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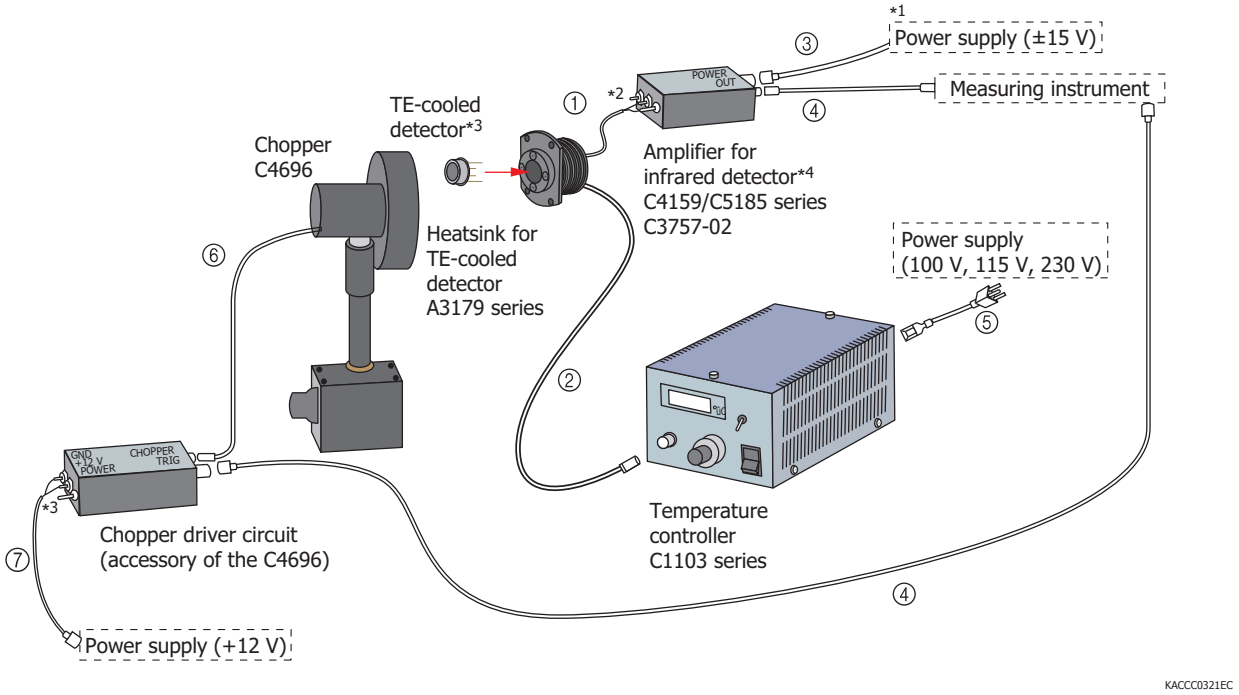
# Accessories for infrared detectors

Temperature controllers | Heatsinks for TE-cooled detector | Chopper, etc.

## Wide lineups of accessories for infrared detector

HAMAMATSU provides temperature controllers, heatsinks for TE-cooled detector, chopper and cables, etc as accessories for infrared detectors.

### Connection example of accessories for infrared detectors




*1: Attach the bare wire ends to a 3-pin or 4-pin connector or to a banana jack, and then connect them to the power supply.
*2: Soldering is needed. When using the C5185 series amplifier, a BNC connector (prepared by the user, example: one end of the E2573) is required.
*3: No socket is available. Soldering is needed.
*4: Refer to the datasheet "Amplifiers for infrared detectors" for detailed information.
Note: Refer to page 6 for details on cables.

## Temperature controllers C1103 series

The C1103 series is a temperature controller designed for thermoelectrically cooled infrared detectors. The C1103 series allows easy but accurate temperature setting for the thermoelectric cooler mounted in an infrared detector.

