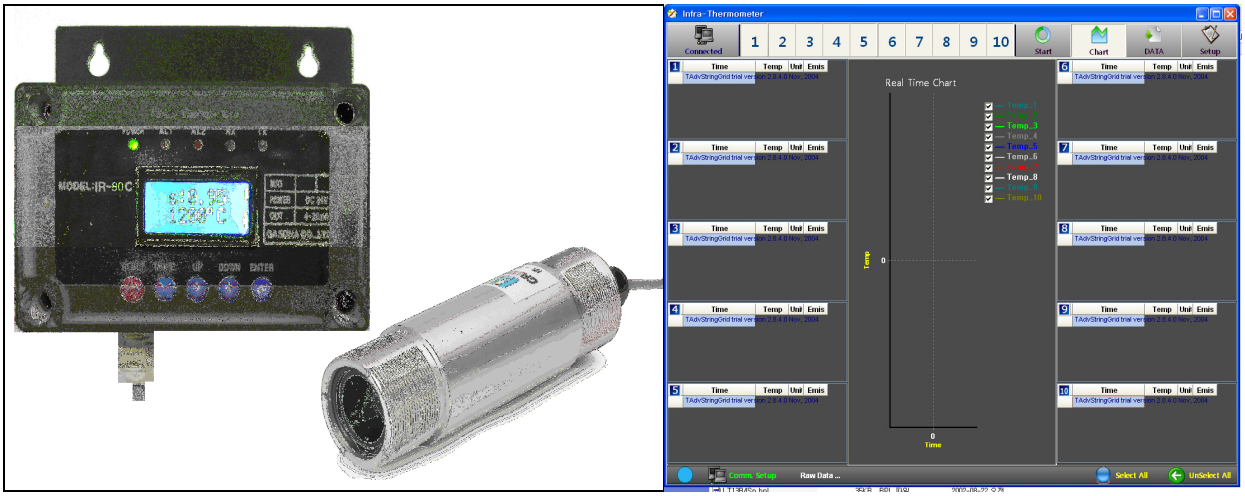
Non-Contact Infrared Temperature Sensor/Transmitter

Temperature Range: 500~1700℃

IR – 80



Best Detectors, Best Sewice

C-910C, Bupyeong Woolim Lion's Valley, #425, Cheongcheon-Dong, Bupyeong-Gu, Incheon, Korea
TEL: +82-32-623-7507 FAX: +82-32-623-7510
E-mail: sales@gasdna.com | Web: www.gasdna.com

1. FEATURES

IR-80 non-contact infrared thermometer measures the infrared wavelength emitted from the target and converts it to standard current signal output (4~20mA) and RS-485 communication signal output.

IR-80 is composed of sensor & controller. The measured temperature is displays on LCD of controller in real-time.

It can measure from 500 ℃ to maximum 1700℃ in the distance of 80:1 D:S (Distance to Spot). Emissivity is 0.10 ~ 0.99 adjustable. Two built-in laser pointers can aim at the target.

※ Applications:

Aluminum, Chrome, Copper, Metal, Magnesium, Oxide-nickel, Platinum, Gold, Silver, Oxided-Titanium, Zinc, Tin, Steel, Oxided- Steel, Oxided-Brass

2. Ordering information

Code Number IR-80-□-□-□

MODEL	Description
IR-80	
Code A	Temperature Range
1	500~1500℃
2	500~1700℃
Z	Other
Code B	OutPut
M	0~20mA
N	4~20mA
V	Voltage Output(DC 1~5V)
Code C	Cable Length
1	3m Cable
Z	Other

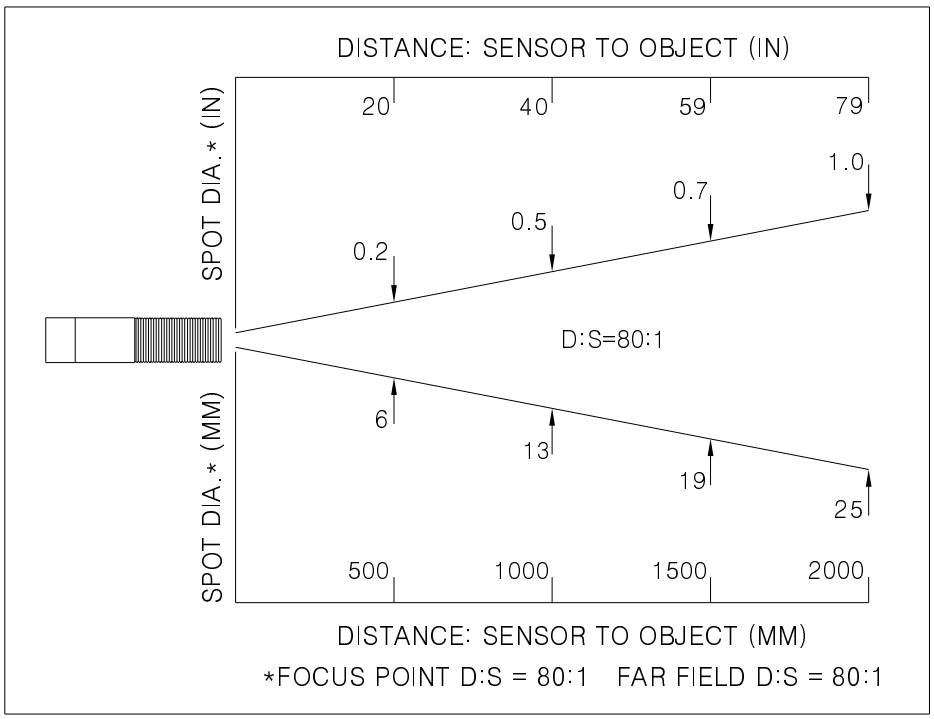
3. Accessories

Description	Shape	Usage	Remark
Fixing nut		Sensor fixing nut	Basic accessory
Mounting bracket		Sensor mounting bracket	Basic accessory

