IR-BAT SERIES

HIGH-SPEED COMPACT RADIATION THERMOMETER

PS
PERFORMANCE SPECIFICATION
CHINO

The IR-BA Series is a compact, fast response time, non-contact Infrared Thermometer. In spite of it's compact design (about the size of a deck of cards) the IR-BA internally handles all the signal processing necessary to provide a 4 to 20mA DC linear output over its measuring range. The compact size allows this on-line unit to be installed in tight spaces and on small production equipment. This full-featured product line provides 50ms response times and spot sizes as small as 5mm. The IR-BA's infrared spectral selectivity allows it to be used on application specific process such as; glass, semiconductor processing and measurement of thin plastics (down to 25mm thick) such as PE & PET.
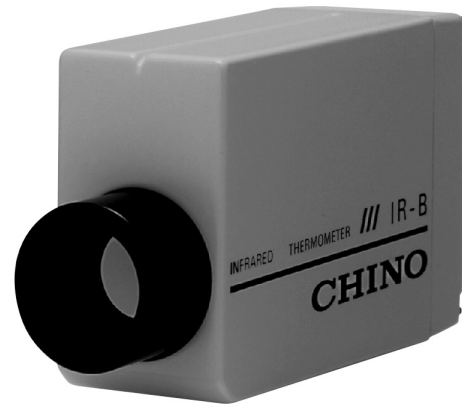
■ FEATURES
- **Fast response time of 50ms**
- **Compact and light-weight**
- **4 to 20mA DC linear output**
- **Accurate emissivity setup**
- **Abundant mountings & accessories**

■ MODELS
- **General Purpose Models**

IR- BAT□□□

Spot size & distance
1: Standard Φ40/500mm
2: Small spot/short distance Φ5/80mm
S:Small spot/long distance Φ40/1000mm

Measuring range & response time
A: 0 to 300°C, 100ms
B: 0 to 600°C, 100ms*
M: 0 to 300°C, 50ms
P: 0 to 600°C, 50ms*
*Only available for standard and small spot/long distance models

Cable
Blank: Standard 2m
E: Extension cable connectable model

- **Application Specific Models**

IR- BAX□□

Application
G1: Glass Temperature
L1: Lamp Anneal
F1: Polyethylene Film
F2: Polyester Film
H1: Combustion Gas

Cable
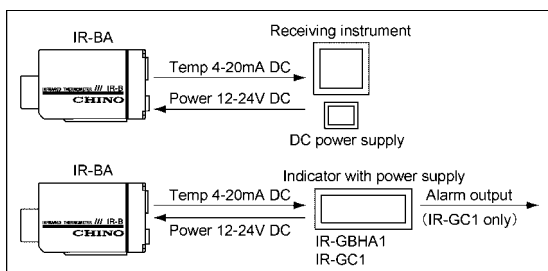Blank: Standard 2m (5m for IR-BAXH1)
E: Extension cable connectable model

- **Extension cable**

IR- ZBRA□□□

Cable lengeth (m)
□□□:Max 200m

■ CONNECTIVITY

■ SPECIFICATIONS FOR GENERAL PURPOSE MODELS

Measuring system:	Broadband radiation thermometer
Measuring wavelength:	8 to 14µm
Element:	Thermopile
Resolution:	0.2°C (at 0 to 300°C)
	0.5°C (at 0 to 600°C)
Repeatability:	±0.2°C(at 0 to 300°C)
	±0.3°C(at 0 to 600°C)
Optics:	GE lens
Emissivity compensation:	
	ε =1.99 to 0.10 (digital switch)
Analog output:	4 to 20mA DC (load resistance 280Ω or less)
Working temperature:	0 to 50°C
Power supply:	12 to 24V DC
Current consumption:	60mA or less
Cable length:	Φ4.5 4-core shielded cable
	non-CE approval --- Max 200m with extention cable
	CE approval --- Standard 2m
	Max length 30m on order (indoor use only)
	IR-ZBRA is not applicable.
Casing:	Aluminum diecast
Protection:	IPX2
Mounting:	M4 screws (2 pcs) or tripod
Weight:	Approx 220g
CE approval:	EMC directive EN61326+A1 Class A, EN61326+A1 Annex A1
	Notes) 1. Connecting cable up to 30m (IR-ZBRA is not applicable.)
	2. One-by-one DC power supply unit must be used.
Stability:	±10°C under EMC test environment

