

IR-FAQ

FIBER OPTIC RADIATION THERMOMETER (2-color)



2-color type fiber optic radiation thermometer IR-FAQ has two types, IR-FAQI used InGaAs element measurable from 250°C, IR-FAQH used hybrid element, measurable medium/high temperature.

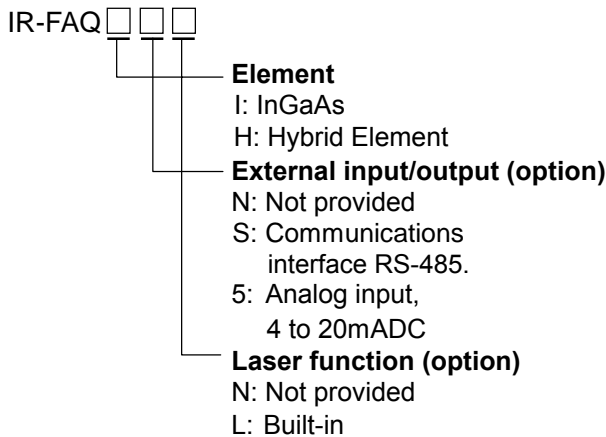
2-color type is stable with less effectiveness of smoke, vapor, dust and lack-of-view.

FEATURES

- High accuracy, high-speed response, high reliability.
- Compact size, lightweight, DIN-rail installation.
- By using heat-resistive fiber optic, measurable the environment at 150°C without any water-cooling.
- By signal modulation function, the stable temperature measurement is possible.
- Emissivity setting by analog input or automatic emissivity computation function is selectable (Option).
- Communication interface RS-485 is available.
- CE conformance



MODEL OF MAIN UNIT



STANDARD MEASURING RANGE

For FAQI	
Measure range	Lens assembly
250 - 900°C	IR-FL5
300 - 1200°C	IR-FL6
400 - 1500°C	
300 - 1200°C	IR-FL0
400 - 1500°C	IR-FL1
	IR-FL2
	IR-FL3
	IR-FL4
350 - 1200°C	IR-FL8
400 - 1500°C	

For FAQH	
Measure range	Lens assembly
500 - 1000°C	IR-FL5
600 - 1500°C	IR-FL6
700 - 2000°C	
800 - 2400°C	
600 - 1500°C	IR-FL0
700 - 2000°C	IR-FL1
800 - 2400°C	IR-FL2
1000 - 3000°C	IR-FL3
	IR-FL4
	IR-FL8

DISTANCE / DIAMETER

Core 400 μm

Type	Distance/diameter
IR-FL0 □ H IR-FL0 □ N	
IR-FL1 □ H IR-FL1 □ N	
IR-FL2 □ H IR-FL2 □ N	
IR-FL3 □ H IR-FL3 □ N	
IR-FL4 □ H IR-FL4 □ N	
IR-FL5 □ H IR-FL5 □ N	
IR-FL6 □ H IR-FL6 □ N	
IR-FL8 □ H IR-FL8 □ N	

* In the case of core 200 μm fiber diameter enable half of the size.

■ SPECIFICATIONS (Main Unit)