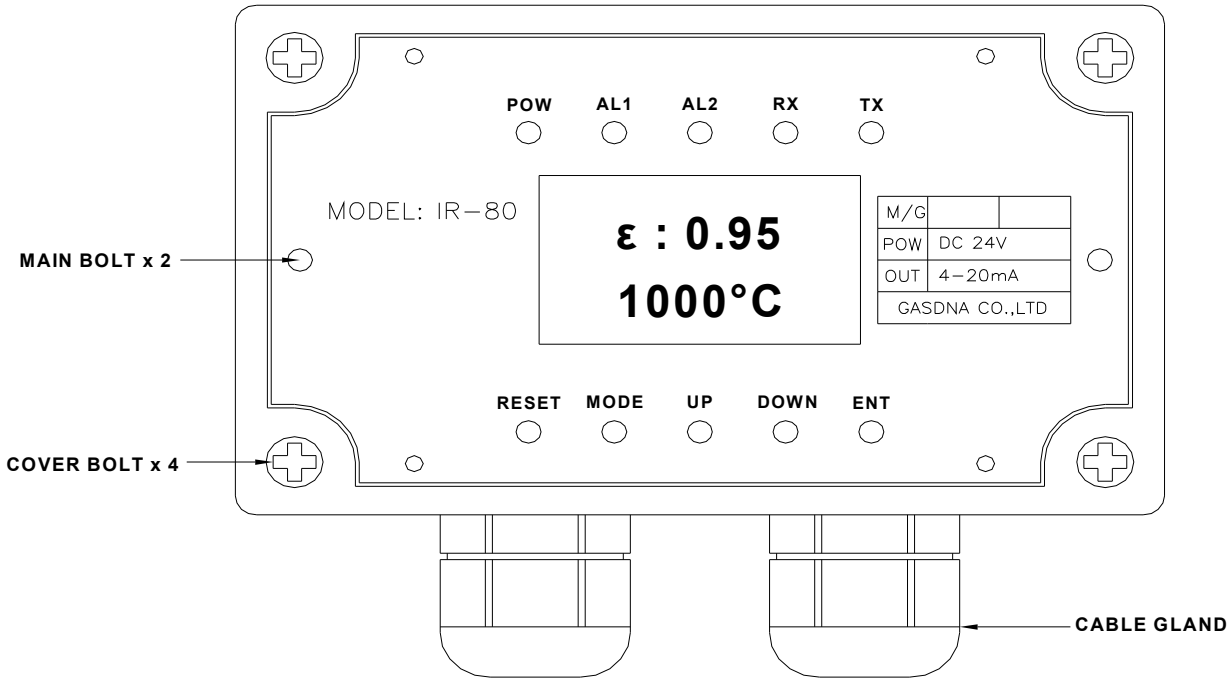
4. SPECIFICATIONS

Segment	Specification
Temperature Range	500~1700℃
Device	InGaAs, Silicon
Accuracy	±1% / full scale or 2℃
Repeatability	±1% of reading
Field of View(D:S)	80:1
Optical spectrum wave	1~1.6㎛
Responsive Time	100msec or below
Emissivity rate	0.10~0.99
Analog Output	4~20mA, 1~5V(option)
Communication output signal	RS-485 communication signal
Relay Output	2 step- Relay Contact (High/Low)
Power	DC 12~24V(Max 100mA)
Ambient temperature(no water cooling)	0~70℃
Temperature Resolution	0.1℃
Operating Relative Humidity	5~90%
Storing Ambient Temperature	-30~85℃
Waterproof	IP65,NEMA 4
Laser pointer	630~670nm(red)
Dimensions	Sensor: Ø46 ×125.5(L) Controller: 105.5(W) x 130(L)
Signal Cable	4 wire shield type
Casing material	Aluminum Alloy
Weight	850g
Cable length	3m(standard), other(option)

