

# IR-SA SERIES

## ONLINE INFRARED RADIATION THERMOMETER



IR-SA series are infrared radiation thermometer realized environment resistance under harsh environment, high accuracy and fast response.

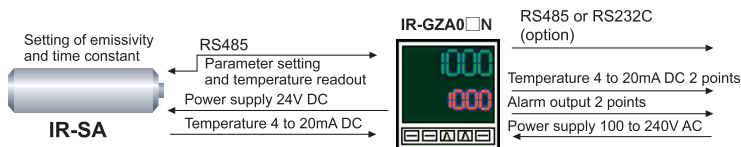
Four models of low temperature, medium temperature, high temperature and 2 colors type are available in various fields like as process line and non-contact temperature measuring.

### FEATURES

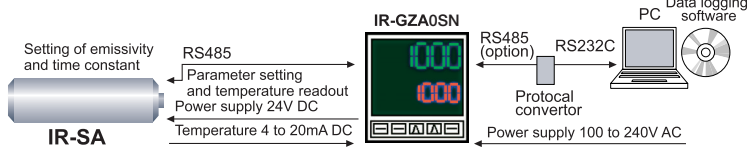
- Environment resistance, withstand temperature 90°C, IP67 dustproof and waterproof.
- High accuracy in the high temperature range by eutectic points of metal carbon scale calibration.
- Robust and small size of  $\phi 50 \times 170\text{mm}$  with stainless case.
- Fast response of 0.002sec for medium and high temperature.
- Communications and RS485 as standard equipment. Remote setting and monitoring on maximum 31 units by connecting setting display or pc are available.
- Telescope or laser pointer for targeting
- Abundant accessories for various applications and site environment.
- Conformed to RoHS (except for IR-SAB).

### STRUCTURE

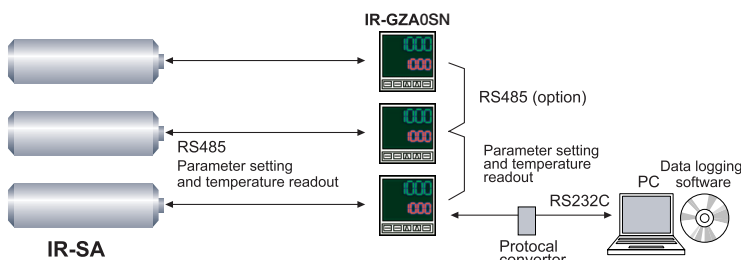
- Basic system by IR-GZA



- Remote monitoring and data acquisition by PC



- Plural units monitoring



### MODELS

- Low temperature

IR-SAB□□N

- Measuring diameter/distance
- 50 :  $\phi 25/500\text{mm}$
- 51 :  $\phi 40/1000\text{mm}$
- 52 :  $\phi 80/2000\text{mm}$
- 55 :  $\phi 200/5000\text{mm}$  (Option)
- 5S :  $\phi 8/200\text{mm}$  (Option)
- 00 :  $\phi 10/500\text{mm}$
- 01 :  $\phi 20/1000\text{mm}$
- 02 :  $\phi 40/2000\text{mm}$
- 05 :  $\phi 100/5000\text{mm}$  (Option)
- 0S :  $\phi 4/200\text{mm}$  (Option)

- Medium to high temperature, two color type

IR-SA□□□A

- Types/element
- I : Medium temp·InGaAs
- S : High temp·Si
- H : Two color·Si/InGaAs
- Measuring diameter/distance
- 10 :  $\phi 5/500\text{mm}$
- 11 :  $\phi 10/1000\text{mm}$
- 12 :  $\phi 20/2000\text{mm}$
- 15 :  $\phi 50/5000\text{mm}$  (Option)
- 1S :  $\phi 2/200\text{mm}$  (Option)
- 20 :  $\phi 3/500\text{mm}$
- 21 :  $\phi 5/1000\text{mm}$
- 22 :  $\phi 10/2000\text{mm}$
- 25 :  $\phi 25/5000\text{mm}$  (Option)
- 2S :  $\phi 1/200\text{mm}$  (Option)

