# USER MANUAL

## Compact Thermal Imaging

## Multimeter with Meterlink®
## DM266

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# USER MANUAL
# Compact Thermal Imaging Multimeter with Meterlink®



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# 1 Advisories

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## 1.2 Quality Assurance

The Quality Management System under which these products are developed and manufactured has been certified in accordance with the ISO 9001 standard. FLIR Systems, Inc. is committed to a policy of continuous development; therefore, we reserve the right to make changes and improvements on any of the products without prior notice.

## 1.3 Documentation

To access the latest manuals and notifications, go to the Download tab at: It only takes a few minutes to register online. In the download area you will also find the latest releases of manuals for our other products, as well as manuals for our historical and obsolete products.

## 1.4 Disposal of Electronic Waste

As with most electronic products, this equipment must be disposed of in an environmentally friendly way, and in accordance with existing regulations for electronic waste. Please contact your FLIR representative for more details.



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# 2 Introduction

Thank you for selecting the DM266 Thermal Imaging Multimeter and TA93 remote control unit. The DM266 is a next-generation multimeter, with color display, built-in IR camera, video recorder, data logger Bluetooth®, and many other features listed below.

## 2.1 Features

- Multimeter functions: Voltage, resistance, continuity, diode, capacitance, and line frequency.
- Advanced functions: Automatic range, true RMS AC measurements, low impedance mode, and VFD low pass filter.
- Color IPS LCD that adjusts its orientation based on position of meter.
- Thermal IR imaging with 240 x 320 pixel resolution.
- Image capture and video recording. Images (*.jpg) contain temperature data.
- Infrared Guided Measurement (IGM) capability for identifying temperature changes on target areas.
- Digital camera imaging with 1600 x 1200 pixel resolution.
- Data logger with adjustable sample rate stores up to 40,000 readings per file.
- Bluetooth with Meterlink mobile application connectivity.
- Remote control unit for capturing images and freezing the displayed reading remotely.
- Rechargeable lithium battery with automatic power off (APO).

## 2.2 Supplied Equipment

- DM266 meter.
- Set of test leads (CAT IV 600 V).
- USB-A to USB-C cable for battery charging and PC interface.
- Soft carrying case.
- Printed Quick Start document.
- TA93 remote controller.
- Registration card.



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# 3 Safety

## 3.1 Safety Notes

- Before operating the device, you must read, understand, and follow all instructions, dangers, warnings, cautions, and notes.
- FLIR Systems reserves the right to discontinue models, parts or accessories, and other items, or to change specifications at any time without prior notice.

**WARNING**

- Do not operate the device if you do not have the correct knowledge. Incorrect operation of the device can cause damage, shock, injury or death to persons.
- Do not start a measuring procedure before you have set the function switch to the correct position. Failure to do so can cause damage to the instrument and can cause injury to persons.
- Do not change to the resistance mode when measuring voltage. This can cause damage to the instrument and can cause injury to persons.
- You must disconnect the test leads from the circuit under test before you change the range. Failure to observe this warning can damage the instrument and cause bodily injury.
- Do not use the device if the test leads and/or the device show signs of damage. Injury to persons can occur.
- Be careful performing measurements if the voltages are > 30 V DC or AC RMS. There is a risk of shock from these voltages. Injury to persons can occur.
- Do not do diode, resistance or continuity tests before you have removed the power from capacitors and other devices under test. Injury to persons can occur.
- Be careful when performing voltage checks on electrical outlets. These checks are difficult because of the uncertainty of the connection to the recessed electrical contacts. You must not rely solely on this device when determining if the terminals are not “live”. There is a risk of electrical shock. Injury to person can occur.
- Do not place or use the device in strong direct sunlight for extended periods.
- The battery can be charged while the DM266 is powered. The DM266 is well designed for charge and use, however the USB charging cable does not provide adequate insulation protection against dangerous live conductors (for example, a voltage source under measurement). To avoid electric shock while charging, do NOT allow a live conductor to contact the USB cable.

**CAUTION**

Do not use the device in a manner not specified by the manufacturer. This can cause damage to the protection provided.



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| | |
|---|---|
| ⚠ | This symbol, adjacent to another symbol or terminal, indicates that the user must refer to the user manual for further information. |
| ⚠ | This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present. |
| ⧈ | Double insulation. |

## 3.2 FCC Compliance

| ⚠ **WARNING** |
|---|
| Operation of this equipment in a residential environment could cause radio interference.<br>Class A equipment is intended for use in an industrial environment.<br>Because of conducted, as well as radiated disturbances, potential difficulties exist in ensuring electromagnetic compatibility in other environments. |

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

| ⚠ **CAUTION** |
|---|
| Exposure to Radio Frequency Radiation.<br>To comply with FCC/IC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons. This device must not be co-located or operating in conjunction with any other antenna or transmitter. |

| ⚠ **WARNING** |
|---|
| Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. |



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### 3.3 Industry Canada Compliance

| ⚠ CAUTION |
| --- |
| Exposure to Radio Frequency Radiation.<br>To comply with RSS 102 RF exposure compliance requirements, for mobile configurations, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons. This device must not be co-located or operating in conjunction with any other antenna or transmitter. |



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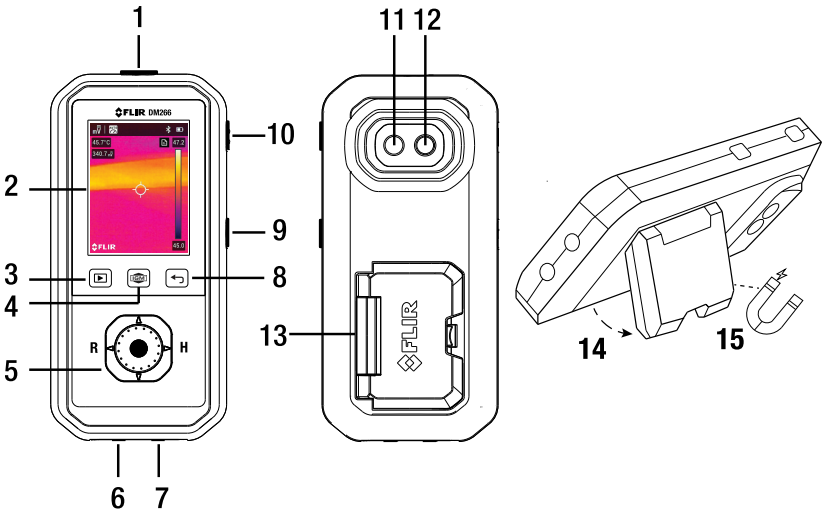
# 4 Description

## 4.1 Meter Front and Back




1. USB port
2. Display
3. GALLERY button (Image, video, and data log repository)
4. IGM thermal imager button
5. Scroll wheel with ENTER (centre) button, and multifunction navigation buttons
6. COM test lead input terminal
7. Positive test lead input terminal
8. RETURN button
9. Power button
10. Image and video capture button
11. Thermal camera lens
12. Visible light (digital) camera lens
13. Tilt stand
14. Tilt stand folding out
15. Tilt stand is magnetic



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## 4.2 Meter Bottom

The test leads connect to the input terminals at the bottom of the meter. Connect the black test lead to the COM jack (1) and the red test lead to the voltage/resistance jack (2).

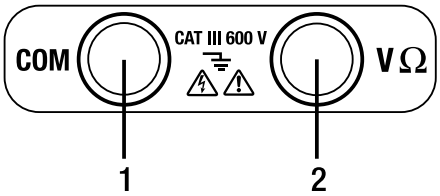


**Figure 4.1** Test lead input terminals on bottom of meter.

## 4.3 Control Buttons

- Power: Located on middle right side of meter. Long press to switch meter ON or OFF. Short press to wake meter from sleep (APO) mode.
- Image and video capture: Located on the upper right side of meter. Short press to capture an image. Long press to start video recording (short press to stop).
- ▶ GALLERY button. Press to open image, video, and data log Gallery.
- IGM Thermal Imager button. Press to open/close the thermal imager.
- ↩ RETURN button. Press to exit a menu and return to previous screen.



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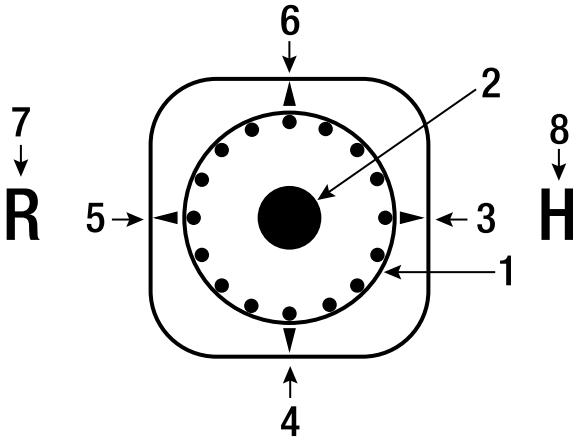
### 4.4 Scroll Wheel and Multifunction Navigation Pad




1. Scroll wheel: Select a measurement function or scroll through menus.
2. ENTER button: Press to open main menu, activate measurements, and select menu items.
3. Right navigation button.
4. Down navigation button.
5. Left navigation button.
6. Up navigation button and VFD enable/disable button (long press).
7. **R** (RANGE): Left navigation button is also used to manually change range (long press to return to Auto mode).
8. **H** (HOLD): Right navigation button also freezes/unfreezes reading.



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## 4.5 Display Descriptions

### *4.5.1 Multimeter Display*

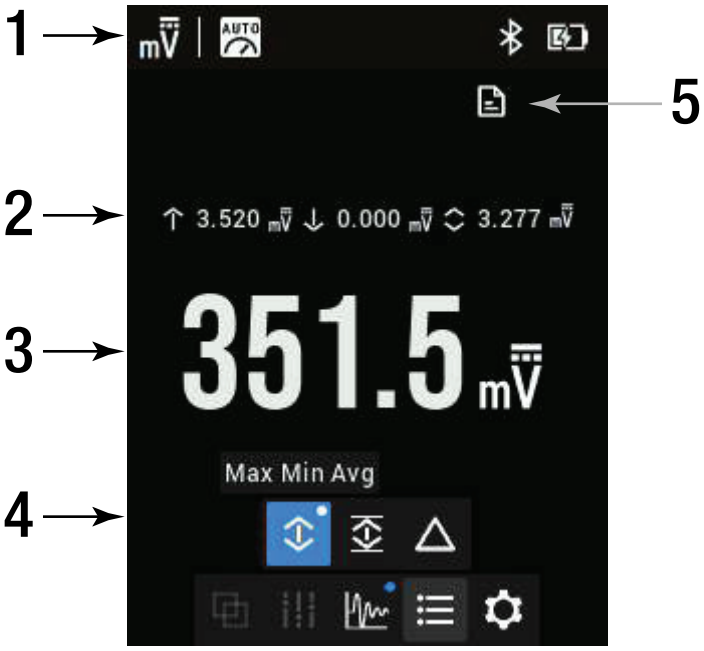


**Figure 4.2** Multimeter display example. Refer to numbered descriptions below.

1. Top row icons. Left-most icon shows selected measurement function.
2. Secondary display area for advanced functions. MAX-MIN-AVG readings shown here.
3. Primary measurement reading.
4. Menu row (press ENTER to open menu). Measurement functions are also display here when the scroll wheel is turned.
5. Data logger icon appears when meter is logging.



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### 4.5.2 *Thermal Imaging Display*

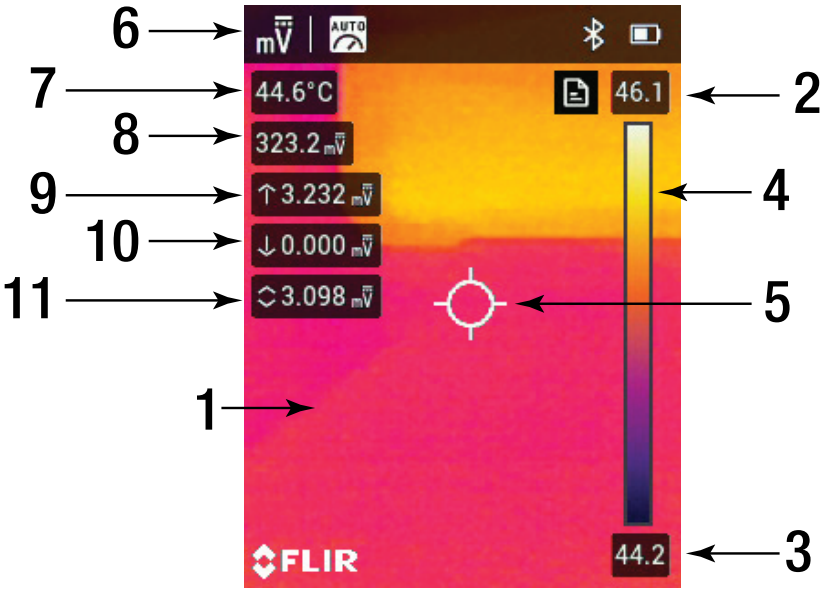


**Figure 4.3** Thermal image example. Refer to numbered descriptions below.

1. Thermal image.
2. Highest temperature measured in image.
3. Lowest temperature measured in image.
4. Full temperature range of image.
5. Cross hair for targeting.
6. Selected multimeter measurement function icon.
7. Measured temperature of targeted spot.
8. Multimeter measurement.
9. Maximum multimeter measurement.
10. Minimum multimeter measurement.
11. Average multimeter measurement.