5. OPTICAL FIELD OF VIEW (D:S = 80:1)



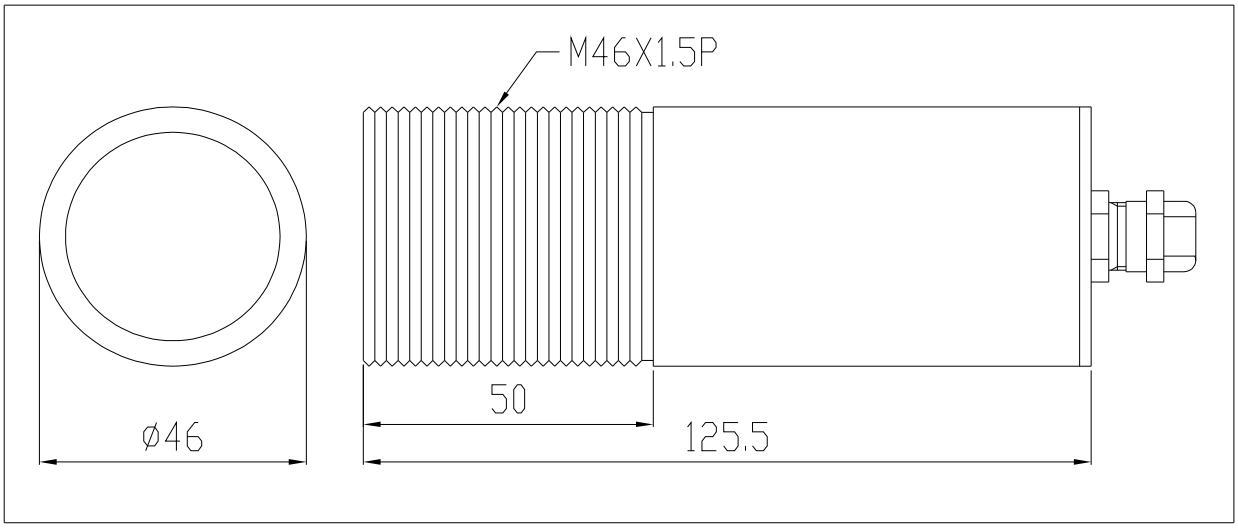
6. Controller Overview

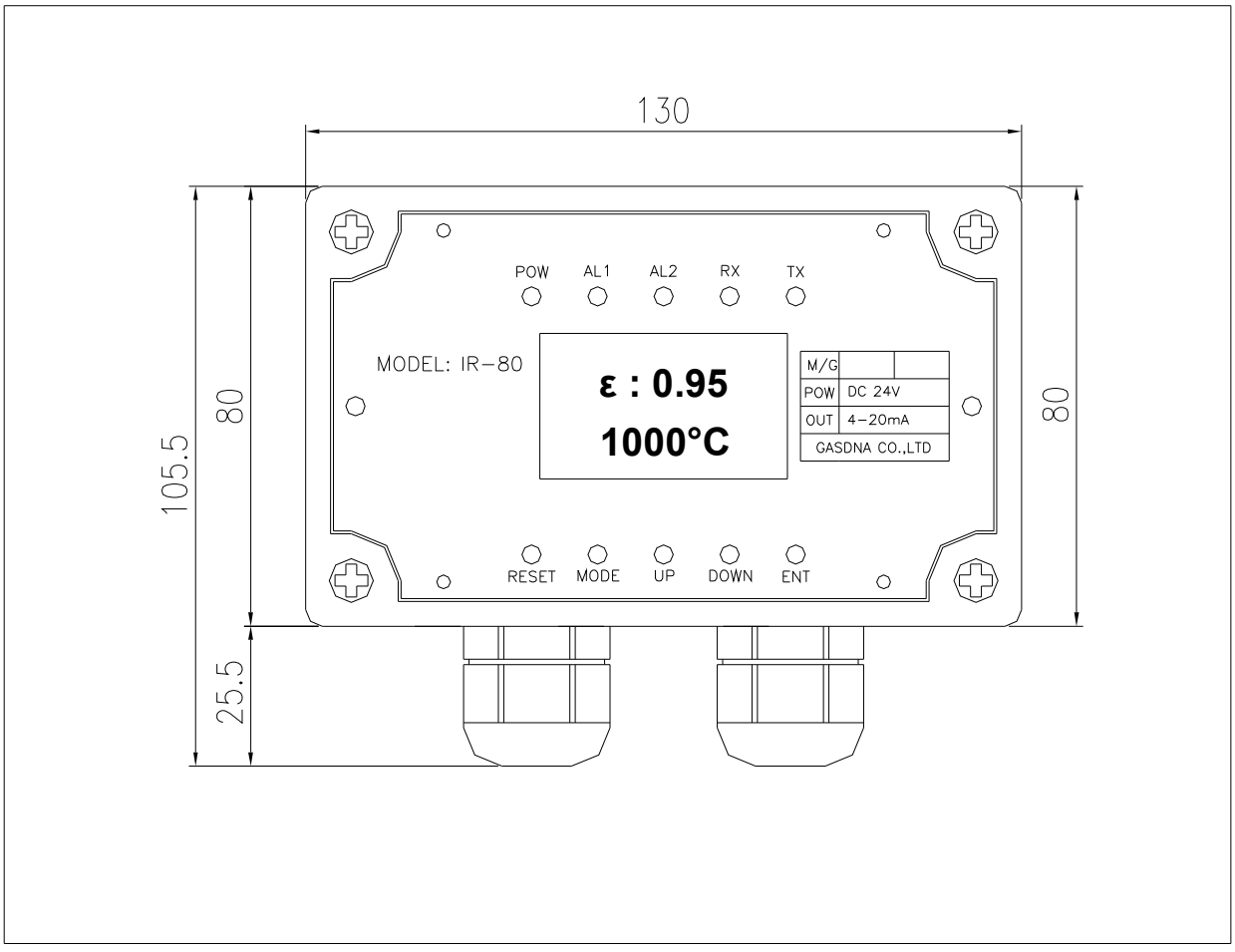


7. MENU FUCNTION

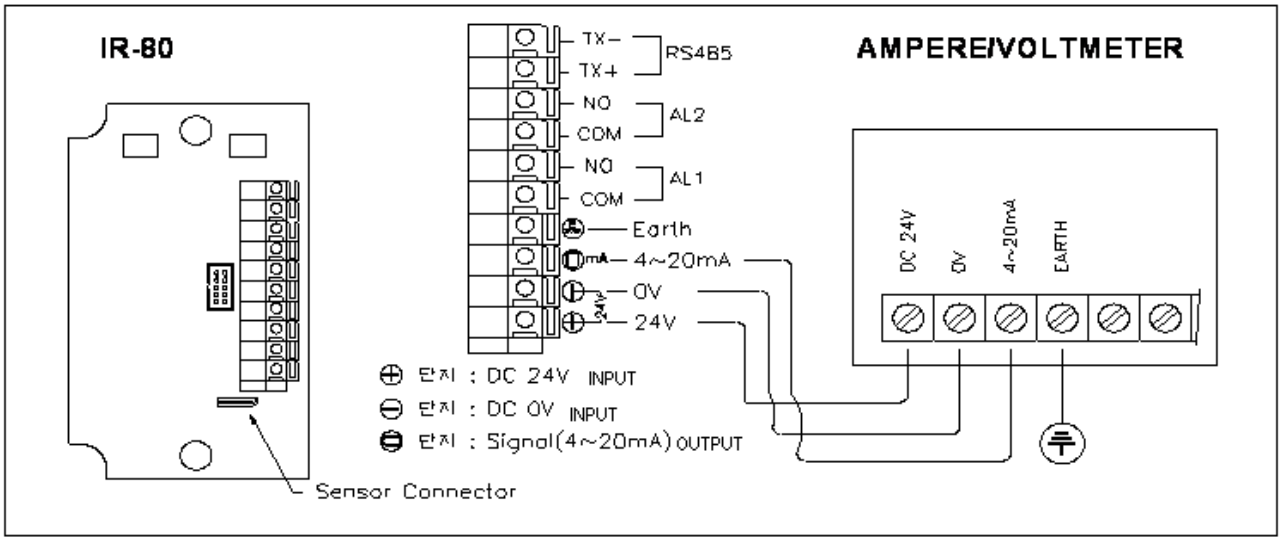
Label	Function
RESET	◈ Measuring Mode - When ALARM relay operates, it makes the ALARM off(In Manual Mode) (ex) In AL-RESET menu, when you set Manual Mode: (1) If the measured value is less than AL1 value, AL1 ALARM relay OFF. (2) If the measured value is more than AL1 value, AL1 ALARM relay ON. (3) If the measured value is less than AL1 ALARM, AL1 ALARM relay ON. (4) If you push RESET switch, AL1 ALARM relay OFF. ◈ Set-up Mode - Enter into Measuring Mode.
MODE	- Enter into Set-up Mode. - In Set-up Mode, move the setting area.
UP	Increase the value of measuring range by 1 unit. ※ When you keep touching it during 5 sec, the value increases fast.
DOWN	Decrease the value of measuring range by 1 unit. ※ When you keep touching it during 5 sec, the value decreases fast.
ENT	Store the set value.
POW	Power
AL1	Alarm 1
AL2	Alarm 2
RX	RS-485 Receiving signal
TX	RS-485 Sending signal