# IR-SA SERIES

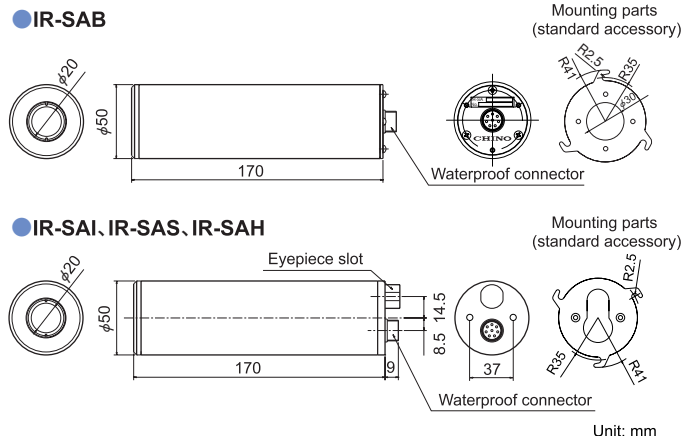
## SPECIFICATIONS

| Model  | Low temperature  | Medium temperature   | High temperature         | 2-color  |
|--|--|--|--------------------------|--|
|  | IR-SAB   | IR-SAI   | IR-SAS                   | IR-SAH   |
| Measuring system   | Broadband radiation thermometer  | Narrow-band radiation thermometer  |                          | Ratio thermometer  |
| Element  | PE   | InGaAs   | Si                       | Si/InGaAs  |
| Measuring wavelength   | 8 to 14 $\mu$ m  | 1.55 $\mu$ m   | 0.9 $\mu$ m              | 0.9/1.55 $\mu$ m   |
| Measuring range  | 0 to 1000 $^{\circ}$ C   | 300 to 1600 $^{\circ}$ C   | 600 to 2500 $^{\circ}$ C | 900 to 2500 $^{\circ}$ C   |
| Accuracy rating<br>( $\epsilon \approx 1.0$ , reference operation condition : ambient temperature 23 $\pm$ 5 $^{\circ}$ C) | 200 $^{\circ}$ C or less --- $\pm 2^{\circ}$ C<br>200 $^{\circ}$ C or more --- $\pm 1\%$ of measured value | 1000 $^{\circ}$ C or less: $\pm 0.2\%$ of measured value $\pm 2^{\circ}$ C<br>1000 to 1500 $^{\circ}$ C: $\pm 0.4\%$ of measured value<br>1500 $^{\circ}$ C or more: $\pm 0.5\%$ of measured value |                          | 1500 $^{\circ}$ C or less: $\pm 0.5\%$ of measured value<br>1500 $^{\circ}$ C or more: $\pm 0.6\%$ of measured value |
| Repeatability  |  | 0.2 $^{\circ}$ C   |                          | 1 $^{\circ}$ C   |
| Temperature drift  | 0.1 $^{\circ}$ C/ $^{\circ}$ C   | 0.1 $^{\circ}$ C/ $^{\circ}$ C or 0.015%/ $^{\circ}$ C of measured value whichever larger  |                          | 0.2 $^{\circ}$ C/ $^{\circ}$ C or 0.02%/ $^{\circ}$ C of measured value whichever larger                             |
| Resolution   |  | 0.5 $^{\circ}$ C   |                          | 1 $^{\circ}$ C   |
| Response time (95%)  | 0.2s   | 0.002s   |                          | 0.01s  |
| Lens aperture  | $\phi 15$ mm   | $\phi 10$ mm   |                          |  |
| Distance factor  | 25, 50   | 100, 200   |                          |  |
| Sighting (Option)  | Laser unit   | Eyepiece   |                          |  |
| Emissivity adjustment  | 1.999 to 0.200   | 1.999 to 0.050   |                          | 1.250 to 0.750 (emissivity ratio)  |
| Working temperature  | 0 to 50 $^{\circ}$ C   | 0 to 90 $^{\circ}$ C   |                          |  |
| Power consumption  | Approx. 5VA  | Approx. 2.4VA  |                          |  |

