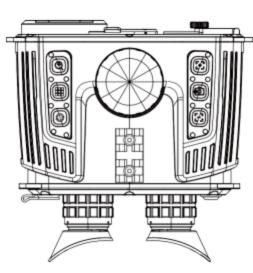


Binocular Thermal Imager (With Range

Finder Function)

User's Guide





TFNTD70B

Catalogue

3	
Overview1	ĺ
Safe use and maintenance	1
Battery charging2	2
Battery installation3	
Cable instructions4	
Product Architecture5	
1. Structure introduction5	
2. Display content description6	ò
Performance Index8	
Basic operating instructions10	0
1. Device on/off and interface adjustment10	
2. Key operation10)
Menu introduction11	
1. Image menu1	1
1.1 View images1	1
1.2 Delete images1	2
2. Palette menu12	2
2.1 Palette description1	2
2.2 Palette application1	2
3. Time menu13	3
4. Settings14	ļ
Connect to WIFI16	5

Overview 0

TFN TD70B binocular fusion thermal imager (hereinafter referred to as the thermal imager) adopts integrated technologies such as ultra-low illumination COMS, infrared thermal imaging camera, electronic compass, GPS, video compression storage and control. It can be used for tactical reconnaissance, surveillance and identification of camouflaged targets day and night, and has the characteristics of small size, easy portability and good environmental adaptability. This thermal imager is easy for a single person to carry for frontier observation, and is also suitable for setting up observations at a fixed observation station to observe, take photos and video of targets day and night. It can be widely used in various occasions such as patrol, investigation, law enforcement, anti-smuggling, anti-drug, forest fire prevention and emergency search and rescue.

Safe use and maintenance

Precautions for using the equipment:

- It is prohibited to look directly at the sun when using this device;
- (2) When the equipment malfunctions or other unknown situations occur, please contact the manufacturer and do not disassemble it without authorization.

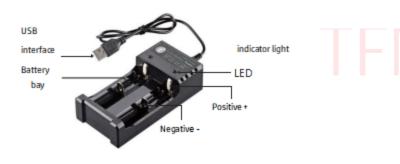
Equipment routine maintenance:

- Please wipe the equipment after using it to prevent water stains and dirt from remaining on the surface of the equipment and the objective lens, and cover the lens cap;
- (2) When the device is not used for a long time, please remove the battery from the device and store it together with other accessories.

Battery charging

When the battery is low, please charge it in time.

- Unscrew the battery cover and take out the battery.
- Use the charger supplied by the original factory to charge the battery, and install the battery correctly according to the polarity instructions on the charger.
- After fully charging, cut off the charger power and remove the battery.



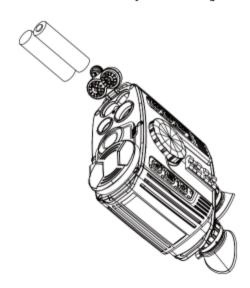
Tips: If this product is not used for a long time, charge it at least once every three months to prevent the battery from being too low due to self-discharge, resulting in irreversible capacity loss.

Battery installation

Turn the battery compartment knob counterclockwise to open the battery compartment cover;

- (1) Install the battery strictly in accordance with the direction of the positive and negative polarity indicators on the battery compartment cover (there are positive and negative polarity indicators at the battery installation location);
- (2) Close the battery compartment cover and turn the battery compartment knob clockwise until it is locked.

Note: 1. Do not use batteries with damaged insulation layers; 2. If the positive and negative poles of the battery are reversed, the device will not work and the battery will be damaged.



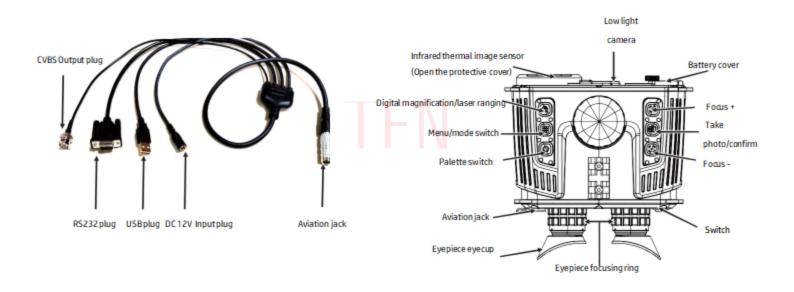
Cable instructions

One end of the data cable that comes with the device is connected to the device's aviation jack, and the other end can be inserted into the corresponding jack as required.

