

IR-C SERIES HIGH-SPEED RADIATION THERMOMETERS



MODEL IR-C

The IR-C series radiation thermometers are designed as the new generation instruments for realizing high precision of measurement and high speed of response. They offer a direct view-finder and other easy to use features.

These thermometers are divided into the medium-temperature type using an InGaAs detecting element, the high-temperature type using an Si detecting element, and wide range type. They are designed as a single unit, combining detecting and converting functions in one unit, powered by a DC power supply.

FEATURES

- High speed of response 10ms (standard type) or 0.5 ms (high-speed type)
 - High precision without being noticeably affected by emissivity due to its narrow wavelength.
 - Excellent long-term reliability owing to the absence of any moving parts (i.e. chopper-motor)
 - Numerous options are available including an emissivity remote setting function, an HMD (Hot Metal Detector) function, and an isolated output function.
- (The HMD discriminates whether a hot substance like a steel plate is located at the correct position or not.)
- Many accessories are available to protect the thermometer under severe environmental conditions.
 - The thermometers with CE-marking are available.

CE-marking Conformance Specifications

EMC

Standard EN5501 1 Group 1, Class A

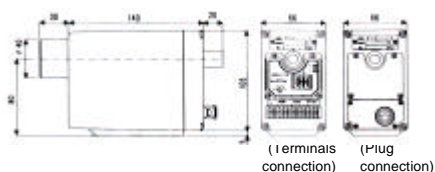
EN50082-2 (Industrial environment)

Directive 89/336/EEC, 92/31/EEC amendment, 93/68/EEC amendment

EXTERNAL DIMENSIONS

Thermometer

(Rear panel)

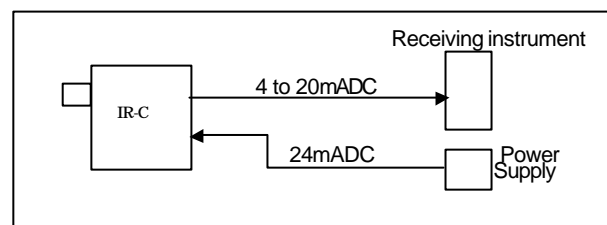


* The terminals connection is not available with CE-marking

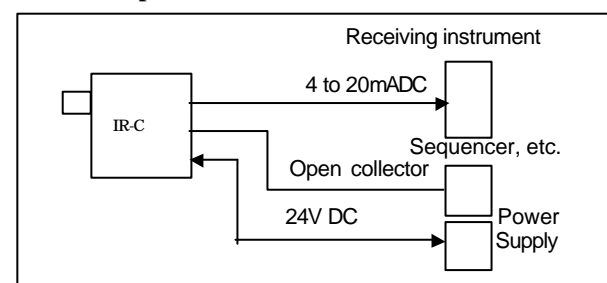


CONFIGURATION

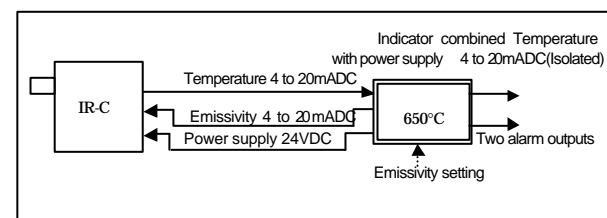
Basic Connection



HMD Output Connection



Emissivity Remote Setting Connection



Indicator with Power Supply IR-GC

(Panel cutout)



(Unit : mm)

PSE-210E

MODELS

Thermometer (IR-CW is wide range type)

