1 YEAR WARRANTY

MADE IN TAIWAN

User's Guide

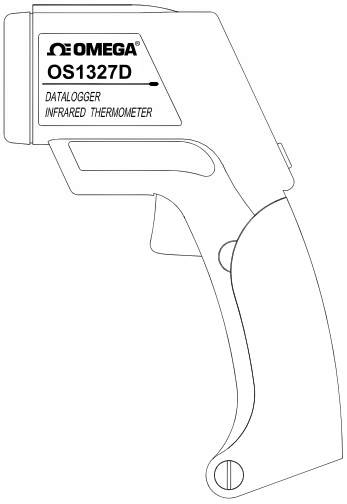
DATALOGGER OS1327D

Infrared / Type K Thermometer

Remote Temperature Measurement
(Non-Contact)

INSTRUCTION MANUAL

※ **Enclosed CD : Software & Protocol Inside.**



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1. INTRODUCTION

The Datalogger Infrared Thermometer is digital and is used with a type-K thermocouple input, being a dual measurement product.

Although its precise design, the hand-held Infrared Thermometer is easy to operate. Furthermore, the backlight illumination function is helpful to user who is accustomed to measure in dark places. The Infrared Thermometer will also indicate a Laser symbol on LCD as a reminder and its additional **auto hold reading** & **auto power off** functions are practical to users.

The Infrared Thermometer is a **non-contact** thermometer with laser pointer. It can be used to measure the temperature of objects' surface that is improper to be measured by traditional (contact) thermometer (such as moving object, surface with electricity current or objects that are difficult to reach).

2. SAFETY INFORMATION

1. Read the following safety information carefully before attempting to operate or service the meter.

2. Use the meter only as specified in this manual; otherwise, the protection provided by the meter may be impaired.

Warning

If user pulls the trigger while the  symbol is showing on LCD, then the meter will radiate the laser. At this moment, user has to avoid the laser radiating to your eyes to prevent any hurts.

- If the measured object with smooth surface and will reflect the laser, pls. prevent the reflected laser to radiate your eyes.
- Pls. don't radiate the laser to inflammable gas to avoid dangers.

3. Precautions:

a). Do not operate the thermometer near large electrical or magnetic fields.

b). Keep the thermometer away from direct sunlight or strong source of light, hot objects (70℃/158℉), high temperature, high humidity, or dust during use and storage.

c). If the thermometer is in an environment where the temperature changes drastically, please wait until the thermometer returns to a stable status before starting the measuring.

d). Condensation may form on the focal lens if the thermometer is moved quickly from a cold to a hot environment. Before taking measurements, please wait for the condensation to dissipate.

e). Do not touch the focal lens.

4. Environmental conditions:

a). Altitude up to 2000 meters.

b). Relative humidity 80% max.

c). Operating Ambient 0 ~ 50℃

5. Maintenance & Clearing:

a). Repairs or servicing that are not covered in this manual and should be performed by qualified personnel only.

b). Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on the instrument.

c). When servicing, use only specified replacement parts.

6. Safety symbols:

CE Comply with EMC

3. FEATURES

- ℃ / ℉ Selectable.
- Backlight LCD display.
- Laser targeting.
- Adjustable Emissivity .
- Audible and visible alarm.
- Manual Data memory and read function.
- Type K thermometer.
- Auto Datalogger & USB PC interface.

4. SPECIFICATIONS

4-1 General Information :

Display : Backlight LCD Display.

Auto power off : Approx. 15 sec.

Manual Data memory capacity : 99 sets. (Direct reading from LCD display)

Auto Datalogger capacity : 10000 sets. (Only download to PC)

Over range indication : "OL" or "-OL".

Low battery indication : The  symbol is displayed on LCD when the battery voltage drops below the operating voltage.

Power supply : Single 9V battery 006P 9V or IEC6F22, or NEDA1604.

Battery life : Approx. 100 hours (laser pointer and backlight aren't on use) (Alkaline batteries)

Operating temperature and humidity : 0℃ to 50℃ (32℉ to 122℉), below 80%RH.

Storage temperature and humidity: -10℃ to 60℃ (14℉ to 140℉), below 70%RH.

