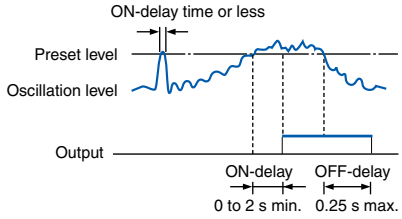
# Shock Sensor
# GA Series

## ON-delay timer prevents detection errors.

The ON-delay timer prevents a detection error due to a short pulse input signal occurring at the machine start-up, etc.




## Detects presence/absence of vibration or change in vibration level with high sensitivity

The GA Series detects target vibration and outputs control signals when the sensor head is attached to the target. The GA Series detects abnormal machine operations based on the change in vibration level at the sensor head installation position.

## Monitor output ideal for vibration analysis (GA-245)

The GA Series is ideal for chronological analysis of machine vibration. When a pen recorder is connected to the GA Series, data on various machine vibrations can be easily monitored.

## Sensor cable

Isolate the sensor cable from power lines. The sensor cable can be extended up to 50 m .

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# Specifications

## Sensor head

| Type | General-purpose | High-sensitivity | Piano-wire |
|---|---|---|---|
| Model | **GH-413** | **GH-313A** | **GH-513** |
| Appearance | | | |
| Smallest detectable acceleration | 9.8 m/s² (1 G) | 0.98 m/s² (0.1 G) | — |
| Response frequency | 100 Hz to 8 kHz (-3 dB) | 40 Hz to 8 kHz (-3 dB) | — |
| Enclosure rating | IP67 | | |
| Ambient temperature | -10 to +60°C | | |
| Relative humidity | 35 to 95%, No condensation | | |
| Vibration resistance | 10 to 55 Hz, 1.5 mm double-amplitude in X,Y and Z directions, 2 hours respectively | | |
| Weight | Approx. 70 g | Approx. 80 g | Approx. 67 g |

## Amplifier

| Type | | DC type | AC type | AC Adj-dial type | |
|---|---|---|---|---|---|
| Model | | **GA-223** | **GA-221** | **GA-245** | |
| Applicable sensor head | | **GH-413/313A/513** | | **GH-313A/513** | |
| Sensitivity adjustment | | Sensitivity selector switch & potentiometer trimmer | | 10-turn potentiometer dial | |
| Response frequency | | 100 Hz to 8 kHz (-3dB) | | 40 Hz to 8 kHz (-3dB) | |
| Minimum detectable acceleration | | 9.8 m/s² (**GH-413**), 4.9 m/s² (**GH-313A**) | | 0.98 m/s² (**GH-313A**) | |
| Indicator | | Power and output indicator (Power ON: green, Output ON: red) | | Power indicator, 4 vibration level indicators | |
| Output | Control output [1] | NPN: 200 mA (40V) max. | Thyristor: 85 to 240 VAC,5 to 300 mA | Solid-state | NPN: 100 mA 40 V max. |
| | | | | Relay | SPDT, 250 VAC, 2A (resistive load) |
| | | | | Analogue | 0 to 20 VAC (P-P), 0 to 10 VDC (switch-selectable) |
| | Output delay time | 1 ms | | Solid-state: 1 ms, Relay: 10 ms | |
| Operation mode | | N.O./N.C. | N.O./N.C. (selectable) | N.O. | |
| ON-delay timer | | OFF/0.5 s (switch-selectable) | | 0 to 2 s variable | |
| OFF-delay timer | | ON-delay timer ON: 200 ms, OFF: 30 ms | ON-delay timer ON: 200 ms, OFF: 60 ms | ON-delay timer preset time +65 ms | |
| Power supply | | 10 to 28 VDC 10% max. | 85 to 240 VAC, 50/60 Hz | 110/120/220/240 VAC, 50/60 Hz | |
| Power/current consumption | | 25 mA max. | 2 VA max. | 5 VA max. | |
| Ambient temperature | | 0 to 50°C | | | |
| Relative humidity | | 35 to 85%, No condensation | | | |
| Vibration resistance | | 10 to 55 Hz, 1.5 mm double-amplitude in X, Y and Z directions, 2 hours respectively | | | |
| Weight (including 3-m cable) | | Approx. 105 g | Approx. 190 g | Approx. 360 g | |

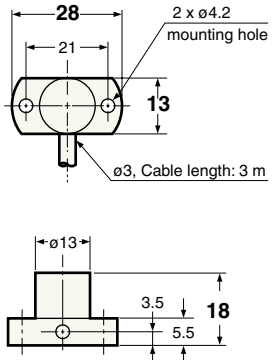
1. NPN output can easily be converted to PNP output by connecting the optional **OP-5148** PNP Output Converter.

# Dimensions

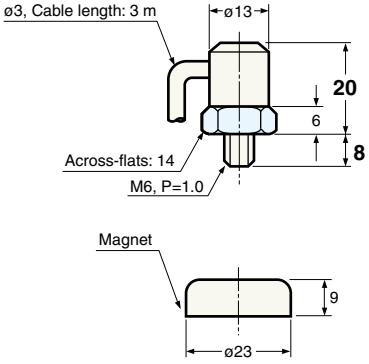
Unit: mm

## Sensor heads

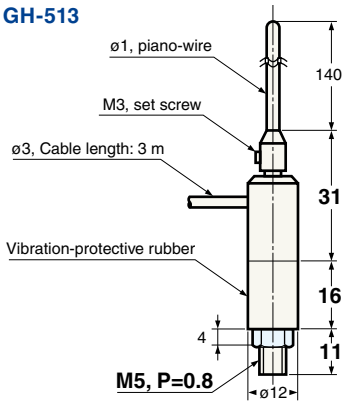
### GH-413




### GH-313A

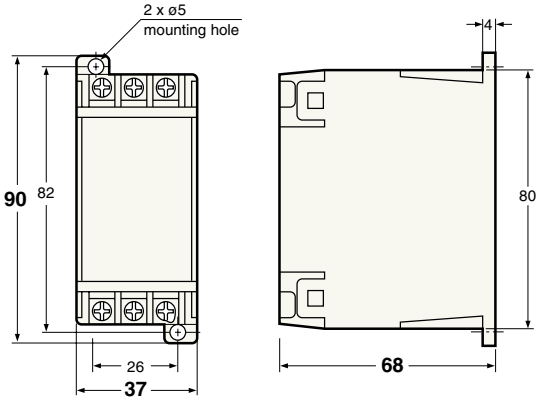



### GH-513

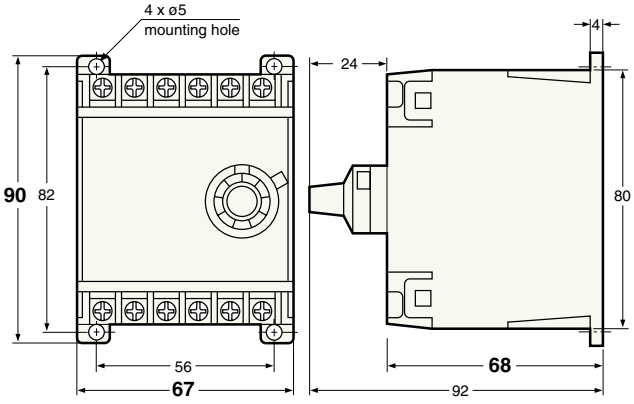



## Amplifiers

### GA-223/221




### GA-245

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