

HW256

THERMAL FUSION SIGHT / USER MANUAL



2026.10 | ERDI TECH LTD

1×

MAGNIFICATION

True 1× optical system

256 × 192

THERMAL DETECTOR

Uncooled VOx, 12 μm pitch

9° × 6.7°

FIELD OF VIEW

19 mm lens

30 × 23 mm

VIEWING WINDOW

Large, unobstructed view

≥ 6 h

FUSION RUNTIME

≥ 10 000 h red dot only

IP67

WATERPROOF RATING

Sealed housing

Red dot and thermal imaging in one 1× sight: fusion viewing by day and by night, black hot, white hot and outline modes, and a 0.5 MOA mechanical zero.

Full technical specifications are given in Section 3.

1. Overview

The HW256 is a compact thermal fusion sight that combines a red-dot aiming system with an uncooled thermal imaging channel in one 1× housing. The red dot gives rapid target acquisition and a precise aiming point; the thermal channel renders target outlines and scene detail under low light, darkness, smoke and dust. The sight therefore stays usable by day and by night without any change of hardware.



Figure 1 — HW256 thermal fusion sight

A 1× optical system is used with both eyes open, so the sight can be brought onto a target in the way a red-dot sight is normally used. Thermal imagery is presented on an OLED display and can be viewed together with the red-dot reticle for fusion observation. The detector resolves 256×192 pixels on a $12 \mu\text{m}$ pitch behind a 19 mm lens, giving a $9^\circ \times 6.7^\circ$ field of view.

The housing is machined from aircraft-grade aluminium and finished with a black hard anodized coating. A standard Picatinny interface with a quick-release lever allows the sight to be fitted and removed without tools, and the 38 mm optical axis height matches common rail and mount combinations. The sight is intended for close- to medium-range work on submachine guns, assault rifles and similar platforms, and is equally suited to urban operations and indoor CQB.

2. Product Features

- Thermal and red dot in one sight; usable by day and by night.
- Three reticle styles: dot, circle and dot with circle.
- Three thermal image modes: black hot, white hot and outline.
- Full CNC aluminium housing for rigidity and stable zero retention.
- Black hard anodized finish for abrasion and corrosion resistance.
- 30×23 mm viewing window for an open field of view.
- Quick-release Picatinny mount with a clamp adjustment knob.
- IP67 sealed housing, rated from -20°C to $+65^\circ\text{C}$.

3. Technical Specifications

Item	Parameter
Optical	
Magnification	1×
Viewing window	30 mm × 23 mm
Reticle styles	Dot / Circle / Dot + circle
Dot size	≤ 3 MOA
Parallax	≤ 2 MOA
Power	
Battery	1 × CR123A (3 V or 3.7 V)
Continuous runtime, red dot only	≥ 10 000 h
Runtime, fusion mode	≥ 6 h
Reticle brightness levels	15 day + 5 night (20 levels)
Thermal brightness levels	10 levels
External power	Type-C, 5 V (does not charge the cell)
Thermal Imaging	
Detector type	Uncooled vanadium oxide
Detector resolution	256 × 192
Pixel pitch	12 μm
Display type / resolution	OLED, 1024 × 768
Lens focal length	19 mm
Field of view	9° × 6.7°
Image modes	Black hot / White hot / Outline
Adjustment and Mounting	
Elevation and windage range	± 40 MOA
Adjustment increment	0.5 MOA
Mount standard	Picatinny rail (MIL-STD-1913)
Physical	
Housing machining	CNC machined, aircraft aluminium
Finish	Black hard anodized
Overall dimensions	≤ 95 × 55 × 90 mm
Sight height above bore axis	38 mm
Weight	450 g
Environment	
Operating temperature	−20 °C to +65 °C
Storage temperature	−40 °C to +70 °C
Waterproof rating	IP67

Table 1 — Technical specifications

4. Buttons and Functions

The sight is operated with five buttons on the top face. The table below summarises the actions; the sections that follow describe each function.