Dimensions : 172(L)×118(W)×46(H) mm
6.8(L)×4.6(W)×1.8(H) inches.

Weight : Approx. 220g with battery.

Accessories : instruction manual, battery, CD software and USB cable.

Optional : AC adaptor (IN-OUT Isolated type), 9VDC 150mA. 

4-2 Electrical Specifications :

Measuring range : -35℃ to 500℃ (-31℉ to 932℉)

Resolution : 0.1℃ , 0.2℉

Accuracy : ± 2% reading or ± 2℃ or ±4℉, whichever is greater.

Temperature coefficient : 0.1 times the applicable accuracy specification per ℃ from 0℃ to 18 ℃ and 28℃to 50℃ (32℉to 64℉ and 82℉ to 122℉).

Responding time : 2.0 times per second.

Spectral Response : 6 ~ 14um.

Field of view : 12:1 ; optics ratio with a 1” min target.

Emissivity : 0.17 ~ 1.00

Sighting : Laser marker 1mw (class 2).

Sensor : Thermopile.

❑ **Type K**

Measuring range : -150℃ to 1350℃ (-238℉ to 1999℉).

Resolution : 0.1℃, 1℃, 0.1℉, 1℉.

Responding time : Once per second.

Basic accuracy : (@ 23±5℃ calibration) accuracy are ± (…% of reading + degree) at 18℃ to 28℃ with relative humidity up 80%.

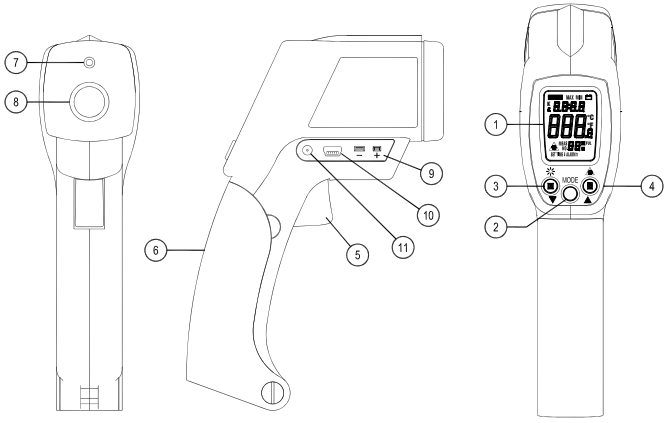
Function	Resolution	Range	Accuracy
℃	0.1℃	-150℃～0℃	±(0.2%rdg + 1.0℃)
		0℃～200℃	±(0.1%rdg + 1.0℃)
	1℃	200℃～1350℃	±(0.2%rdg + 2℃)
℉	0.1℉	-238℉～32℉	±(0.2%rdg + 2℉)
		32℉～200℉	±(0.1%rdg + 2℉)
	1℉	200℉～1999℉	±(0.2%rdg + 4℉)

Temperature Coefficient :

0.1 times the applicable accuracy specification per ℃ from 0℃ to 18℃ and 28℃ to 50℃ (32℉ to 64℉ and 82℉ to 122℉).

Note : The basic accuracy specification does not include the error of the probe. Please refer to the probe accuracy specification for additional details.

5. FRONT PANEL DESCRIPTION

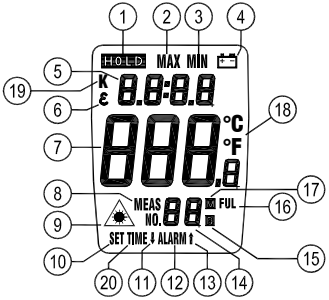


1. Display.

Key	Press one time	Press and hold 3 seconds
2. **MODE**	Enter to MAX/MIN recorder mode. MAX→MIN→Current reading (MAX/MIN)	①In MAX/MIN mode will exit this mode. ②In normal mode will enter to setting mode.
3. ☼ M ▼	①In normal mode will turn on or off the backlight. ②In Read mode can decrease gradually to select the desired memory reading. ③In SET mode can decrease gradually to set the desired values.	Memory the LCD reading.
4. R ▲	①In normal mode will turn on or off the laser mark. ②In Read mode can increase gradually to select the desired memory reading. ③In SET mode can increase gradually to set the desired values.	Read the memory data.

