ThermTec

Thermal Imaging Monocular
Wild 650DL Pro Series
User Manual

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V1.0

CE UK
CA RoHS
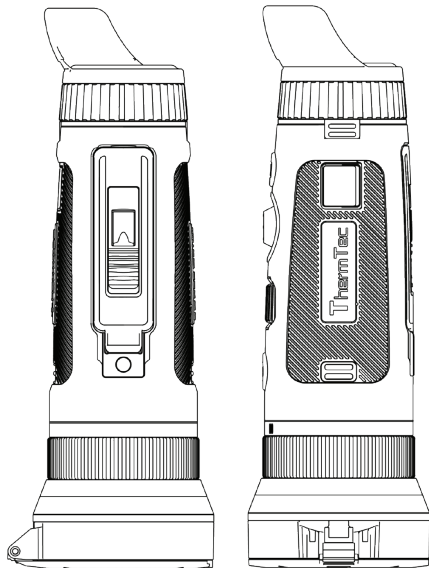
Contents

About This Manual

The Manual includes instructions for using and managing the product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Manual is subject to change, without notice, due to firmware updates or other reasons.

Regulatory Information

This product and, if applicable, the supplied accessories are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Radio Equipment Directive 2014/53/EU, the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU.

This product and - if applicable - the supplied accessories too are marked with "UKCA" and comply therefore with the following directives: Radio Equipment Regulations 2017, Electromagnetic Compatibility Regulations 2016, Electrical Equipment (Safety) Regulations 2016, the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012.

This product and - if applicable - the supplied accessories too are marked with "RoHS" and comply therefore the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS recast" or "RoHS 2").

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points.
For more information see: www.recyclethis.info.

Directive 2006/66/EC and its amendment 2013/56/EU (Battery Directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

1 **Introduction**

1.1 Device Description

Wild 650DL Pro Series Thermal Imaging Monocular is designed with a NETD < 15mK, 12μm uncooled infrared detector and 1600x1200 OLED high-definition display. With AI image recognition algorithm, it gets clear views under various lighting conditions, even in complete darkness, providing reliable and high-quality visual images for night activities. It can also view the moving target and meet the outdoor conditions. The apparatus can be widely used for searching and rescuing, hunting, etc.

1.2 Features

- 12μm uncooled infrared detector, NETD < 15mK.
- 1x-4x continuous digital zoom.
- Inbuilt LRF ranging in the lens up to 1000m.
- Various pseudo colors.
- Joystick control design, wheel focusing realizes one-hand operation.
- Detector anti-burn mechanism.
- Super large aperture offers better temperature radiation capturing capability.
- 1600 × 1200 resolution with 0.5 inch OLED display.
- Up to 6h continuous working for lithium battery.
- Optional dual-FOV lens design.

1.3 Application Scenarios

- Animal Observation.
- Outdoor Adventure.
- Security Law Enforcement.
- Emergency Search and Rescue.

1.4 Appearance

NO.	Comments
1	Lens cover
2	Power button
3	Focusing knob
4	Joystick
5	Capture/Record button
6	Diopter knob
7	Eyecup
8	Compartment of replaceable battery
9	Type-C port
10	Laser module
11	Dual FOV switch

2 Packing List

Scope (x1)

Lens cloth (x1)

User manual (x1)

Service and support card (x1)

Bag (x1)

Lanyard (x1)

Hand strap (x1)

Charger (x1)

Lithium battery (x2)

USB cable (x1)

3 **Operation Guide**
3.1 Charging

Here are two methods we could take to charge the device. Device Charging and Battery Charging.

Device Charging:

Connect the device and power adaptor directly with a type-C cable to power on the device. Alternatively, connect the device and PC to export files. Follow the below steps to charge the battery:

- Lift the cover from the USB port.
- Plug the cable provided into the USB port.
- Plug the opposite end of the cable into a USB power source.

Battery Charging:

Wild DL have adopted replaceable and changeable battery design. The batteries could be taken off and charged directly, from which dramatically improves the device life.

3.2 Power on/off

Press and hold the power button to power on/power off the device.

Note:
- The battery should be fully charged prior to use.
- The battery is supposed to be taken out for long time non-using occasions.