### Specifications

| Parameter | C1103-04 | C1103-05 | C1103-07 |
|---|---|---|---|
| Applicable detector*5 | One-stage/two-stage TE-cooled type PbS, PbSe photoconductive detector, InAs photovoltaic detector, InGaAs, Si photodiode | Two-stage/three-stage TE-cooled type MCT, InSb photoconductive detector | One-stage TE-cooled type MCT, InSb photoconductive detector |
| Setting element temperature | -30 to +20 °C | -75 to -25 °C | -30 to +20 °C |
| Temperature stability | Within ±0.1 °C | | |
| Output current for temperature control | 1.1 A min., 1.2 A typ., 1.3 A max. | | |
| Power supply | 100 V ± 10 % · 50/60 Hz*6 | | |
| Power consumption | 30 W | | |
| Dimensions | 107 (W) × 84 (H) × 190 (D) mm | | |
| Weight | 1.9 kg approx. | | |
| Accessories | Instruction manual<br>4-conductor cable (with a connector, 3 m) A4372-05*7, power supply cable | | |

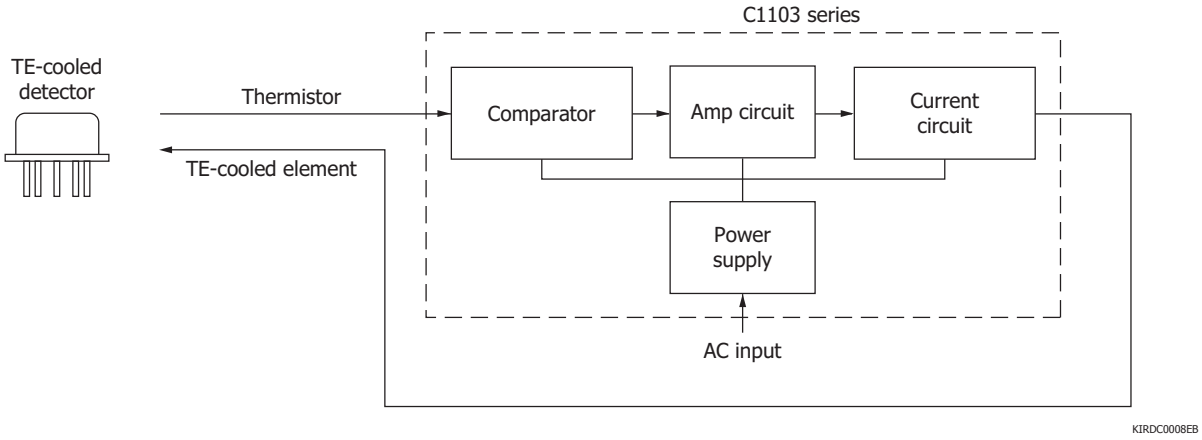
*5: It doesn't correspond to TE-cooled type infrared detector module with preamp.
*6: Please specify power supply requirement (AC line voltage) from among 100 V, 115 V and 230 V when ordering.
*7: When used in combination with an A3179 series heatsink, do not use the 4-conductor cable supplied with the A3179 series, but use the A4372-05 instead.

### Absolute maximum ratings

| Parameter | Value |
|---|---|
| Operating temperature | +10 to +40 °C |
| Operating humidity | 90% Max.*8 |
| Storage temperature | -20 to +40 °C |

*8: No condensation
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

### Block diagram

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The C1103-04 and C1103-05 conform to European EMC directives EN 61326-1 Class B.

## Heatsinks for TE-cooled detector (TO-8, TO-3 package) A3179 series

These heatsinks are designed for use with thermoelectrically cooled detector sealed in a 6-pin TO-8, TO-3 package. The cooling (heat dissipation) capacity of the A3179 and A3179-03 is about 35 °C relative to the ambient temperature 25 °C, the A3179-01 is about 40 °C, and that of the A3179-04 is about 85 °C. The A3179-03 is designed only for two-color detector K3413 series, the A3179, A3179-01 for TO-8, the A3179-04 for TO-3 (heatsink for TO-66 is available as a custom product.) .