■ SPECIFICATIONS FOR APPLICATION SPECIFIC MODELS (Non-CE approval)

Measuring system:	Narrow band radiation thermometer
Measuring wavelength:	4.6 to 5.2µm (IR-BXG1)
	3.43µm (IR-BAXL1, IR-BAXF1)
	7.6 to 8.4µm (IR-BAXF2)
	4.3µm (IR-BAXH1)
Element:	Thermopile
Resolution:	0.5°C (0.2°C for IR-BAXG1)
Repeatability:	0.6°C (0.3°C for IR-BAXG1)
Optics:	GE lens (Ge/Si lens for IR-BAXH1)
Cable:	Φ4.5 4-core shielded cable
	Standard length 2m, 5m for IR-BAXH1
	Max 200m with extention cable

*Other specifications are same as General Purpose Models.

PSE-412D

■ SPECIFICATIONS

		Models	Measuring range	Response time (95% response)	Spot size/measuring distance	Accuracy rating	Measuring wavelength
General models	Standard	IR-BAT1A	0 to 300°C	100ms	Φ40/500mm	300°C or less: ±3°C 300°C or more: ±1% of measured value (at ε =1 under reference operation conditions)	8 to 14μm
		IR-BAT1B	0 to 600°C				
	Small spot & short distance	IR-BAT2A	0 to 300°C	100ms	Φ5/80mm		
	Small spot & long distance	IR-BATSA	0 to 300°C	100ms	Φ40/1000mm		
		IR-BATSB	0 to 600°C				
High-speed models	Standard	IR-BAT1M	0 to 300°C	50ms	Φ40/500mm		
		IR-BAT1P	0 to 600°C				
	Small spot & short distance	IR-BAT2M	0 to 300°C	50ms	Φ5/80mm		
	Small spot & long distance	IR-BATSM	0 to 300°C	50ms	Φ40/1000mm		
		IR-BATSP	0 to 600°C				
Glass Temperature		IR-BAXG1	100 to 400°C	1s	Φ20/150mm	±4°C	4.6 to 5.2μm
Lamp Anneal		IR-BAXL1	400 to 1300°C	1s	Φ40/500mm	1% of measured value	3.43μm (half-value width 120mm)
Polyethylene Film		IR-BAXF1	80 to 250°C	1s (63% response)	Φ40/500mm	±4°C	
Polyester Film		IR-BAXF2	50 to 150°C	1s	Φ40/500mm	±4°C	7.6 to 8.4μm
Combustion Gas		IR-BAXH1	500 to 1300°C	10s	Φ100/1000mm	1.5% of measured value	4.3μm

Note) Normal operation condition: Temperature --- 23°C±5°C,   Humidity --- 35-75%RH

■ RELATION BETWEEN MEASURING DIAMETER AND DISTANCE

Models	Measuring diameter and distance (Unit: mm)
IR−BAT1 IR−BAT1M IR−BAXL1 IR−BAXF1 IR−BAXF2	
IR−BAT2 IR−BAT2M	
IR−BATS IR−BATSM	
IR−BAXG1	
IR−BAXH1	

■ WIRING
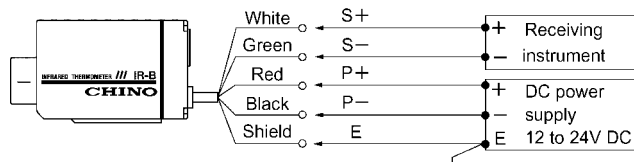
INDICATOR WITH POWER SUPPLY
IR-GBHA☐☐

■ MODELS
IR- GBHA☐☐

Power supply
1: 100V AC
9: Others (to be specified)
Scale
A: 0 to 300˚C
B: 0 to 600˚C