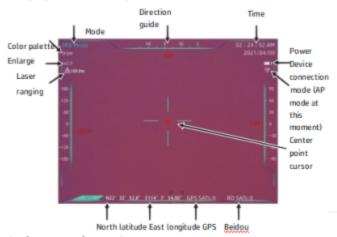
Product Architecture

1. Structure introduction

The appearance structure of the product is mainly composed of CMOS, infrared thermal imaging, battery compartment, buttons, eyepiece, GPS module, and WIFI module.



2.Display content description



Device connection mode

When the "(()) " icon is displayed, it means that the device is connected to AP (hotspot) mode (the device defaults to AP mode):

When the ** icon is displayed, it means that the device is connected to STA (site) mode; when the icon is flashing, it means that the mode is being switched.

Note: Mode switching needs to be operated on the APP.

Laser ranging safety precautions:

- When using this module, do not look directly into the laser beam.
- (2) Do not use lens barrels or other additional optical devices to operate this module to avoid increased damage to your eyes.
- (3) Do not place the module directly in a car exposed to sunlight or in an

environment with strong ultraviolet rays or near a heat source. Under such conditions, it may cause uncontrollable effects on the module.

Laser ranging precautions:

Note: Factors that affect ranging capability, ranging response speed, and ranging accuracy include:

- Target reflectivity: Generally, the higher the target reflectivity, the better the ranging capability and the faster the ranging response speed;
- (2) Target shape: When the reflective surface area of the measurement target is too small or uneven, the ranging capability and ranging response speed will be reduced accordingly;
- (3) Measurement angle: When the laser angle is vertically irradiated onto the reflective surface of the measurement target, the distance measurement can

The better the force, the faster the ranging response speed, otherwise the ranging capability and ranging response speed will be reduced;

- (4) Measurement environment: Factors that affect the ranging response speed of ranging capabilities also include sunlight intensity, the concentration of water vapor and suspended particles in the air, the angle away from sunlight, etc.; (such as in rainy days, foggy days, snowing, foggy days, etc.) The measuring range will be reduced under hazy weather conditions) The measuring range of this series of ranging telescopes is defined under the following conditions:
- The measurement target has medium reflectivity: such as building walls
- (2) The reflective surface of the measurement target is perpendicular to the laser emission direction
- (3) The measurement weather is sunny but not under direct sunlight.
- (4) The area of the reflective surface is not less than 2m*2m.

Performance Index

Infrared				
Model	TD70B			
Detector type	Amorphous silicon uncooled infrared focal plane			
Resolution	384x288			
Pixel size	17µm			
Field of view	7.5° × 5.6°			
Working band	8-14 µ m			
NETD	<50mk@25℃, @f/1.0			
Focal length	50mm			
Frame rate	≤ 50Hz			
Focusing method	Electric focusing			
Detection distance	•			
Figure	3333 m			
(1.7mx0.5mx0.3m)				
Vehicle	8823 m			
(4.5mx2.0mx1.5m)				
Recognition distance				
Figure	833 m			
(1.7mx0.5mx0.3m)				
Vehicle	2205 m			
(4.5mx2.0mx1.5m)				
shimmer				
Detector type	Ultra-lowillumination CMOS			
Resolution	1920 × 1080			
Pixel size	4.0 µ m			
Focal length	35mm			
Frame rate	≤ 30Hz			
Focusing method	Focus-free			