Button	Status	Short press	Long press
Sun button, upper	Device on	Thermal brightness +	Image mode (3 s)
Sun button, lower	Device off	Thermal power on (0.5 s)	—
Sun button, lower	Device on	Thermal brightness −	Thermal power off (6–10 s)
Ring button	Device on	Zoom 1× / 3× / 5×	Thermal calibration
+ button	Device off	Red dot on	—
+ button	Device on	Red-dot brightness +	Change reticle style
− button	Device on	Red-dot brightness −	Red dot off

4.1 Power On and Power Off

With a charged cell fitted, a short press of about 0.5 s on the lower sun button starts the thermal channel. To shut it down, hold the same button for 6–10 s. The red dot has its own logic: press + or − to switch it on, and hold − to switch it off.

4.2 Image Modes

A long press on the upper sun button cycles black hot, white hot and outline. In black hot, warmer objects appear darker; in white hot, warmer objects appear brighter; in outline, target edges are emphasised. The selected mode is retained at the next power-on.

4.3 Brightness

Thermal brightness is set in 10 steps with the two sun buttons. Red-dot brightness is set in 20 steps with + and -: 15 daytime settings and 5 night-vision settings. Set the dot just bright enough to be visible without blooming.

4.4 Zoom and Image Calibration

A short press on the ring button cycles the thermal image through 1×, 3× and 5×. Zoom is digital, so the field of view is reduced at the higher settings. A long press on the same button runs an image calibration; use it when the image becomes uneven or loses contrast.

4.5 Reticle Styles

A long press on + changes the reticle between dot, circle and dot with circle. The dot subtends no more than 3 MOA. See Section 10 for the reticle table.

4.6 Low Battery and Auto Power-Off

The battery icon in the upper right corner empties and flashes when the cell is nearly exhausted. In red dot mode the reticle itself flashes when the cell falls below 5 %. If no button is pressed for about 30 minutes, the red dot switches off automatically.

5. Package Contents

- HW256 thermal fusion sight
- User manual
- Accessories as specified in the order (battery, lens cloth and other items)

Note: the packing list supplied with the shipment prevails.

6. Components and Controls

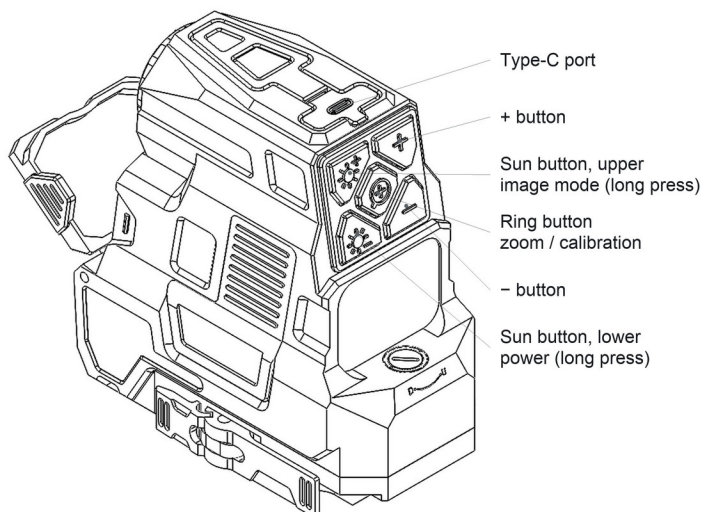


Figure 2 — Controls and interfaces

7. Technical Inspection

Perform the following checks before each use.

- Housing: free of cracks, dents and other visible damage.
- Windows: the objective window and the viewing window are clean and free of oil, stains or scratches.
- Mount: the sight is seated on the rail and cannot be moved by hand.
- Battery: the cell is charged and correctly oriented; the cover is tight.
- Function: the sight powers on, the image is stable and the reticle is visible.
- Buttons: each button responds immediately, without binding or looseness.
- Marking: the model and serial marking are complete and legible.

8. Battery

The HW256 is powered by one CR123A cell; both 3 V and 3.7 V cells can be used. Fusion runtime is ≥ 6 h and red-dot-only runtime is $\geq 10\,000$ h.

8.1 Battery Installation

1. Switch the sight off.
2. Unscrew or lift the battery cover on the underside of the housing.
3. Insert one CR123A cell with the positive terminal facing inward.
4. Refit the cover and tighten it, checking that the O-ring is not pinched.

8.2 Battery Precautions

- Do not mix cells of different types or states of charge.
- Remove the cell before long-term storage to avoid leakage.
- Do not expose the cell to high temperature or flame.
- The Type-C port supplies the sight only; it does not charge the cell.