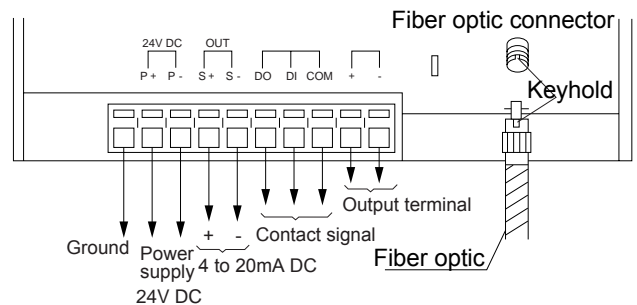
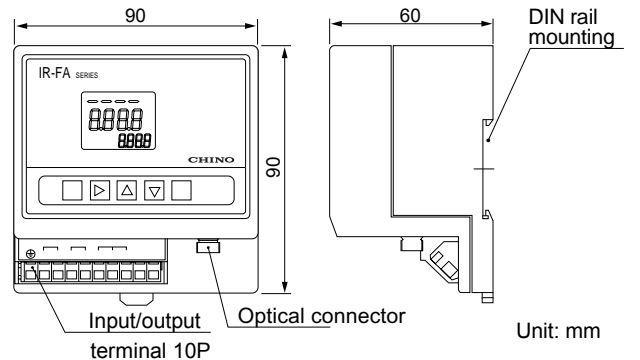
Measuring system: Two-color type
 Element : InGaAs / InGaAs(IR-FAQI)
 InGaAs / Si (IR-FAQH)
 Wavelength: 1.55 / 1.35 μm (IR-FAQI)
 1.55 / 0.9 μm (IR-FAQH)
 Accuracy ratings: Lower than 1000°C: $\pm 5^\circ\text{C}$
 1000°C to 1500°C: $\pm 0.5\%$ of measured value
 1500°C to 2000°C: $\pm 1.0\%$ of measured value
 Higher than 2000°C: $\pm 2\%$ of measured value ($\epsilon = 1.0$)
 Repeatability : Less than 0.2°C
 Temperature drift : $0.2^\circ\text{C}/^\circ\text{C}$ or 0.02% of measured value whichever larger
 EMC test environment
 IR-FAQH : $\pm 10^\circ\text{C}$ or $\pm 1\%$ of measuring range whichever larger
 IR-FAQI : $\pm 30^\circ\text{C}$ or $\pm 5\%$ of measuring range whichever larger
 Resolution : 1.0°C
 Response time (95%) : 40ms
 Emissivity ratio compensation: setting value: 1.999 to 0.050
 Signal modulation: DELAY: Tracing of average value (smoothing) (Modulation ratio: 0.0 to 99.9 seconds, 0.1 second increment),
 Modulation ratio 0 = REAL
 PEAK: Tracing of maximum value, (Modulation ratio: 0, 2, 5, $10^\circ\text{C}/\text{second}$),
 Modulation ratio 0 = PEAK HOLD
 Display : LCD 4-digit (Temperature display, parameter display), $^\circ\text{C}/^\circ\text{F}$ (key selection)
 Analog output: 4 to 20mA DC Isolate output (load resistance less than 500Ω)
 Accuracy rating: $\pm 0.2\%$ of output range
 Output resolution: 0.01% of output range
 Output scaling: Setting within measuring temperature range
 Dummy output: Setting within 0 to 100% of analog output
 Contact output: 1-point, High (low) alarm or error signal, Photo-coupler 30VDC, Maximum 50mA
 Contact input : 1-point, peak hold reset or sample hold, Dry contact or open collector.
 Parameter Setting by keys :
 Operator mode: Set emissivity, signal modulation, alarms, etc.
 Engineering mode: Set engineering unit ($^\circ\text{C}/^\circ\text{F}$), output scaling zero/span, reference temperature input for automatic emissivity calculation, output correction, etc.
 Computing function: Zero, span adjustment, automatic emissivity (ratio) computation, Output correction.
 Self-diagnosis : Thermometer temperature abnormal, Parameter error
 Working temperature: 0 to 50°C
 Rated power supply: 24VDC (Allowable voltage fluctuation range: 22 to 28VDC),
 Power consumption: Maximum 3VA
 Connection : Cramp type no screw terminals
 Mounting : DIN rail mounting or wall mounting.
 Case material : Resin
 Weight : About 250g (main unit)
 Outside Dimensions: W90 x H90 x D60mm.
 CE-marking : EN55011 Group 1 Class A, EN50082-2
 UL : UL3101-1
 CAS (C/UL): CAN-CSA C22.2 No.10101-92

* The emissivity (ratio) is automatically computed by inputting the reference input temperature with key setting or analog input (option).