Display	
Display screen type	OLED
Resolution	1024x768
Display size	0.39 inches
Display mode	Infrared/low light/dual light fusion/picture-in-
	picture
Electronic zoom	1X /2X /4X
Dimension	± 4SD
adjustment	
Color palette	Rainbow, iron red, cool colors, white hot, black
	hot
Other functions	
WIFI	2.4Gimage transmission
Electronic compass	Azimuth and angle display
Positioning	GPS/BD
Ranging range	10m-2500m
Ranging accuracy	<400m, ±1m; >400m, 0.4%
Storage	
Capacity	Built-in 16G eMMC (note: usable storage capacity
	Less than this value, because the system
	software takes up a certain amount of space)
Photo	Support
Video	Support
Picture/video format	JPG/MP4
Interface	
CVBS output	PALvideo output
External power	DC12/1A

Power Supply		
Removable rechargeable lithium	3200mAhx2 (battery model 18650)	
Battery charging method	Separate charging stand	
The power consumption of the whole machine	≤ 6W	
Battery life	≥ 4 hours	
Working/storage environment		
Working temperature	-20°C to+50°C	
Storage temperature	-30°C to+70°C	
Impact	≤ 30g	
Protection grade	IP54	
Dimensions/weight		
Overall dimensions	192.8mmx86.9mmx189.6mm	
Weight	1.58 kg (including battery)	

Basic operating instructions

1.Device startup/shutdown and interface adjustment
Short press the power switch and you can see the screen light up
from the eyepiece; If the characters on the display interface are
blurry, you can adjust the eyepiece focusing ring and rotate it left
or right until the characters on the interface are clear; After the
device starts normally, you can enter the actual operation
interface; If you need to shut down, short press the power switch,
the device will shut down normally and the screen will not be
displayed.

Key operation

2.1 After normal startup, there is no menu displayed on the screen. Short press the "4" key to zoom in, and the image will cycle

through 1X, 2X, and 4X.Long press the "Tkey to turn on the laser ranging function.

2.2 Press the "O " key to switch the color palette: rainbow, iron red, cold color, black hot, white hot.

2.3 Press the " key to switch modes: low light mode, infrared mode, mixed mode, and picture-in-picture mode. Long press the " key, the menu will be displayed on the screen, which is the menu mode. Press " key to exit menu mode.

2.4 The "+" " keys play the role of image focusing.

2.5 Press the " ©" key to capture the image. Long press the " © " key to record video. Long press this key again to save the video and exit recording.

Menu introduction

Long press the " key to enter the menu, which are: image, palette, time, and settings.

- 1. Image menu:
- 1.1 View images

Enter the menu, select the image icon, press " to enter the image list, press the " [-]" " keys to select the image, press " o" to enter the image. When viewing images, press " [-]" to view the previous image, press " o view the next image, and press " o return.

1.2 Delete images

While viewing the image, press " and the screen will appear "Delete Image". Press " " or " - [-] " key to select whether to delete the image, and then press " " to confirm.

2. Palette menu:

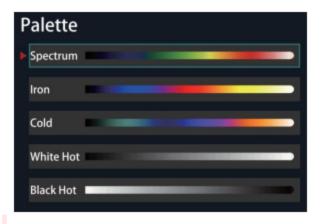
2.1 Palette description

The color palette can be used to change the false color presentation of the infrared image on the display. Some palettes are better suited for specific applications and can be set as desired. The color palette is divided into five color palettes: rainbow, iron red, cool color, white hot, black hot. These palettes work best with high thermal contrast for extra color contrast between high and low temperatures.

Choosing the right color palette can better show the details of the target object. The palette of rainbow, iron red, and cold colors focuses on displaying colors. This palette is very suitable for high thermal contrast situations and is used to improve the color contrast between high and low temperatures. Yet the white-hot, black-hot palette provides uniform linear color.

2.2 Palette application

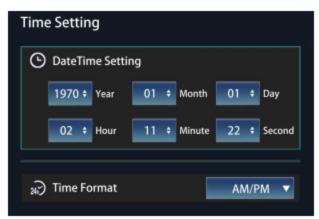
Enter the menu, select the palette icon, press " to enter the palette list, press the " [+] " [-] "keys to select the palette, and then press " to select the palette. Press " key to return.