## COMMON SPECIFICATIONS

|                    |  |
|--------------------|--|
| Optics:            | Fixed focus lens type  |
| Setup:             | Setting in the setting display unit by using communication RS485   |
| Signal modulation: | Delay --- First order lag<br>Modulation time constant 0 to 99.9s (time constant 0 = real)<br>Peak --- Peak tracing<br>Decay time 0, 2, 5, 10 $^{\circ}$ C/ sec (Decay time 0 = peak hold)  |
| Analog output:     | 4 to 20 mA DC isolated output<br>Allowable load resistance --- 780 $\Omega$ or less (530 $\Omega$ or less for IR-SAB)<br>Scaling --- Optional setting in the measuring range   |
| Communications:    | RS485  |
| Power supply:      | 24V DC $\pm 10\%$  |
| Connection:        | Connector (exclusive cable)  |
| Case:              | Stainless steel  |
| Dimensions:        | $\phi 50 \times D170$ mm   |
| Weight:            | Approx. 0.7kg  |
| Protection:        | IP67   |
| CE marking:        | Conformity standards --- EN61326-1: 2006 class A<br>Conformity condition --- Connecting cable 30m or less (inside installation)<br>*Stability under test environment requested by EMS directive --- $\pm 1\%$ of measuring range |

## DIMENSIONS



## MEASURING DIAMETER & DISTANCE

| IR-SAB      |  |             |  |
|-------------|--|-------------|--|
| Code        | Measuring diameter & distance                        | Code        | Measuring diameter & distance                        |
| 50          | $\phi 55$ / 1000, $\phi 25$ / 500, $\phi 15$ / 0     | 00          | $\phi 35$ / 1000, $\phi 10$ / 500, $\phi 15$ / 0     |
| 51          | $\phi 95$ / 2000, $\phi 40$ / 1000, $\phi 15$ / 0    | 01          | $\phi 55$ / 2000, $\phi 20$ / 1000, $\phi 15$ / 0    |
| 52          | $\phi 180$ / 4000, $\phi 80$ / 2000, $\phi 15$ / 0   | 02          | $\phi 100$ / 4000, $\phi 40$ / 2000, $\phi 15$ / 0   |
| 55 (Option) | $\phi 420$ / 10000, $\phi 200$ / 5000, $\phi 15$ / 0 | 05 (Option) | $\phi 220$ / 10000, $\phi 100$ / 5000, $\phi 15$ / 0 |
| 5S (Option) | $\phi 31$ / 400, $\phi 8$ / 200, $\phi 15$ / 0       | 0S (Option) | $\phi 23$ / 400, $\phi 4$ / 200, $\phi 15$ / 0       |

| IR-SAI, IR-SAS, IR-SAH |   |             |  |
|------------------------|---|-------------|--|
| Code                   | Measuring diameter & distance                       | Code        | Measuring diameter & distance                      |
| 10                     | $\phi 20$ / 1000, $\phi 5$ / 500, $\phi 10$ / 0     | 20          | $\phi 15$ / 1000, $\phi 3$ / 500, $\phi 10$ / 0    |
| 11                     | $\phi 30$ / 2000, $\phi 10$ / 1000, $\phi 10$ / 0   | 21          | $\phi 20$ / 2000, $\phi 5$ / 1000, $\phi 10$ / 0   |
| 12                     | $\phi 50$ / 4000, $\phi 20$ / 2000, $\phi 10$ / 0   | 22          | $\phi 30$ / 4000, $\phi 10$ / 2000, $\phi 10$ / 0  |
| 15 (Option)            | $\phi 110$ / 10000, $\phi 50$ / 5000, $\phi 10$ / 0 | 25 (Option) | $\phi 60$ / 10000, $\phi 25$ / 5000, $\phi 10$ / 0 |
| 1S (Option)            | $\phi 14$ / 400, $\phi 2$ / 200, $\phi 10$ / 0      | 2S (Option) | $\phi 12$ / 400, $\phi 1$ / 200, $\phi 10$ / 0     |

\*Distance from front lens of IR-SA

## SETTING DISPLAY UNIT IR-GZA (Option)

IR-GZA is combined with IR-SA for enabling parameters setup, data display and 24V DC power supply to IR-SA. Wall-mount housing box is also prepared.



