TFN HTM180

Handheld Multi-Functional Fusion Thermal Imaging Reconnaissance Device

Product Introduction

The HTM180 is a professional handheld multi-function detector that integrates thermal imaging, low-light night vision, laser ranging, BeiDou satellite positioning, and a digital electronic compass. Equipped with a 640 × 512 uncooled long-wave infrared detector, it delivers high-resolution thermal images in complete darkness, fog, haze, or smoke. The ultra-low-light color CMOS sensor works independently or alongside thermal to reveal hidden or camouflaged targets. With a 3km eye-safe laser rangefinder, high-precision GPS/BeiDou, and a digital compass for azimuth and pitch, this rugged IP66-rated device provides all-in-one situational awareness for search, surveillance, and security operations in harsh environments.

Product Key Selling Points

☑ High-Resolution 640×512 Uncooled Infrared Detector

The HTM180 features a 640×512 long-wave uncooled infrared detector with <40mk thermal sensitivity and a 75mm F1.0 lens. It provides crisp, high-contrast thermal images even in total darkness, dense fog, or smoky conditions. Switch between white hot, black hot, and 8 pseudo-color palettes to maximize target recognition. Whether you are tracking a person, inspecting equipment, or searching a forest, this thermal imager ensures you never miss a heat signature, dramatically improving detection reliability in low-visibility environments.

☑ Dual-Sensor Fusion: Thermal + Ultra-Low-Light CMOS

A 1920×1080 ultra-low-light color CMOS sensor with advanced 3D noise reduction and wide dynamic range works alongside the thermal channel. In starlight or twilight, the visible sensor adds color and texture details, while thermal reveals hidden objects behind camouflage, light foliage, or smoke. This fusion capability helps operators quickly distinguish between a genuine threat and a false alarm, locate concealed suspects, or navigate using natural landmarks – solving the pain point of incomplete visual information during night operations.

☑ Integrated 3km Eye-Safe Laser Rangefinder

The built-in 905nm laser rangefinder measures distances from 20 meters to 3,000 meters with ±1m accuracy and >98% effective rate. With one button press, you get instant, precise distance data displayed directly in the eyepiece. No more guessing distances across open terrain or urban areas. This feature is critical for long-range observation, artillery adjustment, search area definition, sniper handoff, or simply planning an approach route. It saves time, reduces errors, and increases operational safety.

☑ BeiDou II + GPS & High-Precision Digital Compass

Dual satellite positioning (BeiDou II and GPS) provides CEP <1m accuracy for your own location. The 3-axis digital electronic compass delivers azimuth accuracy <0.8° (RMS) and pitch accuracy <0.3° (RMS). The device displays your coordinates, target coordinates (by combining ranging and bearing), and heading in real time. This eliminates disorientation in unfamiliar terrain, allows you to record exact incident locations, and enables rapid sharing of threat coordinates with your team or command center – essential for coordinated field operations.

☑ Rugged IP66 Design with Full Video Recording

Rated IP66 dustproof and waterproof, the HTM180 operates from -30° C to +55° C and 95% humidity. The built-in 32GB storage records JPEG photos and MP4 videos directly from the eyepiece. One-touch recording lets you document evidence, debrief missions, or share observations without extra equipment. The 0.5-inch 1024 × 768 OLED display with 12x magnification (adjustable diopter) delivers sharp, lag-free images. The five-way joystick and dedicated buttons allow gloved operation. This ruggedness and recording capability solve the pain of equipment failure and lost evidence in harsh field conditions.

Product Specifications

Category	Specification
Model	HTM180
Thermal Imager	
Detector Type	Uncooled FPA
Detector Resolution	640×512 @ 12 μm
Working Band	8~12 μm
Frame Rate	50Hz
Temperature Sensitivity (NETD)	<40mk @ 300K
Infrared Lens Focal Length	75mm (F 1.0)
Focusing Method	Motorized (electric focus)
Field of View	5.9° × 4.7°
Digital Zoom	1~4x
Polarity	Black hot / White hot / 8 pseudo-color palettes
Low-Light Imager	
Detector	Ultra-low-light color CMOS
Resolution	1920×1080
Lens Focal Length	50mm
Digital Zoom	1~16x