3. Time menu:

Enter the menu, select the time icon, press " " to enter the time setting, press the " and " " keys to select the time setting or time format, select and press the " key to enter the setting. After the setting is completed, press the " key to confirm, and press the " key to return. Among them, " " " " " " " plays the role of

increasing/decreasing the value in the settings, and plays the role of moving up/down in the list.

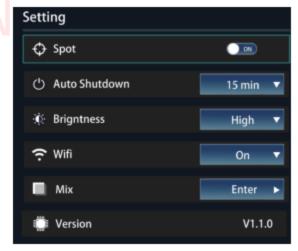


4. Settings:

- 4.1 Enter the menu, select the setting icon, press the " " key to enter the setting, press the " 3" " key to select the setting item, press " to enter the setting, press " to return.
- 4.2 Hotspot tracking switch: Press the " " key to turn off hotspot tracking, press this key again to turn on hotspot tracking.
- 4.3 Automatic shutdown: Press the " © " key, a drop-down menu will pop up, which is 5 minutes, 10 minutes, and no shutdown. Press the " [+2" " " [-7" " key to select the shutdown time, and press " © " to confirm.
- 4.4 Brightness setting: Press the " " key to pop up the drop-

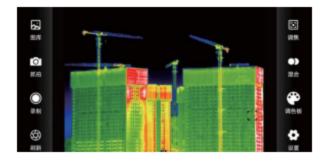
down menu, which is low brightness, medium brightness, or high brightness. Press the " $\{+\}$ " " [-]" key to select the brightness, and press " \bigcirc " to confirm.

4.5 WiFi switch setting: Press the "o " key, a drop-down menu will pop up, which is onor off. Press the "(+)" " " - (-)" key to select on or off, and press "o " to confirm.



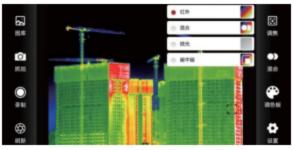
Connect to WIFI

For Android systems, please download the APP software first. Connect to the device hotspot while the device is powered on. The default connection hotspot name of this device: Thermal-XXXX (XXXX is the last four digits of the device MAC) After connecting to the hotspot, open the APP software and enter the interface, which displays as follows:

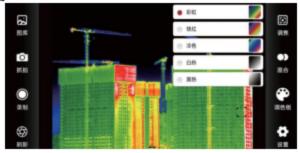


- Gallery, View pictures and videos.
- Snapshot, Take an image.
- Record, Click this icon to start video recording, click again to end recording.
- Refresh, refresh the blank.
- Adjust, Focus to make the image clearer.

Click the " icon to change the mode, which can be set to four modes: infrared, hybrid, low light, and picture-in-picture, as shown in the figure below.



Click the "palette icon to set five color palettes: rainbow, iron red, cold color, white hot, and black hot, as shown in the figure below.

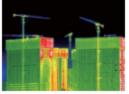


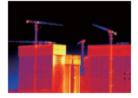
The palette works best with high thermal contrast for extra color contrast between high and low temperatures.

Choosing the right color palette can better show the details of the

target object. The palette of rainbow, iron red, and cold colors focuses on displaying colors. This palette is very suitable for high thermal contrast situations and is used to improve the color contrast between high and low temperatures. Yet the white-hot. black-hot palette provides uniform linear color.

The following are the image effects of the same object taken with five color palettes.

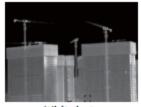




Rainbow

Iron red





Cold color

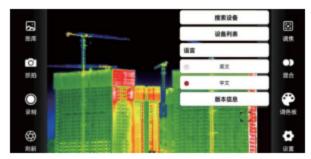
White hot





18

Click the " settings icon to search for devices, view the device list, and switch between Chinese and English, as shown in the figure below.



Search device: Search the current device and connect it automatically. Device list: Enter the device list, click Search, and when multiple devices are searched, select the device to be connected in the list. Version information: View version information.

Select the connection mode: Enter the device list and click Settings to select AP (hotspot) mode or STA (site) mode (the device's default AP mode):

After selecting the mode, enter the name and password below and click OK.

Note: When using the default hotspot for the first time, just connect to the default hotspot without entering a password. If you need to set a password, select AP mode in the settings and set the password.

TFN