USER MANUAL

Temperature Inspection Camera
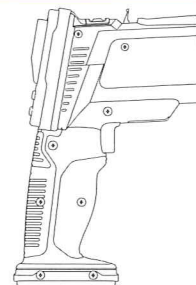
Model: GD8501

EU Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

22
PAP

Model: GD8501

Version 1.0
Please read this user manual carefully before using this product.
Failure to understand operation procedures may result in injury.

CONTENTS

FCC Information

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference;
(2) This device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Warnings

- This product shall not be exposed to water either by dripping, splashing, immersing, etc., unless otherwise indicated.
- Turn off the system if it is not in use.
- This product can only be completely disconnected for from its power source by unplugging the power adapter.
- Do not cut the DC power cable of provided with this product to fit with another power source.

Welcome

The product is of innovative design and of solid structure. Built-in laser pointer and visible light cameras increase the accuracy of the measured target. The combination of the color LCD and the buttons is convenient for the ergonomic operation. It reproduces the temperature environments in the form of videos and images. Distance ratio 50:1, highest temperatures up to 1000 degrees. The device makes your temperature measuring much easier.

Features

- Laser positioning, automatic temperature measuring
- Temperature measuring ranges wide, from -50℃ to 1000℃
- Temperature measuring can be timed, high and low temperature alarm
- Supports camera and video recording.
- Built-in Li-battery supports 5 hours non-stop working.
- 2.7"screen with audio function, built-in loudspeaker
- Supports 32GB SD card, video output format: AVI.
- USB2.0 port for easy direct-to-computer data download and file transfer.

Packing List

① Infrared Temperature Camera × 1

② USB Cable × 1

③ Adapter × 1

④ Type-K Probe(Optional) × 1

⑤ TF Card (optional) × 1

* The pictures are for reference only, please refer to real subjects.

Structure

2.7" TFT-LCD

Power on/off and exit button

Take photo and up button

Microphone

OK Button

Record video and down button

LED status indicator

Lens cover
Speaker
Reset
TF card slot
Power input and date output slot

Lens

Laser

Infrared sensor

Type-k probe slot

Handle

Measure button

Items	Specifications
Imaging Sensor	1/4" Colorful Lens
Total Pixels	640×480
Minimum Illumination	0Lux (LED turns on)
Viewing Angle	35°
LCD Screen Type	2.7" TFT-LCD
Effective Pixels	960 X 240
Built-in Battery Capacity	2000mAh
Charging Time	<4h
Working Time	>5h
TF Card	Supports up to 32GB
Data Output	USB2.0
Photo Type	JPEG
Video Type	. AVI
Photo/Video Pixels	640 × 480
Video Size	30 minutes
Frame Rate	30 frame/second
Dimensions (W x D x H)	210 x 150 x 86 (mm)
Approx. Weight	460g
Operating Temperature	-10~+40°C
Operating Humidity (Max.)	15~85%(RH)

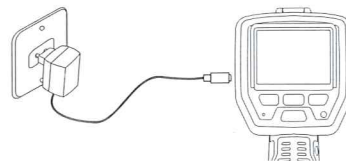* All the specifications are subject to minor change without prior notice.