Features	Wide dynamic range, 3D noise reduction, auto shutter
Eyepiece Display	
Display Type	2× (1024×768) 0.5-inch OLED
Magnification	12x (adjustable diopter)
Laser Rangefinder	
Wavelength	905nm (eye-safe)
Ranging Range	20m – 3000m
Ranging Accuracy	±1m
Effective Ranging Rate	>98%
Satellite Positioning	
System	BeiDou II + GPS
Positioning Accuracy (CEP)	<1m
Digital Compass	
Azimuth Accuracy	<0.8° (RMS)
Pitch Accuracy	<0.3° (RMS)
Video & Recording	
Photo Format	JPEG
Video Format	MP4
Storage Capacity	32GB
Interface	High-speed USB 2.0, analog video out
Environmental	
Protection Rating	IP66
Operating Temperature	-30° C ~ +55° C
Storage Temperature	-40° C ~ +65° C
Humidity	5% ~ 95% (non-condensing)
Physical	
Weight (with battery & hand strap)	~2.0kg
Dimensions (L×W×H)	253×242×97 mm
Mounting Interface	1/4″ standard tripod socket

Product Features

Section 1: Long-Wave Infrared Thermal Imaging – See Through Darkness and Obscurants

The HTM180's 640×512 uncooled infrared detector captures heat radiation in the 8~12 μm band. Unlike visible light cameras, it does not need any ambient light. It sees through total darkness, heavy fog, smoke, dust, and even light vegetation. With a thermal sensitivity of <40mk, it can detect temperature differences as small as 0.04° C. This means you can spot a warm human body hiding in bushes, a recently parked vehicle with a hot engine, or an overheating electrical connection – all from a safe distance. The 75mm F1.0 lens provides a narrow 5.9° × 4.7° field of view, ideal for long-range observation. Switch between white hot, black hot, and 8 pseudo-colors to adapt to different backgrounds. For border patrol, search & rescue, or industrial inspection, this function solves the critical pain point of being completely blind in low-visibility or nighttime conditions, allowing 24/7 uninterrupted surveillance.

Section 2: Ultra-Low-Light CMOS & Fusion Mode – Identify Hidden or Camouflaged Targets

Thermal imaging is excellent for detection, but sometimes you need visual details – a suspect's clothing color, a vehicle's license plate, or natural terrain features for navigation. The HTM180 integrates a 1920×1080 ultra-low-light color CMOS sensor with 3D noise reduction and wide dynamic range. It works in starlight or moonlight without additional illumination. In fusion mode, the device overlays thermal hotspots onto the low-light visible image, or allows side-by-side viewing. This helps you quickly confirm whether a heat source is a human or an animal, distinguish a decoy from a real threat, or navigate using familiar landmarks. For law enforcement and military recon, this dual-sensor fusion dramatically reduces false alarms and speeds up positive identification, solving the pain of incomplete situational awareness during night missions.

Section 3: 3km Laser Ranging – Instant, Accurate Distance Measurement

Estimating distance across open fields, valleys, or urban blocks is notoriously inaccurate and can lead to poor decision-making. The HTM180's 905nm eye-safe laser rangefinder measures from 20 meters up to 3,000 meters with ±1m precision and >98% reliability. One push of the laser button returns the exact distance within a second, displayed directly on the OLED eyepiece. Combined with the digital compass, you can also calculate approximate target coordinates. This feature is invaluable for forward observers, sniper teams, border patrol, and search teams – you can accurately report "target at 1,250 meters, bearing 178°" or plan a rescue approach without wasting time walking off-distance. It solves the pain of guesswork, saves critical time, and improves coordination with other units.

Section 4: BeiDou/GPS + Digital Compass – Full Geospatial Awareness Anywhere

Getting lost or being unable to report your exact location is a major risk in wilderness or unfamiliar terrain. The HTM180 integrates BeiDou II and GPS dual satellite positioning with CEP <1m accuracy. The built-in 3-axis digital electronic compass provides azimuth accuracy <0.8° (RMS) and pitch accuracy <0.3° (RMS), even when the device is tilted. The system displays your own coordinates, target coordinates (by combining ranging and bearing), and heading in real time. You can record waypoints of observed threats, evidence locations, or extraction points. For military recon, this means accurate call-for-fire or MEDEVAC requests. For search & rescue, you can log searched areas systematically. This solves the pain of disorientation and ensures every observation is geospatially actionable, significantly improving team coordination and mission success.

Section 5: Rugged IP66 Construction with Onboard Recording – Reliable in Any Weather

Field operations often involve rain, dust, extreme cold, or heat – conditions that destroy ordinary electronics. The HTM180 is rated IP66, meaning it is completely dust-tight and protected against powerful water jets. It operates from -30° C in arctic environments to +55° C in desert heat and works in 95% humidity without condensation issues. The built-in 32GB storage records JPEG photos and MP4 videos directly from the eyepiece. One-touch recording allows you to document encounters, gather evidence, or debrief trainees without needing a separate body camera or DVR. The ergonomic five-way joystick and large buttons can be operated with gloves.