8. DIMENSION


M46X1.5P
ø46
50
125.5

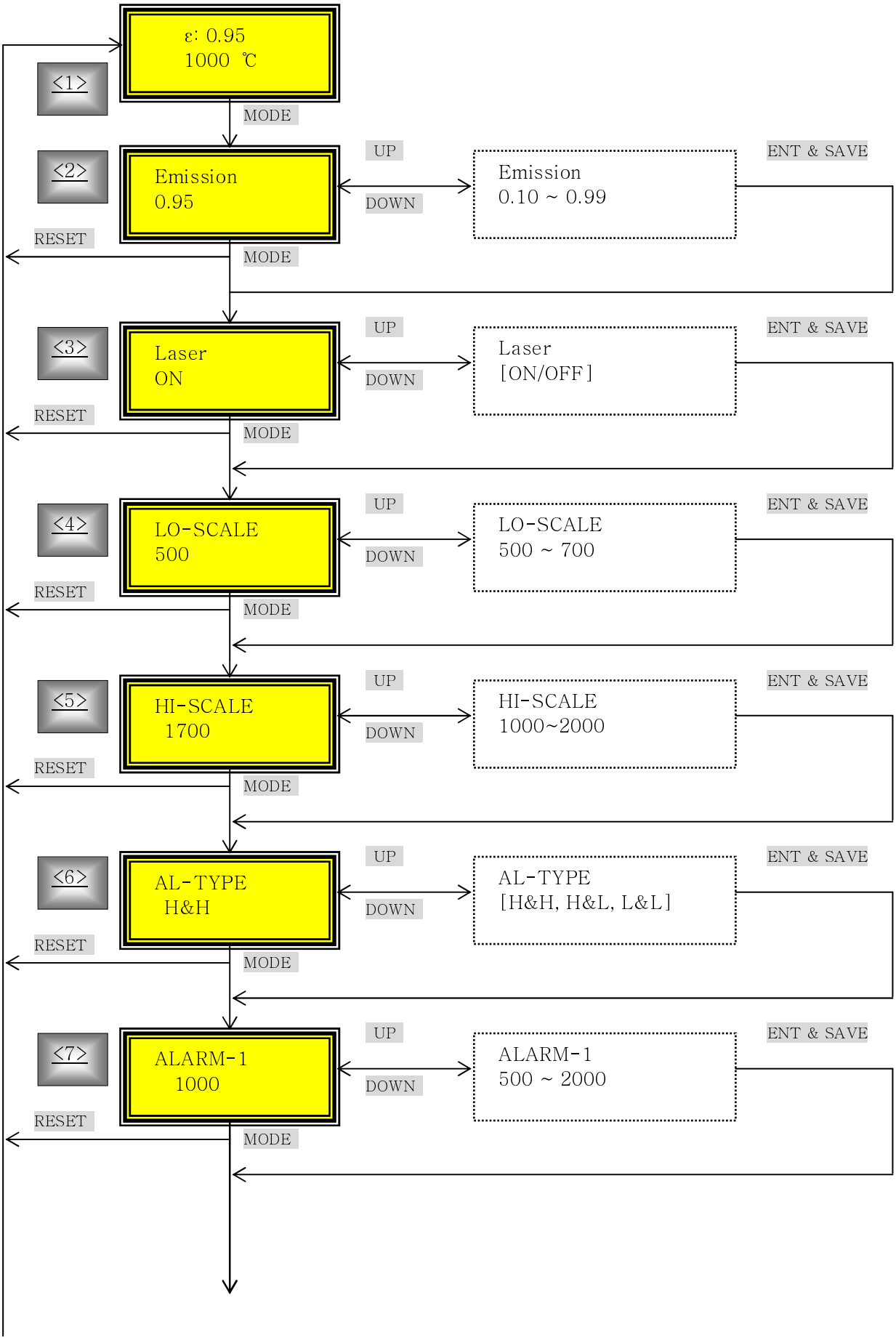

130
105.5
80
25.5
80
POW
AL1
AL2
RX
TX
MODEL: IR-80
ε : 0.95
1000°C
M/G
POW
DC 24V
OUT
4-20mA
GASDNA CO.,LTD
RESET
MODE
UP
DOWN
ENT

