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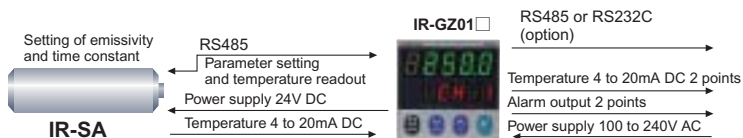
Four models of low temperature, medium temperature, high temperature and 2 colors type are available in various fields like as process line and non-contact temperature measuring.
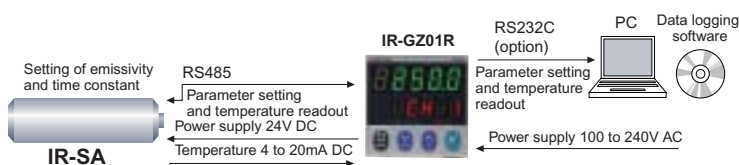
■FEATURES

● Environment resistance, withstand temperature 90℃, IP67 dustproof and waterproof.
● High accuracy in the high temperature range by eutectic points of metal carbon scale calibration.
● Robust and small size of φ50 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.
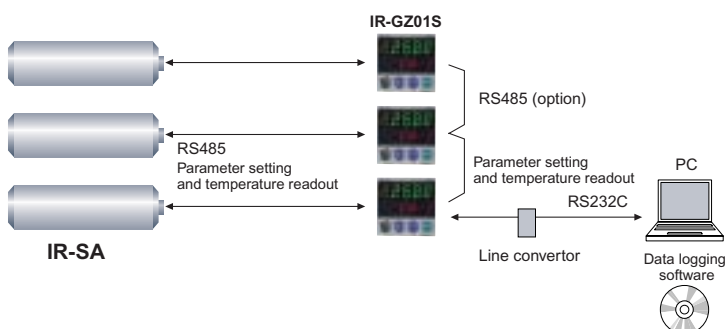● Conformed to RoHS.

*Telescope (option)

■STRUCTURE

● Basic system by IR-GZ

Setting of emissivity and time constant
RS485
Parameter setting and temperature readout
Power supply 24V DC
Temperature 4 to 20mA DC

IR-SA

IR-GZ01□

RS485 or RS232C (option)
Temperature 4 to 20mA DC 2 points
Alarm output 2 points
Power supply 100 to 240V AC

● Remote monitoring and data acquisition by PC

Setting of emissivity and time constant
RS485
Parameter setting and temperature readout
Power supply 24V DC
Temperature 4 to 20mA DC

IR-SA

IR-GZ01R

RS232C (option)
PC
Data logging software
Parameter setting and temperature readout
Power supply 100 to 240V AC

● Plural units monitoring

IR-GZ01S

RS485 (option)
Parameter setting and temperature readout
RS232C
Line convertor
PC
Data logging software

RS485
Parameter setting and temperature readout

IR-SA

■MODELS

● **Low temperature**

IR-SAB□□N

Measuring diameter/distance
50：φ25/500mm
51：φ40/1000mm
52：φ80/2000mm
55：φ200/5000mm (Option)
5S：φ8/200mm (Option)
00：φ10/500mm
01：φ20/1000mm
02：φ40/2000mm
05：φ100/5000mm (Option)
0S：φ4/200mm (Option)

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

IR-SA□□□N

Types/element
I ：Medium temp・InGaAs
S ：High temp・Si
H ：Two color・Si/InGaAs

Measuring diameter/distance
10：φ5/500mm
11：φ10/1000mm
12：φ20/2000mm
15：φ50/5000mm (Option)
1S：φ2/200mm (Option)
20：φ3/500mm
21：φ5/1000mm
22：φ10/2000mm
25：φ25/5000mm (Option)
2S：φ1/200mm (Option)