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### 4.5.3 Top Row Icons

| | |
|---|---|
| | Battery Status icon (not charging)<br>Battery Status icon (charging) |
| AUTO | Auto range |
| H | Data Hold |
| | Bluetooth |
| | Auto Power Off (APO) |
| VF D | Low pass filter |

### 4.5.4 Measurement Display Icons

| | |
|---|---|
| | Maximum, Minimum, Average readings (L to R) |
| °F °C | Temperature units |
| ~ | AC voltage |
| ⎓ | DC voltage |
| •))) | Continuity |
| Ω | Resistance (ohms) |
| ⊣▶⊢ | Diode |
| V | Voltage |
| ⊣⊢ | Capacitance (F: farads) |
| Hz | Frequency (hertz) |
| LoZ | Low impedance mode |
| | Data logger |
| | Peak Hold menu icon<br>Peak MAX indicator<br>Peak MIN indicator |



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| | |
|---|---|
| △ | Relative mode |
| **OL** | Out of range measurement |
| ⚠ | > 30 V (AC/DC) |
| **k** | $10^3$ (kilo- prefix) |
| **m** | $10^{-3}$ (milli- prefix) |
| **µ** | $10^{-6}$ (micro- prefix) |



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# 5 Quick Start

1. Connect the test leads to the input terminals on bottom of meter.
2. Long press the power button (middle right side) to switch ON or OFF.
3. Use the scroll wheel to select a measurement function and press the ENTER (centre) button to activate (a blue dot will appear next to the activated measurement icon). Refer to the dedicated measurement information (Section 7) for specific instructions.
4. Touch the test leads to the circuit under test and read the auto range measurement on the display. Press the ‘right’ navigation button to hold (freeze) the displayed reading (H will appear); press again to release the reading. Press the ‘left’ navigation button to change the range manually; long press to return to automatic range mode.
5. Press the IGM button to open or close the thermal imager. The multimeter operates normally in the IGM mode.



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# 6 Meter Power

The meter is powered by an internal rechargeable lithium battery that is charged before it is shipped. The battery status icon is shown at the top right of the display. The meter also displays a full screen low battery alert.

To recharge the battery, connect the meter to a standard charger using the supplied USB cable. The meter's USB port is at the top, under the protective flap. For more information, refer to Section 15, *Maintenance*.

| ⚠ **WARNING** |
|---|
| The battery can be charged while the DM266 is powered. The DM266 is well designed for charge and use, however the USB charging cable does not provide adequate insulation protection against dangerous live conductors (for example, a voltage source under measurement). To avoid electric shock while charging, do NOT allow a live conductor to contact the USB cable. |

| ⚠ **CAUTION** |
|---|
| The battery is not user-serviceable, contact Flir Service if the battery requires replacement or service. |

## 6.1 Powering the Meter

Long press the power button (middle, right side) to switch ON or OFF. Short press the power button to wake the meter after it enters sleep mode (APO).

## 6.2 Auto Power Off (APO)

The meter enters sleep mode after a programmable period of inactivity, to customize this setting please see Section 12, *Settings Menu*. The default APO time is 5 minutes. The time can be set to 2, 5, or 10 minutes (select OFF to disable APO). When APO is disabled, the APO icon ⏻ switches OFF. To wake the meter from an APO time-out, short press the power button.



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# 7 Multimeter Operation

**CAUTION**

Before operating the device, you must read, understand, and follow all instructions, dangers, warnings, cautions, and notes.

**CAUTION**

When connecting the probe leads to the device under test, connect the negative lead before connecting the positive lead. When removing the probe leads, remove the positive lead before removing the negative lead.

**CAUTION**

Before and after hazardous voltage measurements, test the voltage function on a known source (such as line voltage) to determine proper meter functionality.

**CAUTION**

Probe assemblies to be used for MAINS measurements must be rated as appropriate for CAT III or CAT IV, according to IEC 61010–031, and must have a voltage rating at least the voltage of the circuit to be measured.

## 7.1 Multimeter Overview

The DM266 operates as a standard multimeter with an improved design that offers a scroll wheel for browsing measurement functions and an ENTER (centre) button for activating the selected measurement function. A blue dot is shown next to the measurement icon currently activated.

The menu, at the bottom of the display, showing the available measurement functions automatically hides after several seconds, and reappears when the scroll wheel is turned.

The test leads connect to the input terminals on the bottom of the meter. The measurement reading and the function icons are shown on the display monitor. If you rotate the meter, the display orientation will change to accommodate the rotation.



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## 7.2 Automatic and Manual Range

The meter defaults to the automatic range mode, with the auto range icon shown on the upper left corner of the monitor. To change the range manually, press the 'left' navigation button to step to the desired range. Long press the button to return to the auto range mode.

If the input is out-of-range, **OL** is displayed. Please do not attempt to make measurements beyond the specified ranges of the meter.

## 7.3 Display Hold

To hold (freeze) the displayed reading, press the 'right' navigation button, the **H** icon will appear. Press the navigation button again to release the reading.

## 7.4 Screen Shot Captures

The DM266 can capture screen shots in multimeter mode using the image capture button (upper right side of meter). Screen shots can be shared with mobile devices using the Meterlink app (Section 13) or downloaded to a PC (Section 14). Refer to the instructions provided in the thermal imaging section of this manual (Section 8) for additional information regarding image capturing.

## 7.5 Advanced Multimeter Features

The features listed below are available from the Advanced Menu, explained in detail in Section 10.

- MAX/MIN/AVG: View the highest, lowest, and average readings.
- Peak Hold: Capture and view quick positive and negative peak measurement values.
- Relative Mode: Store a reference measurement and display subsequent readings relative to the stored reference.



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## 7.6 AC Voltage and Frequency Measurements

| ⚠ CAUTION |
|---|
| Use caution when the measured voltage is greater than 30 V DC or AC RMS. |

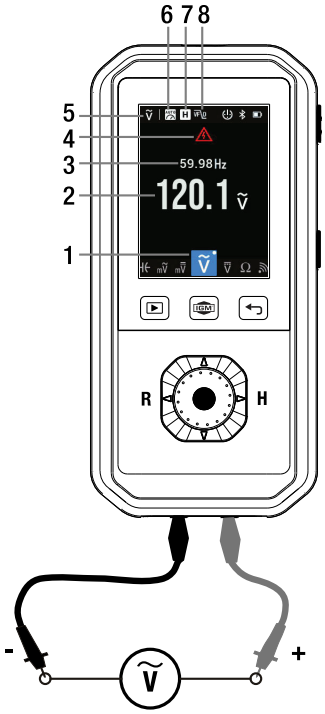


**Figure 7.1** AC Voltage Measurements.

1. Selected function using scroll wheel.
2. Measurement reading.
3. Line frequency measurement.
4. High voltage alert.
5. Measurement icon.
6. Automatic range indicator
7. Display Hold mode.
8. VFD (low pass filter engaged).

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the AC voltage Ṽ position and press the ENTER button to activate. A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Place the probe ends of the test leads in parallel to the part under test.



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4. Read the auto range voltage measurement on the display. The frequency (Hz) of the voltage is shown above the voltage reading.
5. To switch to manual range mode, short press the ‘left’ navigation button. Subsequent short presses will step through the available ranges. Long press the button to return to auto range mode.
6. Short press the ‘right’ navigation button to freeze or release the displayed measurement.
7. The voltage measurement is shown, digitally, at the centre of the display. When in IGM mode, the multimeter readings are shown on the upper left of the thermal image.
8. To engage/disengage the low pass filter (VFD mode) in AC mode, long press the ‘up’ navigation button. The VFD icon will appear at the top of the display when engaged.
9. The warning symbol is shown when the measured voltage is > 30 V DC or AC RMS.



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## 7.7 DC Voltage Measurements

**CAUTION**

Use caution when the measured voltage is greater than 30 V DC or AC RMS.

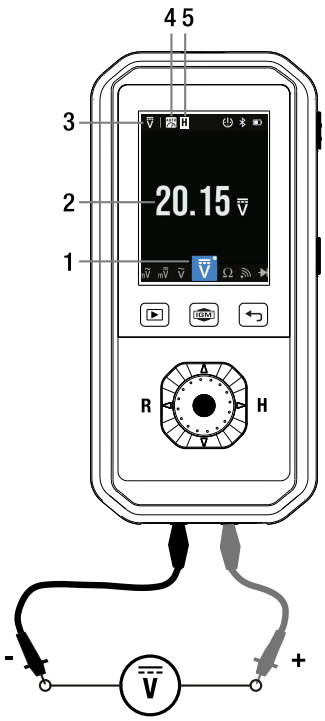


**Figure 7.2** DC Voltage Measurements.

1. Select function using scroll wheel.
2. Measurement reading.
3. Measurement icon.
4. Automatic range indicator
5. Display Hold mode.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the DC voltage V position and press the ENTER button to activate. A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Place the probe ends of the test leads in parallel to the part under test.



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4. Read the auto range voltage measurement on the display.
5. To switch to manual range mode, short press the ‘left’ navigation button. Subsequent short presses will step through the available ranges. Long press the button to return to auto range mode.
6. Short press the ‘right’ navigation button to freeze or release the displayed measurement.
7. The voltage measurement is shown, digitally, at the centre of the display. When in IGM mode, the multimeter readings are shown on the upper left of the thermal image.
8. The warning symbol is shown when the measured voltage is > 30 V DC or AC RMS.

### 7.8 Low Impedance (LoZ) AC Voltage Measurements

| ⚠ CAUTION |
|---|
| Use caution when the measured voltage is greater than 30 V DC or AC RMS. |

Lo Z voltage measurements eliminate the affects of ‘ghost’ voltages. The procedure for taking Lo Z voltage measurements is virtually the same as for taking standard voltage measurements, the only difference is that for Lo Z voltage measurements you select the AC LoZ icon $\widetilde{\text{LoZ}}$ with the scroll wheel. The blue dot will appear next to the selected icon. The selected LoZ icon will also appear on the upper left corner of the display.

Refer to Section 7.6 for AC voltage measurement instructions.



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## 7.9 Low Impedance (LoZ) DC Voltage Measurements

| ⚠ CAUTION |
|---|
| Use caution when the measured voltage is greater than 30 V DC or AC RMS. |

Lo Z voltage measurements eliminate the affects of ‘ghost’ voltages. The procedure for taking LoZ voltage measurements is virtually the same as for taking standard voltage measurements, the only difference is that for LoZ voltage measurements you select the DC LoZ icon **LoZ** with the scroll wheel. The blue dot will appear next to the selected icon. The selected LoZ icon will also appear on the upper left corner of the display.

Refer to Section 7.7 for DC voltage measurement instructions.

## 7.10 Low Pass Filter (VFD) AC Voltage Measurements

| ⚠ CAUTION |
|---|
| Use caution when the measured voltage is greater than 30 V DC or AC RMS. |

The VFD feature eliminates high frequency noise in AC voltage measurements by means of a low pass filter. The VFD mode is designed for variable frequency drive measurements. When measuring AC voltage, activate/deactivate the low pass filter by pressing the ‘up’ navigation button for three seconds (in portrait orientation only). The procedure for taking VFD Voltage measurements is virtually the same as for standard AC voltage measurements (Section 7.6).



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## 7.11 Resistance Measurements

**WARNING**

Do not take resistance measurements before removing power to the resistor or circuit under test. Injury to persons can occur.

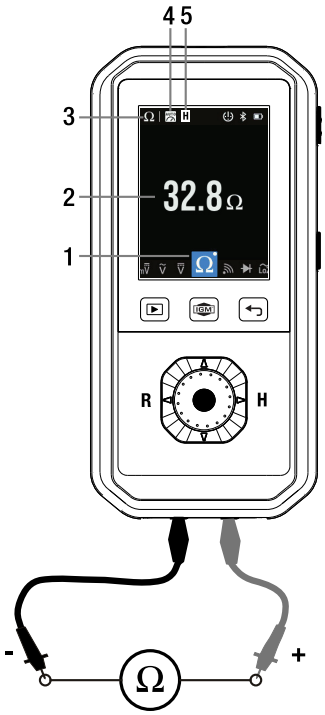


**Figure 7.3** Resistance Measurements.

1. Selected function using scroll wheel.
2. Measurement reading.
3. Selected measurement icon.
4. Automatic range icon.
5. Display Hold icon.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the resistance position Ω and press ENTER. A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Place the probe ends of the test leads in parallel to the part under test.
4. Read the resistance value on the display.



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5. To switch to manual range mode, short press the ‘left’ navigation button. Subsequent short presses will step through the available ranges. Long press the button to return to auto range mode.
6. Short press the ‘right’ navigation button to freeze or release the displayed measurement.



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## 7.12 Continuity Measurements

**WARNING**

Do not perform continuity tests before removing power to the device under test. Injury to persons can occur.

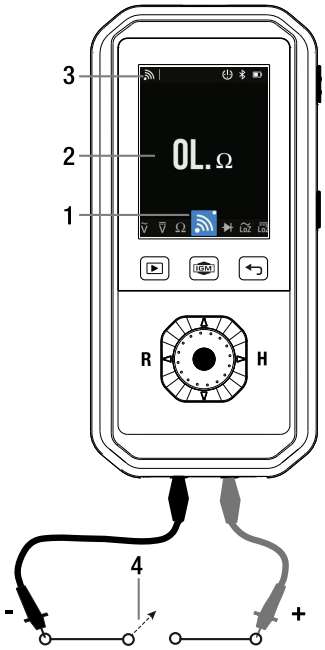


**Figure 7.4** Continuity Measurements.

1. Selected function using scroll wheel.
2. Measurement reading.
3. Selected measurement icon.
4. When measurement circuit or wire is open, the reading will be **OL** (infinite resistance), when the circuit is shorted, the resistance reading will be zero.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the continuity position •)). A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Place the probe ends of the test leads across the wire or device under test. If the measurement is < 30 Ω, the meter will beep. If the measurement is > 150 Ω, the meter will not beep. Between 30 Ω and 150 Ω, the meter will stop beeping at an unspecified point.



