Electrostatic capacitance detection sensor 1-axis acceleration sensor GF1



Direct mount



AGF1

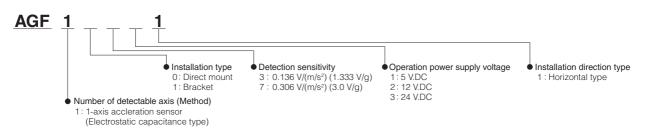
Features

- High precision, High reliability : Superior offset voltage temperature characteristics (±33 mg (Typ.))
- High sensitivity : 1.33
- Compact size
- : 1.333 to 3.0 V/g : 58×36.5×33 mm 2.283×1.437×1.299 inch (Direct-mount type)
- RoHS compliant

Typical Applications

- Automobiles
- Special vehicles
- : 4WD-ABS control, neutral control, idling stop system and suspension control
 : 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 accleration 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
	5 V.DC	±4.9 m/s² (±0.5g)	0.306 V/(m/s²) (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/s² (±0.5g)	0.306 V/(m/s²) (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
	24 V.DC	±4.9 m/s² (±0.5g)	0.306 V/(m/s²) (3.0 V/g)	Direct mount	AGF10731

Absolute Maximum Ratings

Product name		Unit	Absolute maximum ratings			
			AGF1 11 (Power supply: 5 V.DC type)	AGF1 21 (Power supply: 12 V.DC type)	AGF1 31 (Power supply: 24 V.DC type)	Remarks
Maximum allowable voltage		V.DC	7	16	30	Max. Ta=25 °C 68 °F
Maximum applied	AGF1□3□1	0	15			Max.
acceleration	AGF1□7□1	g		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.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Electrical Characteristics

• AGF1[]3[]1 (Sensitivity : 1.333 V/g type)

Item	Unit	AGF10011	AGF1□□21	AGF1□□31	Remarks
		(Power supply: 5 V.DC type)	(Power supply: 12 V.DC type)	(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 – –		Тур.	
Clamping voltage VL*3	V	0.5 – –		Тур.	

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

Item	Unit	AGF10011	AGF1□□21	AGF1□□31	Remarks
		(Power supply: 5 V.DC type)	(Power supply: 12 V.DC type)	(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 – –		Тур.	
Clamping voltage VL*3	V	0.5 – –		Тур.	

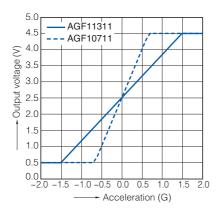
Note: ***1** The acceleration unit "g" means 9.8 m/s². ***2** Maximum error from linear output that connects +1.2 g and -1.2 g output. (AGF1□3□1) Maximum error from linear output that connects +0.5 g and -0.5 g output. (AGF1□7□1)

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

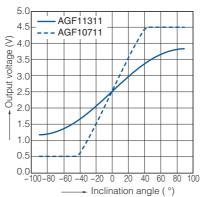
Panasonic

Reference Data

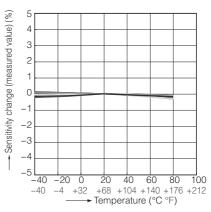
1. Output characteristics



2. Inclination angle - Output voltage characteristics

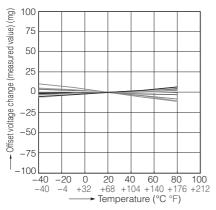


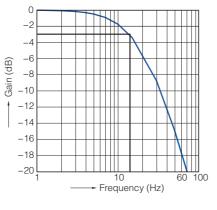
3. Sensitivity temperature characteristics





5. Frequency characteristics

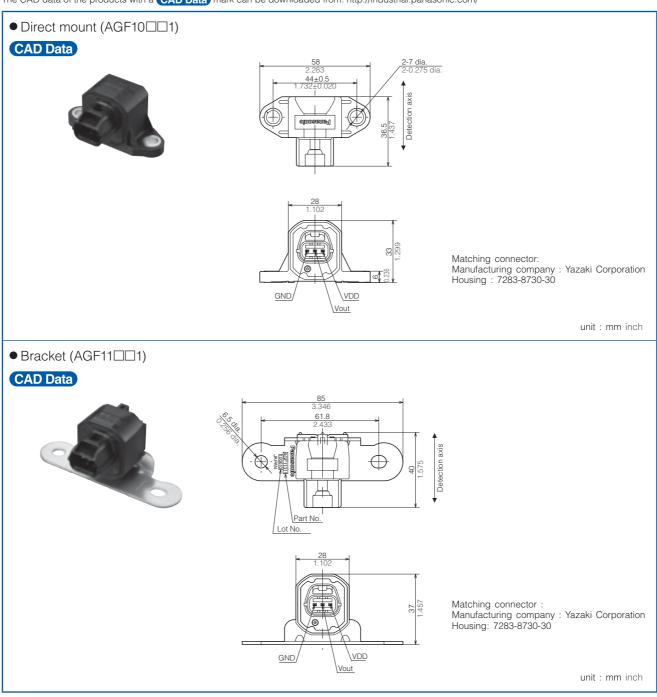




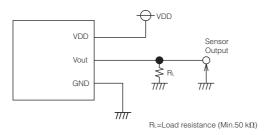
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Dimensions

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



Wiring Diagram



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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.

- 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.