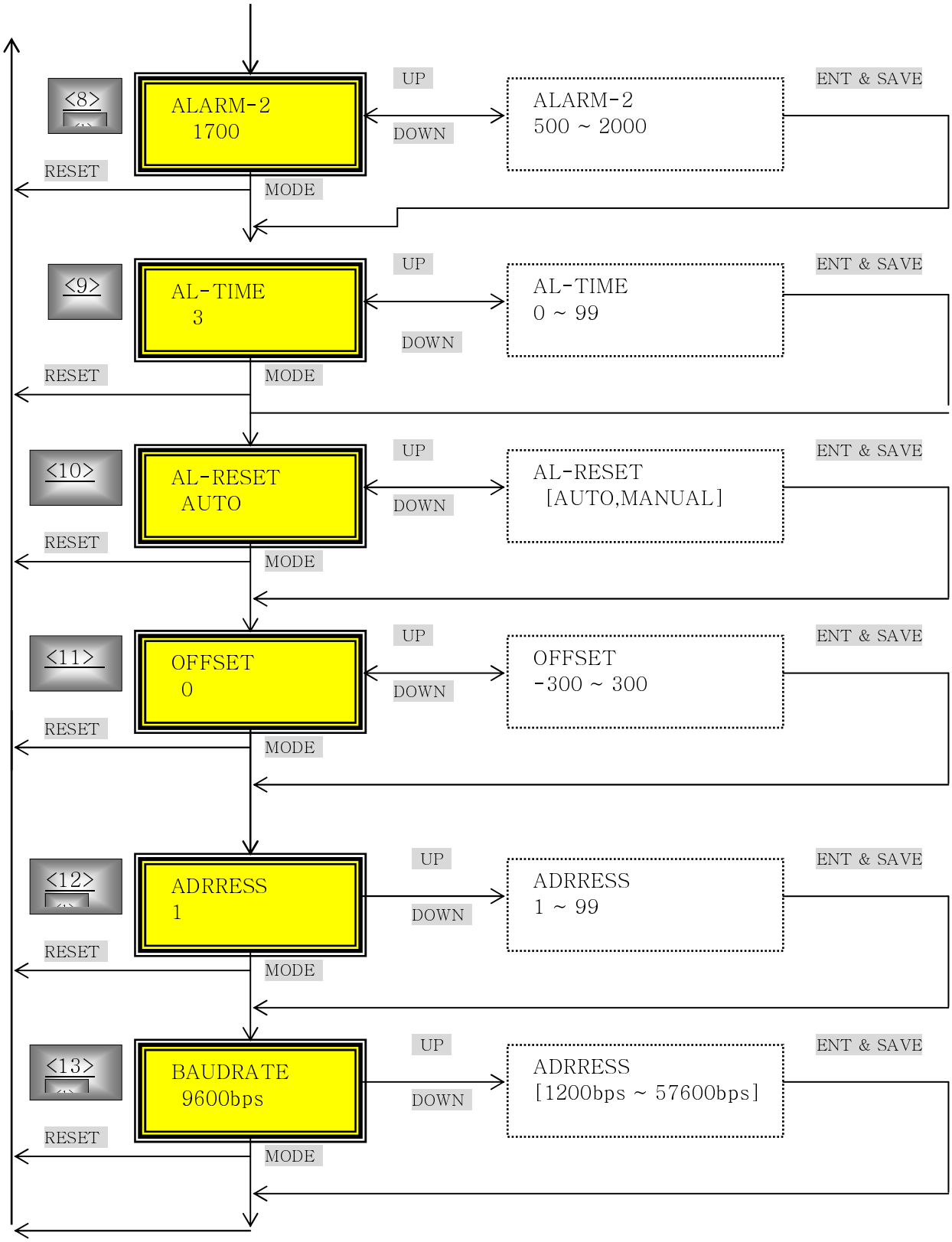
9. WIRING



No.	Letters	Usage
1	24V	Power 24VDC(+)
2	0V	Power 0V(-)
3	mA	Analogue Signal Output
4	E	FIELD GROUND
5	AL1 COM	Alarm #1 Relay Contact Terminal
6	AL1 NO	Alarm #1 Relay Contact Terminal
7	AL2 COM	Alarm #2 Relay Contact Terminal
8	AL2 NO	Alarm #2 Relay Contact Terminal
9	TX+	RS485 A
10	TX-	RS485 B

10. PARAMETERIZING





<1> Measuring Mode

- Measure the temperature of object and display it on LCD in real time.
- When you push MODE during 2 seconds, you can enter into Set-up Mode.

<2> HI-SCALE

- 20mA for FULL SCALE

(ex) If you set HI-SCALE as 10.0:

4mA Analogue Output ---------- [0.0] Display.

12mA Analogue Output ---------- [5.0] Display.

20mA Analogue Output ---------- [10.0] Display

<3> ALARM-1

- ALARM-1 alarm relay output (according to ALARM TYPE, alarm on)

<4> ALARM-2

- ALARM-2 alarm relay output (according to ALARM TYPE, alarm on)

<5> AL-TYPE(ALARM-TYPE)

- 4 types of alarm settings - H&HH, H&L, L&H, L&LL
- two(2) alarm relays – ALARM-1 & ALARM-2

ex) If you set H&L:

➔ ALARM-1: ALARM-1(If more than set value, relay on)

➔ ALARM-2: ALARM-2(If less than set value, relay on)

<6> AL-RESET(ALARM RESET)

- After ALARM on, the way how to relay off
- Select: AUTO ➔➔ MANUAL.

(1) AUTO: relay off according to set value only regardless of reset switch.

(2) MANUAL: relay off according to set value After press AL-RESET button

<7> AL-TIME (ALARM TIME)

- This menu is to prevent abrupt malfunction affected by shock or noise from outside.

<8> INITTIME (Initialization time)

- After power supplied, Sensor need certain time to transmit stable output(Warming Up Time)

<9> OFFSET (Compensate measured value)

- compensate the error of measured value which happened by sensor.

ex) OFFSET: If you set -5:

➔ When the sensor output error is +5, display shows 0 after it compensates -5.