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4. View the measurements on the display.
5. Short press the ‘right’ navigation button to freeze or release the displayed measurement.



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## 7.13 Capacitance Measurements

**CAUTION**

Discharge capacitors before taking measurements.

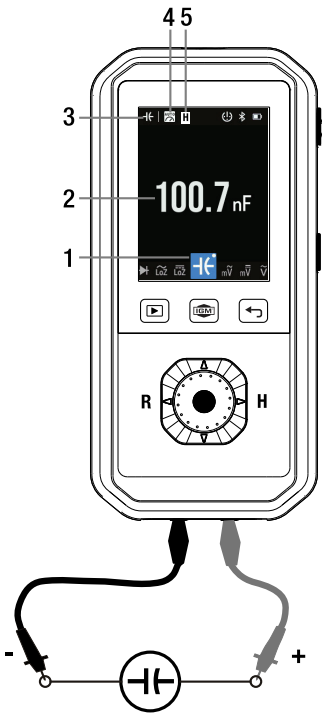


**Figure 7.5** Capacitance Measurements.

1. Selected function using scroll wheel.
2. Measurement reading.
3. Selected measurement icon.
4. Automatic range icon.
5. Display Hold icon.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the capacitance position ⊣⊢. A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Place the probe ends of the test leads in parallel to the part under test.
4. Read the auto range measurement on the display.



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5. To switch to manual range mode, short press the ‘left’ navigation button. Subsequent short presses will step through the available ranges. Long press the button to return to auto range mode.
6. Short press the ‘right’ navigation button to freeze or release the displayed measurement.



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## 7.14 Diode Measurements

**WARNING**

Do not perform diode tests before removing power to the diode under test. Injury to persons can occur.

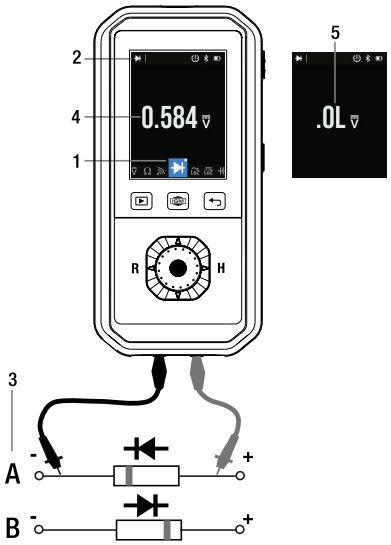


**Figure 7.6** Diode Measurements.

1. Selected function using scroll wheel.
2. Selected measurement icon.
3. Take two readings, in the two orientations (A and B) shown.
4. Voltage reading for orientation 'A'.
5. Voltage reading for orientation 'B'.

1. Insert the black test lead into the negative (COM) terminal and the red test lead into the positive terminal.
2. Turn the scroll wheel to the diode position ⊣▶⊢. A blue dot appears next to the selected measurement icon. The selected measurement icon is also shown on the top row of the display bar (at left).
3. Take a forward bias diode measurement and note the reading.
4. Take a reverse bias diode measurement and note the reading.
5. View the readings at the centre of the display.
6. If the reading is between 0.40 V and 0.90 V in one direction and **OL** (overload) in the opposite direction, the component is good. If the measurement is **0 V** in both directions (shorted) or **OL** in both directions (open), the component is bad.



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# 8 Thermal Imaging

## 8.1 Basics

Thermal images represent infrared energy emitted by surfaces that you target. Color variations in the image represent temperature variations. The display cross hairs assist in targeting.

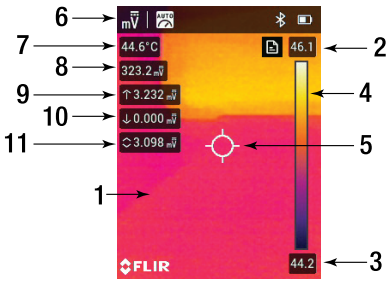
The meter also digitally displays the measured temperature of a targeted spot, in the upper left hand corner of the display, superimposed on the thermal image.

See the Appendices (Section 18) for detailed information regarding thermal imaging.

Saved thermal images are *.jpg type and include temperature data.

Press the IGM button to open the camera. Note that the battery must have a charge of at least 25% for the imager to operate.

## 8.2 Thermal Imaging Display Description




1. Thermal image.
2. Highest temperature measured in image.
3. Lowest temperature measured in image.
4. Image temperature range.
5. Cross hair for targeting.
6. Selected multimeter measurement function icon.
7. Measured temperature of targeted spot.
8. Multimeter measurement.
9. Maximum multimeter measurement.
10. Minimum multimeter measurement.
11. Average multimeter measurement.

## 8.3 Thermal Imager Operation

The thermal imaging camera lens and detection sensors are located on the back of the meter. When you point the camera lenses towards an object, you view its image on the meter's display. The temperature of the targeted surface is shown on the upper, left-hand corner of the display.



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Use the cross hairs for targeting, these can be switched ON or OFF in the Thermal Settings menu (Section 10.3).

In the thermal imaging mode, the meter continues to operate normally as a multimeter. Electrical measurements are shown underneath the temperature reading. In the Image Mode menu (Section 10.2) you can remove the electrical measurement displays from the thermal images.

The thermal imager's field of view (FOV) is 44° (horizontal) by 57° (vertical).

## 8.4 Configuring the Thermal Imager

The thermal imager is configured using the Image Mode (Section 10.2) and Thermal Settings (Section 10.3) menus. Below is a list of the available thermal imaging settings in these two menus.

- Image Mode: Select Thermal MSX, Thermal image only, or Digital camera only modes.
- Thermal Settings: Color palette, Measurement Mode, Temperature Scale, and Emissivity.

## 8.5 Image and Video Capture

### *8.5.1 Overview*

The meter can capture thermal and visible light (digital camera) images and video and store them in the meter's internal memory. These can be viewed, deleted, and shared from the Gallery menu (Section 9).

Images and video can be shared with mobile devices, using the Meterlink mobile app (Section 13), or can be downloaded to a PC (Section 14) using the supplied USB-C connecting cable. The USB-C port is located at the top of the meter.

Saved thermal images are *.jpg type and include temperature data.

### *8.5.2 Recording Images and Video*

When using the thermal or digital camera, short press the image capture button to save the displayed image. Long press the button to start recording video, and short press the button to stop the recording.

In multimeter mode (when not using cameras), you can capture screen shots as images (not video) by pressing the image capture button.

See Section 9 (*Gallery*), Section 13 (*Meterlink*), and Section 14 (*PC Interface*) for information on viewing, sharing, and downloading stored media.



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# 9 Media Gallery

## 9.1 Gallery Overview

The Gallery is the meter's repository for images, video, and data log results that you capture. The stored media is organized into three folders, one for each media type. Media files can be opened and viewed, shared, and deleted directly from the Gallery.

## 9.2 Navigating the Gallery

Press the GALLERY button to open the repository, and three folders will be presented: Image Files, Video Files, and Log Results.

1. Press the GALLERY button.
2. Scroll to the desired media folder and press ENTER.
3. Navigate to the (view) or **X** (delete all files) icon at the bottom of the screen and press ENTER.
4. If you select , the folder will open and show a list of saved media.
5. If you select **X**, you will be prompted to delete all files or cancel. Note that deleting all files in a folder permanently removes all media from that folder.
6. When viewing a folder list, scroll to an item and press ENTER. For image and video media, the following options appear at the bottom of the screen: (view), (share), or (delete). For data log files, the options are the same, except that the view icon is different .
7. If you select or , the media file will open. If you select , you can share the file with a mobile device, using the Meterlink application (Section 13). If you select , the file will be deleted.
8. To download a file to a PC, connect the meter to the PC using the supplied USB cable. The PC recognizes the meter as an external storage drive; see Section 14 additional information.



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# 10 Main Menu

## 10.1 Main Menu Overview

To open the main menu, press the ENTER button. The five menu items, listed below, will appear at the bottom of the monitor. All five are available from the thermal imaging mode, and three are available from the multimeter mode. Use the scroll wheel to browse the menu, and press the ENTER button to open a menu. Each item is explained in detail in the following sections.

Image mode (IGM mode only): Alignment distance, Thermal MSX image, Thermal image, Digital image.

Thermal settings (IGM mode only): Color, Measurement, Temperature Scale, Emissivity.

Logging: Press the ENTER button to start/stop the data logger.

Advanced menu: MAX/MIN/AVG, Peak Hold, Relative.

Settings: Measurement Parameters, Saving Options, Device Settings, Information.



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## 10.2 Image Mode Menu

The image mode is only accessible in the IGM mode. The image mode menu has four options covered in the next sections. To access these options, press the ENTER button at the image mode icon in the main menu, use the navigation buttons to scroll to an option, and press ENTER to open it.

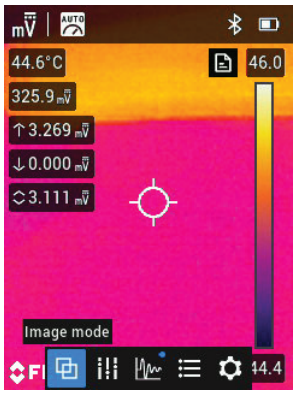


**Figure 10.1** Image Mode Menu. Press ENTER on this icon to open the menu.



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### *10.2.1 Alignment Distance*

In MSX mode, the digital camera image is superimposed on the thermal image to provide greater detail. The Alignment tool is used to optimize the alignment of the two images.

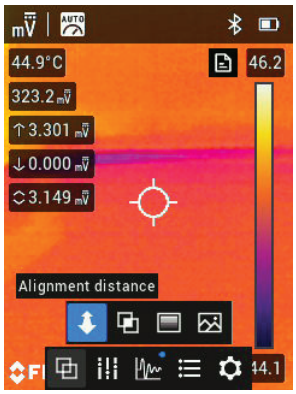


**Figure 10.2** Alignment Distance Menu. Press ENTER on this icon to start the alignment process.

1. Scroll to the Thermal MSX icon in the Image Mode menu, and press ENTER to select it.
2. Scroll to the Alignment tool icon , and press ENTER to open it.
3. Use the ‘left’ and ‘right’ navigation buttons to align the images.



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### *10.2.2 Thermal MSX Image*

MSX provides detail and clarity to thermal images by superimposing digital camera images. Scroll to the Thermal MSX icon in the Image Mode menu, and press ENTER to select it. Use the Alignment tool, explained above, to align the two images.

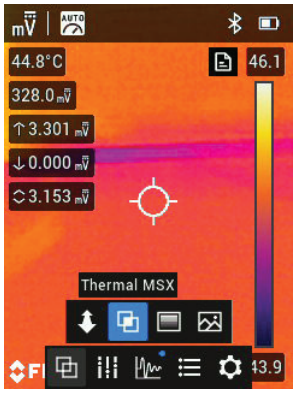


**Figure 10.3** Thermal MSX image mode.



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### *10.2.3 Thermal Image*

In the Thermal Image mode, the display shows a thermal image without MSX.

Scroll to the Thermal Image icon in the Image Mode menu, and press ENTER to select it.

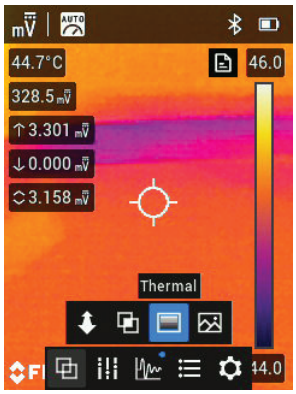


**Figure 10.4** Thermal Image mode.



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### *10.2.4 Digital Camera Image*

In the Digital Camera mode, the display shows visible light camera images.

Scroll to the Digital Camera icon in the Image Mode menu, and press ENTER to select it.

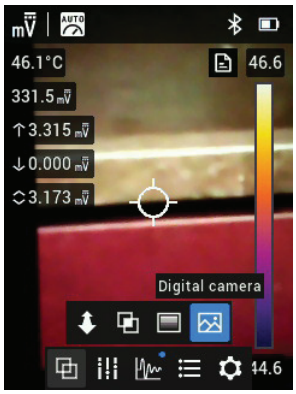


**Figure 10.5** Digital camera image example.



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## 10.3 Thermal Settings Menu

The Thermal Settings icon is only accessible in the thermal image mode. The Thermal Settings menu has five options, *Color*, *Measurement*, *Temperature Scale*, and *Emissivity*, covered in the next sections. To access these options, press ENTER at the Thermal Settings icon in the main menu, use the navigation buttons to scroll to the desired option, and press ENTER to open it.

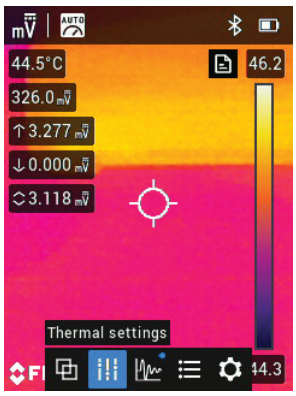


**Figure 10.6** Thermal Settings menu.



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### *10.3.1 Colors*

Press ENTER on the Color icon, scroll to the desired color palette, and press ENTER to select it. The options are explained below, and shown in Figure 10.6.