### Model

IR-GZA□□□

#### External input

- 0 : None
  - 1 : Remote emissivity
  - 2 : Reflection compensation
- Ask CHINO for a model to be combined (Two color model cannot be used.)

#### Communication interface

- N : None
- S : RS485

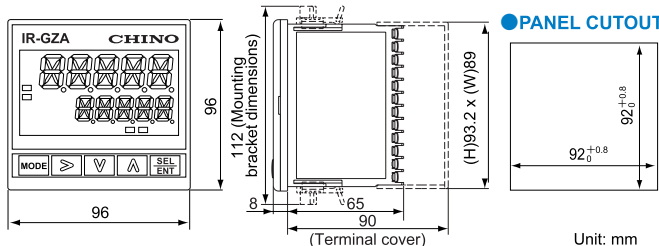
#### Damp proof treatment

- N : None
- C : With damp treatment

### SPECIFICATIONS

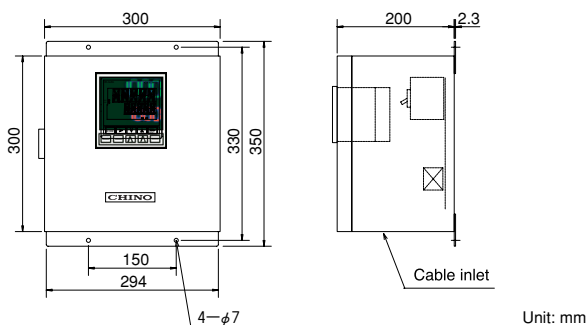
- Thermometer input: RS485  
 Functions: Temperature indication, Parameter setup and transmission to thermometer, temperature alarm judgement, Signal modulation treatment, analog temperature signal transmission
- No. of connectable unit: 1 unit (IR-GZA2□□ is 2 units)  
 Setup parameters: For parameter transmission to thermometer Emissivity (ratio) --- 1.999 to 0.050  
 Signal modulation mode, Signal modulation constants/decay rate, Analog output scaling
- Thermometer information: Temperature value, Self-diagnosing information  
 Signal modulation: Delay --- First-order lag  
 (Modulation constant --- 0.1s steps from 0.0 to 99.9s, or 0.01s steps from 00.00 to 9.99s)  
 Modulation constant 0 = Real  
 Peak --- Tracing of highest value  
 Decay rate --- 0, 2, 5, 10.0°C/s (selectable)
- Indication: Temperature, Event status  
 Analog output: Output 1 --- IR-GZA processing output: 4 to 20mA DC, Allowable load resistance: 600Ω or less  
 Output renewal cycle: 0.1s  
 Accuracy: ±0.3% of output range  
 Output 2 --- IR-SA direct output: 4 to 20mA DC  
 Load resistance: 780Ω or less (IR-SAB is 530Ω or less)
- Event output: 2 points --- Select 2 points from "high temperature alarm", "high-high temperature alarm", "low temperature alarm" and "low-low temperature alarm"  
 Relay a contact output (common)  
 Contact capacity: 240VAC 1.5A / 30V DC 1.5A
- External input: IR-GZA1□□ --- Emissivity remote 4 to 20mA (Enable arbitrary scaling)  
 IR-GZA2□□ --- Reflection compensation input 4 to 20mA, Pt100, Thermometers (Ch31), key entry
- High-order communication: IR-GZA□□S --- RS485  
 Working temperature: -10 to 50°C (-10 to 40°C when closed installation)  
 Working humidity: 20 to 90%RH (No dew condensation)  
 Power supply to IR-SA: 24V DC, 830mA  
 Power supply: 100 to 240V AC 50/60Hz  
 Power consumption: 100V AC Max 28VA, 240V AC Max 36VA  
 Terminal screw size: M3  
 Casing: Fire-retardant polycarbonate resin  
 Installation: Panel mounting  
 Weight: Approx. 0.5kg  
 CE approval: EMC EN61326+ A1\*  
 Low voltage EN61010-1+A2  
 Overvoltage category II, pollution level 2  
 Stability under the test environment requested by EMS directive --- 10%