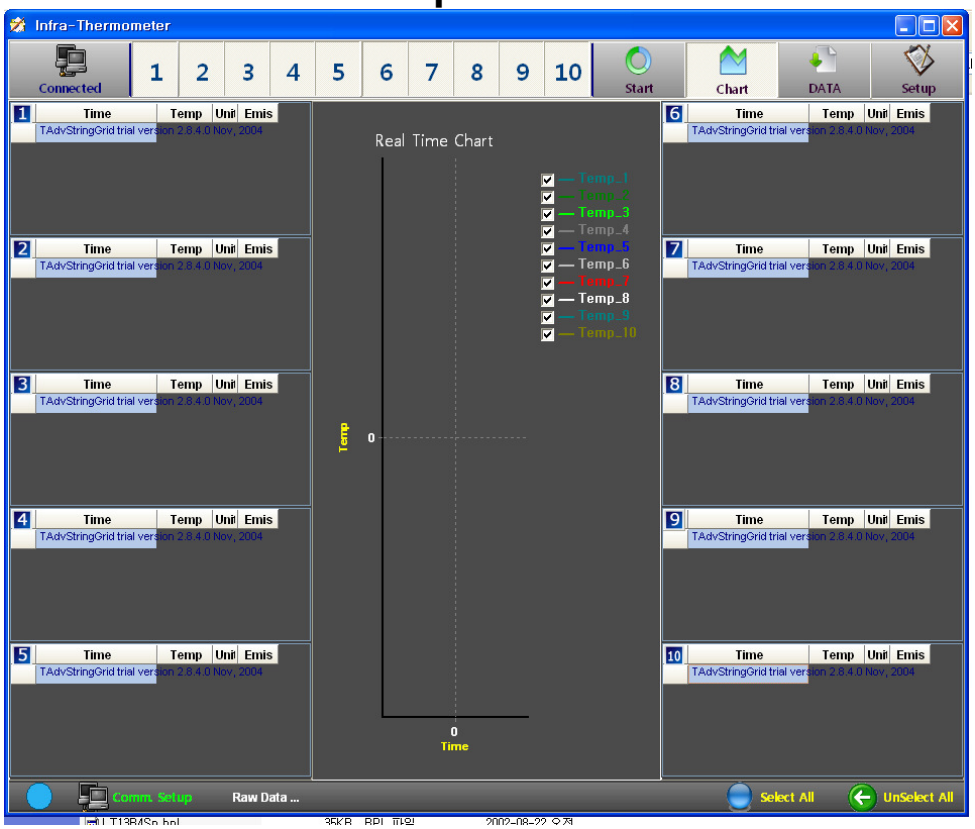
<10> ADDRESS

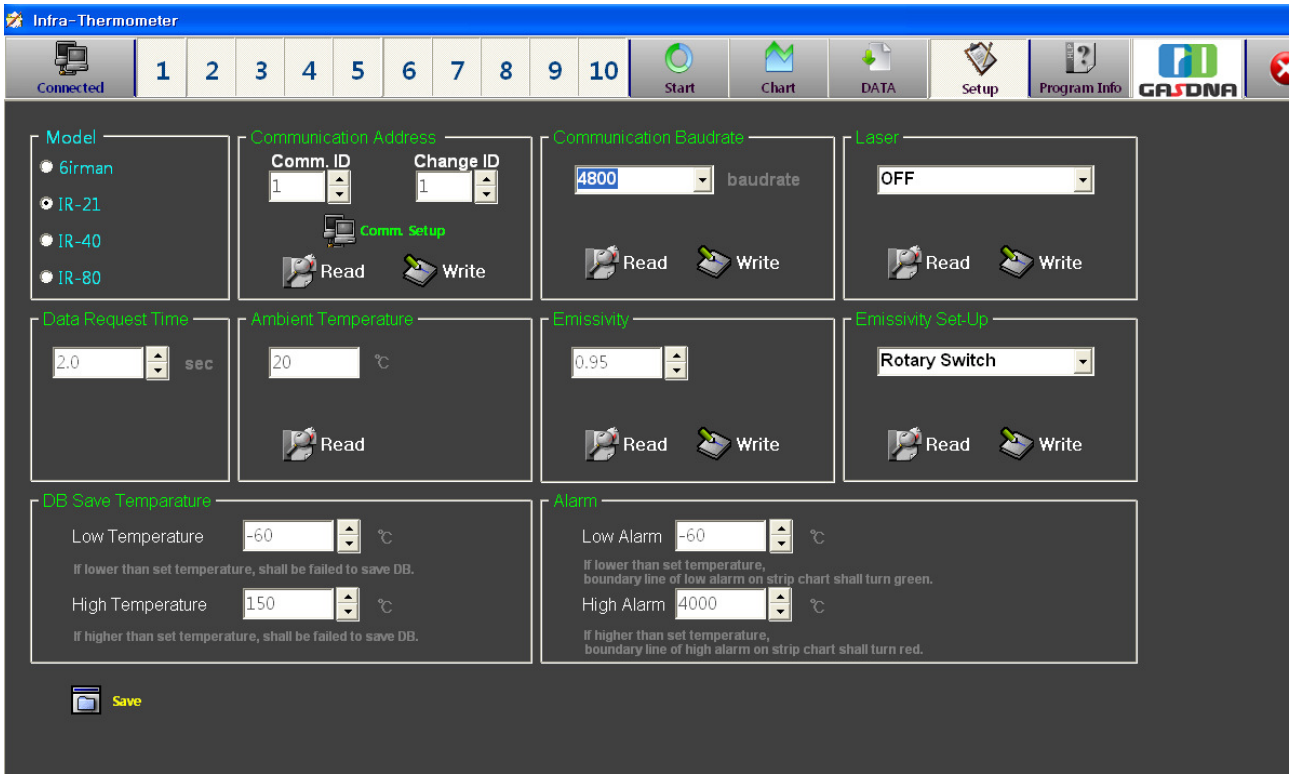
- RS-485

<11> BAUDRATE

- RS-485

11. Communication specification and Software





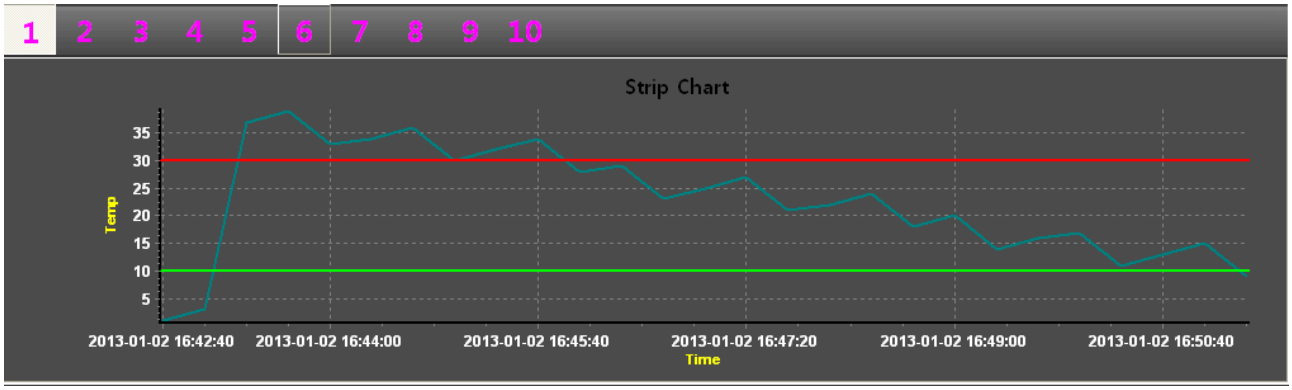
Serial Interface (Initial value setting)

Baud Rate: 4800, 9600 setting
Data Request time: data reading speed setting
Ambient temperature: Ambient Temperature
Emissivity: Emissivity setting
DB Save Temperature: storage temperature setting

Alarm : setting when you want to see temperature transition in detail by graph within measured temperature range

