Non-Contact Thermometer

Instruction Manual

CT-80T-2A,CT-80T-4A

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Thank you for purchasing CHUNDE products.

This device is a non-contact thermometer to convert the infrared energy emitted from the surface of an object into temperature. This thermometer measures the surface temperature of solid and liquid without contacting them. The temperature of gas cannot be measured by this thermometer.

- ○Please make sure the model you purchased is the one you specified.
- ○Please read the manual thoroughly before using the CT-80T-XX for correct usage.
- ○After reading this manual,please retain it for future reference.
- ○CHUNDE is not liable for any incidental or consequential damages or losses including losses of data or changes of measurement,arising from accident, misuse or abnormal conditions of operation or handling.

Usage

1. Installation

The outside diameter of the screw is M18 x P1.0.
Fix the screw to a hole of not less than ϕ18mm with the provided nut.
L-shaped bracket provided would help easy adjustment of angle.

Installation Warnings

①The sensor should be installed perpendicular to the target.
②Avoid mechanical shock to the sensor.
③Make sure if there is not any heat source around the location of the sensor. Highly reflective objects may cause discrepancies in measurement.
④Do not expose sensor to direct hot air, nor operate/store in the room of which temperature exceed its ambient temperature range (see "Specification")

2. Connection

Please make the connections correctly as shown in the illustration below while strictly following the warnings.

Connection Warnings

①Use the unit within rated voltage and confirm prpoer wiring surriciently for the connection.
②Please do not connect the analog output(-) with the GND,etc. Discrepancies in measurement may result.
③The analog output should be connected to the devices such as meters with load resistance of 250 ohm or less.
④Please do not let the analog output short circuit.
⑤When using in an environment with strong EMI noise, it is necessary to run the output cord through an iron pipe, etc. as a precaution.
⑥The Shield line is connected to the main body for ground. The Shield line is to be connected to F.G.(Frame Grand)

3. Measurement

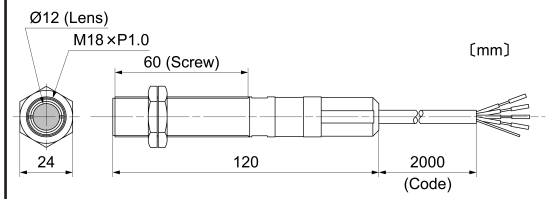
①Turn the unit on after checking to see there are no mistakes in connection.
②Check if the unit is operating properly with the panel meter or the tester.
When the unit's temperature is unstable (such as just after installation), measurement error may occur.

Specifications

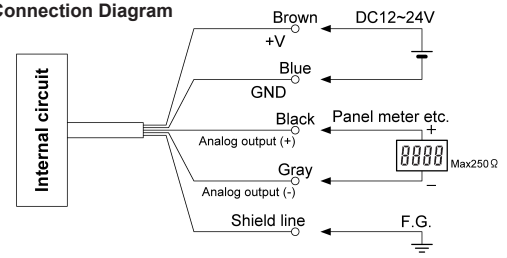
Models	CT-80T	
	2A	4A
Temperature Range	0～200℃	0～400℃
Area Size	φ80 / 500mm	
Optics	Silicon Lens	
Spectral Response	Temopile / 8～14μm	
Response Speed	100ms / 90%	
Accuracy	0～200℃ :±2℃ 201～400℃ :±1%	
Repeatability	±1℃ of reading value	
Analog Output	4–20mA	
Emissivity ratio (ε) Adjustment	0.95	
Power Supply	DC12～24V±10% / MAX 70mA	
Ambient Temperature	0 ～ 70℃	
Environmental Humidity	35 ～ 85% Rh (without dew condensation)	
Storage Temperature	–20～70℃	
Vibration Resistance	10-55Hz, amplitude 1.5mm, two hours each in the direction of X, Y, Z	
Water Resistance	IP67	
Materials	SUS / Al	
Weight	180g	

Accessories : M18 Nut × 2pcs.
Optional : Blackbody tape
※Specifications may change without prior notice.

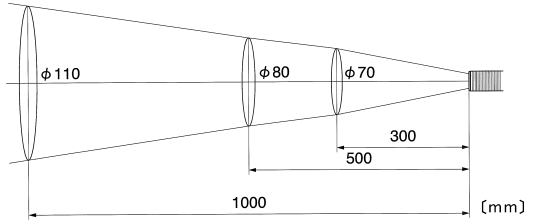
Outside dimension



Connection Diagram



Field of View



The optical resolution values stated in "Field of View" are at minimum 90% energy. The size of measuring object should be sufficiently larger than the field of view (spot size) shown in the above illustration.