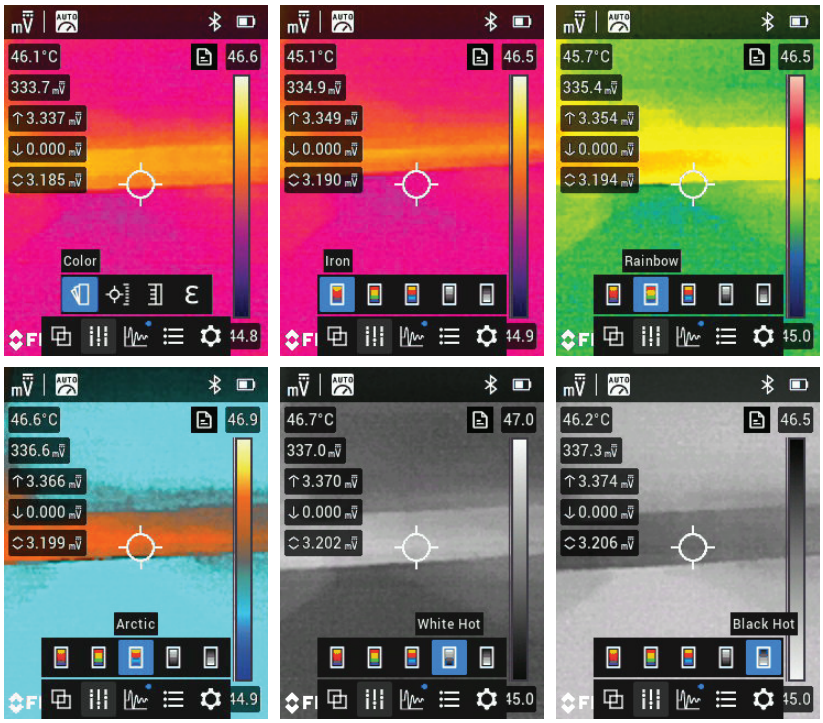


**Figure 10.7** Color palettes in the Thermal Settings menu.

- **IRON**: General-purpose palette that quickly identifies thermal anomalies using color to show heat distribution and subtle details. Hot objects are shown in lighter, warm colors while colder objects are show in darker, cool colors.
- **RAINBOW**: Similar to Iron but with additional colors; useful for pinpointing objects in environments with minimal heat differences.



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- **ARCTIC**: Identifies warm objects with a gold color and colder objects with shades of blue. Differing colors quickly show heat sources while darker shading shows slight temperature changes.
- **WHITE HOT**: The most commonly used palette. White Hot displays warmer objects in white and cooler objects in black. Gray scale palettes offer simplicity for scenes with a wide temperature span and generate images with realistic details. The versatility of White Hot makes it appealing for use in shifting landscapes and urban areas.
- **BLACK HOT**: Black Hot is the inverse of White Hot, displaying warmer objects as black and cooler objects as white. Useful for law enforcement and environmental applications, displaying body heat in a clear, lifelike image.



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### 10.3.2 Measurement

Press ENTER on the Measurement icon , scroll to desired mode, and press ENTER to select it. The measurement modes are *Centre Spot*, *Hot Spot*, *Cold Spot*, and *No Measurements*, explained in the sections below.

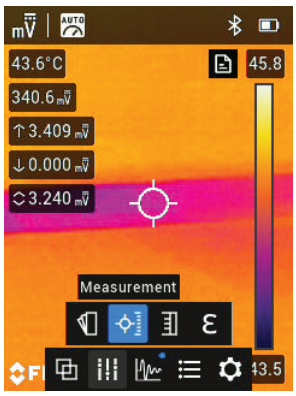


**Figure 10.8** The Measurement menu.



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### 10.3.2.1 Center Spot

Select to measure surface temperature using cross hair targeting. The temperature measurement is shown on the upper left-hand corner of the thermal image.

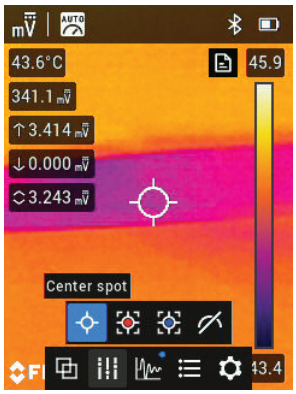


**Figure 10.9** Center Spot mode.



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### 10.3.2.2 Hot and Cold Spot

Select or to automatically target the warmest (red) or coldest (blue) spot The thermal image will show a rectangle that can be used for targeting an area. Red or blue cross hairs will automatically move to the warmest (red) or coldest (blue) spot in the rectangle.

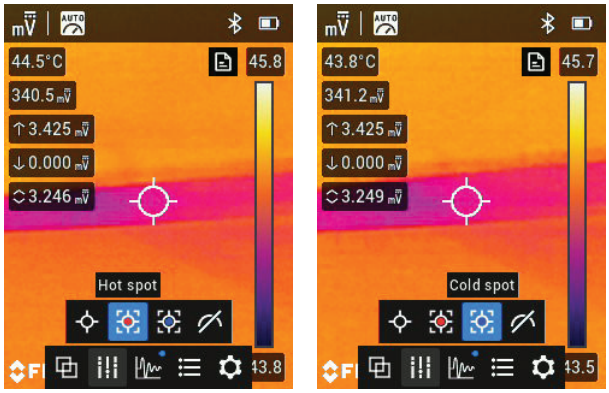


**Figure 10.10** Hot Spot (left) and Cold Spot (right) modes.



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### 10.3.2.3 No Measurements

Select to remove the cross hairs and multimeter/temperature measurements from the thermal image.

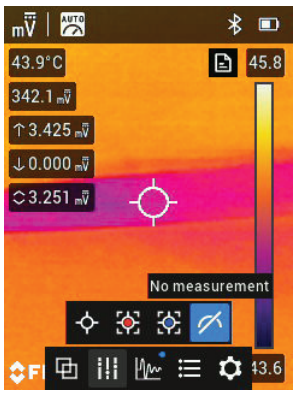


**Figure 10.11** No Measurement mode.



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### *10.3.3 Temperature Scale*

Press ENTER on the Temperature Scale icon , scroll to *Auto* or *Lock*, and press ENTER to select it.

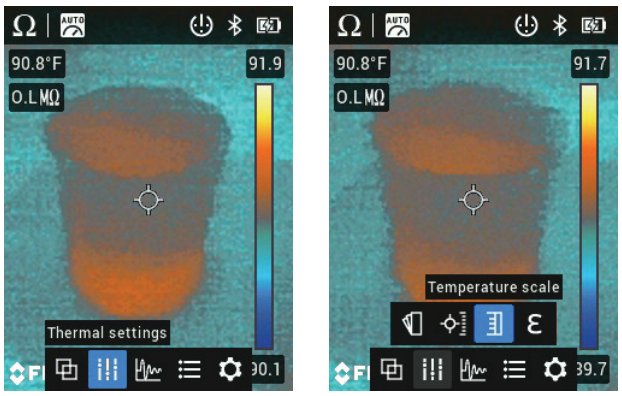


**Figure 10.12** Temperature Scale menu.

Note: For best results, allow a warm-up period of 3-5 minutes before using this feature.

The Auto/Lock Scale option allows the color palette range to be adjusted to suit a given application. For example, when viewing both cold and hot objects in the same frame, the auto-scaling (default mode) will cause the palette to ‘stretch’, as to fit the whole range of temperatures.

However, this can cause smaller temperature variations to go undetected, as the difference between two colors might increase from 1° to 10°. In this case, the user may choose to lock the scale with only the cold or medium-temperature objects in the frame. This would cause the hot objects to saturate, but will provide more detail to the colder objects of interest.

#### 10.3.3.1 Automatic Temperature Scale

Select Auto to allow the camera to use the entire thermal range. In Figure 10.12, below, the image on the left shows the Auto mode where the temperature range uses all the available spectrum.



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### 10.3.3.2 Lock Temperature Scale

Select Lock to limit the thermal range to a narrow thermal region. The image on right, below in Figure 10.12, shows the Lock mode, where the temperature range is constrained. To constrain the range, point to a spot in the frame that represents the temperature of interest, and then select the Lock mode.

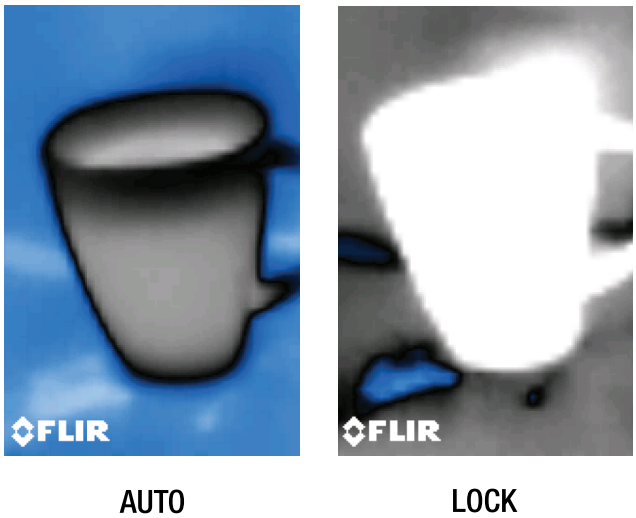


**Figure 10.13** AUTO and LOCK temperature scale modes.



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### *10.3.4 Emissivity*

The amount of IR energy emitted by an object is proportional to the object's temperature and its ability to emit energy. This ability is known as emissivity.

Set the emissivity based on the material and finish of the object you are measuring. A flat black surface has an emissivity of 0.95. Preparing a surface with flat black paint or tape simplifies the emissivity setting process. Shiny and reflective surfaces have a much lower emissivity. See the Appendices for a list of common materials and their approximate emissivity values.

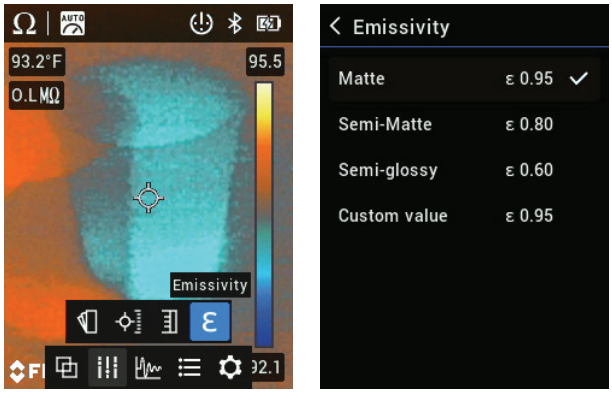


**Figure 10.14** Emissivity selection.

1. Press ENTER on the Emissivity icon ε.
2. Scroll to a preset (*Matte*, *Semi Matte*, *Semi Glossy*), or scroll to the *Custom Value* option, and press ENTER.
3. If you select the Custom Value option, set the emissivity using the ‘up’ and ‘down’ navigation buttons.
4. Press ENTER to confirm.



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## 10.4 Logging Menu

Scroll to the Data Logger icon in the main menu, and press ENTER to start (or stop) logging. A blue dot appears next to the menu icon, and the data logger icon appears on the upper right of the display, when the data logger is recording. Select the logger's sample rate in the Device Settings menu, see Section 11.3 (*Settings* > *Device Settings* > *Log Sampling Rate*).

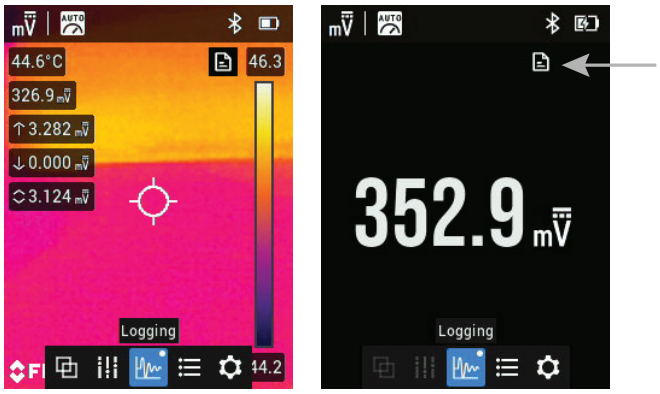


**Figure 10.15** Data Logger selection from the main menu in thermal image mode (left) and multimeter mode (right). The arrow shows the data logging icon.

Data Logs are stored in the meter and can be viewed, deleted, and shared from the Gallery (Section 9). The Meterlink mobile app is used for data sharing (Section 13). Data logs can also be or downloaded to a PC (Section 14). See the dedicated Data Logger section (Section 12) for complete data logger information.



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## 10.5 Advanced Menu

Press ENTER to open the main menu, navigate to the Advanced menu icon ☰ and press ENTER again. Three options are available in the Advanced menu, MAX/MIN/AVG, Peak Hold, and Relative mode, explained in the next section. Navigate to the desired mode and press ENTER to activate it.