### Accessories

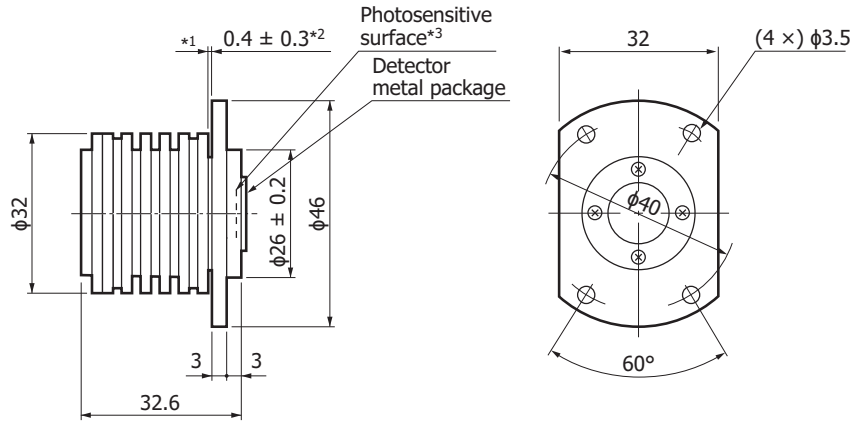
- **Instruction manual**
- **4-conductor cable (2 m): for TE-cooler and thermistor*9, *10**
  **Coaxial cable (2 m): for signal*10**

*9: When used in combination with a C1103 series temperature controller, do not use the 4-conductor cable supplied with the A3179 series, but use the 4-conductor cable A4372-05 (sold separately, with a connector).

*10: No socket is supplied for connection to infrared detectors. Connect infrared detectors by soldering.
Cover the soldered joints and detector pins with vinyl insulating tubes.

### Dimensional outlines (unit: mm, tolerance unless otherwise noted: ±0.3)

A3179




Weight: 50 g approx.

*1: Bottom surface (reference surface) of detector metal package
*2: When the detector is installed
*3: The position of the photosensitive surface differs according to the detector used.
Refer to the dimensional outline for the detector.

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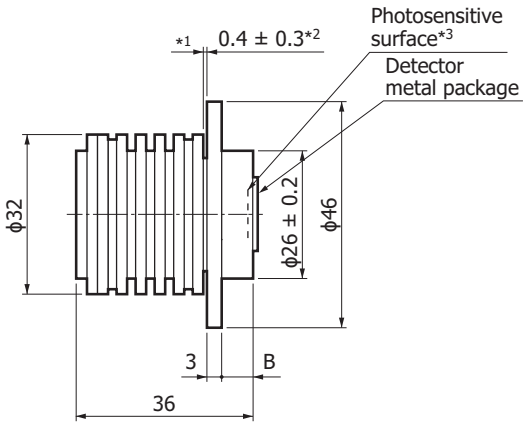
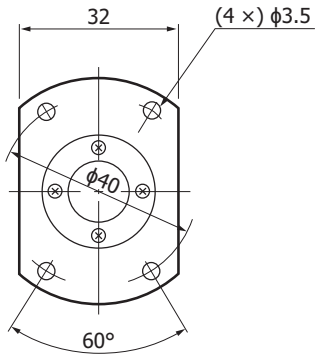
## A3179-01, A3179-03




A3179-01: B=6
A3179-03: B=6.4
Weight: 53 g approx.

*1: Bottom surface (reference surface) of detector metal package
*2: When detector is installed
*3: The position of the photosensitive surface differs according to the detector used.
Refer to the dimensional outline for the detector.