3.3 Buttons and Controls
3.3.1 Buttons Combinations and Introduction

Before entering the main menu		
Icon	**Short Press**	**Long Press**	**Double Press**

Icon	Short Press	Long Press	Double Press
⏻	Standby Mode	On/Off	N/A
▣	Capture	Record	N/A

Icon	Up	Down	Left	Right		Center	
⬤	Zoom in	Zoom out	LRF Range finder	Short Push	Long Push	Brief Click	Double Click
				Pseudo Switch	Outline Mode	Calibration	Menu

After entering the main menu				
Icon	**Up**	**Down**	**Left**	**Right**	**Short Press**

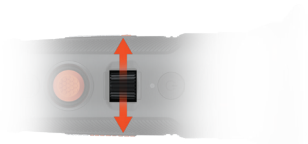| Icon	Up	Down	Left	Right	Short Press
⬤	Move up	Move down	Exit sub-menu	Open Sub-menu	Confirm

3.3.2. Lens Adjustment

Diopter Adjustment

Looking through the eyepiece, adjust the position of diopter level to optimize the image sharpness on the OLED display.
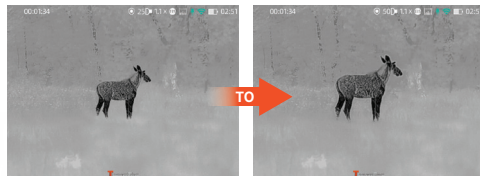

Objective Lens Focusing

Manually adjust the objective lens focus when you can't see the scene clearly.

FOV Selection and Switch
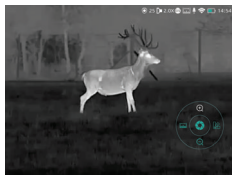
To adjust focal length from 25mm to 50mm.

Notice: There should be switched at the limiting position during the two diverse lenses changed.

3.3.3 Joystick Operation

3.3.3.1 Zoom
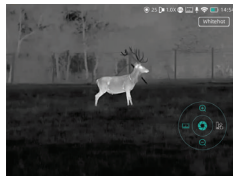
Push the joystick to the front to zoom in, vice versa.

3.3.3.3 Pseudo Color Switch

Brief push joystick to right to switch pseudo colors.

3.3.3.2 Laser Rangefinder

Push the joystick to the left to activate laser rangefinder.

There are totally six pseudo colors
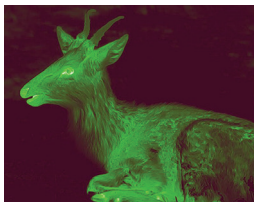(white hot, black hot, red hot, green, golden, violet) for user choice.

White

Black

Red

Green

Golden

Violet

3.3.4 Capture/Record
Image Capturing

Press Capture button to take photos. Then the photo icon in the upper left corner will flash once.

Video Recording

Press and hold Capture button to take videos. Then the recording icon starts flashing in the upper left corner, and the recording starts timing. Press and hold again to stop recording.

3.4 Set

Select setting and double-click the joystick to enter setting menu.
Note: Select by moving the joystick, and short press the joystick to confirm the selection.
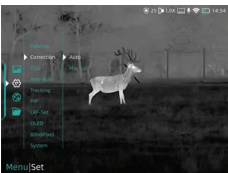
3.4.1 Setting

Press to enter the Imaging Setting menu. There are five sub-menus for image setting, which are "Image Mode", "Sharpness", "Denoise", "Brightness" and "Contrast".
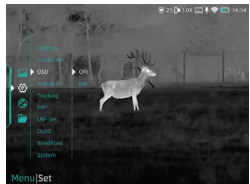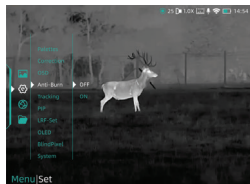
Image Settings

Mode	Forest/ Target	Forest: The image details would be enhanced in a way. Target: Outstanding target shape, more suitable for heavy weather.	
Sharpness	0-10	Adjust image sharpness to make the image edge sharper. The recommended value is 5.	
Denoise	0-10	Adjust image noise to make the image cleaner. The recommended value is 5.	
Brightness	1-10	Adjust image brightness to make the image brighter. The recommended value is 5.	
Contrast	1-10	Adjust image contrast to make the target more prominent in the image. The recommended value is 5.	