Specifications

<table>
<thead>
<tr><th colspan="2">Items</th><th>Specifications</th></tr>
</thead>
<tbody>
<tr><td rowspan="9">IR temperature measurement</td><td>Temperature range</td><td>-50~1000℃ (-58~1832℉)</td></tr>
<tr><td>Display resolution</td><td>0.1℃(0.1℉)</td></tr>
<tr><td rowspan="3">Accuracy</td><td>-50~20℃(-58~68℉) : ±3.5℃(6.3℉)</td></tr>
<tr><td>20~500℃(68~932℉) : ±1% or ±1.0℃(1.8℉)</td></tr>
<tr><td>500~1000℃(932~1832℉) : ±1.5%</td></tr>
<tr><td>D:S</td><td>50:1</td></tr>
<tr><td rowspan="2">Repeatability</td><td>-50~20℃(-58~68℉) : ±1.5℃(2.7℉)</td></tr>
<tr><td>20~1000℃(68~1832℉): ±0.5% or ±0.5℃(0.9℉)</td></tr>
<tr><td>Response time</td><td>150(ms)</td></tr>
<tr><td rowspan="2"></td><td>Spectral response</td><td>8~14(um)</td></tr>
<tr><td>Emissivity</td><td>Digitally adjustable form 0.10 to 1.0</td></tr>
<tr><td rowspan="4">Type-k temperature measurement</td><td>Temperature range</td><td>-50~1000℃(-58~1832℉)</td></tr>
<tr><td rowspan="2">Accuracy</td><td>1)-50~0℃(-58~32℉) : ±2.5℃(4.5℉)</td></tr>
<tr><td>2) 0~1000℃(32~1832℉) : ±0.5%±1.5℃(2.7℉)</td></tr>
<tr><td>Display resolution</td><td><1000℃: 0.1℃(0.1℉)</td></tr>
<tr><td rowspan="8">Air temperature and relative humidity measurement</td><td>Air temperature</td><td>0~50℃(32~122℉)</td></tr>
<tr><td rowspan="2">Air temperature accuracy</td><td>1) 10~40℃ : ±0.5℃(0.9℉)</td></tr>
<tr><td>2) Others : ±1.0℃(1.8℉)</td></tr>
<tr><td>Dewpoint temperature range</td><td>0~50℃ (32~122℉)</td></tr>
<tr><td rowspan="2">Dewpoint temperature accuracy</td><td>1) 10~40℃ : ±0.5℃(0.9℉)</td></tr>
<tr><td>2) Others : ±1.0℃(1.8℉)</td></tr>
<tr><td>Relative humidity range</td><td>0~100%RH</td></tr>
<tr><td rowspan="3">Relative humidity accuracy</td><td>1)40%RH~60%RH : ±3%RH</td></tr>
<tr><td>2)20%RH~40%RH and 60%RH~80%RH: ±3.5%RH</td></tr>
<tr><td>3)0%RH~20%RH and 80%RH~100%RH: ±5%RH</td></tr>
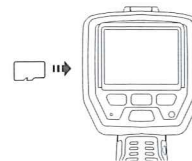</tbody>
</table>

Installation

● To Connect Power

Connect the unit to an appropriate power source with the provided adapter to charge and the charging icon ▥ will flash on the LCD screen. Turned off, the LED status indicator lights red.
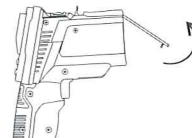
● To Insert TF Card

After TF card is inserted into TF card slot successfully, an TF card 🖪 icon will appear on the LCD screen; otherwise, the 'no TF card' 🖾 icon will show.
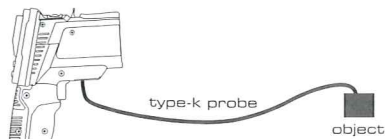
● Open Lens Cover

Lock the lens cover into the top of the unit.

To Insert Type-K Probe

Insert the type-K probe provided to the type-K probe slot with proper polarity as indicated.

type-k probe

object

To turn On/Off

Press the (⏻Esc) button for about 2 seconds and the startup interface will appear:

Press the (⏻Esc) button again for about 2 seconds to turn off the system.

Substance	Thermal Emissivity	Substance	Thermal Emissivity
Asphalt	0.90 to 0.98	Black cloth	0.98
Concrete	0.94	Human skin	0.98
Cement	0.96	Lather	0.75 to 0.80
Sand	0.90	Charcoal (powder)	0.96
Earth	0.92 to 0.96	Lacquer	0.80 to 0.95
Water	0.92 to 0.96	Lacquer (matt)	0.97
Ice	0.96 to 0.98	Rubber (black)	0.94
Snow	0.83	Plastic	0.85 to 0.95
Glass	0.90 to 0.95	Timber	0.90
Ceramic	0.90 to 0.94	Paper	0.70 to 0.94
Marble	0.94	Chromium oxides	0.81
Plaster	0.80 to 0.90	Copper oxides	0.78
Mortar	0.89 to 0.91	Iron oxides	0.78 to 0.82
Brick	0.93 to 0.96	Textiles	0.90

Format Memory

Press the (AO) and (OV) button to select Yes or No, press the OK button to exit and save.

Power Frequency

Press the (AO) and (OV) button to select 50Hz or 60Hz, press the OK button to exit and save.