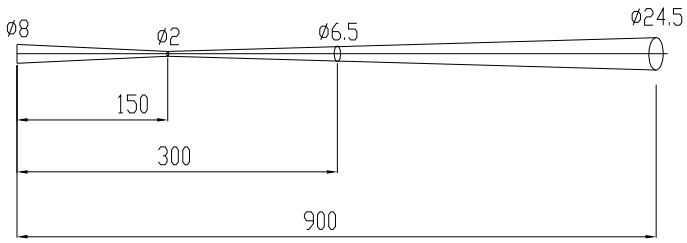
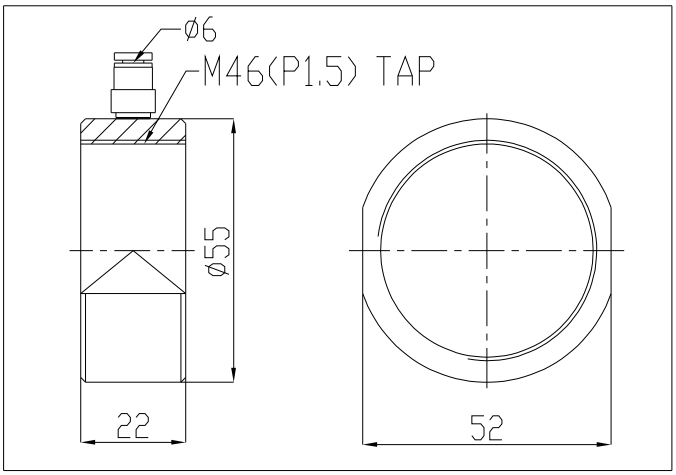
EX> Set low alarm to 10℃ (Green) and Set High Alarm to 30℃ (Red) for No 1 Thermometer as below.

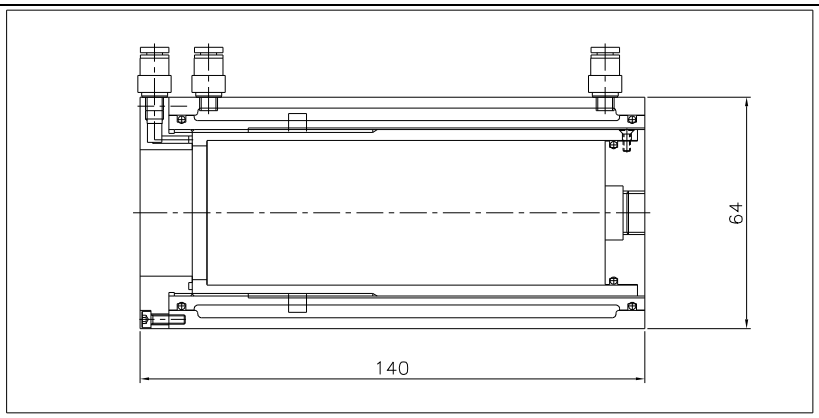
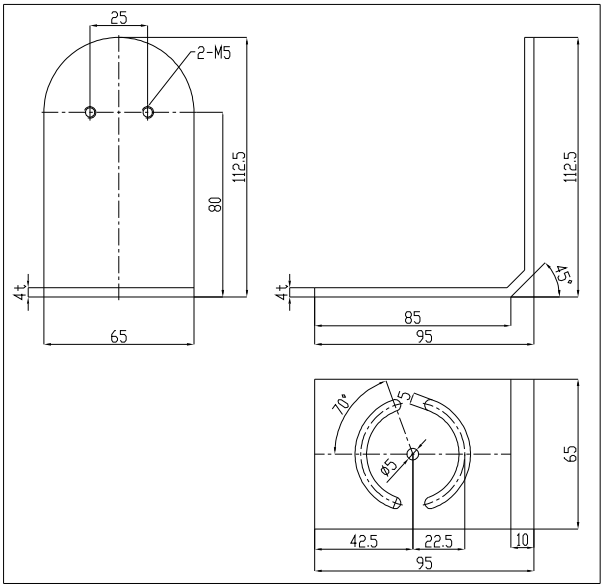
EX >

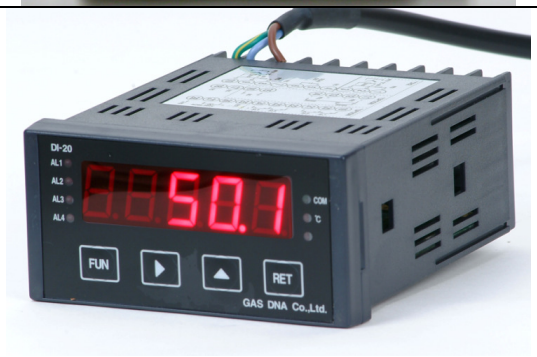


♣ **Caution: After setting value, Please do not forget to press 'Save' buttom**

12. OPTION

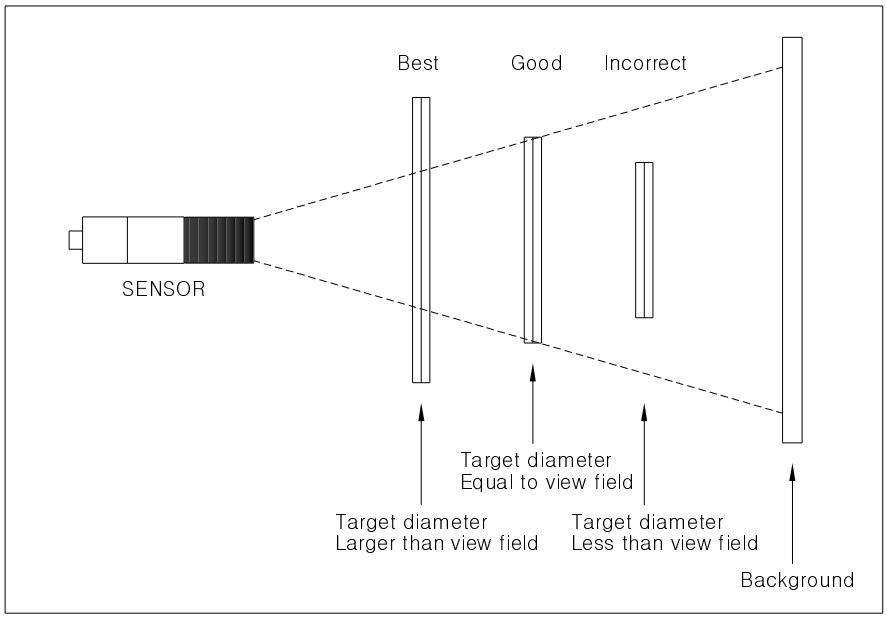
IR-80-CF-150	 D:S unit:mm
Air-purge	 

Air/Water Cooler	 
Up and down adjustable Bracket	 

485 To RS232 converter	
Indicator (Model No. DI-20)	
2 Inch LED Display	

13. INSTALLATION

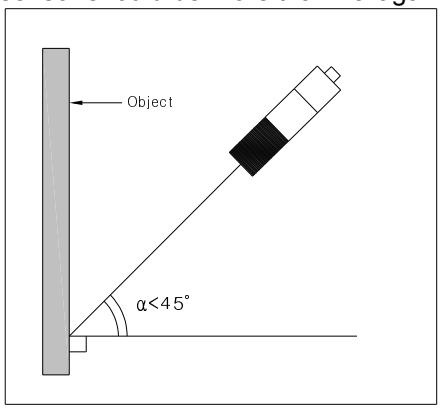
□ Please make sure the target area is larger than the field of view.