3.4.2 System Setting

Press joystick to confirm Setting to enter the System Setting menu. Select by moving the joystick, and short-press the joystick to confirm the selection.

System Setting		
Palettes	Target color	Totally six palettes could be set up.
Correction	/	The image correction mode could be set by Auto or Manual.
OSD	On-screen display	Enable this feature to decide if the menu icons display in the recorded videos.
Anti-Burn		Detector anti-burn function, it could be set by on/off.
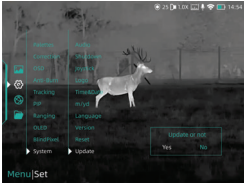
Anti-Burn		Once it detects harmful rays to the detector, the system will enable protection automatically.
Tracking		Turn on heat tracking to mark the target with the highest temperature in real time in the screen.

PIP	Picture in picture	In the picture, the image is 2x enlarged from the center of the cross.
Ranging	LRF-Set	It includes the default information of LRF location. Warning: No modification is allowed in this section.

Ranging	LRF-Set	
OLED	Mode	User can set up the needed OLED illuminated model.

OLED	Hue	Gray, Blue, Purple and Red are optional for OLED hue.
OLED	Brightness	The brightness could be adjusted here to make the image brighter or darker. The value could be set by 1-10.

Blind Pixel		The blind pixel in the picture can be replaced. We could replace bind pixels, save the current settings or cancel it.
System	Audio	Turn on or off audio function.

System	Shutdown	The device could be set to shutdown after 30mins, 60mins, or you could turn off the function.
System	Joystick	Customize the sensitivity range of joystick towards each direction, so it could be better adjusted to every individual needs and requirements.

System	Logo	The logo on the screen could be turned on or turned off.
System	Time Date	Time and Date could be set here.

System	M/yd	The measuring distance unit could be set by meter or yard.
System	Lang	System language could be set here.

System	Version	We could check the information of current version here.
System	Reset	The settings of images could be reset here.

System	Update	You can adjust and upgrade the device system.

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3.4.3 Network Connection

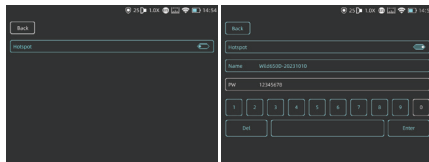Select Internet icon to and press joystick to enter the Network Connection menu.

Menu|Wlan

3.4.3.1 App Download

You may download the "ThermTec Outdoor" APP through the QR code shown on the packing box, user manual or below.

Download on the App Store

GET IT ON Google Play

### 3.4.3.2 Connect via Hotspot

Turn on device's hotspot.

● Connect mobile client with device's hotspot.
● After the connection, you could control devices freely with APP (ThermTec Outdoor).
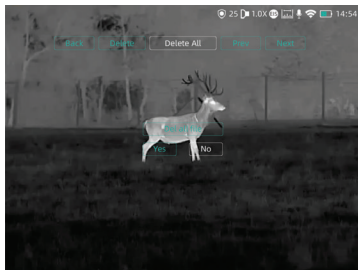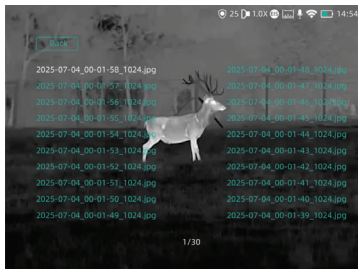
3.4.4 File Management

Select Files and press the joystick to enter the Files. Select the image and video sub-menus to view the images and videos and play the videos.

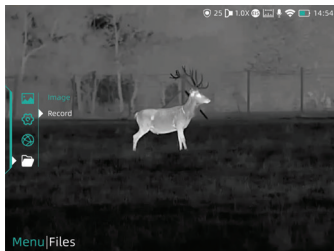**Image Viewing**

● Press the joystick to enter image files.
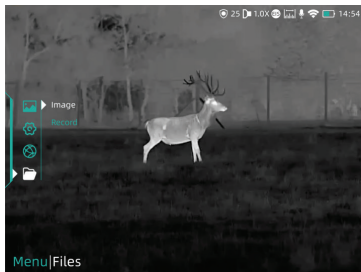
● After selecting a certain image, press joystick to access further operations of the image, we could delete it, check next one or delete all the images.