The 0.5-inch 1024×768 OLED display provides sharp, lag-free images even in bright sunlight. This solves the pain of equipment failure in harsh conditions, lost evidence, and complex controls that distract from your mission. You get a durable, single-device solution for observation and documentation.

Applications & Pain Points Solved

Scenario	Customer Pain Point	HTM180 Solution
Border Patrol & Anti-Smuggling	Smugglers operate at night using camouflage and remote terrain. Standard binoculars and flashlights cannot detect hidden people or vehicles in bushes or darkness.	Thermal imaging (640×512) detects body heat and engine heat through vegetation, smoke, or total darkness. Laser ranging gives exact interception distance. GPS marks location for rapid coordination.
Search & Rescue (Lost Persons)	Low visibility due to fog, rain, or nightfall makes it nearly impossible to spot a motionless or injured person. Rescue teams waste hours searching uncoordinated areas.	Thermal quickly identifies body heat against cool ground. Dual fusion (thermal + low-light) helps confirm visual details. GPS/compass allows logging searched areas and guiding teams to the exact victim location.
Law Enforcement / SWAT Reconnaissance	Need to surveil a suspect hideout from a distance without being detected. Estimating range for breaching or sniper teams is often inaccurate, risking operation failure.	Covert thermal observation through light foliage and smoke. One-button 3km ranging provides precise distance for ballistic solutions or approach planning. Video recording (MP4) gathers admissible evidence.
Wildlife Observation & Poacher Deterrence	Animals are most active at dawn/dusk or night. Traditional binoculars fail in darkness. Poachers use thermal to evade rangers.	Thermal detects warm animals from hundreds of meters without disturbing them. GPS marks nest locations or poacher camps. Rugged IP66 works in jungle rain or mountain cold.
Industrial / Utility Inspection	Inspecting power lines, pipelines, or solar farms at night or in bad weather is dangerous. Hotspots (faults) are invisible to the naked eye.	Thermal imaging reveals overheating connections, friction hotspots, or insulation failures from a safe distance. Laser ranging tells exactly which tower or pipe segment is faulty. Recording creates maintenance logs.

Q&A

Q1: Can the HTM180 see through walls or glass?

A: No. Thermal imagers cannot see through solid walls or standard window glass because glass blocks long-wave infrared radiation (8~12 μ m). However, the HTM180 can detect heat signatures radiating from a wall if an object is pressed against it (thermal transfer). It works perfectly through smoke, fog, light foliage, and fabrics. For vehicle windows, you may see reflections rather

than the interior.

Q2: What is the maximum ranging distance and accuracy?
A: The integrated 905nm laser rangefinder measures distances from 20 meters up to 3,000 meters (3km) with ±1 meter accuracy and >98% effective rate under good conditions. This allows you to precisely locate targets at long range, whether for observation, artillery adjustment, or search planning.

Q3: Can I record videos and photos directly on the device?
A: Yes. The HTM180 has built-in 32GB storage. You can take JPEG photos and record MP4 videos directly from the eyepiece using the dedicated record button (short press for photo, long press to start/stop video recording). This is ideal for evidence collection, mission debriefing, or training documentation.

Q4: Is the laser rangefinder safe for my eyes?
A: Yes. The 905nm laser is classified as eye-safe (Class I) under normal use. It meets international safety standards. However, as a best practice, do not intentionally point the laser directly into anyone's eyes for prolonged periods. It is safe for observing people or animals at distances over 20 meters.

Q5: Can I use the HTM180 in heavy rain or dusty environments?
A: Absolutely. The device is rated IP66, meaning it is completely dust-tight and protected against powerful water jets. It operates in temperatures from -30° C to +55° C and humidity up to 95% (non-condensing). You can confidently use it in heavy rain, sandstorms, or extreme cold without worrying about internal damage.

Package Contents

1. HTM180 Main Unit (with hand strap)
2. Rechargeable Lithium Battery (installed, capacity as per factory)
3. Battery Charger (AC adapter + power cable)
4. Infrared Lens Protective Cover
5. Low-Light Lens Protective Cover (if applicable)
6. Eyepiece Rubber Cup (removable)
7. Lens Cleaning Cloth
8. USB 2.0 High-Speed Data Cable
9. Analog Video Output Cable (optional, check version)
10. Quick Start Guide (English)
11. Detailed User Manual (English)
12. Hard Carrying Case (foam-padded for protection)
13. 1/4″ Standard Tripod Mount Adapter

> Note: For battery operating time, storage capacity upgrades, or optional accessories (external battery pack, vehicle charger), please contact our sales team.

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