PSE-603B

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 14μm	1.55μm	0.9μm	0.9／1.55μm
Measuring range	0 to 1000℃	300 to 1600℃	600 to 2500℃	900 to 2500℃
Accuracy rating ($\varepsilon \fallingdotseq$ 1.0, reference operation condition : ambient temperature 23±5℃)	200℃ or less --- ±2℃ 200℃ or more --- ±1% of measured value	1000℃ or less: ±0.2% of measured value ±2℃ 1000 to 1500 ℃: ±0.4% of measured value 1500℃ or more: ±0.5% of measured value		1500℃ or less: ±0.5% of measured value 1500℃ or more: ±0.6% of measured value
Repeatability		0.2℃		1℃
Temperature drift	0.1℃/℃	0.1 ℃/℃ or 0.015%/℃ of measured value whichever larger		0.2℃/℃ or 0.02%/℃ of measured value whichever larger
Resolution		0.5℃		1℃
Response time (95%)	0.2s	0.002s		0.01s
Lens aperture	ϕ15mm	ϕ10mm		
Distance factor	25, 50	100, 200		
Sighting	Laser unit	Telescope or laser pointer		
Emissivity adjustment	1.999 to 0.200	1.999 to 0.050		1.250 to 0.750 (emissivity ratio)
Working temperature	0 to 50℃	0 to 90℃		
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
                   Modulation time constant 0 to 99.9s
                   (time constant 0 = real)
                   Peak --- Peak tracing
                   Decay time 0, 2, 5, 10 ℃/ sec
                   (Decay time 0 = peak hold)
Analog output: 4 to 20 mA DC isolated output
                   Allowable load resistance ---
                   780Ω or less (530Ω 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: ϕ50 x D170mm
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

■DIMENSIONS

●IR-SAB

Mounting parts
(standard accessory)

Waterproof connector

●IR-SAI、IR-SAS、IR-SAH

Sighting slot

Mounting parts
(standard accessory)

Waterproof connector

Unit: mm
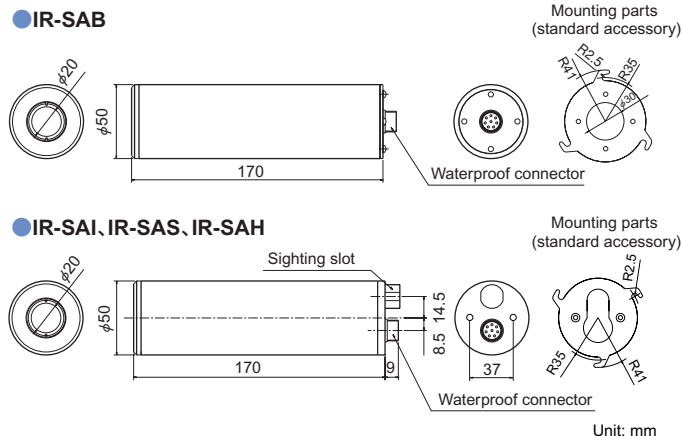
■MEASURING DIAMETER & DISTANCE

IR-SAB

Code	Measuring diameter & distance	Code	Measuring diameter & distance
50	ϕ55 / ϕ25 / ϕ15 — 1000 / 500 / 0	00	ϕ35 / ϕ10 / ϕ15 — 1000 / 500 / 0
51	ϕ95 / ϕ40 / ϕ15 — 2000 / 1000 / 0	01	ϕ55 / ϕ20 / ϕ15 — 2000 / 1000 / 0
52	ϕ180 / ϕ80 / ϕ15 — 4000 / 2000 / 0	02	ϕ100 / ϕ40 / ϕ15 — 4000 / 2000 / 0
55 (Option)	ϕ420 / ϕ200 / ϕ15 — 10000 / 5000 / 0	05 (Option)	ϕ220 / ϕ100 / ϕ15 — 10000 / 5000 / 0
5S (Option)	ϕ31 / ϕ8 / ϕ15 — 400 / 200 / 0	0S (Option)	ϕ23 / ϕ4 / ϕ15 — 400 / 200 / 0

