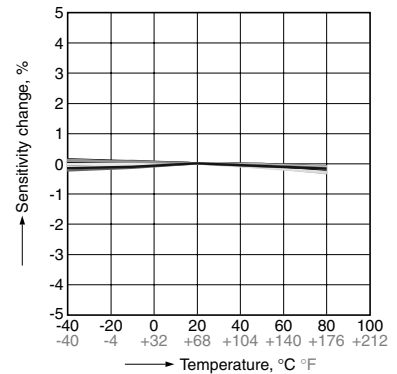
1. Output characteristics



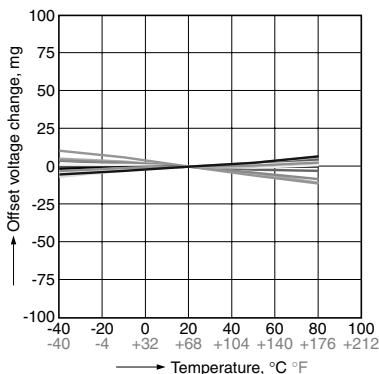
2. Inclination angle - Output voltage characteristics



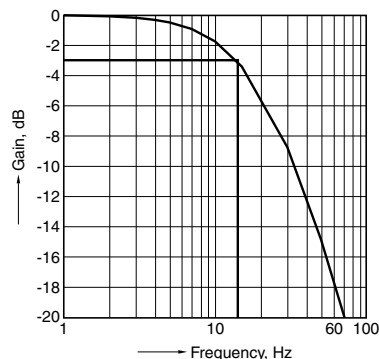
3. Sensitivity temperature characteristics

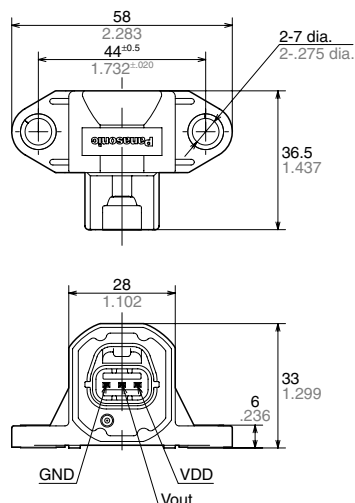


4. Offset voltage temperature characteristics

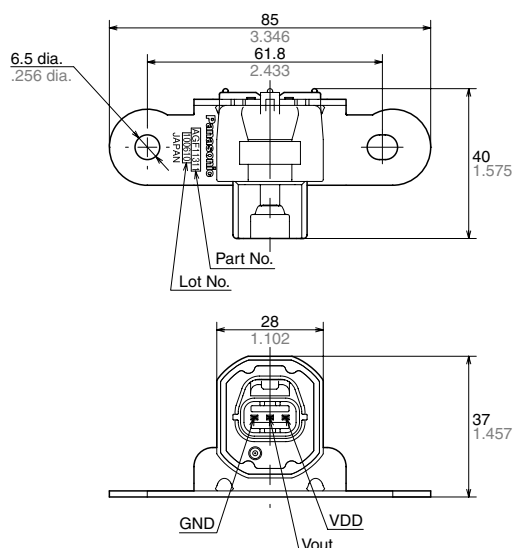


5. Frequency characteristics

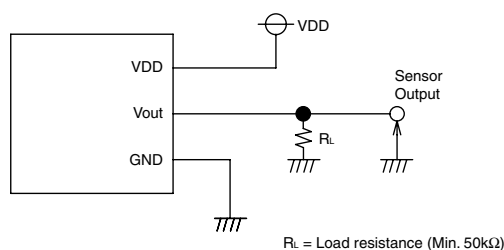


DIMENSIONS (mm inch)The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>**Direct mount (AGF10**1)****CAD Data**

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

Bracket (AGF111)****CAD Data**

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

WIRING DIAGRAM**NOTES****1. To ensure reliability, please verify quality under conditions of actual use****2. Connections**

• Please perform connections correctly in accordance with the terminal connection diagram. In particular, be careful not to reverse wire the power supply as this will cause damage or degrade to the product.

3. Cleaning

• Avoid ultrasonic cleaning since this may cause breaks or disconnections in the wiring.

4. Environment

• Please avoid using or storing the sensor in a place exposed to corrosive gases (such as the gases given off by organic solvents, sulfuric acid gas, hydrogen sulfides, etc.) which will adversely affect the performance of

the sensor.

• Since the internal circuitry may be destroyed if an external surge voltage is supplied, provide an element which will absorb the surges.

• Malfunctioning may occur if the product is in the vicinity of electrical noise such as that from static electricity, lightning, a broadcasting station, an amateur radio, or a mobile phone.

• Avoid using the sensor in an environment where condensation may form. Furthermore, its output may fluctuate if any moisture adhering to it freezes.

• Avoid using the sensor where it will be susceptible to ultrasonic or other high-frequency vibration.

• Please do not use the sensor in a location subject to direct sunlight or in a location subject to a similar strong light source.

5. Other handling precautions

To assure reliability, check the sensor under actual loading conditions. Avoid any situation that may adversely affect its performance.

• Caution is required because differences in the acceleration detection range and the method of connection can lead to accidents.

• The actual acceleration should be within the rated acceleration range. Damage may occur if it is outside of this range.

• This product may become damaged if exposed to static electricity. Therefore, please be careful when handling.