### DIMENSIONS

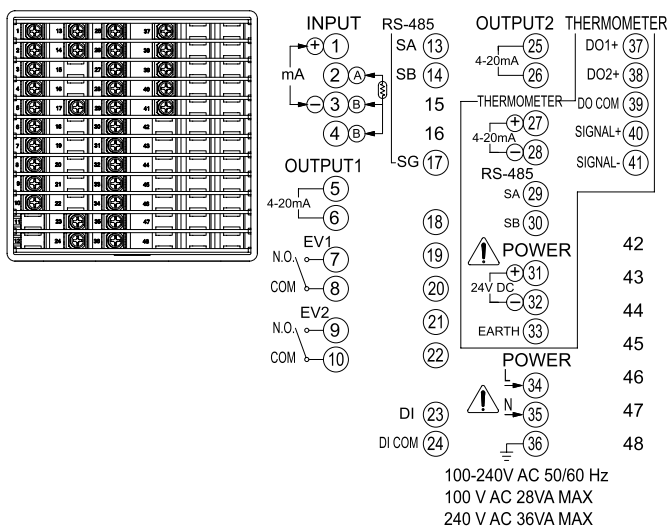


### ACCESSORIES

#### Wall-mount housing box IR-ZGBW (Order IR-GZA separately)



### TERMINAL DIAGRAMS

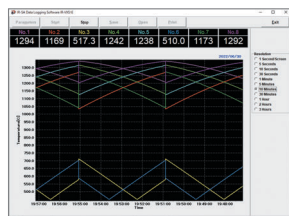


## DATA LOGGING SOFTWARE (OPTION)

### MODEL

#### IR-VXS1E

Measured value trend display and parameter settings available by connecting to maximum 8 units of IR-SA.



|             |   |                                |
|-------------|---|--------------------------------|
| Environment | OS  | Windows 7 / 10                 |
|             | Hard drive  | Capacity: 20MB or more         |
|             | Drive   | CD-ROM (use when installation) |
| Functions   | · Real time trend display<br>· Data storage (CSV type) / replay / printing<br>· Parameter setup and readout |                                |
| Option      | · Protocol convertor<br>· Communication cable (for protocol convertor and PC)                               |                                |

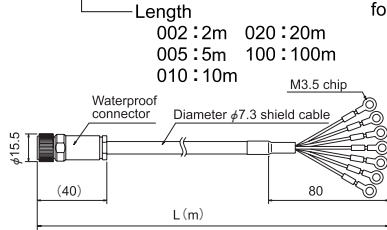
## ACCESSORIES

### Connecting cable

Model: IR-ZYRC

For connecting IR-SA with setting display unit

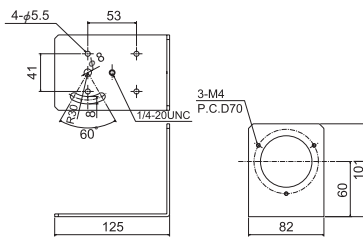
\*Contact CHINO for other lengths



### Mounting bracket

Model: IR-ZYHG1

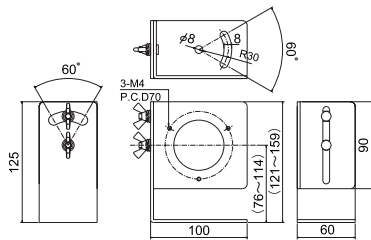
Horizontal adjustment of measuring spot is available. It can be fixed to universal head IR-ZMSS.