Type		Minimum measuring diameter	Measuring distance-to-measuring diameter relation (Unit: mm)
InGaAs element	Si element		
IR-CI00□□	IR-CS00□□	φ 10/500mm	
IR-CW00□□	IR-CWS00□□		
IR-CI01□□	IR-CS01□□	φ 20/1000mm	
IR-CW01□□	IR-CWS01□□		
IR-CI02□□	IR-CS02□□	φ 40/2000mm	
IR-CW02□□	IR-CWS02□□		
IR-CI10□□	IR-CS10□□	φ 5/500mm	
IR-CW10□□	IR-CWS10□□		
IR-CI11□□	IR-CS11□□	φ 10/1000mm	
IR-CW11□□	IR-CWS11□□		
IR-CI12□□	IR-CS12□□	φ 20/2000mm	
IR-CW12□□	IR-CWS12□□		
IR-CI20□□	IR-CS20□□	φ 3/500mm	
IR-CW20□□	IR-CWS20□□		
IR-CI21□□	IR-CS21□□	φ 5/1000mm	
IR-CW21□□	IR-CWS21□□		
IR-CI22□□	IR-CS22□□	φ 10/2000mm	
IR-CW22□□	IR-CWS22□□		

□ Connection system C : Plug T : Terminals

※ The terminals connection is not available with CE-marking

□ High-speed specification and options

Blank: No option is provided

A : High-speed

B : Isolated output (4 to 20mA DC linear output only)

C : High speed + Isolated output

D : Emissivity remote setting (Input: 4 to 20mA DC)

E : High speed + Emissivity remote setting

F : Emissivity remote setting + Isolated output

G : High speed + Emissivity remote setting + Isolated output

H : HMD output (open collector output)

I : High speed + HMD output

J : HMD output + Isolated output

K : High speed + HMD output + Isolated output

L : Non-linear output (0 to 10VDC)

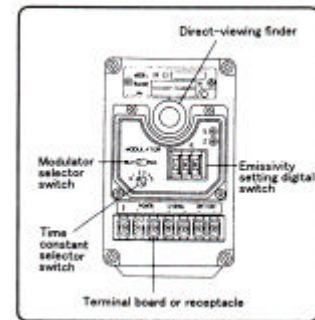
M : High speed + Non-linear

V : CE-marking (with isolated output only)

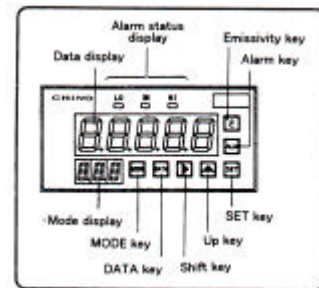
X : Other optional specifications

Y : High speed + Other optional specifications

THERMOMETER REAR SETTING PANEL



SETTING PANEL OF INDICATOR WITH POWER SUPPLY



Indicator with Power Supply

	Relay output	Transistor output
Model	IR-GC1	IR-GC1T

Note: The unit with CE-marking is not available.

DC Power Supply Unit

Model	Output voltage	Power supply
HN-W1A	24VDC ±1V	90-110/180-220VAC 50/60Hz

Note: The unit with CE-marking is not available.

STANDARD MEASURING RANGE

Model	InGaAs element	Si element
IR-C□0□□□	* 200 to 450°C 250 to 600°C 300 to 750°C 350 to 900°C 400 to 1100°C 500 to 1300°C	* 500 to 900°C 600 to 1100°C 700 to 1300°C 800 to 1600°C 900 to 2000°C 1100 to 3000°C
IR-C□1□□□	* 250 to 600°C 300 to 750°C 350 to 900°C 400 to 1100°C 500 to 1300°C	* 600 to 1100°C 700 to 1300°C 800 to 1600°C 900 to 2000°C 1100 to 3000°C
IR-C□2□□□	* 300 to 750°C 350 to 900°C 400 to 1100°C 500 to 1300°C	* 700 to 1300°C 800 to 1600°C 900 to 2000°C 1100 to 3000°C

(Asterisked (*) ranges are not applicable to the high-speed type.)

Wide range type (High-speed type is not available.)

IR-CW□0□□□	* 250 to 1000°C 300 to 1300°C 350 to 1600°C	* 600 to 1100°C 700 to 2400°C 800 to 3000°C
IR-CW□1□□□	* 300 to 1300°C 350 to 1600°C	* 700 to 2400°C 800 to 3000°C
IR-CW□2□□□	* 350 to 1600°C	* 800 to 3000°C

(Asterisked (*) ranges are not available to high-speed type.)