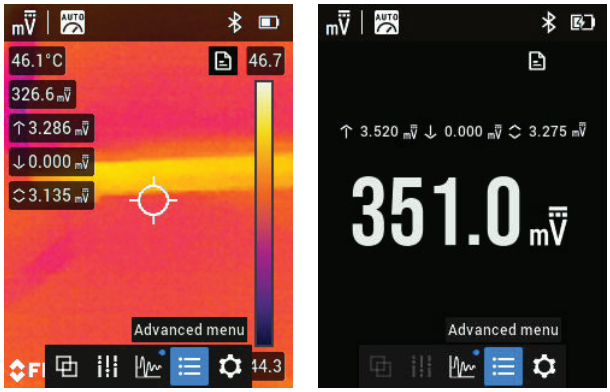


**Figure 10.16** Advanced Menu accessible from thermal image mode (left) and multimeter mode (right).



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### 10.5.1 MAX/MIN/AVG

In MAX/MIN/AVG mode the meter records the highest, lowest, and average readings. To record and view these readings, follow the steps below.

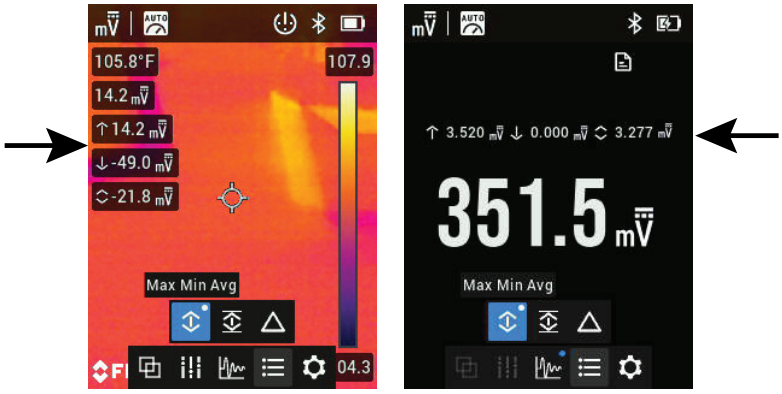


**Figure 10.17** MAX-MIN-AVG mode menu from the thermal image mode (left) and the multi-meter mode (right). The arrows indicate where the MAX/MIN/AVG readings are shown.

1. With the meter measuring an electrical signal, press the ENTER button and navigate to the *Advanced menu* > *MAX-MIN-AVG* menu. Press the ENTER button to activate or deactivate the function, a blue dot appears next to the MAX/MIN/AVG icon when it is activated.
2. The maximum, minimum, and average reading memories will appear on the left side of the thermal image, or above the main reading in the multi-meter mode, next to their associated icon (left to right, MAX, MIN, AVG), as shown in Figure 10.16.



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### *10.5.2 Peak Hold*

In Peak Hold mode, the meter captures and displays the positive and negative peak values, updating only when a higher or lower value is registered. Peak mode is available when measuring AC current or voltage.

In the advanced menu, use the navigation buttons to select Peak Hold and press ENTER to activate it. The positive and negative peak readings will appear on the left side of the thermal image, or above the main reading in multimeter mode, next to their associated up and down arrow icons, as shown in Figure 10.17.

**Figure 10.18** Peak Hold mode menu from the thermal image mode (left) and multimeter mode (right).



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### *10.5.3 Relative Mode*

In Relative mode, you can store a reference measurement to compare subsequent measurements with. The main reading then represents the actual measurement relative to the stored reference.

Use the ‘left’ and ‘right’ buttons to navigate to the Relative mode icon △ and press ENTER to activate and store the reference. The reference will appear on the left side of the thermal image, or above the main reading in the multimeter mode.

The blue dot will appear next to the menu icon to indicate that the mode is active. The main reading will now represent the actual measurement minus the reference. Press ENTER again on the Relative icon in the menu to exit this mode.

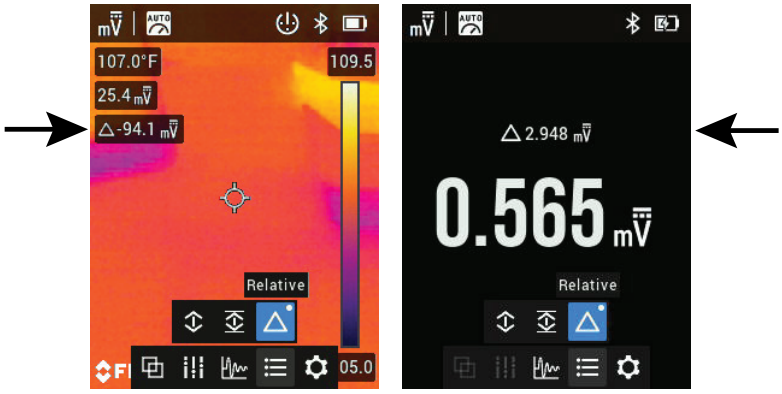


**Figure 10.19** Relative mode menu from the thermal image mode (left) and multimeter mode (right). The arrows show where the reference value is shown.

## 10.6 Settings Menu

The settings menu has a dedicated section, below, for Measurement Parameters, Saving Options, Device Settings, and Information items.



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# 11 Settings Menu

Press ENTER to open the main menu, navigate to the Settings menu icon, and press ENTER to open it.

**Figure 11.1** Accessing the Settings menu.

## 11.1 Measurement Parameters

In this menu, you can set emissivity, reflected temperature, and atmospheric temperature. Scroll to the desired option and press ENTER to open it. Use the navigation buttons to change a setting and press ENTER to confirm. Use the RETURN button to exit a menu.

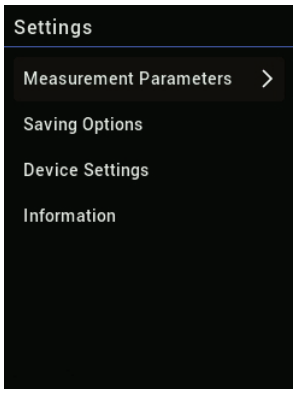


**Figure 11.2** Accessing the Measurement Parameters menu.



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### 11.1.1 Emissivity Setting

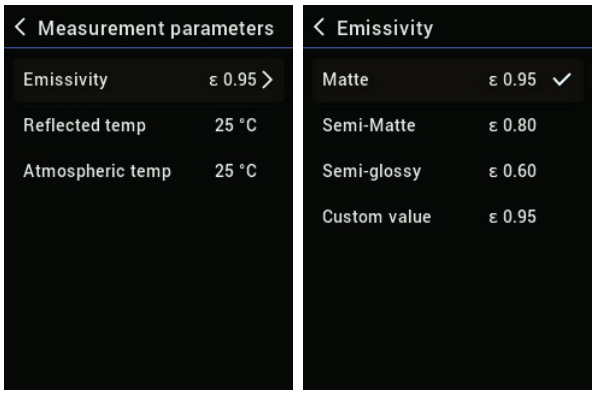


**Figure 11.3** Emissivity menu.

1. Go to the Emissivity menu (*Settings* > *Measurement Parameters* > *Emissivity*).
2. Scroll to a preset (*Matte*, *Semi Matte*, *Semi Glossy*), or scroll to the *Custom Value* option, and press ENTER to select it.
3. If you select the Custom Value option, set the emissivity using the ‘up’ and ‘down’ navigation buttons.
4. Press ENTER to confirm.

For additional information on emissivity see Appendices (Section 18).



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### 11.1.2 Reflected Temperature Setting

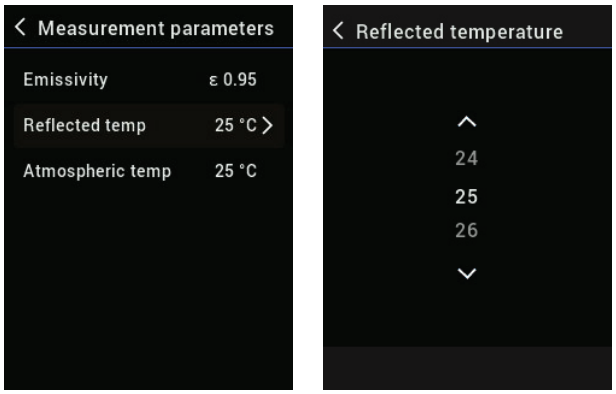


**Figure 11.4** Reflected Temperature menu.

Reflected temperature (also known as background temperature) is thermal radiation originating from other objects that reflect off the target you are measuring. Reflected temperature can affect the temperature a thermal camera measures.

1. Go to the Reflected Temperature menu (*Settings* > *Measurement Parameters* > *Reflected Temperature*).
2. Use the ‘up’ or ‘down’ button to set the temperature.
3. Press ENTER to confirm.



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### 11.1.3 Atmospheric Temperature Setting

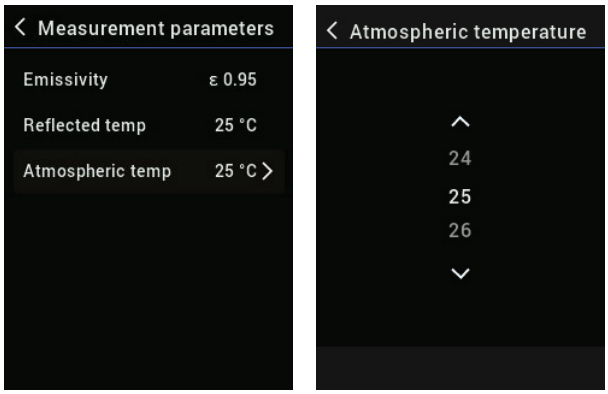


**Figure 11.5** Atmospheric Temperature menu.

Atmospheric conditions (gases and scattered particles between the object and the thermal camera) tend to attenuate radiation. The amount of attenuation depends on radiation wavelength. Fog, clouds, rain, and snow will affect thermal measurements. Adjusting this setting can mitigate these affects.

1. Go to the Atmospheric Temperature menu (*Settings* > *Measurement Parameters* > *Atmospheric Temperature*).
2. Use the ‘up’ or ‘down’ button to set the temperature.
3. Press ENTER to confirm.



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## 11.2 Saving Options

In the Saving Options menu, you can opt to save a separate visible light (digital camera) image in *.jpeg format with each thermal image.

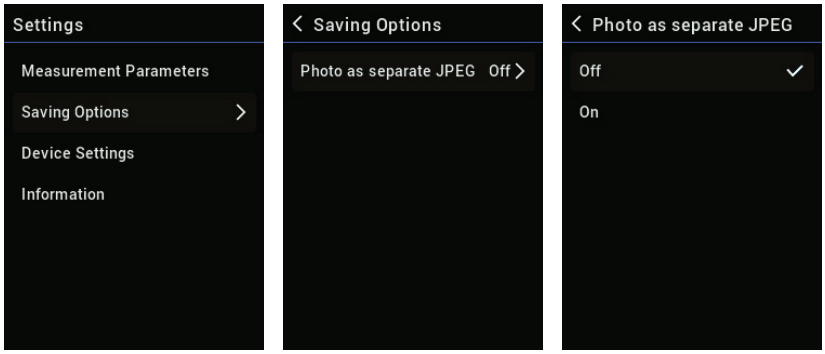


**Figure 11.6** Savings Options menu.

1. Press ENTER at the Saving Options menu.
2. Press ENTER again to see the options.
3. Scroll to *YES* or *NO* and press ENTER to confirm.



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## 11.3 Device Settings

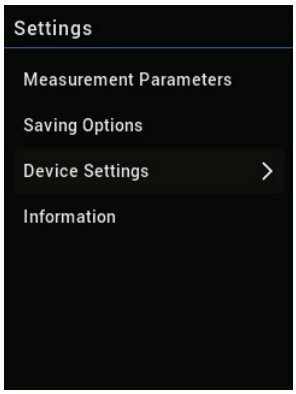


**Figure 11.7** Device Settings menu.

In this menu, you can set the language, time, date, units, auto power OFF (APO), Bluetooth, screen brightness, logger sampling rate, and remote control. These are covered in the sections below. Use the navigation buttons to scroll to an option, and press ENTER to open it.



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### 11.3.1 Language

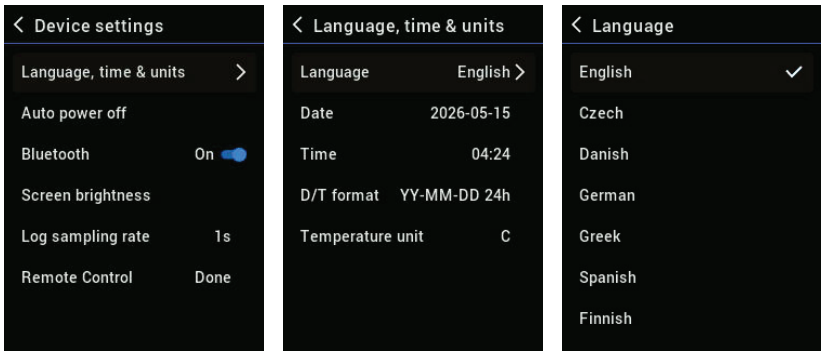


**Figure 11.8** Language options menu.

Press ENTER at the Language, Time & Units option (*Settings* > *Device Settings* > *Language, Time & Units*), scroll to the desired language, and press ENTER to confirm.



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### 11.3.2 Date

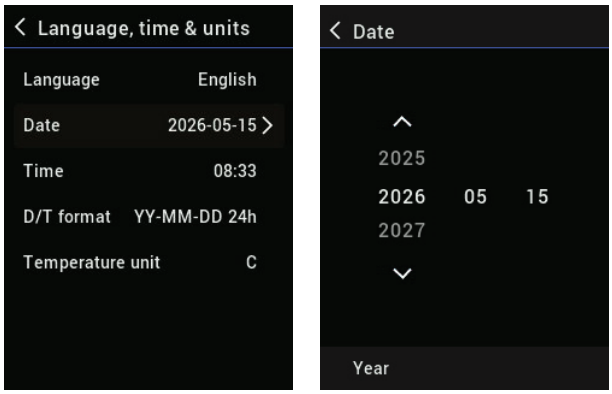


**Figure 11.9** Date setting menu.

1. Press ENTER at the Language, Time & Units option (*Settings* > *Device Settings* > *Language, Time & Units*).
2. Press ENTER at the Date option.
3. Use the ‘left’ and ‘right’ navigation buttons to step to the year, month, and day fields (only the Year field is shown in the accompanying figure).
4. Use the ‘up’ and ‘down’ navigation buttons to change a setting.
5. Press ENTER to confirm and to return to previous menu.