5. Measuring trigger :
   ① Trigger for powering on.
      Pull the trigger to turn on the thermometer.
   ② In SET mode, pull the trigger will stored the setting value and exit this mode.
6. Battery cover.
7. Laser aperture.
8. Focal lens.
9. Type K thermocouple input socket.
10. USB interface socket.
11. AC adaptor, input socket.

6. LCD DISPLAY DESCRIPTION



1. Hold function	11. Lo alarm
2. Maximum reading	12. Alarm function
3. Minimum reading	13. Hi alarm
4. Low battery mark	14. Memory and Read address number
5. Emissivity / Type K value	15. Read memory data
6. Emissivity value setting	16. Memory full indicator
7. Infrared measuring value	17. Store data to memory
8. Measure indicator	18. Unit “℃ , ℉ ”
9. Laser indicator	19. Type K measuring indicator
10. SET symbol	20. Auto datalogger indicator

7. Emissivity Adjustment

1. **Emissivity :** Emissivity is a value between 0.17 and 1 that indicates an object's ability to emit infrared energy. Emissivity is determined primarily by the object's composition and surface finish.

The thermometer's sensitivity to emissivity " ε " was set at 0.95 before shipment because in 90% of the time, objects' emissivity is set at 0.95.

2. **Emissivity Adjustment**

① Apply black tape, black mat paint or black magic marker to the object if it is safe.

② " ε " is set at 0.95 to measure the dark surface.

③ To aim the laser at dark surface, pull trigger to get measurement as T1.

④ Remove the black tape or black mat paint and aim laser at the same area again then pull trigger to get the measurement as (T).

⑤ Change & reset a value for emissivity " ε " to get measurement (T) until T equal to T1.

a). Enter to setting mode (refer to **MODE** key).

b). Press **MODE** key to select the ε value setting.

c). Press ▲ or ▼ keys to set desired values.

d). Pull the trigger to store the setting value and exit this mode.

Emissivity VALUES

Typical Emissivity Values-Metals (cont.)	
SURFACE	EMISSIVITY
Zinc (oxidized)	0.1*
Galvanized iron	0.3
Tin-plated steel	0.1*
Gold (polished)	0.1*
Silver (polished)	0.1*
Chromium (polished)	0.1*

Emissivity Values-Non-Metals Refractory & Building Materials	
Red brick (rough)	0.75 to 0.9
Fire clay	0.75
Asbestos	0.95
Concrete	0.7
Marble	0.9
Carborundum	0.85
Plaster	0.9
Alumina (fine grain)	0.25
Alumina (coarse grain)	0.45
Silica (fine grain)	0.4
Silica (coarse grain)	0.55
Zirconium silicate up to 500℃	0.85
Zirconium silicate at 850℃	0.6
Quartz (rough)	0.9
Carbon (graphite)	0.75
Carbon (soot)	0.95
Timber (various)	0.8 to 0.9
Miscellaneous	
Enamel (any color)	0.9
Oil paint (any color)	0.95
Lacquer	0.9
Matte black paint	0.95 to 0.98
Aluminum lacquer	0.5
Water	0.98
Rubber (smooth)	0.9
Rubber (rough)	0.98
Plastics (various, solid)	0.8 to 0.95
Plastic films (05 mm thick)	0.5 to 0.95
Polythene film (03 mm thick)	0.2 to 0.3
Paper and cardboard	0.9
Silicone polish (03 mm thick)	0.7
* Emissivity values with purity	