Small target type

IR-CIOS□□	IR-CSOS□□	φ4/200mm		* 250 to 600°C 300 to 750°C 300 to 900°C 400 to 1100°C 500 to 1300°C	* 600 to 1100°C 700 to 1300°C 800 to 1600°C 900 to 2000°C 1100 to 3000°C
IR-CWIOS□□	IR-CWSOS□□				
IR-CI1S□□	IR-CS1S□□	φ2/200mm		* 300 to 750°C 350 to 900°C 400 to 1100°C 500 to 1300°C	* 700 to 1300°C 800 to 1600°C 900 to 2000°C 1100 to 3000°C
IR-CW1S□□	IR-CWS1S□□				
IR-CI2S□□	IR-CS2S□□	φ1/200mm		* 350 to 900°C 400 to 1100°C 500 to 1300°C	* 800 to 1600°C 900 to 2000°C 1100 to 3000°C
IR-CW2S□□	IR-CVS2S□□				

(Asterisked (*) ranges are not available to high-speed type.)

■ GENERAL SPECIFICATIONS

● Detector

Measuring system: Narrow band radiation thermometer

Detecting element/measuring wavelength: Si 0.9 μm
InGaAs 1.55 μm

Measuring temperature range:

200 to 3000°C

250 to 3000°C for wide range

Accuracy rating:

±4°C at lower than 800°C

±0.5% of measured value at higher than 800°C, but lower than 1500°C

±1.0% of measured value at higher than 1500°C, but lower than 2000°C

±2.0% of measured value at higher than 2000°C

(Wide range type)

±5°C at lower than 1000°C

±0.5% of measured value at higher than 1000°C, but lower than 1500°C

±1.0% of measured value at higher than 1500°C, but lower than 2000°C

±2.0% of measured value at higher than 2000°C

(E = 1.0 under the reference operating conditions)

Note) Reference operating conditions.

Ambient temperature: 23°C ±5°C,

Humidity: 35 to 75%RH

Reproducibility: Within ±0.2°C

Stability: (1) Temperature drift
0.1°C/°C or 0.015%/°C of measured value, whichever is larger

(2) Under EMC test environment (Only applicable

to thermometers with CE-marking) ±5°C or ±1% of temperature range, whichever is larger

Resolution: 0.2°C (0.5°C in case of high-speed type)

Response time: 10ms (95% response)

* 0.5ms in case of high-speed type

Emissivity correction: 1.99 to 0.10 (Digital switch setting)

Modulator: Peak & delay selection

Decay ratio.....Time constant 0, 1, 2, 5, 10, & 20sec., 6-stage selection
(Real output when the time constant is 0sec.)

Output: 4 to 20mADC (Linear output, Load resistance: Lower than 550Ω)

Optical system: Lens condensing system, fixed focus type

Lens diameter: 20mmφ(10mmφ in case small target size)

Collimation: A direct viewing finder is attached.

Working temperature: 0 to 50°C

Working humidity: Lower than 90%RH
(No dew condensation is allowable.)

Allowable vibration: Less than 3G

Power supply: 24VDC (22 to 28VDC)

Power consumption: Approx. 3VA

Connection method: Terminals or plug

Casing material: Aluminum diecast

Weight: Approx. 1kg

● Indicator with Power Supply

MODEL IR-GC1

IR-GC1T

Emissivity setting : 0.000 to 2.000

Front panel switch setting (0.001 step)

Emissivity signal : 4 to 20mADC

Scaling: Front panel switch setting

(set to the measuring range of thermometer.)

Input signal : 4 to 20mADC (Thermometer output)

Input sampling cycle : 8 to 206ms

Selectable out of 9 kinds of set values.

Modulator: Average --- Trace of section average value

• Section count value setting

1 to 9999 counts, optional setting

• Data update cycle --- Input sampling time
x count value

Hold --- Output hold by a HOLD signal (External
“a” contact)

• Sampling hold --- Data are held when the
HOLD signal turns on.