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### *11.3.3 Time*

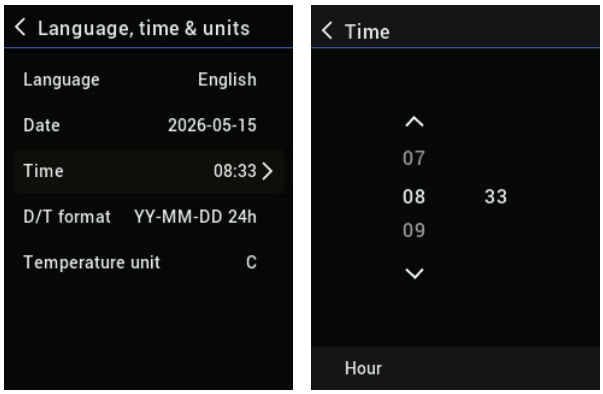


**Figure 11.10** Time setting menu.

1. Press ENTER at the Language, Time & Units option (*Settings* > *Device Settings* > *Language, Time & Units*).
2. Press ENTER at the Time option.
3. Use the ‘left’ and ‘right’ navigation buttons to step to the hour and minute fields (only the Hour field is shown in the accompanying figure).
4. Use the ‘up’ and ‘down’ navigation buttons to change a setting.
5. Press ENTER to confirm and to return to previous menu.



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### 11.3.4 Date and Time Format

**Figure 11.11** Date and Time Format menu.

1. Press ENTER at the Language, Time & Units option (*Settings* > *Device Settings* > *Language, Time & Units*).
2. Press ENTER at the D/T Format option.
3. Use the ‘left’ and ‘right’ navigation buttons to step to the Date Format and Time Format fields (only the Date Format field is shown in the accompanying figure).
4. Use the ‘up’ and ‘down’ navigation buttons to change a setting.
5. Press ENTER to confirm and to return to previous menu.



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### *11.3.5 Temperature Units*

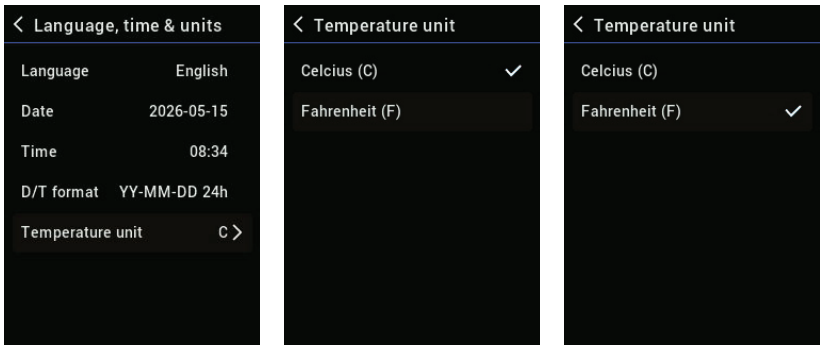


**Figure 11.12** Temperature Units menu.

1. Press ENTER at the Language, Time & Units option (*Settings* > *Device Settings* > *Language, Time & Units*).
2. Press ENTER at the Temperature Unit option.
3. Use the ‘up’ and ‘down’ navigation buttons to select the unit.
4. Press ENTER to confirm and to return to previous menu.



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### *11.3.6 APO Settings*

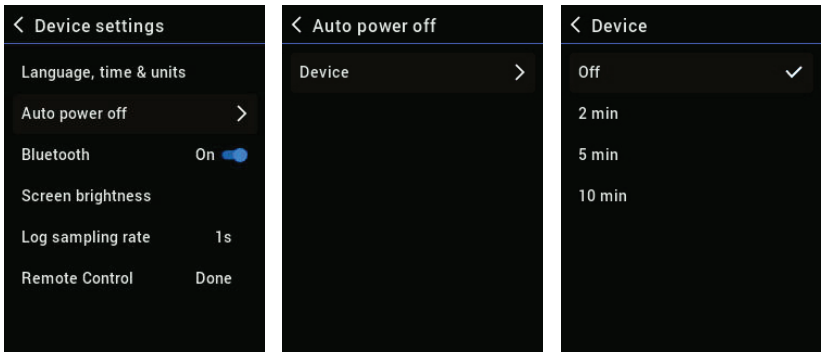


**Figure 11.13** Auto Power OFF (APO) settings menu.

1. Press ENTER at the Auto Power Off option (*Settings* > *Device Settings* > *Auto Power Off*).
2. Press ENTER on the *Device* option.
3. Scroll to the desired automatic power off time (2, 5, 10 minutes or OFF), and press ENTER to confirm and return to the previous menu.



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### 11.3.7 Bluetooth ON/OFF

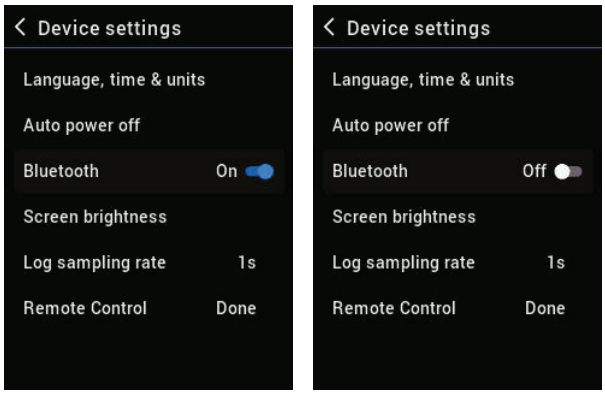


**Figure 11.14** Bluetooth menu showing Bluetooth enabled (left) and disabled (right).

1. To toggle Bluetooth ON or OFF, press ENTER at the Bluetooth option (*Settings* > *Device Settings* > *Bluetooth*).
2. Press RETURN to exit to the previous menu. See Section 13 for information regarding the Meterlink mobile app for sharing images, video, and data log records.



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### 11.3.8 Screen Brightness

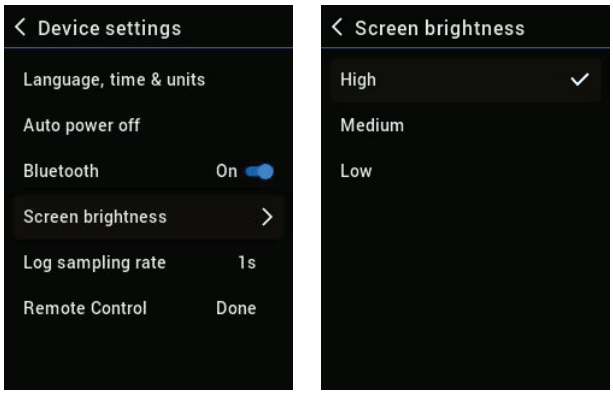


**Figure 11.15** Screen brightness settings.

1. Press ENTER at the Screen Brightness option (*Settings* > *Device Settings* > *Screen Brightness*).
2. Use the ‘up’ or ‘down’ navigation button to select Low, Medium, or High.
3. Press ENTER to confirm.
4. Press RETURN to exit the previous menu.



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### *11.3.9 Data Log Sampling Rate*

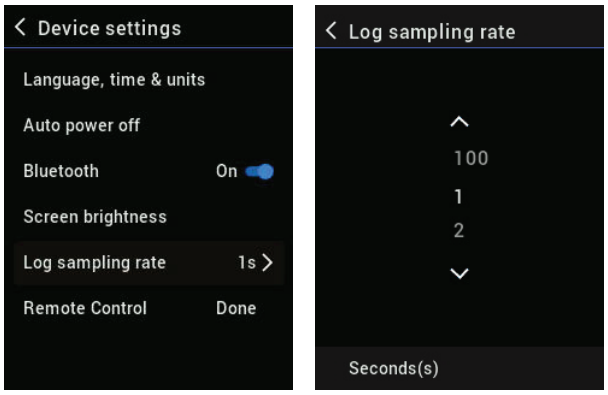


**Figure 11.16** Data log sampling rate settings.

1. Press ENTER at the Log Sampling Rate option (*Settings* > *Device Settings* > *Log Sampling Rate*).
2. Use the ‘up’ or ‘down’ navigation button to set the sampling interval from 1 to 100 seconds.
3. Press ENTER to confirm and to return to the previous menu.

See Section 12 for additional information on Data Logging.



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## 11.4 Remote Control

The TA93 remote controller allows you to remotely freeze/unfreeze readings and capture images on the DM266. See Section 15 for complete TA93 operating instructions.

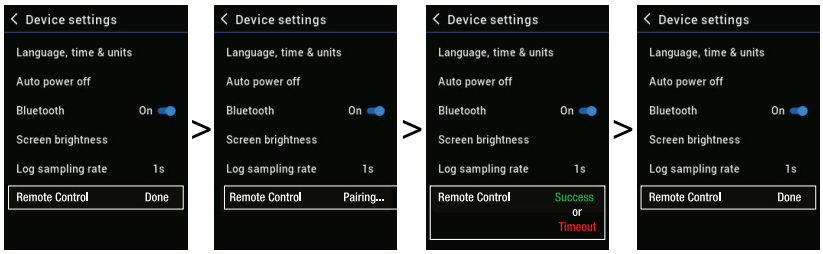


**Figure 11.17** Remote controller pairing screens in the Device Settings menu.

1. Start by placing the TA93 adjacent to the DM266, within 3.3 ft. (1 m).
2. Press ENTER to open the Main Menu.
3. Scroll to ‘Settings’ and press ENTER.
4. Scroll to ‘Device Settings’ and press ENTER.
5. Scroll to ‘Remote Control’ and press ENTER.
6. Press and hold both TA93 buttons and monitor the DM266 screen for status.
7. The DM266 will indicate ‘pairing’ as it searches for the remote controller.
8. When the DM266 successfully pairs with the TA93, the DM266 will indicate ‘SUCCESS’.
9. The DM266 will indicate ‘TIMEOUT’ (after 20 seconds) if pairing fails.
10. The DM266 will indicate ‘DONE’ when the above procedure has been completed (for successful or unsuccessful pairing).
11. Release the held buttons.
12. Turn to Section 15 for complete TA93 instructions.



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## 11.5 Information

The Information menu has three sub-menus, *System Information*, *Regulatory*, and *Reset Options*, as explained below. Press ENTER at the Information menu, use the navigation buttons to scroll to an option, and press ENTER to open it.

**Figure 11.18** Information screens.



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### 11.5.1 System Information Menu

In the System Information menu, scroll through the following data.

- Model number
- Serial number (S/N)
- Software version
- Build number
- Meter firmware version (FW)
- Bluetooth firmware version (BT FW)
- Storage status (memory used/memory total)
- Battery strength
- Meter Calibration Date
- Infrared (IR) Calibration Date

### 11.5.2 Regulatory Menu

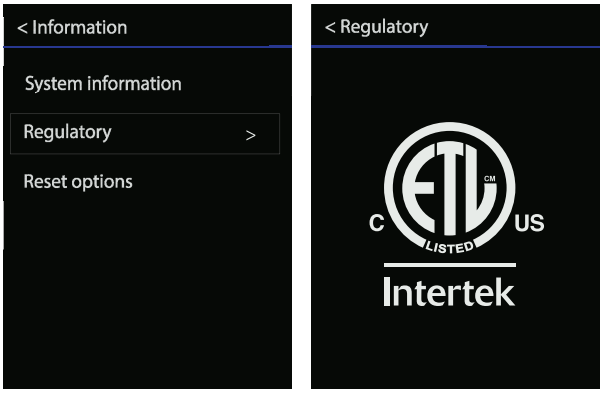


**Figure 11.19** Regulatory menu



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### *11.5.3 Reset Options Menu*

Under Reset Options you can reset the meter to its factory default state or format its internal memory, as explained in the next sections.

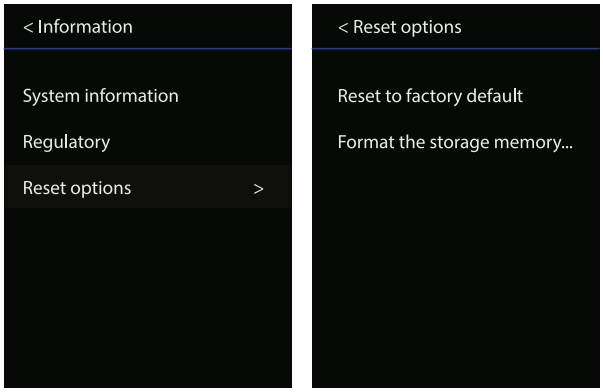


**Figure 11.20** Reset options menus.

#### 11.5.3.1 Factory Default Reset

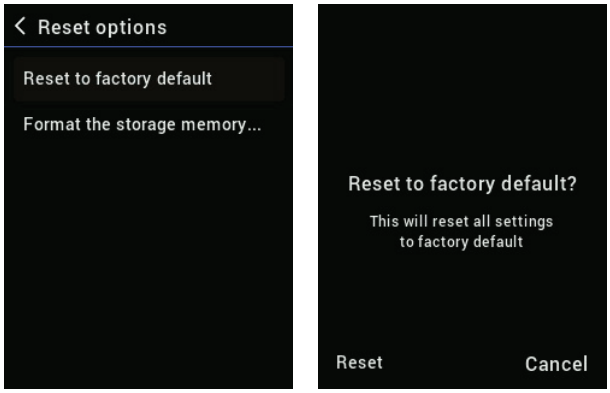


**Figure 11.21** Factory default menu.

1. Press ENTER at the Reset to Factory Default menu (*Settings* > *Information* > *Reset Options* > *Reset to Factory Default*).