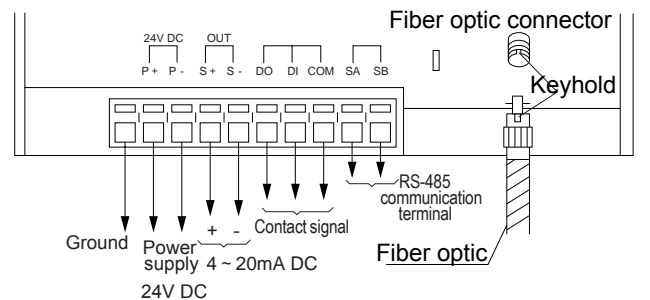
■ OPTION

- Laser function : Built-in semiconductor laser unit
 Laser light is lower than 1mW (645nm)
 Class 2
- Analog input : Input signal 4 to 20mA DC
 Remote setting of emissivity (ratio) or reference temperature
 input setting for automatic emissivity (ratio) computation
- Communication interface : RS-485
 Transmitting of measured data (down to 1 decimal point),
 Transmitting/receiving of parameters.

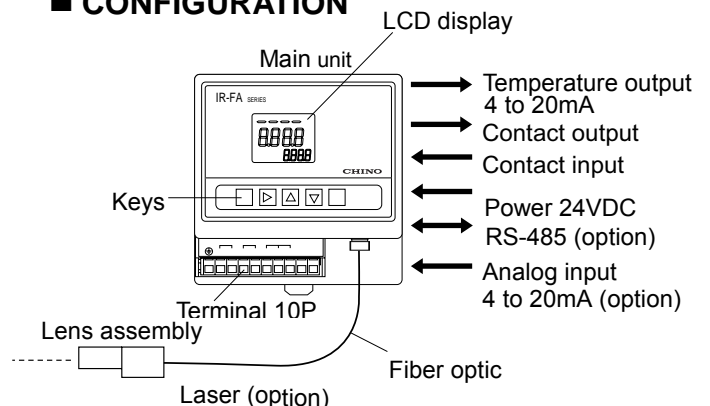
■ OUTSIDE DIMENSIONS



(In the case of communication)



■ CONFIGURATION



LENS ASSEMBLY & FIBER OPTIC

■ SPECIFICATIONS

Fiber: Single core quartz
 Core: 400 μ m
 Sheath: Without metallic protective tube (Heat resistive sheath/glass wool braid)
 With metallic protective tube (Heat resistive sheath/glass wool braid + SUS flexible tube)

Working temperature : 0 to 150°C

Length: Specify 2-50m without metallic protection tube.
 Specify 2-20m with metallic protection tube.

Allowable bending : R100mm

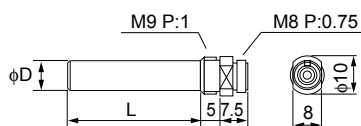
Connection: Connector

Mounting : Screw mounting

Accessories: Aluminum air purge case,
 (1-5NI/min)

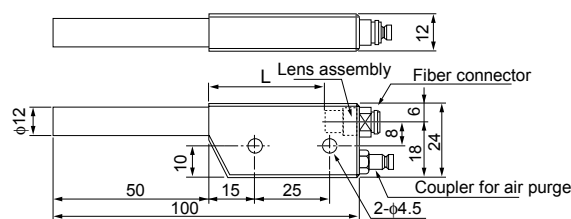
■ OUTSIDE DIMENSIONS

• Lens assembly (IR-ZFL□)



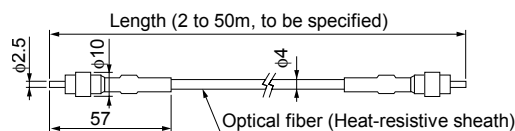
Lens assembly	0, 1, 2, 3	4	5	6	7	8
Two-color	L	35	15	10	10.5	45
	ϕ D	7.5				7.5

• Air purge case (IR-ZFX02)

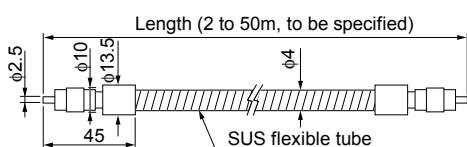


Lens assembly	0, 1, 2, 3	4	5	6	7	8
Two-color	L	10	30	35	34.5	

• Fiber without metallic protection tube (IR-ZFH□□)