Factory Default

Press the (AO) and (OV) button to select Yes or No, press the OK button to exit and save.
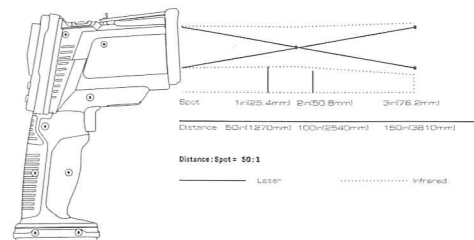
Version Info

Press the OK button to view the information of the product.

Measurement Temperature

Distance & Spot Size

As the distance(D) from the object increases, the spot size (s) of the area measured by the unit becomes larger. The relationship between distance and spot size of the unit is listed below. The focal distance for each unit is 914mm(36"). The spot sizes indicate 90% encircled energy.
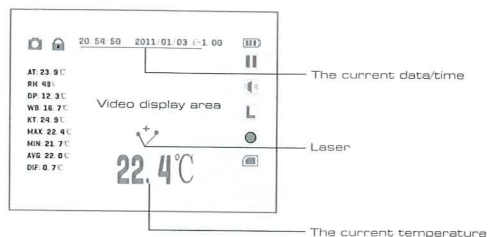

Spot   1r(25.4mm) 2r(50.8mm)   3r(76.2mm)

Distance 50r(1270mm) 100r(2540mm)   150r(3810mm)

Distance:Spot = 50:1

——— Laser   ·············· Infrared

Symbols

Symbols	Description	Symbols	Description
📷	Take picture mode	📼	TF card is inserted
▶	Take video mode	⌧	TF card is not inserted or inserted incorrectly
⌂	Turn on the auto measure mode	▥	The status of the battery
▶	Record	KT	K-Type temperature
II	Hold	MAX	Max. IR temperature
H	Enable the high temperature alarm	MIN	Min. IR temperature
L	Enable the low temperature alarm	AVG	Average of IR temperature
◀	Turn on alarm sound	DIF	Difference of IR temperature
●	Turn on the laser	WB	Wetbulb temperature
◉	Turn off the laser	AT	Air temperature
IR	IR mode	RH	Air humidity
DP	Dewpoint mode	£	Emissivity
▱	TF card is full		

Main Menu Interface

Video Mode

Video Mode

Use to measure IR temp, air temp, air humi, dewpoint temperature and wet bulb temperature with camera. it can display the IR MAX temp., MIN temp, DIF temp, AVG temp.

Press and hold the Measure button to measure the temperature. this mode can take picture and take video.

AT: 23.9℃
RH: 48%
DP: 12.3℃
WB: 16.7℃
KT: 24.9℃
MAX: 22.4℃
MIN: 21.7℃
AVG: 22.0℃
DIF: 0.7℃

20:54:50 2011/01/03 /-1:00

Video display area

22.4℃

The current data/time

Laser

The current temperature

● **Key Sound**

Press the [▲O] and [O▼] button to select On or Off, press the OK button to exit and save.

● **Cursor**

Press the [▲O] and [O▼] button to select the cursor (cross, circle or off), press the OK button to exit and save.

● **Backlight**

Press the [▲O] and [O▼] button to select the backlight brightness, press the OK button to exit and save.

● **Font Color**

Press the [▲O] and [O▼] button to select the color, press the OK button to exit and save.

● **Screen Timeout**

Press the [▲O] and [O▼] button to select the screen auto off time or never screen auto off, press the OK button to exit and save.

● **Auto Shutdown**

Press the [▲O] and [O▼] button to select the auto power off time or never auto power off, press the OK button to exit and save.

System Settings

In the main menu interface, press (A0) and(C7) button to select "System Setting", then press the OK button to enter.

Items	Descriptions
Language	select language
Date/Time	set date and time
Unit(℃/℉)	select the temperature unit
Key Sound	select key sound on or off
Cursor	select cursor on or off
Backlight	backlight brightness adjustment
Font Color	select the font color
Screen Timeout	select screen auto off time
Auto shutdown	select auto power off time
Format Memory	format the SD card
Power Frequency	select the power frequency
Factory Default	restore factory settings
Version Info	view the version information

Press the (A0) and (C7) button to select the items, then press the OK button to enter.