9. Installation and Adjustment

9.1 Mounting on a Picatinny Rail

1. Press the release button and swing the quick-release lever outward.
2. Seat the base on the rail so that the sight sits flat.
3. Swing the lever inward to lock the clamp.
4. If the sight cannot be seated, turn the clamp adjustment knob counterclockwise; if it is loose, turn the knob clockwise until firm.
5. Confirm that the sight cannot be moved by hand before firing.

9.2 Zeroing

Zero the sight by firing at a target and correcting the point of impact. The elevation and windage knobs move the point of impact in 0.5 MOA steps, and each has a range of ± 40 MOA. The elevation knob carries U and D markings and the windage knob carries L and R markings.

Point of impact	Correction
Low	Turn the elevation knob counterclockwise (towards U)
High	Turn the elevation knob clockwise (towards D)
Left	Turn the windage knob counterclockwise (towards R)
Right	Turn the windage knob clockwise (towards L)

The table below gives the movement of the point of impact on target for each adjustment step.

Adjustment	25 m	50 m	100 m
0.5 MOA	3.6 mm	7.3 mm	14.5 mm
1 MOA	7.3 mm	14.5 mm	29 mm
2 MOA	14.5 mm	29 mm	58 mm

10. Reticle Settings

10.1 Switch Reticle Style

The sight provides three reticle styles. Press and hold the + button to cycle through them. The dot is no larger than 3 MOA, so it covers little of a distant target.

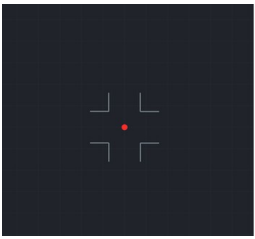
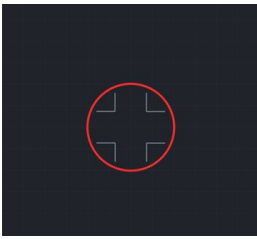
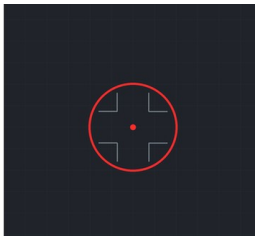
		
Dot	Circle	Dot + circle

Table 2 — Reticle styles

11. Maintenance

Carry out the following maintenance at least twice a year and before any period of demanding use.

- Wipe the outer surfaces with a cloth moistened with water, mild soap solution or alcohol.
- Blow loose particles off the optics, then clean the glass with a lens tissue and an optical solvent.
- Clean the battery compartment with a suitable solvent and let it dry fully.
- Check the mount, the O-rings and the covers.
- If the sight is not used for a long period, switch it on and check it every three months.

12. Troubleshooting

Symptom	Possible cause	Action
No image, will not start	Cell missing, flat or reversed	Check the cell and its orientation; hold the lower sun button for 0.5 s
Thermal image blurred	Objective dirty; calibration due	Clean the objective; long-press the ring button
Red dot not visible	Brightness at minimum; cell low	Raise brightness with +; replace the cell
Red dot flashing	Cell below 5 %	Replace the cell
Will not lock to the rail	Clamp clearance wrong	Turn the clamp knob counterclockwise to open, clockwise to close
Red dot switches off	No operation for 30 minutes	Press + or – (normal behaviour)

13. Transportation and Storage

The packaged sight may be transported by road, rail or air. Protect it from rain, dust, direct sunlight and impact, and avoid severe vibration.

Store the sight in a dry, dust-free place with a relative humidity below 80 %, away from acids, alkalis and other corrosive vapours. Remove the cell before long-term storage and check the sight every three months.

14. Safety Warnings and Precautions

- The sight contains a battery. Keep it away from fire and use it only within the specified temperature range.
- Store the sight in a dry place and wipe it dry after exposure to rain.
- Check the mount and basic function before each use.
- Handle the sight with care; do not drop it and do not open the housing.
- Do not point the objective at the sun, a laser or any other strong light source.
- Operating temperature $-20\text{ }^{\circ}\text{C}$ to $+65\text{ }^{\circ}\text{C}$; storage temperature $-40\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$.

This product may be subject to export control or dual-use regulations. Confirm the applicable national regulations, end user and end use before export, re-export or transfer.

Specifications and appearance are subject to change without notice.