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2. Use the ‘left’ or ‘right’ navigation button to select Cancel or Reset (the selected option’s text is larger).
3. Press ENTER to execute the action.
4. Use the RETURN button to exit to the previous menu.

#### 11.5.3.2 Format Internal Memory

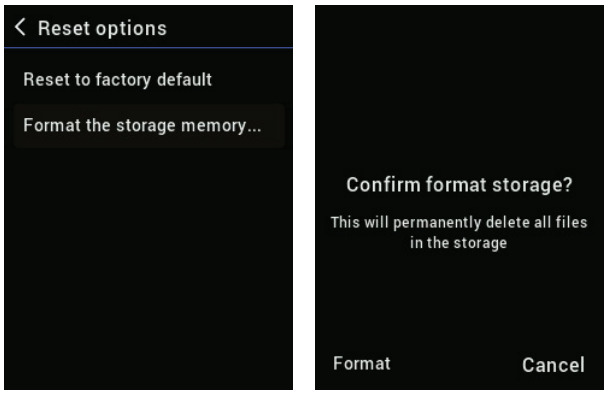


**Figure 11.22** Formatting the internal memory.

1. Press ENTER at the Format the Storage Memory menu (*Settings* > *Information* > *Reset Options* > *Format the Storage Memory*).
2. Use the ‘left’ or ‘right’ navigation button to select Cancel or Reset (the selected option’s text is larger). Note that all images, video, and data logs will be erased if the memory is formatted.
3. Press ENTER to execute the action.
4. Use the RETURN button to exit to the previous menu.



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# 12 Data Logger Operation

## 12.1 Data logger Overview

The DM266 can automatically record multimeter readings at a programmable time interval. This sampling time (rate) is set in the Settings menu (Section 11) from 1 to 100 seconds (*Settings* > *Device Settings* > *Log Sampling Rate*).

Readings are logged into text files, stored in the meter's internal memory. Up to 40,000 readings can be stored in each file. Since the meter's internal memory is 8 GB in size, it can hold up to 5,000 data log files, if no other files (images or video) are stored. Each 40,000 reading file is approximately 1.5 MB in size.

The data logger is available in the thermal imaging and multimeter modes of operation. However, only electrical measurements are logged.

Logged readings are stored as *.csv files, and can be viewed, shared, and deleted in the Gallery (Section 9). Data log files, like images and video, are shared using the Meterlink mobile app (Section 13).

Data log files can also be downloaded to a PC by connecting the meter to a PC using the supplied USB cable (Section 14). Data log files can be opened in spreadsheet applications, see data log spreadsheet example below, in Figure 12.1.

## 12.2 Data Logger Operation

1. Press the ENTER button to open the main menu (Section 10).
2. Navigate to the *Settings* > *Device Settings* > *Log Sampling Rate* menu (Section 11) and press ENTER to open the menu.
3. Use the 'up' or 'down' navigation button to set the sampling rate (1 to 100 seconds). Press ENTER to confirm.
4. Press the RETURN button several times to exit to the main menu.



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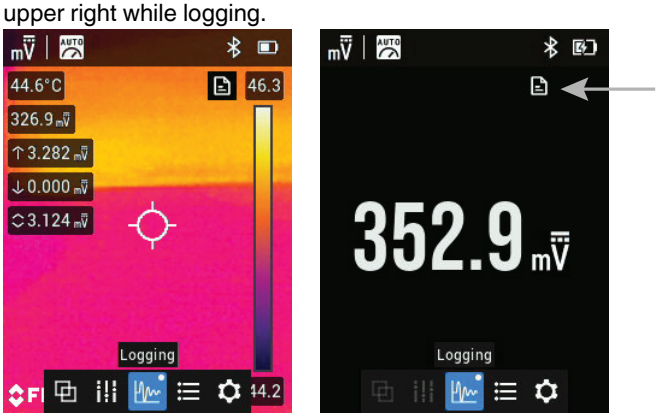
5. At the main menu, scroll to the Data logger icon and press ENTER to start (or stop) logging. A blue dot will appear next to the data logging icon while the logger is active. The ‘logger active’ icon is displayed on the upper right while logging.




6. See Section 13, *Meterlink* for sharing data log records using the Meterlink mobile app or Section 14, *PC Interface* for downloading files to a PC.
7. When 40,000 readings are stored, the data logger will stop. To start logging to a new set, repeat step 5, above.

| Device Model<br>FLIR DM266<br>SN:001 | Function<br>ACV | Function Index<br>0x9 | Unit<br>V | Unit Index<br>0x2 | OL Max<br>6 | OL Min<br>0 | Sampling Rate<br>2 | Sampling Unit<br>1 second |
|---|---|---|---|---|---|---|---|---|
| No. | Date | TIME | VALUE | POWER OF 10 | UNIT | OUT OF RANGE | | |
| 1 | 6/10/26 | 3:59:30 PM | 121 | 0 | V | 0 | | |
| 2 | 6/10/26 | 3:59:30 PM | 121 | 0 | V | 0 | | |
| 3 | 6/10/26 | 3:59:30 PM | 120 | 0 | V | 0 | | |
| 4 | 6/10/26 | 3:59:30 PM | 118 | 0 | V | 0 | | |
| 5 | 6/10/26 | 3:59:30 PM | 122 | 0 | V | 0 | | |

**Figure 12.1** Data log file opened in a spreadsheet.



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# 13 Meterlink Mobile App

Images, videos, and data log records can be shared with mobile devices using the Meterlink application. Download the app from the App Store® (iOS® devices) or Google Play™ (Android™ devices). Instructions for use are provided with the application.

The maximum communication distance between the meter and the mobile device is 32 ft. (10 m).

After downloading and opening the app on your mobile device, follow the steps below to share files.

1. Press the ENTER button and navigate to the *Settings* > *Device Settings* > *Bluetooth* menu item and press ENTER to switch Bluetooth ON or OFF.
2. Press the GALLERY button and scroll to the *Image Files*, *Video Files*, or *Log Results* menu and press ENTER.
3. Press ENTER to activate the view option, shown on the bottom of the display, to view the list of stored files. Alternatively, select '**X**', on the bottom of the display, and press ENTER to delete all files in the menu (a confirmation prompt will appear).
4. When viewing the list of files in a menu, highlight one and press ENTER. Then select (for image/video files) or (for data log files) to view the contents of the file, select the share icon to share the file with the mobile device, or select the trash icon to delete the file.
5. If the sharing icon is selected, the files will be available on the paired mobile device when transmission is complete. Note that video length is limited to 20 seconds when sharing



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# 14 PC Interface

The meter connects to a PC using the supplied USB-A to USB-C cable. The meter's USB port is located at the top, under the protective flap. When connected, the PC recognizes the meter as a standard external storage drive. Simply drag images, videos, and data log files from the meter's drive to the PC. You can also upgrade the meter's firmware by loading a firmware update file (obtained from the FLIR support site) to the meter's drive, as explained in Section 16.

Additional information can be found in the Section 17, *Specifications* and in Section 9, *Media Gallery*.



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# 15 Remote Controller (TA93)

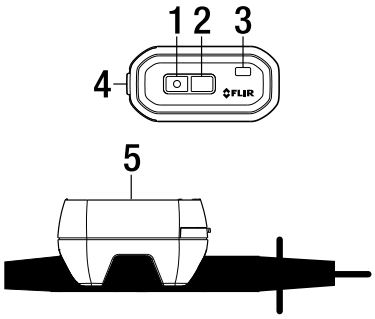


**Figure 15.1** TA93 Remote Controller. 1. Snapshot button; 2. Display Hold button; 3. Status LED; 4. Release tab, for battery replacement; 5. Test lead shown with TA93 attached.

### 15.1 Remote Controller Overview

The TA93 remote controller allows you to remotely freeze/unfreeze the displayed reading and capture images on the DM266. The TA93 is battery powered and conveniently clips onto one of the DM266 test leads.

### 15.2 Remote Control Pairing

The DM266 and TA93 must be ‘paired’ before the remote controller can be used. The pairing is explained in Section 11.4 and reiterated below.

1. Place the TA93 within 3.3 ft. (1 m) of the DM266.
2. Press ENTER to open the main menu.
3. Scroll to ‘Settings’ and press ENTER.
4. Scroll to ‘Device Settings’ and press ENTER.
5. Scroll to ‘Remote Control’ and press ENTER.
6. Press and hold both TA93 buttons and monitor the DM266 screen for status (see Figure 15.2. below).
7. The DM266 will indicate ‘pairing’ as it searches for the remote controller.
8. When the DM266 successfully pairs with the TA93, the DM266 will indicate ‘SUCCESS’.
9. The DM266 will indicate ‘TIMEOUT’ (after 20 seconds) if pairing fails.
10. The DM266 will indicate ‘DONE’ when the above procedure has been completed (for successful or unsuccessful pairing).
11. Release the held buttons.



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12. If the pairing fails, ensure that the DM266 and TA93 are placed within 3.3 ft. (1 m). Also, check the status of the TA93 battery (when the battery is fresh its LED status indicator will light when either TA93 button is pressed).

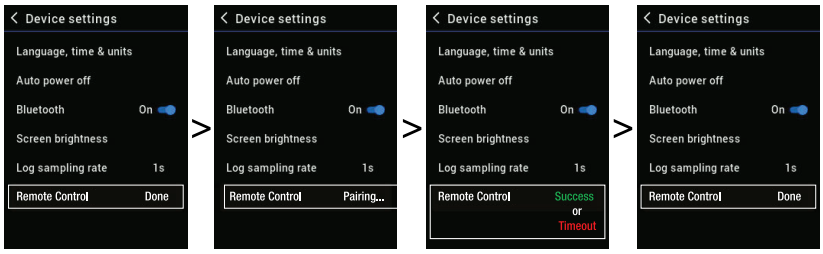


**Figure 15.2** Remote controller pairing screens in the Device Settings menu.

## 15.3 Remote Controller Operation

When the remote controller is paired with the DM266, press the TA93 Display Hold button (Figure 15.1, item 2) to freeze or unfreeze the displayed DM266 reading. Press the Snapshot button (item 1) to capture an image. Refer to Section 9, *Media Gallery*, for information regarding media management and sharing. The TA93 status LED indicator (item 3) will flash after each button press.

## 15.4 Remote Controller Battery Replacement

The TA93 is powered by one CR1220 (3 V) coin battery. The battery requires replacement when the TA93 status LED no longer lights when either of its buttons is pressed. Follow the procedure below to replace the battery.

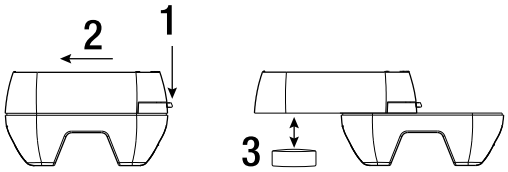


**Figure 15.3** 1. Press the tab down; 2. Slide the housing open; 3. Replace the battery.

1. Press the battery housing tab and slide the TA93 apart as shown in Figure 15.3.
2. Note the orientation of the old battery and then remove it.
3. Insert a new CR1220 (3 V) battery observing proper orientation.
4. Close the TA93 housing by sliding it back into the closed position.



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# 16 Maintenance

## 16.1 Cleaning

Wipe the meter housing with a soft, damp cloth and mild detergent when necessary. Do not use solvents or abrasives to clean the meter.

When cleaning the display and the lenses, use a very soft, lint-free, lens cloth and a high quality lens cleaner. Use a lint free swab to clean the recessed lenses. Use extra caution when cleaning the display and lenses, as scratching and other damage can result if wiped too vigorously with a rough or hard material.

## 16.2 Recharging the Battery

**WARNING**

The battery can be charged while the DM266 is powered. The DM266 is well designed for charge and use, however the USB charging cable does not provide adequate insulation protection against dangerous live conductors (for example, a voltage source under measurement. To avoid electric shock while charging, do NOT allow a live conductor to contact the USB cable.

The internal rechargeable lithium battery is not user serviceable. For replacement or repairs, please contact FLIR support.

**NOTE**

The minimum charger voltage and current rating is 5 volts and 1 ampere. Do not attempt to charge the meter with a charger that has a lower rating.

Recharge the battery by connecting the supplied USB-C cable to the meter's USB-C port and to a charger. The meter's battery status icon will animate while charging. The meter will run for up to 12 hours in IGM mode with the screen brightness set to medium, and for up to 16 hours in multimeter mode with the screen brightness set to medium.



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## 16.3 Upgrading the DM266 Firmware

### *16.3.1 General*

If you are not confident that you can complete the upgrade successfully, please contact our customer support site:

### *16.3.2 Prerequisites*

To upgrade the firmware, you will need:

- DM266 meter.
- Windows PC and USB cable.
- Firmware upgrade file obtained from the support site, as explained below.