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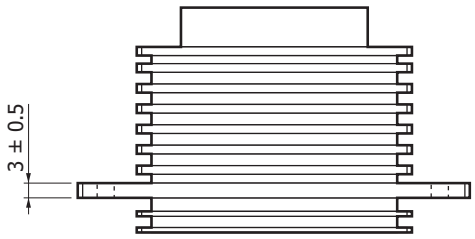
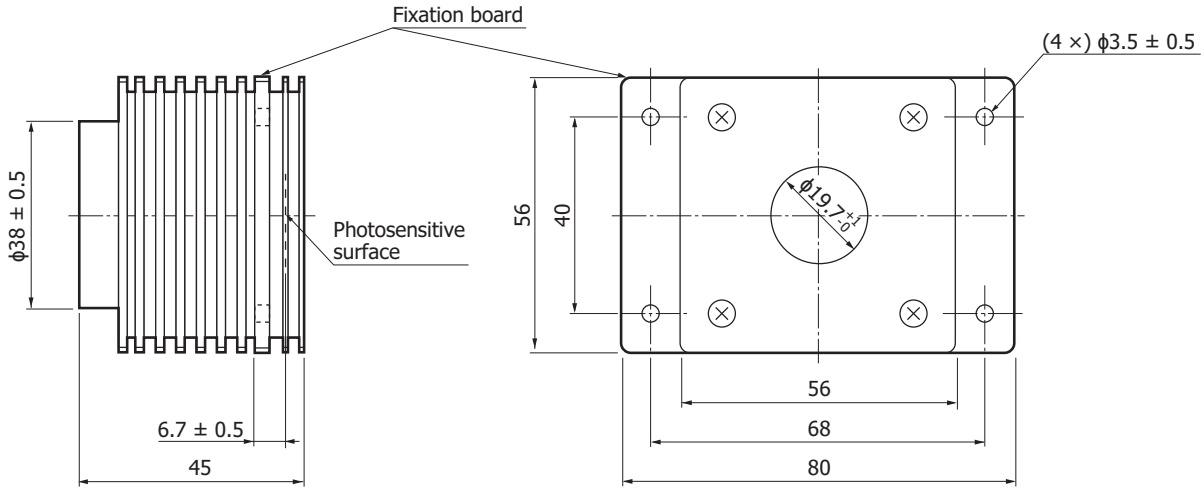
## A3179-04




Weight: 320 g approx.

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## Chopper C4696

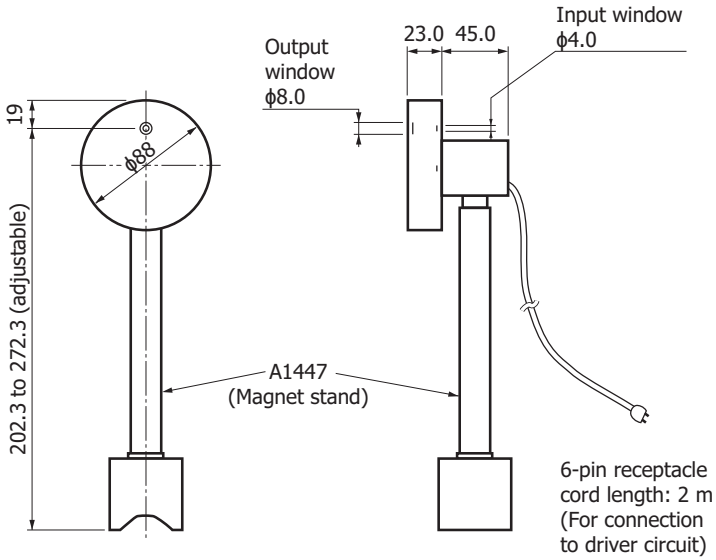
### Specifications

| Parameter | | Specification |
|---|---|---|
| Chopping frequency*11 | | 115 to 380 Hz, 345 Hz typ.*12 |
| Power supply (VD) | | DC 5 to 13 V, 12 V typ. |
| Duty ratio | | 1 : 1 |
| Rotational stability | | 0.06 %/°C |
| Synchronous signal (high level) | Min. | VD - 0.5 V |
| | Max. | VD - 0.2 V |
| Operating temperature | | 0 to 50 °C |
| Maximum current consumption*12 | | 90 mA |
| Accessory | | Magnet stand A1447 |

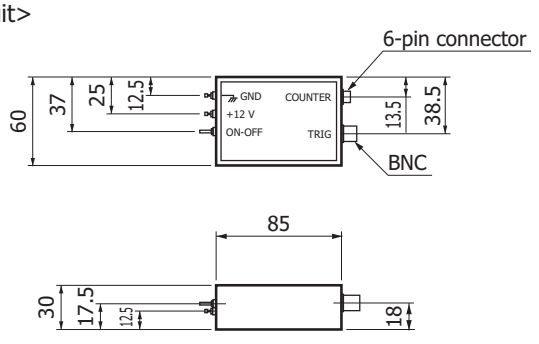
*11: Chopping frequency will be 230 to 760 Hz when an optional disc is used.
*12: VD=12 V