EMISSIVITY VALUES	
Typical Emissivity Values-Metals	
SURFACE	EMISSIVITY

Iron and Steel	
Cast iron (polished)	0.2
Cast iron (turned at 100℃)	0.45
Cast iron (turned at 1000℃)	0.6 to 0.7
Steel (ground sheet)	0.6
Mild steel	0.3 to 0.5
Steel plate (oxidized)	0.9
Iron plate (rusted)	0.7 to 0.85
Cast iron (rough) rusted	0.95
Rough ingot iron	0.9
Molten cast iron	0.3
Molten mild steel	0.3 to 0.4
Stainless steel (polished)	0.1
Stainless steel (various)	0.2 to 0.6
Aluminum	
Polished aluminum	0.1*
Aluminum (heavily oxidized)	0.25
Aluminum oxide at 260℃	0.6
Aluminum oxide at 800℃	0.3
Aluminum Alloys various	0.1 to 0.25
Brass	
Brass (polished)	0.1*
Brass (roughened surface)	0.2
Brass (oxidized)	0.6
Copper	
Copper (polished)	0.05*
Copper plate (oxidized)	0.8
Molten copper	0.15
Lead	
Lead (pure)	0.1*
Lead (oxidized at 25℃)	0.3
Lead (oxidized , reated to 200℃)	0.6
Nickel and its alloys	
Nickel (pure)	0.1*
Nickel plate (oxidized)	0.4 to 0.5
Nichrome	0.7
Nichrome (oxidized)	0.95

8. TEMPERATURE MEASUREMENT

1. Measurement :

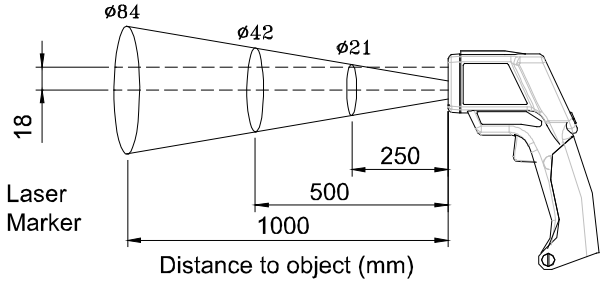
① Pull the trigger to power on the meter and start measuring. Release the trigger to stop measuring and auto hold the reading. The meter will turn off automatically after 15 seconds.

② Auto detection type K thermocouple plug-in or pull-out. If plug-in type K thermocouple, the infrared ε value will auto change to type K measuring temperature value.

2. MAX/MIN hold function :

Pull & hold the trigger then press **MODE** for "1 time" to cycle select maximum (MAX), minimum (MIN) and current reading (MAX/MIN).

Press **MODE** for "3 seconds" to exit this mode.



Note:

- ❑ Laser offset: The laser beam is offset 18mm(0.71in) from the focal lens. Choose a sampling spot that is large enough to include the laser offset.
- ❑ Surface Temperatures: The thermometer will measure the first surface it detects, even a glass cover, dust or fog. Make sure the object is not obstructed.

3. Selecting ℃/℉ unit :

While powering on the meter, the temperature unit that appears in LCD would be the last unit you measured. If user wants to change the temperature unit, pull trigger to turn on the meter, then press **MODE** for "3 seconds" until "SET" mark appears on the LCD to enter SET mode, press ▲ or ▼ to select desired ℃ / ℉ unit, pull trigger to store the unit.

4. Manual Memorize / Read function (99 readings)

① To memorize the reading :

Press and hold down " **M** " key until the " **M** " mark is displayed (about 3 seconds), then release " **M** " key, stores one set logged reading in memory, LCD will show " **M** " and memory location numbers (1 to 99).

② To recall and read the reading :

a). Press " **R** " key for 3 seconds to recall the reading memory data mode. LCD will show " **R** " and memory location numbers.

b). Press " ▲ " or " ▼ " key to scroll through the logged readings.

c). Press **MODE** key to exit READ mode.

③ To clean the memory :

a). Under power off status, press and hold **M** key then pull trigger until " CLR no " shows on LCD.

b). Press ▲ or ▼ to select "YES" or "no", then press **MODE** key two times to exit this mode. If you select "YES" the all memory will be cleared.

5. Auto Datalogger Function

① To setting interval time :

a). Pull trigger to power on the meter. Press & hold **MODE** for "3 seconds" until "SET" appears on the LCD to enter the setting mode.

b). Press **MODE** key 5 times, the "TIME" mark is displayed to enter the interval time setting mode.

c). Press ▲ or ▼ key to select desired interval time from 1 second to 10 minutes.

d). Pull trigger to exit this mode.