IR-SAI,IR-SAS,IR-SAH

Code	Measuring diameter & distance	Code	Measuring diameter & distance
10	ϕ20 / ϕ5 / ϕ10 — 1000 / 500 / 0	20	ϕ15 / ϕ3 / ϕ10 — 1000 / 500 / 0
11	ϕ30 / ϕ10 / ϕ10 — 2000 / 1000 / 0	21	ϕ20 / ϕ5 / ϕ10 — 2000 / 1000 / 0
12	ϕ50 / ϕ20 / ϕ10 — 4000 / 2000 / 0	22	ϕ30 / ϕ10 / ϕ10 — 4000 / 2000 / 0
15 (Option)	ϕ110 / ϕ50 / ϕ10 — 10000 / 5000 / 0	25 (Option)	ϕ60 / ϕ25 / ϕ10 — 10000 / 5000 / 0
1S (Option)	ϕ14 / ϕ2 / ϕ10 — 400 / 200 / 0	2S (Option)	ϕ12 / ϕ1 / ϕ10 — 400 / 200 / 0

＊Distance from front lens of IR-SA

■SETTING DISPLAY UNIT IR-GZ (Option)

IR-GZ 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-GZ□1□

Analog input
0 : None
1 : Remote emissivity setup

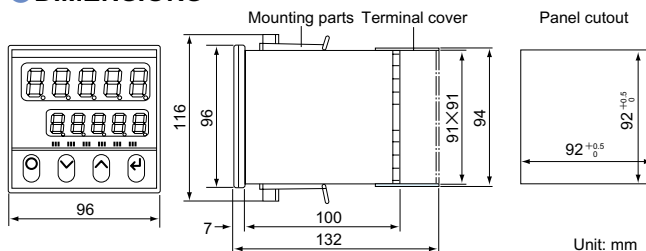Communications interface
N : None (standard)
R : RS232C
S : RS485

Wall-hanging box IR-ZGBW

●SPECIFICATIONS

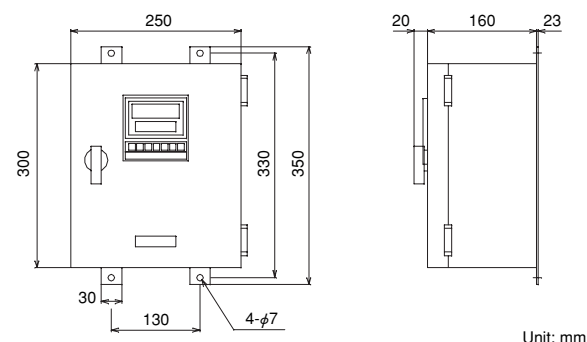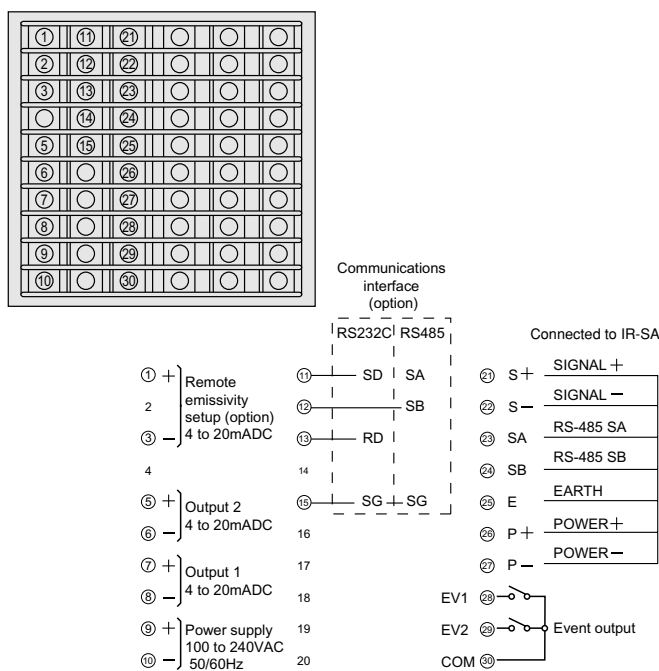|	
Emissivity (ratio) setting:	1.999 to 0.050
Thermometer input:	RS485
Signal modulation:	DELAY --- First-order lag
	Time constant: 0.0 to 99.9sec with 0.1sec increment or 0.00 to 9.99sec with 0.01 sec increment Optional setting (time constant 0 = real)
	PEAK --- Peak tracing Decay time 0, 2, 5, 10℃/sec selectable (Decay time 0 =peak hold)
Display:	Temperature, thermometer number being connected, 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, 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 Stability under the test environment required by EMC directive --- ±1%
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℃
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

