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 450 x 170mm 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 setting environment.
- Conformed to RoHS.

**STRUCTURE**
- Basic system by IR-GZA

Remote monitoring and data acquisition by PC

**MODELS**

**Low temperature**

IR-SAB

- Measuring diameter/distance: 50 : ø25/500mm
- 51 : ø40/1000mm
- 52 : ø80/2000mm
- 55 : ø200/5000mm (Option)
- 5S : ø8/200mm (Option)
- 00 : ø10/500mm
- 01 : ø20/1000mm
- 02 : ø40/2000mm
- 05 : ø100/5000mm (Option)
- 08 : ø4/200mm (Option)

**Medium to high temperature, two color type**

IR-SAN

- Measuring diameter/distance: 10 : ø5/500mm
- 11 : ø10/1000mm
- 12 : ø20/2000mm
- 15 : ø50/5000mm (Option)
- 1S : ø2/200mm (Option)
- 20 : ø3/500mm
- 21 : ø5/1000mm
- 22 : ø10/2000mm
- 25 : ø25/5000mm (Option)
- 2S : ø1/200mm (Option)
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Low temperature</th>
<th>Medium temperature</th>
<th>High temperature</th>
<th>2-color</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR-SAB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR-SAI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR-SAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR-SAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring system</td>
<td>Broadband radiation thermometer</td>
<td>Narrow-band radiation thermometer</td>
<td>Ratio thermometer</td>
<td></td>
</tr>
<tr>
<td>Element</td>
<td>PE</td>
<td>InGaAs</td>
<td>Si</td>
<td>Si/InGaAs</td>
</tr>
<tr>
<td>Measuring wavelength</td>
<td>8 to 14µm</td>
<td>1.55µm</td>
<td>0.9µm</td>
<td>0.9/1.55µm</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0 to 1000°C</td>
<td>300 to 1600°C</td>
<td>600 to 2500°C</td>
<td>900 to 2500°C</td>
</tr>
<tr>
<td>Accuracy rating</td>
<td>200°C or less: ±2°C</td>
<td>1000°C or less: ±0.2% of measured value ±2°C</td>
<td>1500°C or less: ±0.5% of measured value ±2°C</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>0.2°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature drift</td>
<td>0.1°C/°C</td>
<td>0.1°C/°C or 0.015%/°C of measured value whichever larger</td>
<td>0.2°C/°C or 0.02%/°C of measured value whichever larger</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.5°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time (95%)</td>
<td>0.2s</td>
<td>0.002s</td>
<td></td>
<td>0.01s</td>
</tr>
<tr>
<td>Lens aperture</td>
<td>#15mm</td>
<td>#10mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance factor</td>
<td>25, 50</td>
<td>100, 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sighting</td>
<td>Laser unit</td>
<td>Telescope or laser pointer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emissivity adjustment</td>
<td>1.999 to 0.200</td>
<td>1.999 to 0.050</td>
<td>1.250 to 0.750 (emissivity ratio)</td>
<td></td>
</tr>
<tr>
<td>Working temperature</td>
<td>0 to 50°C</td>
<td>0 to 90°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 5VA</td>
<td>Approx. 2.4VA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### COMMON SPECIFICATIONS

- **Optics:** Fixed focus lens type
- **Setup:** Setting in the setting display unit by using communication RS485
- **Signal modulation:** Delay — First order lag
  - Modulation time constant 0 to 99.9s
  - (time constant 0 = real)
- Peak — Peak tracing
  - Decay time 0, 2, 5, 10 °C/sec
  - (Decay time 0 = peak hold)
- **Analog output:** 4 to 20 mA DC isolated output
- **Allowable load resistance:** 7800Ω or less (5300Ω or less for IR-SAB)
- **Scaling:** Optional setting in the measuring range
- **Communications:** RS485
- **Power supply:** 24V DC ±10%
- **Connection:** Connector (exclusive cable)
- **Case:** Stainless steel
- **Dimensions:** 50 x 170mm
- **Weight:** Approx. 0.7kg
- **Protection:** IP67
- **CE marking:** Conformity standards --- EN61326-1: 2006 class A
  - Conformity condition — Connecting cable 30m or less (inside installation)
  - *Stability under test environment requested by EMS directive — ±1% of measuring range*

### MEASURING DIAMETER & DISTANCE

#### IR-SAB

<table>
<thead>
<tr>
<th>Code</th>
<th>Measuring diameter &amp; distance</th>
<th>Code</th>
<th>Measuring diameter &amp; distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td><img src="example1.png" alt="Diagram" /></td>
<td>00</td>
<td><img src="example2.png" alt="Diagram" /></td>
</tr>
<tr>
<td>51</td>
<td><img src="example3.png" alt="Diagram" /></td>
<td>01</td>
<td><img src="example4.png" alt="Diagram" /></td>
</tr>
<tr>
<td>52</td>
<td><img src="example5.png" alt="Diagram" /></td>
<td>02</td>
<td><img src="example6.png" alt="Diagram" /></td>
</tr>
<tr>
<td>55 (Option)</td>
<td><img src="example7.png" alt="Diagram" /></td>
<td>05 (Option)</td>
<td><img src="example8.png" alt="Diagram" /></td>
</tr>
<tr>
<td>5S (Option)</td>
<td><img src="example9.png" alt="Diagram" /></td>
<td>0S (Option)</td>
<td><img src="example10.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