• Peak hold --- Maximum data is held out of
HOLD signal inputs.

• Bottom hold --- Minimum data is held out of
HOLD signal inputs.

Time reset peak hold---

Peak data are held from the time of
over alarm adjudging level to the time
of hold time finished

Alarm adjudging level---

within scaling range, option setting

Hold time --- 0.1 to 25.5 sec., option setting

Display: Data, modes, and alarm status display (3 LEDs)

• Data indicator --- 4-3/4 digits, red LED
Character height 15mm

• Mode indicator --- 3 digits, red LED, Char
acter height 7mm

Analog output: 4 to 20mADC

(Load resistance: Lower than 750Ω)

Isolated output

Output update cycle:

Display --- 0.1 to 25.5sec., optional setting

Analog signal --- 16 to 214ms

(Depends upon the input sampling time)

Accuracy: Display accuracy --- ±0.1% of the scaling range
±1 digit

(when the input sampling time is 46ms)

Analog output accuracy -- ±0.2% of the scaling
range ±1°C

(when the input sampling time is 46ms)

Alarm output: Higher-limit/lower-limit independent setting

Output mode --

Relay output or transistor output

• Relay output (2 points)

Contact capacity 125 VA (250 VAC)
60VA (30VDC)

• Transistor output (open collector)

Rated load voltage 24VDC

Maximum load current 50mA

Response time - 11 to 209ms

(Depends upon the input sampling time.)

* Alarm setting - Output is selectable
before/behind the
modulator.

Simulated output: 4 to 20mADC by front keys

Output correction: Broken line setting system

Feed power supply to thermometer : 24VDC 100mA

Power supply: 85 to 264VAC free power supply, 50/60Hz

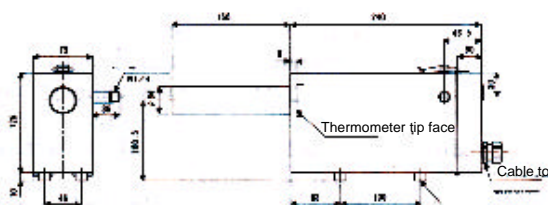
Power consumption: Approx. 20VA

Working temperature range: 0 to 50°C

Working humidity range: Lower than 90%RH
(No dew condensation is allowable.)

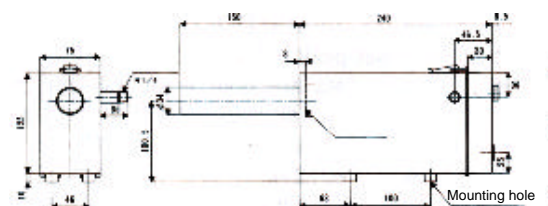
Weight: Approx. 0.4kg

• Soft protective case IR-ZCCST
(For terminal type detector)



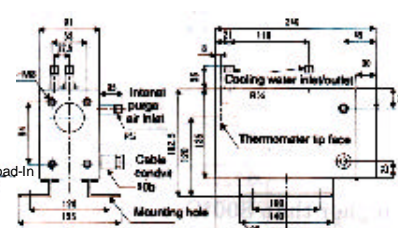
* The hard protective case is recommendable, if the mounting ambient temperature of the radiation thermometer exceed 50°C

• Soft protective case IR-ZCCSC
(For connector type detector)

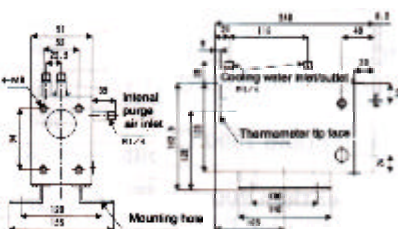


* The hard protective case is recommendable, if the mounting ambient temperature of the radiation thermometer exceed 50°C

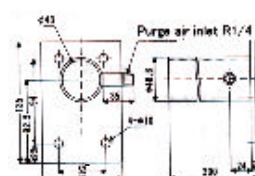
• Hard protective case IR-ZCCHT
(For terminal type detector)