■ EXTERNAL DIMENSIONS

48	
96	
	Panel cut
	44
6.5	124.5	13	92⁺⁰·⁵⁻₀	45⁺⁰·⁵⁻₀

Unit: mm
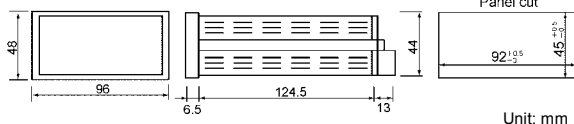
■ SPECIFICATIONS
Input signal: 4 to 20mA DC
Scale: See models
Display: LED, Character height 15mm
Analog output: 4 to 20mA DC isolated output
Load resistance 550Ω or less
Thermometer power supply:
24V DC 80mA
Working temperature: 0 to 50˚C
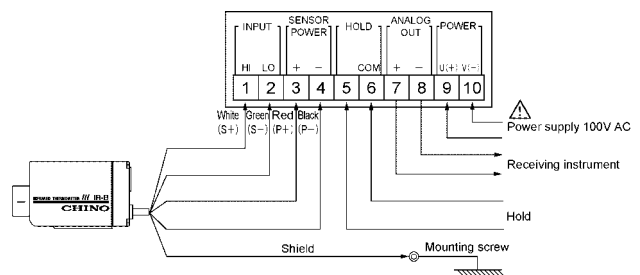Working humidity:
85%RH or less (no dew condensation)
Power supply: 100V AC 50/60Hz
Power consumption:
Approx 7VA
Weight: Approx 400g

■ TERMINAL DIAGRAMS

INPUT		SENSOR POWER		HOLD		ANALOG OUT		POWER	
HI	LO	+	−		COM	+	−	U;+	V;−
1	2	3	4	5	6	7	8	9	10

White (S+) Green (S−) Red (P+) Black (P−)

Power supply 100V AC
Receiving instrument
Hold
Shield   Mounting screw

INDICATOR WITH POWER SUPPLY
IR-GC1☐

■ MODELS
IR- GC1☐

Output
Blank: Relay output
T: Transistor output

■ EXTERNAL DIMENSIONS

48	
96	
	Panel cut
	44
12	125	13	91.0⁺⁰·⁸	44.0⁺⁰·³

Unit: mm

■ TERMINAL DIAGRAMS

Sensor input   Hold   Sensor power supply   Analog output
+ −   + −   + − COM + −   + −

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩
⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳

Alarm output (See right diagrams)   Power supply 100-240V AC

●Relay output
⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱
AL 1   AL 2

●Transistor output
⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱
AL 1   AL 2
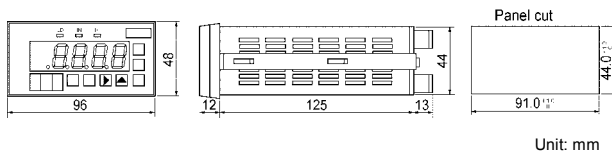
■ SPECIFICATIONS
Input signal: 4 to 20mA DC (thermometer output)
Input impedance 50Ω
Input sampling cycle:
8 to 206ms
Select from 9 kinds of set value
Modulator: Averaging --- Tracing of average value
between sections
Hold --- Output hold by holding
signal (external 'a' contact)
Sampling hold, peak hold, bottom hold
Display: Data, mode, alarm status
Analog output: 4 to 20mA DC isolated output
Load resistance 750Ω or less
Output renewal cycle:
16 to 214ms (depending on input
sampling time)
Accuracy rating: Display accuracy --- ±0.1%±1 digit of
scale range
Analog output accuracy --- ±0.2%±1˚C
of scale range
Alarm outputs: High and low independent setup, Relay
output or transistor output
Relay output (1ab)
Contact capacity 125VA (250VAC), 60VA
(30VDC)
Transistor output (Open collector)
Rated load voltage 24VDC
Max load current 50mA
Response time --- 11 to 209ms
(depending on input sampling time)
Dummy output: 4 to 20mA DC Front key setup
Output correction:
Broken line setting
Emissivity setup:
Setup on IR-BAT
Thermometer power supply:
24V DC 0.1A
Power supply: 100-240VAC 50/60Hz
Power consumption:
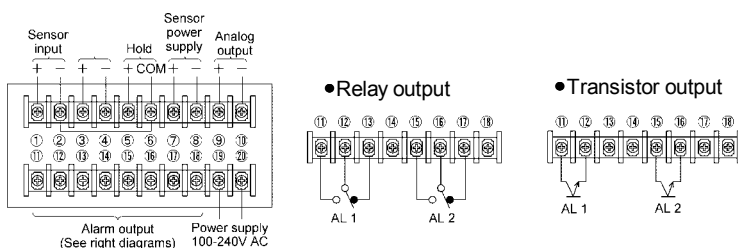Approx 20VA
Working temperature:
0 to 50˚C
Working humidity:
90%RH or less (no dew condensation)
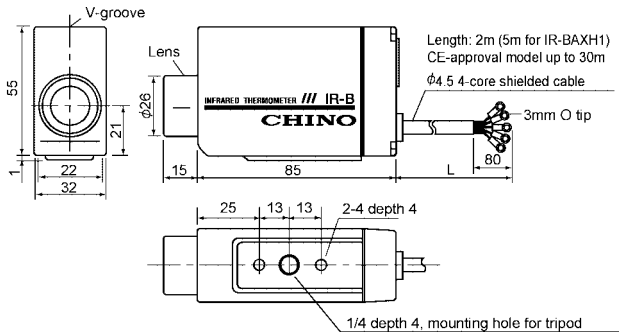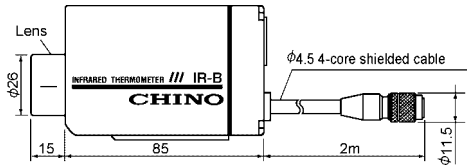Weight: Approx 400g

