

What is a Remote Controlled Acoustic Hailing Device?

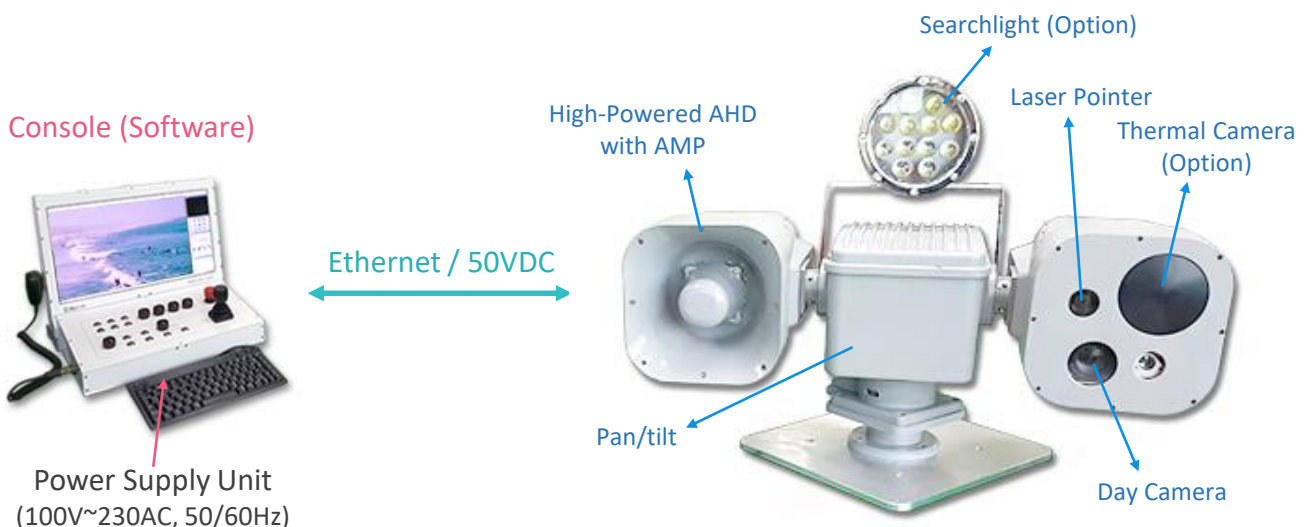
Eltem's unique and innovative technology allows operators to observe the situation on the spot remotely even during day and night and also clear command and highly effective warning broadcasts to be transmitted to long distances (1~3km). It consists of a high powered Long Range Acoustic Hailing Device that is connected to the equipment via Ethernet and controls all functions remotely using dedicated control software, a motor that can be adjusted vertically and horizontally, a daytime camera and a thermal camera.



FEATURES

- Simultaneous Surveillance and Warning Broadcasting
- Superior Voice Intelligibility and Highly Clear Communication up to 1km
- High output of 142dB, 1km broadcasting distance (80dB standard)
- Network sound source and microphone broadcasting
- 360°(left and right) rotation, 180°(up and down) rotation
- 32x optical zoom camera
- Network control
- All-weather use
- Thermal camera (option)
- Searchlight (option)

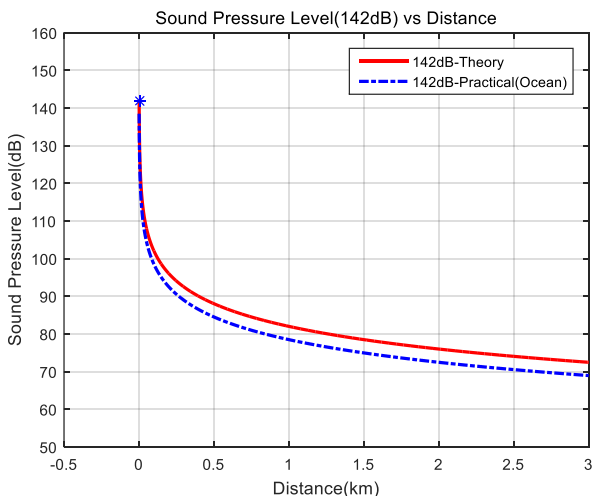
❖ Operation Concepts & System Components