• Fiber with metallic protection tube (IR-ZFN□□)



POWER SUPPLY UNIT

■ MODEL

IR-ZFEP

■ SPECIFICATIONS

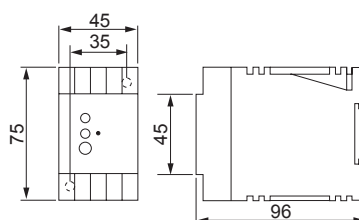
Output Voltage: 24VDC

Power supply: 100 to 240VAC, 50/60Hz

Output current: 600mA

External dimensions: W45 x H75 x D96 mm

■ OUTSIDE DIMENSIONS



Unit: mm

DATA LOGGING SOFTWARE

Using for IR-FA connected with PC, the software logs and stores the measured temperature data.

n MODELS

IR-VXF1□

Language

J : Japanese

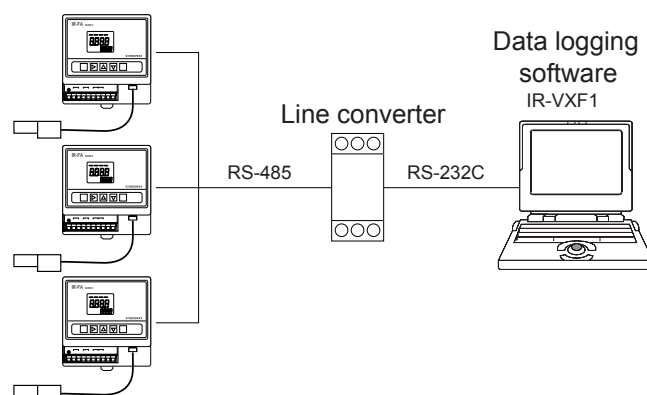
E : English

■ SPECIFICATIONS

Background	OS	Windows95/98/NT/2000/XP
	Hard disk	more than 20MB
	Memory	more than 16MB
	Drive	Floppy disk drive
Function	Display the measured data Store, readput, printout Connectable thermometers: 1 to 3 units	
Model	Real-time trend model	

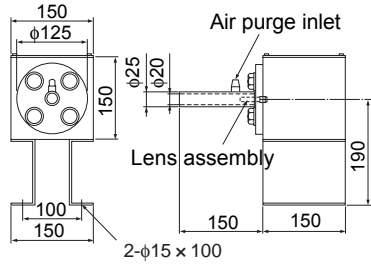
CONNECTIONS

IR-FAQ□S

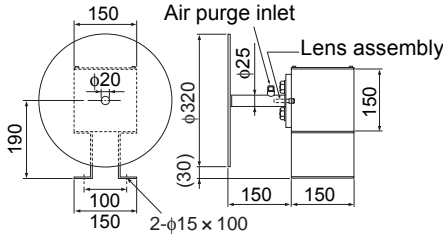


■ **ACCESSORIES**

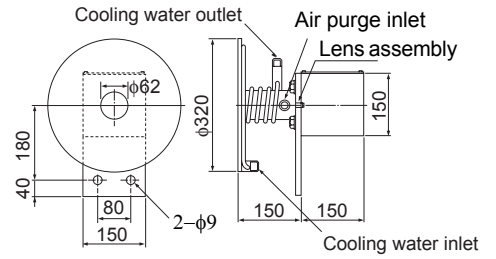
- Air Purge Hard Case IR-ZFX05



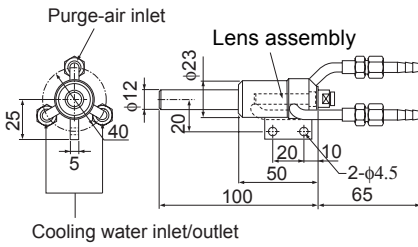
- Hard Case with Radiation Seat IR-ZFX06



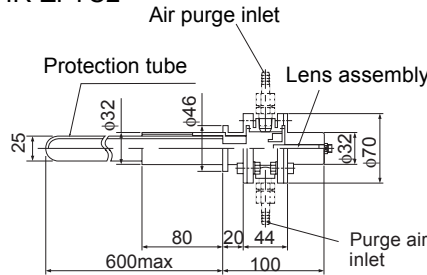
- Hard Case with Water-cooling Radiation seal IR-ZFX07