### Dimensional outline (unit: mm, tolerance unless otherwise noted: ±1)

<Chopper>




<Driver circuit>

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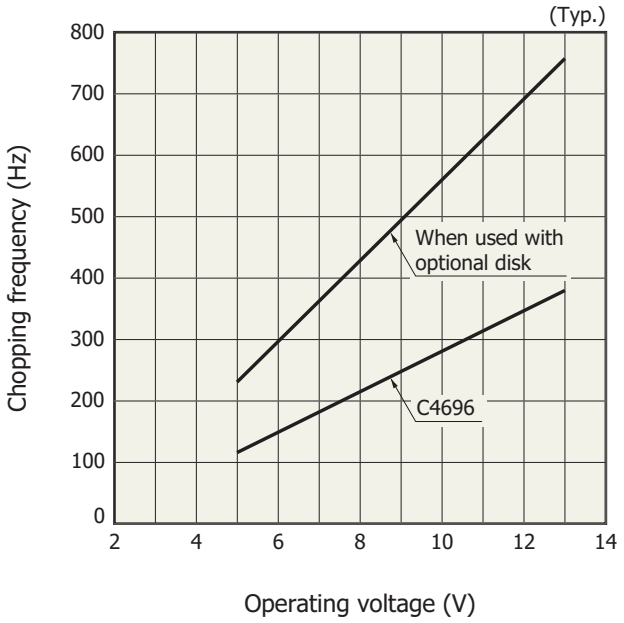
## Chopping frequency vs. operating voltage

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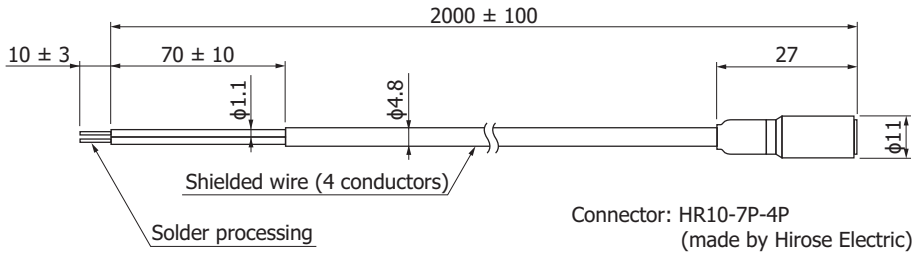
## Cables A4372 series

| Cable No. | Cable | Length approx. | Note |
|---|---|---|---|
| ① | Coaxial cable (for signal) | 2 m | Supplied with heatsink A3179 series.<br>When using this cable, make it as short as possible (preferably about 10 cm). |
| ② | 4-conductor cable (with a connector) A4372-05 | 3 m | Supplied with temperature controller C1103 series.<br>This cable is also sold separately. |
| ③ | 4-conductor cable (with a connector) A4372-02 | 2 m | This cable is supplied with the C4159/C5185 series amplifiers for infrared detectors, C3757-02, and infrared detector modules with preamp (room temperature operation type).<br>This cable is also sold separately. Besides this cable, the A4372-03, which is a 6-conductor cable (with connector) supplied with "infrared detector module with preamp", is also sold separately. |
| ④ | BNC connector cable E2573 | 1 m | Option |
| ⑤ | Power supply cable (for temperature controller) | 1.9 m | Supplied with temperature controller C1103 series |
| ⑥ | Chopper driver cable (connected to chopper) | 2 m | Connected to chopper |
| ⑦ | 2-conductor cable or coaxial cable (for chopper power supply) | 2 m or less | Prepared by user |

## Dimensional outlines (unit: mm)

### A4372-02

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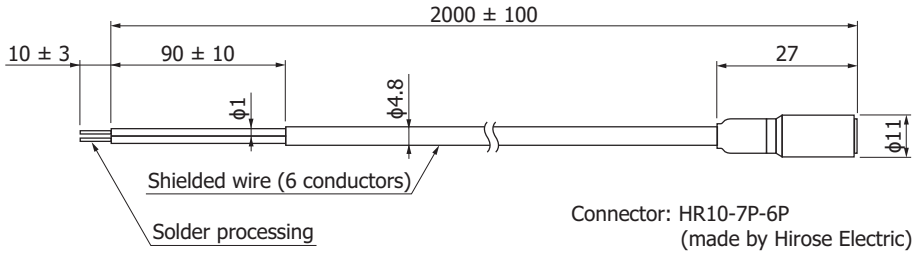
### A4372-03