Maintenance

Lens Dust or dirt adhering to the lens and flaws on the lens may cause incorrect measurement. When the lens is dirty, remove the adhering objects from the lens using a blower for lens cleaning, etc.
If dirt remains, wipe the lens softly using a cotton swab or lens wiping cloth moistened with a small amount of ethyl alcohol.

Unit When the unit is dirty, wipe it off using a cloth moistened with a small amount of ethyl alcohol.

Troubleshooting

Problems	Cause	Solution
Unmeasurable	The power source is not connected properly.	Check the lead wires and the connection.
	The power voltage is low it to the DC12～24V range	Check the power voltage and adjust it to the DC12～24V range.
The measured figure is odd.	The lens is dirty.	Clean the lens referring to the lens section under "Maintenance".
	The measureing area is off center.	Aim the target which should be within the area of view field of the sensor.
	Near the object to be measured is another object emitting high temperatures,affecting the temperature reading.	Block the heat source using a board, etc.
The measured figure is not stable.	The sensor is vibrating.	Prevent the vibration.
	The temperature of the sensor changes suddenly.	Put the sensor aside for a while to stabilize the sensor's temperature.

When the above symptoms are not removed even after the corresponding countermeasure has been taken, the thermometer may have a fault. In such cases, contact the shop in which you purchased the product or CHUNDE.

Emissivity setting

Emissivity (ε) refers to the ratio of infrared energy emitted from all the object surfaces. All objects has their own emissivity, which changes depending on the surface conditions and object temperature. This thermometer has 0.95 fixed emissivitie. Refer to the following examples.
0.95...Food, rubber, plastic, paintwork, etc.
The displayed temperature could differ from the actual temperature of objects that have different emissivity. In such cases, regard the displayed temperature as a rough standard. When you wish to measure shiny metal surfaces, put a piece of optional blackbody tape (ε =0.95) on the surface of the measured object.

Safe Usage

This instruction manual contains various warnings for your safety and proper usage to avoid possible personal injury. Please be sure to heed the warnings and strictly follow safety instructions.

⚠Caution : This symbol signifies that improper usage may result in injuries or damage.

⃠:This symbol signifies a prohibited action.
❗:This symbol signifies a required action.

⚠ Caution

This product is not a clinical thermometer and therefore, can not be used for medical purposes.

Environmental Warnings

❗ **KEEP THE THERMOMETER AWAY FROM DIRECT SUNLIGHT, DUST,HIGH TEMPERATURES AND HIGH HUMIDITY DURING USE AND STORAGE.**
This may cause irreparable damage or incorrect measurement.

❗ **KEEP THE THERMOMETER AWAY FROM SUDDEN CHANGE IN AMBIENT TEMPERATURE.**
Sudden temperature change may cause incorrect measurement. Start measurement when temperature has become stable after leaving the meter for a while.

❗ **KEEP THE THERMOMETER AWAY FROM STRONG ELECTROMAGNETIC SOURCES.**
Usage in such environments may cause irreparable damage or incorrect measurement.

Usage Warnings

❗ **AVOID MEASURING SHINY OBJECTS.**
Shiny objects reflect surrounding temperatures. As this thermometer's sensitivity to emissivity is fixed, the displayed temperature could differ form the actual temperature of objects that have different emissivity values.

⃠ **ONLY RATED SUPPLY SHOULD BE USED FOR POWER SOURCE.**
Using other than direct current of 12-24V will cause damage, short circuit, fire and injury. In this case, immediately shut off the power.

⃠ **DO NOT LET THE THERMOMETER TOUCH THE OBJECT THAT IS BEING MEASURED.**
This product is a non-contact themometer. Touching high-temperature object may cause deformation of the meter, irreparable damage or incorrect measurement.

⃠ **DO NOT TOUCH THE FILTER.**
Do not let a solid or sharp object touch the filter and do not insert foreign objects into the filter. These may cause incorrect measurement.

❗ **DO NOT BRING THE THERMOMETER CLOSE TO ELECTRICALLY CHARGED OBJECTS.**
This may cause irreparable damage or incorrect measurement.