Video Viewing
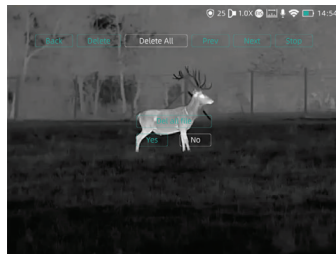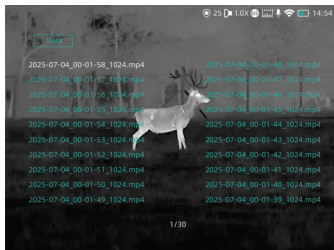- Select Record and press joystick to enter video files.

- Choose a certain video and press joystick to check the video.

- Further operations could be accessed here, we could delete it, check next one, pause the video or delete all the videos.

3.5 Data Reading

Data Reading

When external display is connected, the OLED of the device automatically turns off. Power on the device, use a type-C USB cable to connect with the computer to read the video and image data in the memory.

Note: Videos, images and rav videos taken will be saved separately in folders named "record", "image" and "rav".

3.6 System Software Upgrade

Wild DL thermal imaging monocular supports "ThermTec Outdoor" APP, which allows you to transmit the image from the thermal imager to the smartphone or tablet via Hotspot in real time mode.

Upgrading via APP

- Open ThermTec Outdoor APP.
- Turn on the hotspot of the device, and connect it with the Mobile phone.
- Select Update on the menu options.
- The downloading and upgradation would be a continuous process if there is an update.
- After finishing the update, the device will reboot.

Upgrading via PC

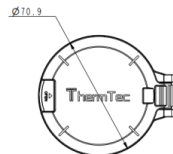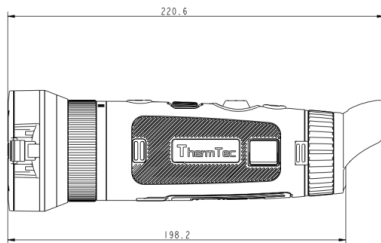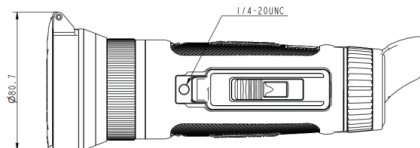- Copy the related updating firmware to the storage file of Wild DL.

- Copy the related updating firmware to the file folder of Wild. Press joystick to select Update icon, and the system will prompt "Update".
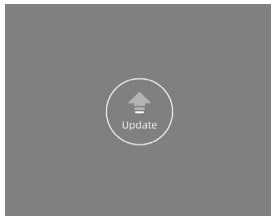
- Enter Version menu to check firmware version.

4 Technical Data
4.1 Product Size & Drawing

Wild 650DL Pro size

4.2 Specifications

Model	Wild 650DL Pro
Microbolometer	
Resolution	640×512
Pixel pitch	12μm
NETD	<15mK@300K
Spectral range	8-14μm
Frame rate	50Hz
Detection range	1300m/2600m
Optics	
Objective lens	25mm/50mm
F Number	F0.9/F0.9
m@100m	30.7*24.6/15.4*12.3
Field of view	17.5° x 14°/8.8° x 7.0°
Magnification	1.8X-3.6X
Digital zoom	1-4X continuous zoom
Eye relief	20mm
Exit pupil	8mm
Diopter	±5D
Display	
Type	AMOLED
Resolution	1600×1200
Display size	0.5 inch
Color palette	6
Image mode	Forest/Target

Function	
Photo / Video playback	Yes
Language	Multiple-languages
Inbuilt memory	64GB
PIP	Yes
Hot track	Yes
OSD recording	Yes
Burn prevention	Yes
Battery	
Internal battery	Replaceable and Rechargeable Li-ion Battery (18650x1)
Battery life	6h
Interface	
Type C	Supports battery charging, data transfer, USB video output
Hotspot	Yes, App remote control
Environment	
Working temperature	-20°C to +50°C
Protection level	IP67
Weight, g	653±5
Dimension,mm	221(L)×71(W)×81(H)±5
Accessories	
External cable	Type-C-USB cable
Other Accessories	Palm strap/Protective bag/ Non-dust cloth and etc.
Laser Rnagefinder	
Safety class	Class 1
Wavelength	905nm
Range	1000m
Accuracy	±1m

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