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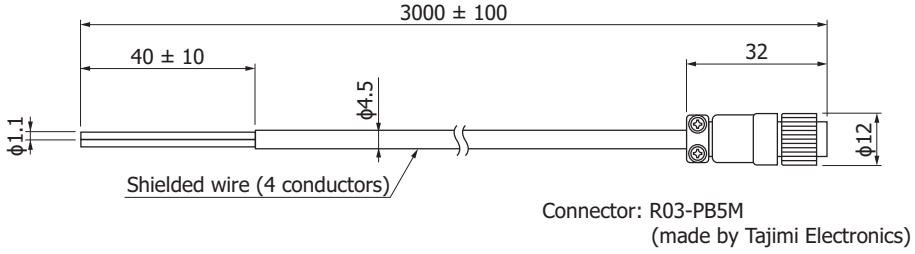
### A4372-05

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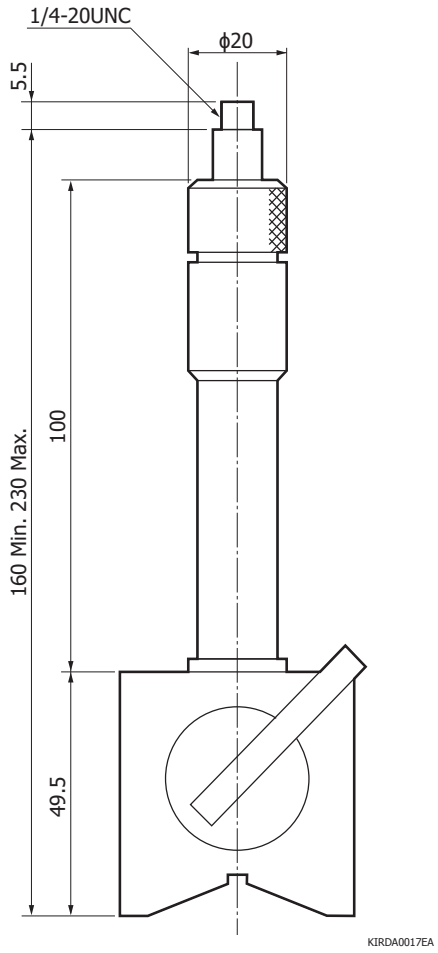
## Magnet stand A1447

This is a magnet stand (sold separately) designed for the B749 photon drag detector.

### Dimensional outline (unit: mm, tolerance unless otherwise noted: ±1)

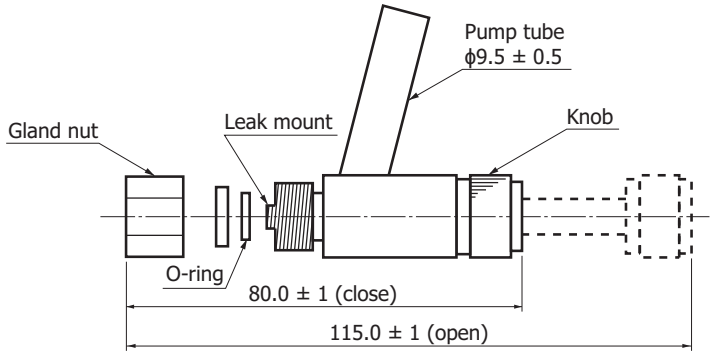


## Valve operator for metal dewar A3515

With this valve operator, metal dewars can be re-evacuated to maintain the desired vacuum level. Refer to the instruction manual for details. Please be aware that the detector performance is not guaranteed after re-evacuation is performed with the valve operator.

Vacuum pump — Valve operator — Metal dewar type infrared detector

### Dimensional outline (unit: mm)

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### Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Notice

■ Technical information
· Infrared detector / Technical information



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