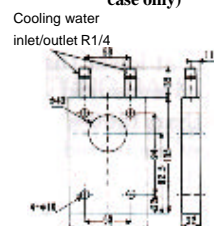
• Hard protective case IR-ZCCHC
(For connector type detector)



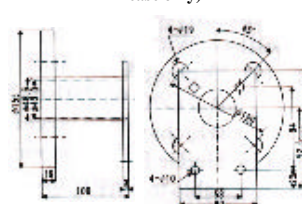
• Air purge hood IR-ZCAP
(For hard protective case only)



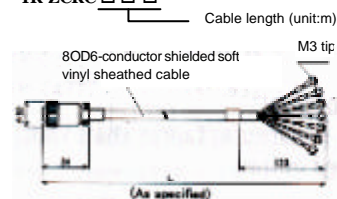
• Front water-cooled plate IR-ZCWC
(For hard protective case only)



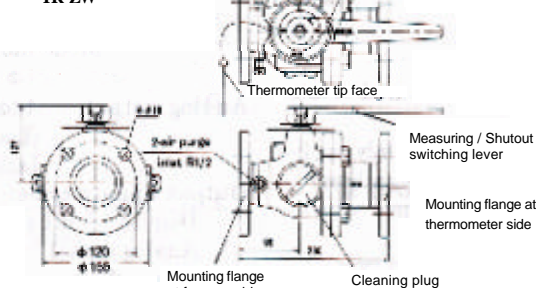
• Flange mounting plate IR-ZCAF
(For hard protective case only)



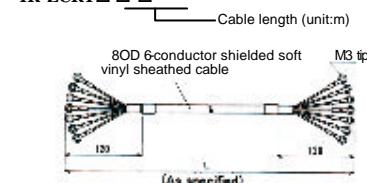
• Connection cable IR-ZCRC □ □ □



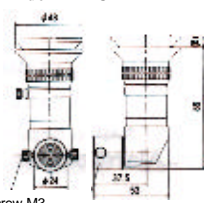
• Sealing window IR-ZW



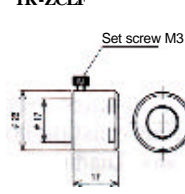
• IR-ZCRT □ □ □



• Angle finder IR-ZCLA



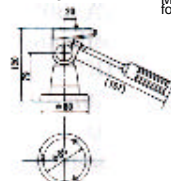
• Eyepiece filter IR-ZCLF



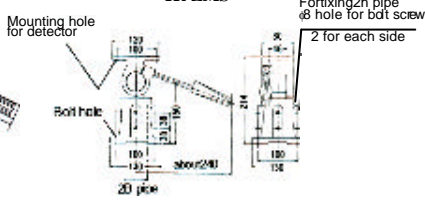
• Light tripod IR-ZBMT



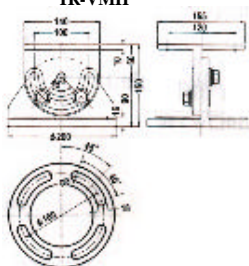
• Universal head IR-VMS



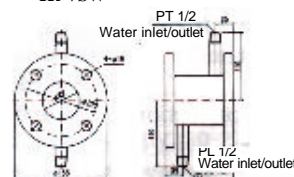
IR-ZMS



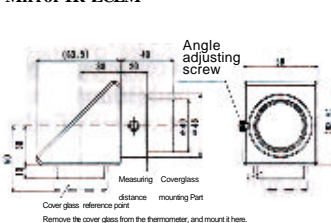
IR-VMH



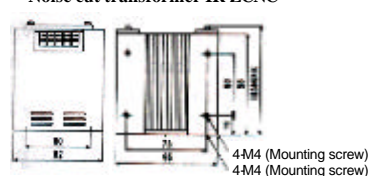
• Water cooling flange IR-VSW



• Mirror IR-ZCLM



• Noise cut transformer IR-ZCNC



Specifications subject to change without notice. Original 2001.5

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