Mounting parts Terminal cover

Panel cutout

116   96   91×91   94

96   7   100   132

$92^{+0.5}_{0}$ $92^{+0.5}_{0}$

Unit: mm

●ACCESSORIES

●Wall-hanging box IR-ZGBW

250   20   160   23

300   330   350

30   130   4-φ7

Unit: mm

●TERMINAL DIAGRAMS

Communications interface (option)

RS232C   RS485

① + Remote emissivity setup (option) 4 to 20mADC

⑪ SD / SA
⑫ SB
⑬ RD
⑤ + Output 2 4 to 20mADC
⑮ SG + SG

Connected to IR-SA

㉑ S+   SIGNAL +
㉒ S-   SIGNAL -
㉓ SA   RS-485 SA
㉔ SB   RS-485 SB
㉕ E   EARTH
㉖ P +   POWER +
㉗ P -   POWER -

⑦ + Output 1 4 to 20mADC
⑨ + Power supply 100 to 240VAC 50/60Hz
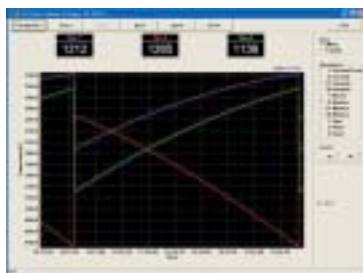
㉘ EV1
㉙ EV2   Event output
㉚ COM

■DATA LOGGING SOFTWARE (OPTION)

●MODEL

IR-VXS1E

Measured value trend display and parameter settings available by connecting to maximum 3 units of IR-SA.

|		
Environment	OS	Windows 2000 / XP / Vista
	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 convertor · Communication cable (for protocol convertor and PC)	

■ACCESORRIES

● Connecting cable
Model: IR-ZYRC□□□
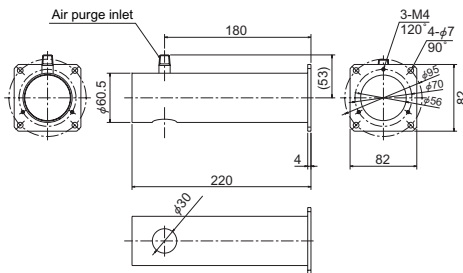
For connecting IR-SA with setting display unit

Length
002：2m　020：20m　*Please ask for the length other than options.
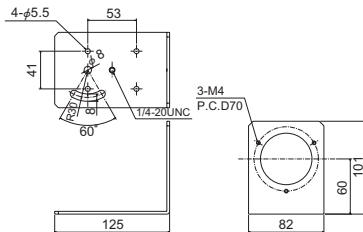005：5m　100：100m
010：10m

Waterproof connector
Diameter φ7.3 shield cable
M3.5 chip
φ15.5
(40)
L (m)
80
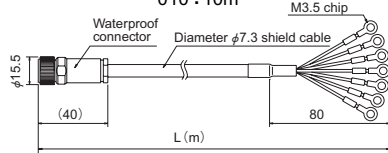
● Air purge case
Model: IR-ZYCP

Air purge inlet
180
3-M4 120°
4-φ7 90°
φ95
φ70
φ56
φ60.5
(53)
82
82
220
4
φ30

● Mounting bracket
Model: IR-ZYHG1

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

4-φ5.5
53
41
φ8
60
1/4-20UNC
3-M4 P.C.D70
60
101
82
125

● Adjustable bracket
Model: IR-ZYHG2

Horizontal and vertical adjustment of measuring spot.