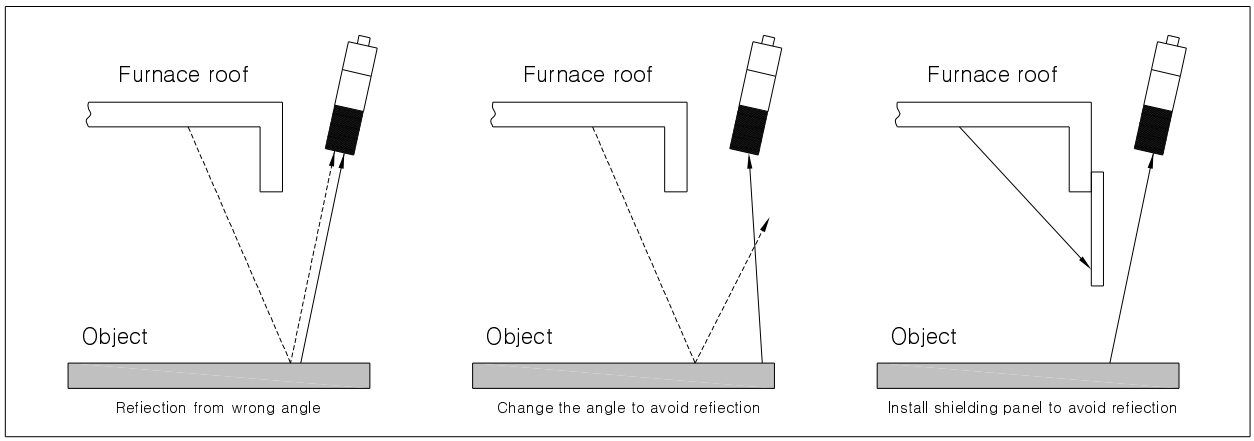
The spot size is decided by the distance from the sensor to the target.
Please refer to the ‘section 5. Optical field of view’ and make sure your target area is larger than the field of view.

□ Please locate the sensor vertical against the target.

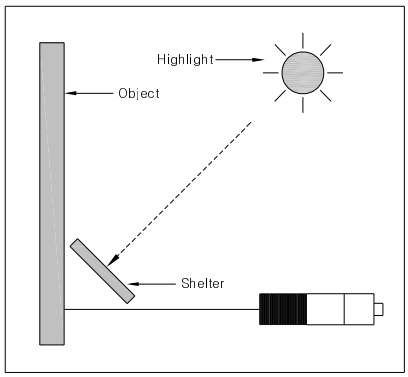
It is the best for you to install the sensor vertical against the target area or object. If it is not available, the sensor should be more than 45°against the target area. Otherwise, it can affect the measuring accuracy.



□ Please avoid the heat reflection from other high temperature materials



□ Please avoid highlight.



□ Please avoid electronic noise.

Please avoid the high frequency or high voltage area such as motor, pump, power line, and so on.

14. Emissivity Table

Appendix A – Emissivity Table for Metals

Material		Typical Emissivity
Aluminium	Non oxidized	0,02-0,1
	Polished	0,02-0,1
	Roughened	0,1-0,3
	Oxidized	0,2-0,4
Brass	Polished	0,01-0,05
	Roughened	0,3
	Oxidized	0,5
Copper	Polished	0,03
	Roughened	0,05-0,1
	Oxidized	0,4-0,8
Chrome		0,02-0,2
Gold		0,01-0,1
Haynes	Alloy	0,3-0,8
Inconel	Electro polished	0,15
	Sandblast	0,3-0,6
	Oxidized	0,7-0,95
Iron	Non oxidized	0,05-0,2
	Rusted	0,5-0,7
	Oxidized	0,5-0,9
	Forged, blunt	0,9
Iron, casted	Non oxidized	0,2
	Oxidized	0,6-0,95
Lead	Polished	0,05-0,1
	Roughened	0,4
	Oxidized	0,2-0,6
Magnesium		0,02-0,1
Mercury		0,05-0,15
Molybdenum	Non oxidized	0,1
	Oxidized	0,2-0,6
Monel (Ni-Cu)		0,1-0,14
Nickel	Electrolytic	0,05-0,15
	Oxidized	0,2-0,5
Platinum	Black	0,9
Silver		0,02
Steel	Polished plate	0,1
	Rustless	0,1-0,8
	Heavy plate	0,4-0,6
	Cold-rolled	0,7-0,9
	Oxidized	0,7-0,9
Tin	Non oxidized	0,05
Titanium	Polished	0,05-0,2
	Oxidized	0,5-0,6
Wolfram	Polished	0,03-0,1
Zinc	Polished	0,02
	Oxidized	0,1

Appendix B – Emissivity Table for Non Metals

Material		Typical Emissivity
Asbestos		0,95
Asphalt		0,95
Basalt		0,7
Carbon	Non oxidized Graphite	0,8-0,9 0,7-0,8
Carborundum		0,9
Ceramic		0,95
Concrete		0,95
Glass		0,85
Grit		0,95
Gypsum		0,8-0,95
Ice		0,98
Limestone		0,98
Paint	Non alkaline	0,9-0,95
Paper	Any color	0,95
Plastic >50µm	Non transparent	0,95
Rubber		0,95
Sand		0,9
Snow		0,9
Soil		0,9-0,98
Textiles		0,95
Water		0,93
Wood	Natural	0,9-0,95