### *16.3.3 Obtaining the Firmware Upgrade File*

1. Go to the support site:
2. Click on the **DOWNLOADS** menu heading, as shown.

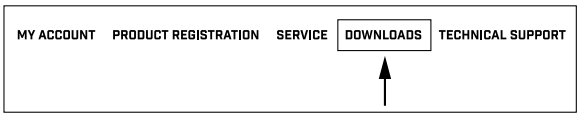
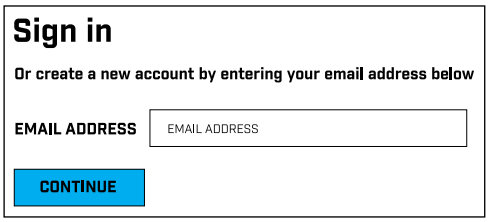



**Figure 16.1** Click 'DOWNLOADS'.

3. Click **Software and Firmware** as shown.

**Figure 16.2** Click the 'Software and Firmware' item from the options list.

4. Type your **Email Address** to log in or to create an account, as shown. Click **Continue**.



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5. For Figure 16.3, below, 1. Type **DM266** in the search field; 2. Select **FLIR / Extech Meters Software** from the pull-down menu; 3. Select **FLIR Software** from the pull-down menu; 4. Click **SEARCH**; 5. Click the upgrade file to download it to your PC.

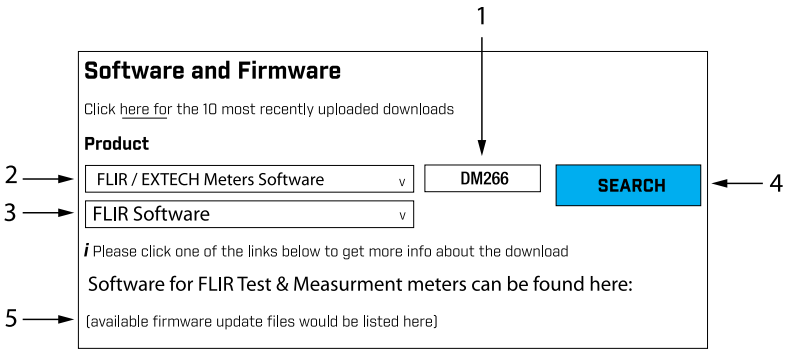


**Figure 16.3** The Software and Firmware page on the support site.

### *16.3.4 Firmware Upgrade Procedure*

## NOTE

The DM266 battery must be charged to at least 50% before continuing.

1. With the meter switched off, open the rear compartment to access the USB port.
2. Connect the meter to the PC using the supplied USB cable.
3. The PC should now recognize the DM266 as an external storage drive.
4. Move the firmware file from your PC to the root (top level) directory of the DM266.

| ⚠ **CAUTION** |
|---|
| Drag only the upgrade file into the DM266 root directory. Do not drag other files or folders that may accompany the upgrade file (*readme.txt*, for example).<br>Do not copy the upgrade file to the DCIM or DLOG folder.<br>Do not change the filename of the upgrade file. |

5. Safely eject the DM266 from the PC (right-click the drive letter in File Explorer and select Eject).
6. Physically disconnect the DM266 from the PC.



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7. Disconnect the USB cable from the DM266 and switch the meter ON.
8. Select ‘YES’ when prompted by the meter to upgrade the firmware.

| ⚠ **CAUTION** |
| --- |
| Do **NOT** switch OFF the DM266 while it is upgrading. If the meter is switched off during the upgrade process, it may not be recoverable and would have to be returned to FLIR for service. |

9. If the DM266 does not automatically cycle power after the upgrade, man-ually power the meter off and on.
10. When the DM266 restarts, note the firmware version as displayed in the *Information* sub-menu in the DM266 *Settings* menu.
11. If you require assistance, please visit the customer support site.

### 16.4 Disposal of Electronic Waste

As with all electronic products, this equipment must be disposed of in an environmentally friendly way, and in accordance with existing regulations for electronic waste.

Please contact your FLIR Systems representative for more details.



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# 17 Specifications

## 17.1 General Specifications

| | |
|---|---|
| Display type | 3.2 in. color IPS LCD |
| AC measurement type | True RMS |
| Measurement rate | Three (3) samples per second |
| Over-range indication | **OL** is displayed |
| Calibration | One-year calibration cycle |
| Operating conditions | 14 to 86°F (–10 to 30°C); < 85% RH |
| | 86 to 104°F (30 to 40°C); < 75% RH |
| | 104 to 122°F (40 to 50°C); < 45% RH |
| Storage conditions | 4 to 140°F (-20 to 60°C); < 80 % RH |
| Temperature coefficient | 0.2 x (specified accuracy)/°C, <64.4°F (18°C), >82.4°F (28°C) |
| Operating altitude | 6562 ft. (2000 m) |
| Pollution degree | 2 |
| IP rating | IP 40 |
| Drop-test | 6.6 ft. (2 m) |
| Dimensions | 6.5 x 3.4 x 1.2 in. (168 x 87 x 31 mm) |
| Weight | 10.5 oz. (299 g) |
| Over-voltage category | CAT III 600 V |
| Category III applications | Distribution circuits, machinery, main switching devices close to switch gears, industrial installations and high current close to distribution circuits |



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## 17.2 Agency Approvals and Certifications

| | |
|---|---|
| Certifications | ETL, CE, FCC, |
| | Conforms to UL STD 61010-1, 61010-2-033 certified to CSA STD C22.2 No. 61010-1, 61010-2-033 |
| | C US LISTED Intertek 5029168 |
| Safety standards | IEC 61010-1 CAT III 600 V |
| EMC | EN 61326-1, EN 61326-2-2, EN 300328, FCC part 15 B |

## 17.3 Meter Power

| | |
|---|---|
| Meter power | Rechargeable 3.7 V (2950 mAH) lithium polymer battery (internal).<br>Minimum charger rating is 5 V and 1 A, do not charge the meter with a lower rated charger. |
| Battery status indications | Battery symbol (upper right corner) and full-screen alerts. |
| Battery life | Up to 12 hours in IGM mode.<br>Up to 16 hours in multimeter mode.<br>These durations are approximate and are specified for a display brightness set to medium. |
| Auto Power Off (APO) | Device: 2, 5, or 10 minutes (or OFF) |

## 17.4 Thermal Imaging

| | |
|---|---|
| Detector type | FLIR Lepton® microbolometer |
| Image modes | Thermal MSX (Multi-Spectral Dynamic Imaging)<br>Thermal camera<br>Digital camera |
| Thermal sensitivity | < 130 mK |
| IR resolution | 160 x 120 pixels (19,200 pixels) |
| IR imaging field of view | 57° x 44° (vertical x horizontal) |



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| | |
|---|---|
| IR imaging spectral response | 8 to 14 µm |
| IR image capture frequency | 9 Hz |
| IR image color palettes | Iron, Rainbow, Arctic, White Hot, Black Hot |
| IR temperature measurement range | +14 to +572°F (-10°C to +300°C) |
| IR temperature resolution | 0.1°F (0.1°C) |
| IR temperature accuracy | 5.4°F (±3°C) or ± 3% of reading; whichever is greater |
| Temperature scanning | Continuous |
| Emissivity | Three (3) presets plus a custom setting (0.10 to 1.00). Default setting is 0.95 |
| Targeting | Display cross hairs |

## 17.5 Visual Imaging (Digital Camera)

| | |
|---|---|
| Resolution | 2 MP (1600 x 1200 pixels) |
| Focus | Fixed |
| Field of View (FOV) | 83° |

## 17.6 Memory (Thermal Images and Video)

| | |
|---|---|
| Thermal image storage | eMMC 8 GB |
| Thermal image file format | *.jpg type with temperature data |
| Thermal image storage limits | 40,000 images |
| Video recording | 50 minutes maximum (20 seconds for file sharing) |

## 17.7 Memory (Data Logger)

| | |
|---|---|
| Data logger sampling interval | 1 to 100 seconds (selectable) |
| Data log reading limits | 40,000 readings per file |
| Sharing data logs | Data log records can be shared using the Meterlink mobile app or directly through USB PC connection |

## 17.8 Wireless Connectivity

| | |
|---|---|
| Wireless technology | Bluetooth low energy (BLE) |
| Communications protocol | Meterlink mobile application |
| Bluetooth range | 32 ft. (10 m) |



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## 17.9 Remote Controller (TA93)

| | |
|---|---|
| Button operation | Snapshot and Display Hold functions |
| Communication | Wireless (RF) |
| Radio frequency | 433 MHz |
| Operating distance | 3.3 ft. (1 m) maximum |
| Power | CR1220 (3 V) coin battery |
| Operating conditions | 14 to 86°F (-10 to 30°C); < 85% RH<br>86 to 104°F (30 to 40°C); < 75% RH<br>104 to 122°F (40 to 50°C); < 45% RH |
| Storage conditions | -4 to 140°F (-20 to 60°C); < 80% RH |
| Dimensions (L x W x H) | 1.65 x 0.82 x 0.98 in. (42.7 x 21 x 24.9 mm) |
| Weight | 0.35 oz. (10 g) |

## 17.10 Electrical Specifications

Accuracy is ± (% reading + number of digits) at 73.4°F ±9°F (23°C ±5°C), <80% RH.

### *17.10.1 AC/DC Voltage Measurements (True RMS)*

| Function | Range | Accuracy (of reading) |
|---|---|---|
| AC/DC V | 600.0 mV | ± (0.3% + 2 digits) |
| | 6.000 V | |
| | 60 V | |
| | 600 V | ± (0.5% + 5 digits) |
| Line Frequency | 45 Hz to 1 kHz | ± (0.1% + 2 digits) |
| AC V VFD (45 to 65 Hz) | 600.0 V | ± (1% + 3 digits) |
| AC/DC V (Lo Z) | 600.0 V | ± (2% + 3 digits) |



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### 17.10.2 Resistance and Continuity

| Function | Range | Accuracy (of reading) |
|---|---|---|
| Resistance | 600.0 Ω | ± (1.0% + 2 digits) |
| | 6.000 KΩ | |
| | 60.00 KΩ | |
| | 600.0 KΩ | |
| | 6.000 MΩ | |
| | 60.00 MΩ | ± (1.0% + 5 digits) |
| Continuity | < 30 Ω beeper ON<br>>150 Ω beeper OFF | |

### 17.10.3 Capacitance

| Function | Range | Accuracy (of reading) |
|---|---|---|
| Capacitance | 1000 nF | ± (2.0% + 2 digits) |
| | 10.00 µF | |
| | 100.0 µF | |
| | 1000 µF | |
| | 10.00 mF | ± (3.0% + 5 digits) |

### 17.10.4 Diode Testing

| Function | Range | Accuracy (of reading) |
|---|---|---|
| Diode testing | 3 V | ± (0.9% + 3 digits) |



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# 18 Appendices

## 18.1 Emissivity Values for Common Materials

**Table 18.1** Approximate Emissivity values for common materials (for reference only).

| Material | Emissivity | Material | Emissivity |
|---|---|---|---|
| Asphalt | 0.90 to 0.98 | Cloth (black) | 0.98 |
| Concrete | 0.94 | Skin (human) | 0.98 |
| Cement | 0.96 | Leather | 0.75 to 0.80 |
| Sand | 0.90 | Charcoal (powder) | 0.96 |
| Soil | 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 |

## 18.2 IR Energy and Imaging Overview

A thermal imager generates an image based on temperature differences. In a thermal image, the hottest item in the scene appears as white and the coldest item as black. All other items are represented as a gray scale value between white and black. The camera also offers color images to simulate hot (lighter colors) and cold (darker colors) temperatures.

It may take some time to get used to the thermal imagery. Having a basic understanding of the differences between thermal and daylight cameras can help with getting the best performance from the camera.

One difference between thermal and daylight cameras has to do with where the energy comes from to create an image. When viewing an image with an ordinary camera, there has to be some source of visible light (something hot, such as the sun or other lighting) that reflects off the objects in the scene to the camera. The same is true with human eyesight; the vast majority of what



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people see is based on reflected light energy. On the other hand, the thermal imager detects energy that is directly radiated from objects in the scene.

This is why hot objects such as parts on engines and exhaust pipes appear white, while the sky, puddles of water and other cold objects appear dark (or cool). Scenes with familiar objects will be easy to interpret with some experience.

Infrared energy is part of a complete range of radiation called the electromagnetic spectrum. The electromagnetic spectrum includes gamma rays, X-rays, ultraviolet, visible, infrared, microwaves (RADAR), and radio waves. The only difference is their wavelength or frequency. All of these forms of radiation travel at the speed of light. Infrared radiation lies between the visible and RADAR portions of the electromagnetic spectrum.

The primary source of infrared radiation is heat or thermal radiation. Any object that has a temperature radiates in the infrared portion of the electromagnetic spectrum. Even objects that are very cold, such as an ice cube, emit infrared. When an object is not quite hot enough to radiate visible light, it will emit most of its energy in the infrared. For example, hot charcoal may not give off light, but it does emit infrared radiation, which we feel as heat. The warmer the object, the more infrared radiation it emits.

Infrared imaging devices produce an image of invisible infrared or “heat” radiation that is unseen by the human eye. There are no colors or “shades” of gray in infrared, only varying intensities of radiated energy. The infrared imager converts this energy into an image that we can interpret.

The FLIR Infrared Training Centre offers training (including online training) and certification in all aspects of thermography:
.



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# 19 Customer Support

Repair, Calibration, and Technical Support



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# 20 Three-Year Warranty

This product is protected by FLIR's 3-Year Limited Warranty. Visit
o read the 3-Year Limited Warranty document.



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