❷ To enter auto datalogger mode

a). Press **M** key for 6 seconds until the "**TIME**" and "**M**" marks are displayed to enter the auto datalogger mode. When the "**M**" mark is disappear one time, one set of reading is stored to the memory.

b). The maximum memory capacity is 10000 sets.

c). Pull trigger to exit this mode.

❸ To clear auto datalogged memorized data

a). Under power off status, press and hold down **M** key then pull trigger until "CLR no" show on LCD.

b). Press **MODE** key one time, the "TIME" mark is displayed.

c). Press ▲ or ▼ key to select "YES" or "no", then press **MODE** key one time to exit this mode. If you select "YES" the all memory will be cleared.

9. SETTING MODE

Pull trigger to power on the meter. Press & hold **MODE** for "3 seconds" until "SET" appears on the LCD to enter the setting mode.

1. Parameter settings for measuring :

Under the infrared parameter setting mode, LCD will show SET. Press **MODE** to select setting of "℃/ ℉", "ALM ON/OFF" , "↓ALM" "ALM↑", emissivity "ε " and auto datalogger interval time "TIME". Pull trigger to exit the setting mode and return to the general measurement.

2. Parameter settings :

① "℃/ ℉" : Temperature unit ℃/ ℉, press ▲ or ▼ to select units ℃or ℉.

② ALM (Alarm function ON/OFF) : Press ▲ or ▼ to select alarm function on or off.

③ ↓ALM (Lo Alarm Function) : Press ▲ or ▼ to set up a value as an alarm value. When this Lo alarm value is exceeded, the beeper will beep and "↓ALM" symbol will appear on LCD.

④ ALM↑ (Hi Alarm Function) : Press ▲ or ▼ to set up a value as an alarm value. When this Hi alarm value is exceeded, the beeper will beep and "ALM↑" symbol will appear on LCD.

Example :

If you want alarm warning to exceed 100℃ and below 0℃, can setting Hi Alarm point is 100℃,

Lo Alarm point is 0℃.

Setting procedure :

a). Press **MODE** key for 3 seconds until LCD display "SET" mark.

b). Press "▲" key select ℃ unit.

c). Press **MODE** key one time, enter to ALARM ON/OFF choice, press ▲ or ▼ keys select "ON" mode.

d). Press **MODE** key one time enter to ↓ALARM (Lo Alarm point) setting.
Press ▲ or ▼ keys setting display to 0.0℃.

e). Press **MODE** key one time enter to ↑ALARM (Hi Alarm point) setting.
Press ▲ or ▼ keys setting display to 100.0℃.

f). Pull trigger to store the setting and exit this setting mode.

⑤ ε (Emissivity) : User can press ▲ or ▼ to adjust parameter.

⑥ TIME : Press ▲ or ▼ to setting the desired auto datalogger interval time from 1 seconds to 10 minutes.

⑦ ▲ : Key for increasing the value of Parameters. Hold down will increase the parameter rapidly.

⑧ ▼ : Key for decreasing the value of Parameters. Hold down will decrease the parameter rapidly.

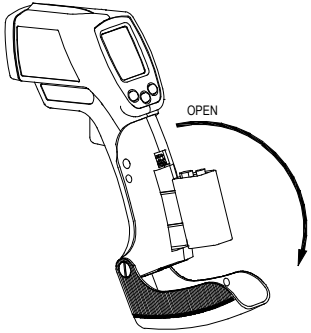
Note: ❑ After setting procedure is terminated, the parameter will be memorized until next setting.

❑ Under setting mode, Backlight, Laser light, Memory and Read functions will be disabled.

❑ Pull trigger to exit setting mode.

10. BATTERY REPLACEMENT

1. As battery power is not sufficient, LCD will display the symbol  . Replace old battery with a new one.
2. Open battery cover then take out the battery from instrument and replace with a new 9-Volt battery. Put back the battery cover.



11. SOFTWARE INSTALLATION and OPERATION

1. For the detailed instruction, please refer to the content of attached CD-ROM, which has the complete instruction of software operation and relevant information.

2. Protocol : are enclosed within the content of CD-ROM, please open the CD-ROM for details.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of theproduct, and
3. Repair instructions and/or specific problems relative to the product.

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