#### IR-SAI, IR-SAS, IR-SAH

<table>
<thead>
<tr>
<th>Code</th>
<th>Measuring diameter &amp; distance</th>
<th>Code</th>
<th>Measuring diameter &amp; distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td><img src="example11.png" alt="Diagram" /></td>
<td>20</td>
<td><img src="example12.png" alt="Diagram" /></td>
</tr>
<tr>
<td>11</td>
<td><img src="example13.png" alt="Diagram" /></td>
<td>21</td>
<td><img src="example14.png" alt="Diagram" /></td>
</tr>
<tr>
<td>12</td>
<td><img src="example15.png" alt="Diagram" /></td>
<td>22</td>
<td><img src="example16.png" alt="Diagram" /></td>
</tr>
<tr>
<td>15 (Option)</td>
<td><img src="example17.png" alt="Diagram" /></td>
<td>25 (Option)</td>
<td><img src="example18.png" alt="Diagram" /></td>
</tr>
<tr>
<td>1S (Option)</td>
<td><img src="example19.png" alt="Diagram" /></td>
<td>2S (Option)</td>
<td><img src="example20.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

*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-hanging box is also prepared.

- **Model IR-GZA**
  - External Input
    - 0: None
    - 1: Remote emissivity
    - 2: Reflection compensation
  - Communication interface
    - N: None
    - S: RS485
  - Damp proof treatment
    - N: None
    - C: With damp treatment

- **SPECIFICATIONS**
  - Emissivity (ratio) setting: 1.999 to 0.050
  - Thermometer input: RS485
  - Signal modulation: DELAY --- First-order lag
    - Time constant: 0.0 to 99.99sec with 0.1sec increment or 0.0 to 9.999sec with 0.01 sec increment
    - (time constant 0 = real)
  - PEAK --- Peak tracing
    - Decay time 2, 5, 10°C/sec selectable (Decay time 0 =peak hold)
  - Display: Temperature, thermometer number of connected units, status display
  - Analog output: Output 1: 4 to 20 mA DC
    - (IR-GZ output, load resistance: less than 500Ω)
  - Output 2: 4 to 20 mA DC
    - (IR-SA output, load resistance: less than 780Ω or less than 530Ω for IR-SAB)
  - Output renewal cycle: Output 1: 100ms
  - Output 2: Depending on the model of IR-SA
  - Output accuracy ratings: ±0.2% of output range
  - 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 240V AC 1.5A 30V DC 1.5A
  - Analog input: 4 to 20 mA DC (Remote emissivity setup)
  - Communications interface: RS232C, RS485 (option)
  - Power supply to IR-SA: 24V DC 0.45A
  - Power supply: 100 to 240V AC universal power supply, 50Hz-60Hz
  - Power consumption: Maximum 20VA
  - Working temperature: -10 to 50°C
  - Working humidity: 20 to 90%RH (No dew condensation)
  - Case: Fire-retardant polycarbonate resin
  - Installation: Panel mounting
  - Weight: Approx. 0.5kg
  - CE marking:
    - EMC EN61326 + A1
    - Low voltage EN61010-1 + A2
    - Overvoltage category II, pollution level 2

**DIMENSIONS**

- **Wall-hanging box IR-ZGBW**

**ACCESSORIES**

**TERMINAL DIAGRAMS**

**DATA LOGGING SOFTWARE (OPTION)**

- **MODEL IR-VXS1E**
  - Measured value trend display and parameter settings available by connecting to maximum 3 units of IR-SA,
  - Windows 2000 / XP / Vista / 7 32bit
  - OS: Hard drive Capacity: 20MB or more
  - Drive: CD-ROM (use when installation)
  - Functions:
    - Real time trend display
    - Data storage (CSV type) / replay / printing
    - Parameter setup and readout
  - Option:
    - Protocol converter
    - Communication cable (for protocol converter and PC)
- Connecting cable
  Model: IR-ZYRC
  Length: 02:12m 02:20m 00:5m 100:100m 010:10m
  For connecting IR-SA with setting display unit

- Air purge case
  Model: IR-ZYCP

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

- Water-cooling flange
  Model: IR-ZVSW

- Water-cooling flange
  Model: IR-VSW

- Telescope
  Model: IR-ZYTS
  Installed to IR-SA for measuring spot sighting

- Laser pointer
  Model: IR-ZYLZ1
  Installed to IR-SA for targeting measuring spot by laser beam

- Laser unit (for protecting case storage)
  Model: IR-ZYLZ2
  Replacement when targeting measuring spot of IR-SAB and housed by a protecting case.

* A telescope and a laser pointer can be used for multiple units as they are removable.

Specifications subject to change without notice. Printed in Japan (I) 2018. 12