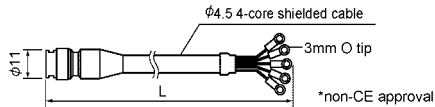## ■ EXTERNAL DIMENSIONS

● **Radiation Thermometer**
・IR-BAT□□

V-groove
Lens
Length: 2m (5m for IR-BAXH1)
CE-approval model up to 30m
φ4.5 4-core shielded cable
INFRARED THERMOMETER /// IR-B
CHINO
3mm O tip
55 φ26 21 22 32 15 85 80 L
25 13 13 2-4 depth 4
1/4 depth 4, mounting hole for tripod

・IR-BAT□□E

Lens
INFRARED THERMOMETER /// IR-B
CHINO
φ4.5 4-core shielded cable
φ26 15 85 2m φ11.5

● **Extension cable**
・IR-ZBRA□□□

φ4.5 4-core shielded cable
3mm O tip
φ11 L
*non-CE approval

● **Mounting metal**
・IR-ZBML

30 85
30 15
2 25 26±0.1 2-φ4.5
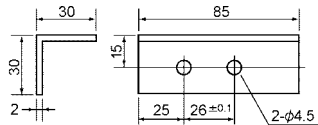
● **Protective case**
・General type IR-ZBCSH

2 screw holes for mounting metal
Purge air inlet for plastic pipe OD 6mm, ID 4mm
2 57 40 113 10.5
27 39 Protective case φ4.3
80 φ29 45 52
2 10 33 125 24
Mounting metal
Cable conduit
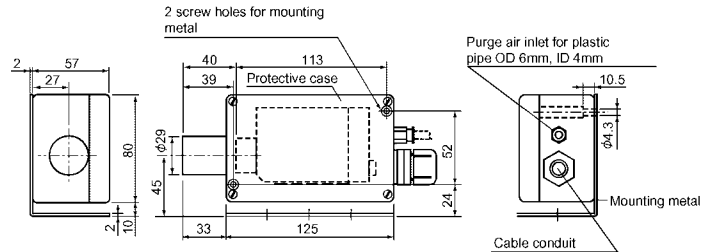
・Water cooling protective case IR-ZBCWH

2 57 Coolant outlet 43 113 Coolant inlet/outlet 1/4 PT
27 42 Thermometer 2 screw holes for mounting metal
18
φ56 φ70 80 45 52
10 6 36 125 24
4-φ7 mounting holes
Coolant inlet

・Sanitary case IR-ZBCAH

Cap 30 φ32
Thermometer 40 (31)
φ27.2 83 80
41 31.5 23.5 80 30
128 54 5
Cable conduit

Unit: mm