● **Language**

Press the (A0) and(C7) button to select the language, press the OK button to exit and save.
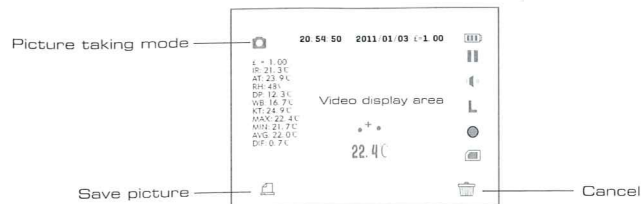
● **Date/Time**

Press the (A0) and (C7) button to select the value, press the OK button to set the next value, press the OK button again to exit and save the date and time.

● **Unit [℃/℉]**

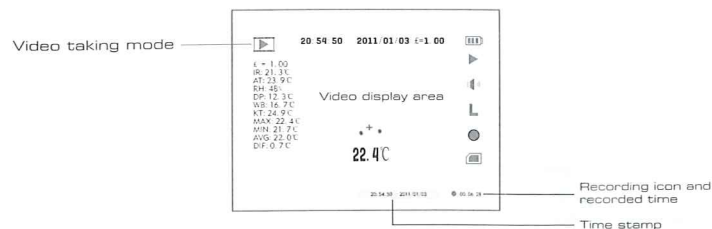Press the (A0) and (C7) button to select the unit, press the OK button to exit and save.

Take Picture Function

On the Video Mode, press the (A0) button to enter picture taking mode, then press the button again to save pictures, or press the (C7) button to cancel.

Picture taking mode

20.54.50 2011/01/03 ε=1.00

Video display area
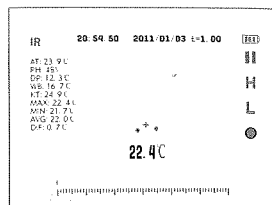
22.4℃

Save picture

Cancel

Take Video Function

On the Video Mode, press the (C7) button to enter video taking mode, press the button again to start record video, the third press the button to stop the recording and save the video.

Video taking mode

20.54.50 2011/01/03 ε=1.00

Video display area

22.4℃

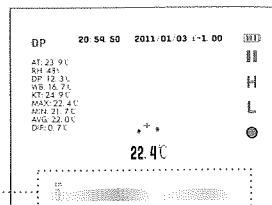Recording icon and recorded time

Time stamp

IR Mode

Use to measure IR\air\dewpoint\wet bulb temperature and air humidity without camera.
It can display the IR MAX\MIN temperature and DIF \ AVG temperature. Press and hold the measure button to measure the temperature.

```
IR      20 54 50   2011/01/03  t=1.00
AT: 23.9℃
PH 45%
DP: 12.3℃
WB: 16.7℃
KT: 24.9℃
MAX: 22.4℃
MIN: 21.7℃
AVG: 22.0℃
DIF: 0.7℃
                      22.4℃
```

Dewpoint Mode

Measure the IR\dewpoint temperature. Press and hold the measure button to measure the temperature.

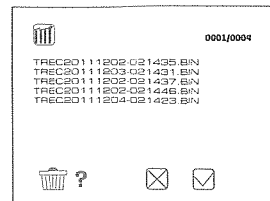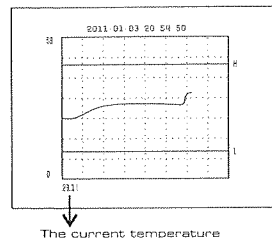This is that the IR temperature and dewpoint temperature close to the percentage of. ←

```
DP      20 54 50   2011/01/03  t=1.00
AT: 23.9℃
RH 45%
DP 12.3%
WB 16.7%
KT: 24.9℃
MAX: 22.4℃
MIN: 21.7℃
DIF: 0.7℃
                      22.4℃
```

Temperature Chat

In the Temperature Chat Mode, first set the parameter, like high alarm value, low alarm value, time interval, and the line color, then press the measure button to start logging. the unit will automatically record data. Press the (Esc) button to exit the mode, then the data will automatically save.

```
       2011 01 03 20 54 50
50



0
2011
```
The current temperature

Check next page for the detailed settings of the "Measure Setting".

```
                          0001/0004
TREC20111202-021435.BIN
TREC20111203-021431.BIN
TREC20111202-021437.BIN
TREC20111202-021446.BIN
TREC20111204-021423.BIN
```

then press the (▲D) and (◯▼) button to select " ⊠ " or " ☑ ", press OK button to confirm.

Output Date

Use the provided USB cable to connect the monitor to any PC with a USB slot. Your computer will automatically recognize the new hardware, which you may browse by double-clicking on the My Computer icon on your desktop, and then navigating into the Mobile Disk directory.