φ8
R30
60°
60°
3-M4 P.C.D70
125
(76~114) (121~159)
90
100
60
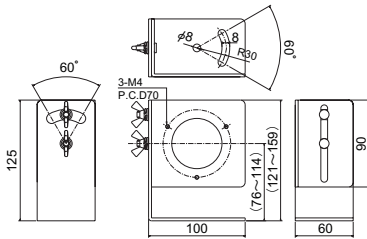
● Heat resistance universal head
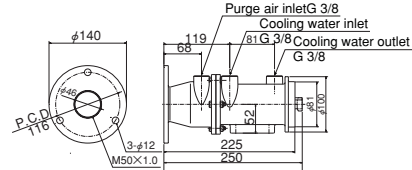### Model: IR-ZMSS

53
18
46
4-M5
206
4-φ9 hole
100
124
(187)
100
124
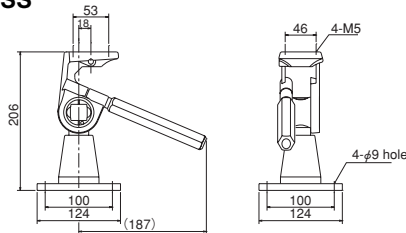
● Protecting case
Model: IR-ZYCH

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.

Purge air inlet G 3/8
Cooling water inlet
G 3/8
Cooling water outlet
G 3/8
φ140
119
68
81
φ46
P.C.D 116
52
3-φ12
M50×1.0
225
250
φ100

● Air purge hood
Model: IR-ZYSS

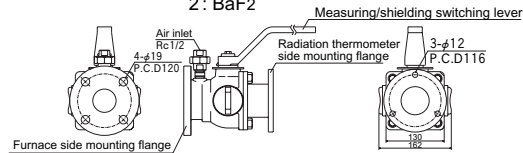Blocking off the light by using with a protecting case IR-ZYCH and keeping measuring light path by air guide
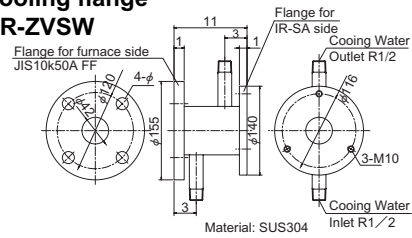
φ60
M57
300
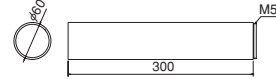
● Sealing window
Model: IR-ZW□C

Installing in the furnace wall for sealing between inside of furnace and outside of furnace when furnace inner presser is high. Sealing glasses is replaced easily while keeping sealing.
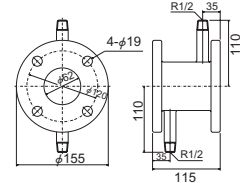
Window materials
0 : Quartz
2 : BaF2

Measuring/shielding switching lever
Air inlet Rc1/2
Radiation thermometer side mounting flange
4-φ19 P.C.D120
3-φ12 P.C.D116
130
182
Furnace side mounting flange

● Water-cooling flange
Model: IR-ZVSW

11
3
1
Flange for IR-SA side
Cooing Water Outlet R1/2
Flange for furnace side JIS10k50A FF
φ155
4-φ
φ140
3-M10
3
Cooing Water Inlet R1／2
Material: SUS304

● Water-cooling flange
Model: IR-VSW

R1/2
35
4-φ19
110
110
φ155
R1/2
115

● Telescope
Model: IR-ZYTS | Applicable models | IR-SAI、IR-SAS、IR-SAH |

Installed to IR-SA for measuring spot sighting
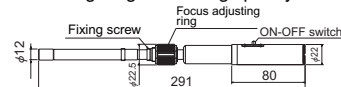
φ12
Fixing screw
Focus adjusting ring
φ22.5
215
φ20
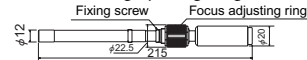
● Laser pointer
Model: IR-ZYLZ1 | Applicable models | IR-SAI、IR-SAS、IR-SAH |

Installed to IR-SA for targeting measuring spot by laser beam

φ12
Fixing screw
Focus adjusting ring
ON-OFF switch
φ22.5
291
80
φ22

● Laser unit (for protecting case storage)
Model: IR-ZYLZ2

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

φ50
170
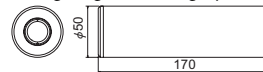
* A telescope and a laser pointer can be used for multiple units as they are removable.

Unit: mm

Specifications subject to change without notice. Printed in Japan (I) 2009. 11