### Adjustable bracket

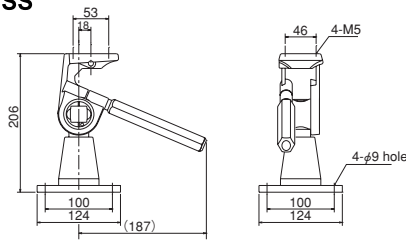
Model: IR-ZYHG2

Horizontal and vertical adjustment of measuring spot.



### Heat resistance universal head

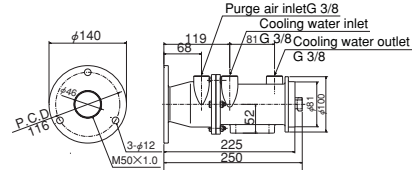
Model: IR-ZMSS



### Protecting case

Model: IR-ZYCH

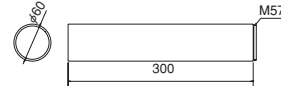
Case for housing IR-SA when measuring in a harsh environment like as smoke, oily smoke and dust. It also has water cooling and air purge functions.



### Air purge hood

Model: IR-ZYSS

Blocking off the light by using with a protecting case IR-ZYCH and keeping measuring light path by air guide

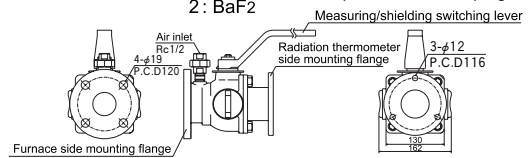


### Sealing window

Model: IR-ZWC

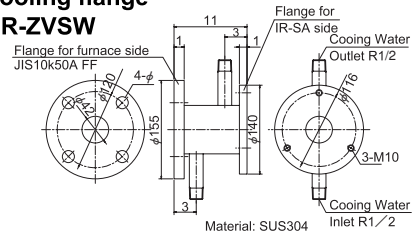
Installing in the furnace wall for sealing between inside of furnace and outside of furnace when furnace inner pressure is high. Sealing glasses can easily be replaced while keeping sealing.

Window materials  
0: Quartz  
2: BaF2



### Water-cooling flange

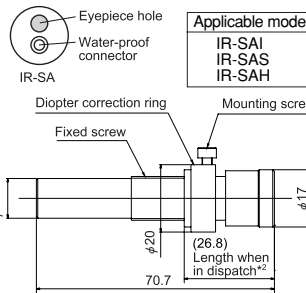
Model: IR-ZVSW



### Eye piece\*1

Model: IR-ZYTSA

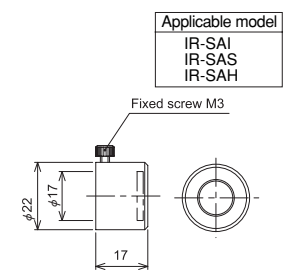
Insert the eye piece into the IR-SA to confirm measuring view for accurate alignment



### Eye piece filter\*1

Model: IR-ZCLF

A neutral-density filter for eyes protection when measuring high temperature objects.



\*1 Eye piece and eye piece filter are removable unit which can be utilized with plural units.  
\*2 Length varies in diopter correction.

### Laser unit (for protecting case storage) \*3

Model: IR-ZYLZ2

Replacement when targeting measuring spot of IR-SAB and housed by a protecting case.



\*3 Laser unit is removable SQ can be utilized with plural units

Unit: mm

Specifications subject to change without notice. Printed in Japan (I) 2022.7

## CHINO CORPORATION

32-8 KUMANO-CHO, ITABASHI-KU, TOKYO 173-8632  
Telephone : +81-3-3956-2171  
Facsimile : +81-3-3956-0915  
E-mail : inter@chino.co.jp  
Website : http://www.chino.co.jp/