Document Management

In the main menu interface, press [AO] and [OV] button to select "Folder", then press the OK button to enter.

● Playback

Press the [AO] and [OV] button to select the photo\video or logs. then press the OK button to enter.

For photo\logs: press the [AO] and [OV] button to select photo\log, press the OK button to view photo\log, press the [OExit] button to exit.

For video: press the [AO] and [OV] button to select video, press the OK button to playback, press the OK button again to pause, press the [AO] button to go backward fast for about 2 second, press the [OV] button to go forward fast for about 2 second, press the [OExit] button to exit.

```
00:00:05   ◄◄   ►   ►►    00:01:26
                              ◄ |||||||||
ε = 1.00
IR: 21.3℃
AT: 23.9℃
RH: 45%
DP: 12.3℃        Video display area
WB: 16.7℃
KT: 24.9℃
MAX: 22.4℃
MIN: 21.7℃          ●   ●
AVG: 22.0℃
DIF: 0.7℃        22.4℃
                 ▬
             25:14:30  2015:01:03
```

● Delete

Press the [AO] and [OV] button to delete the photo\video or log. press the OK button to enter, press [AO] and [OV] button to select the photo/video/log you want to delete, then press the OK button for about 2 seconds will appears the follow interface:

☞ Remark
* The video will be automatically saved as an individual file every 30 minutes.
* "Memory Full!" appears on the LCD screen indicates that the TF card memory is full.

⚠ NOTE:
* Do not use the unit to measure shiny or polished metal surfaces (stainless steel, aluminum, etc.).
* The unit cannot measure through transparent surfaces such as glass. It will measure the surface temperature of the glass instead.
* Steam/dust/smoke, etc, can prevent accurate measurement by obstructing the unit's optics.

Measure Temperature Settings

On any measure temperature mode, press the OK button into the function menu:

Emissivity	Low Alarm	Dewpoint/Wetbulb
Auto	K Type Sensor	
Timing Shooting	Max/Min	
Laser	Avg./Dif.	
High Alarm	AT/%RH	

Items	Descriptions
Emissivity	Set the emissivity
Auto	Lock to continue measure
Timing Shooting	Enable or disable the timing shooting function and set the shooting time
Laser	Enable or disable of laser
High Alarm	On or off the high temperature alarm and set the value
Low Alarm	On or off the low temperature alarm and set the value
K Type Sensor	Enable or disable the type-k input
Max/Min	Display the max. or min. IR temperature
Avg./Dif.	Display the average or difference of IR temperature
AT/%RH	Display the air temperature and humidity
Dewpoint/Wetbulb	Display the dewpoint and wet bulb temperature

Press the (▲◎) and (◎▼) button to select the items, then press the OK button to enter.

● **Emissivity**

ON the first rectangle(ε=0.94), press the OK button to select emissivity. press the (▲◎) and (◎▼) button to adjust the value. then press the OK button to confirm. press (▲◎) and (◎▼) button to select the emissivities of the materials. press the OK button to exit and save.

● **Auto**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.

Note: if enable the auto mode. the unit will automatic continue measure.

● **Timing Shooting**

On the first rectangle, press the OK button to select time. press the (▲◎) and (◎▼) button to adjust the time, press the OK button to exit and save.

Or press (▲◎) and (◎▼) button to select Off, then press OK button to exit and save.

● **Laser**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.

● **High Alarm**

On the first rectangle, press the OK button to select temperature, press the (▲◎) and (◎▼) button to adjust the temperature, press the OK button to exit and save.

Or press (▲◎) and (◎▼) button to select Off, then press OK button to exit and save.

● **Low Alarm**

On the first rectangle, press the OK button to select temperature, press the (▲◎) and (◎▼) button to adjust the temperature, press the OK button to exit and save.

Or press (▲◎) and (◎▼) button to select Off, then press OK button to exit and save.

● **K Type Sensor**

Press the (▲◎) and (◎▼) button to select On or Off, and then press the OK button to exit and save.

Note: If insert Type-k probe, enable will be selected by default. Users can select the disable. prohibiting LCD display Type-K temperature.

● **Max/Min**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.

● **Avg./Dif.**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.

● **AT/%RH**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.

● **Dewpoint/Wetbulb**

Press the (▲◎) and (◎▼) button to select On or Off, press OK button to exit and save.