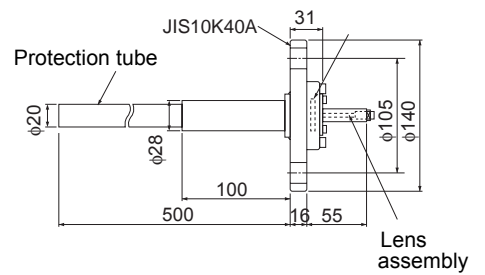
- Water-cooling Case IR-ZFX08



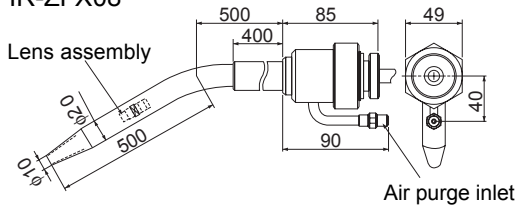
- Opto-couple Type Protection Tube IR-ZFTC2



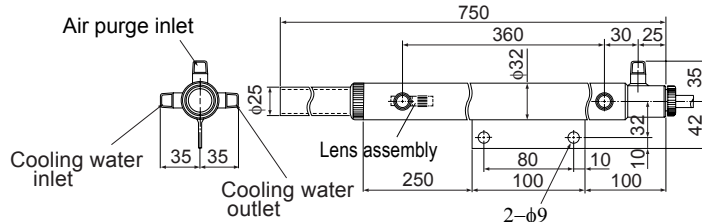
- Opto-couple Type Protection Tube IR-ZTCH1 (for vacuum furnace)



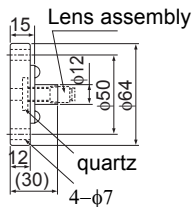
- Protection Case for Electro-magnetic Tube IR-ZFX08



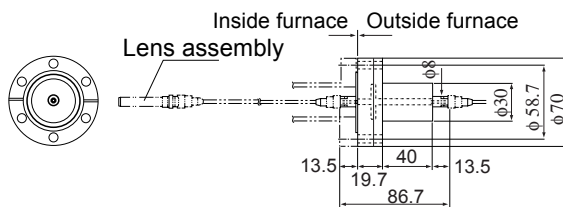
- Protection Tube for Continuous Casting IR-ZFX08



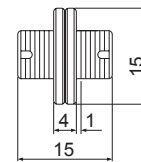
- Measuring Window for Vacuum Furnace IR-ZFX11



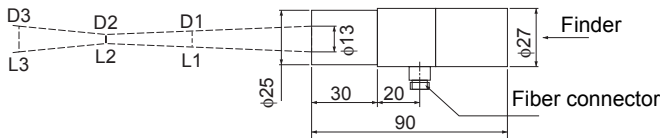
- Vacuum Range IR-ZFX12



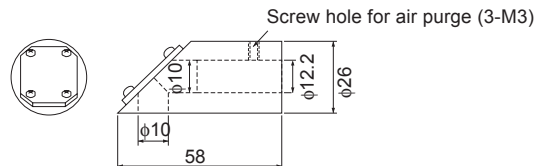
- Optical Fiber Connector IR-ZFX13



- Beam-condensing Part with Finder IR-FF0



- Mirror Adapter IR-ZFX04



Measuring Distance & Measuring Diameter

Type 1(φ5 at 500)		Type 2(φ4 at 370)		Type 3(φ10 at 1000)	
Distance	Dia.	Distance	Dia.	Distance	Dia.
L1 : 400	D1 : φ7	L1 : 270	D1 : φ7	L1:800	D1: φ11
L2 : 500	D2 : φ5	L2 : 370	D2 : φ4	L2:1000	D2:φ10
L3 : 600	D3 : φ9	L3 : 470	D3 : φ9	L3:1200	D3:φ15

Unit: mm

Specifications subject to change without notice. Original 1999.1 Printed 2003

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