PROPA-250R SPECIFICATIONS

Communications Range	≥1000m (80dB)	
Maximum Output	142dB SPL @1m (Maximum output limit function according to the user requirement)	
Directivity	≤±15° (2kHz, -3dB)	
Dimensions	880× 386× 321mm, 880× 386× 528mm (included a search light)	
Weight	49kg, 52kg (included a search light)	
Tilt	Range	-90° ~ +90°
	Speed	30°/s
	Resolution	0.01°
Pan	Range	360° (continuous rotation)
	Speed	40°/s
	Resolution	0.01°
Camera	32x Optical Zoom, 1920×1080 pixel, 30 frame/sec	
Thermal Camera (Option)	100mm Optical Zoom, 640×480 pixel, 9 frame/sec	
Laser Pointer	Green Laser, 4W	
Communication Interface	TCP/IP, Acoustic broadcast, Remote Volume Control, Control Program	
Operating Temperature	-33°C ~ +60°C	
Storage Temperature	-40°C ~ +70°C	

❖ Sound Pressure Level vs Distance



- 30~50dB Quiet library, noise in the woods, bedroom
- 50~60dB General office noise
- 60~70dB Noise on large ship deck
- 70~90dB Small ship engine noise (above deck)
- 80~100dB Noisy construction site, road noise
- 120~130dB Jet noise (100m)
- 130dB Above, we started to feel pain
- 160dB Rocket firing noise

Theoretically, we can hear sounds at 88dB at 500m, 82dB at 1km and 68dB at 5km.

Equipment Performance

❖ Day Camera



SPECIFICATIONS

Image Device	1/2.8" 2.38M CMOS
Total/Effective Pixel	1,952(H) x 1,116(V), 2.18M 1,944(H) x 1,104(V), 2.14M
Focal Length (Zoom Ratio)	4.44 ~ 142.6mm (Optical 32x)
Angular Field of View	H : 62.8°(Wide) ~ 2.23°(Tele) V : 36.80°(Wide) ~ 1.26°(Tele)
Min. Illumination	Color : 0.3Lux (1/30sec, F1.6, 50IRE) B/W : 0.03Lux (1/30sec, F1.6, 50IRE)
Focus Control	Auto / Manual / One push
Video Compression Format	H.264 (MPEG-4 part 10/AVC), MJPEG
Resolution	1920 x 1080, 1280 x 1024, 1280 x 960, 1280 x 720, 1024 x 768, 800 x 600, 800 x 450, 720 x 576, 640 x 480, 640 x 360, 320 x 240, 320 x 180

❖ Thermal Camera (Option)

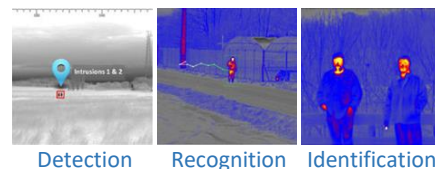


SPECIFICATIONS

Detector	Uncooled micro bolometer FPA
Resolution	640(H) x 480(V)
Pitch Size	17μm
Spectral Range	8~14μm
Thermal Sensitivity	< 0.05°C(50mK), F/1.0
Zoom Lens	100mm
Frame rate	<30Hz

DRI Range

Object	Conditions	Distances(m)	Object	Conditions	Distances(m)
Human	Detection	2,450	Vehicle	Detection	6,000
	Recognition	650		Recognition	1,750
	Identification	330		Identification	900



Detection Recognition Identification

DRI Definition

- Johnson Criteria
- Detection : ability to distinguish an object from the background(1 ± 0.25 line pairs OR 2 ± 0.5 pixels)
- Recognition : ability to classify the object class (animal, human, vehicle, boat ...) (4 ± 0.8 line pairs OR 8 ± 1.6 pixels)
- Identification: ability to describe the object in details (a man with a hat, a deer, a Jeep ...) (6.4 ± 1.5 line pairs OR 13 ± 3 pixels)
- A line pair is defined as one white line adjacent to a black line.
- <https://www.hgh-infrared.com/FAQ/Perimeter-Security/Definition-of-DRI-Detection-Recognition-Identification-ranges>

Equipment Performance

❖ Laser Pointer or Dazzler

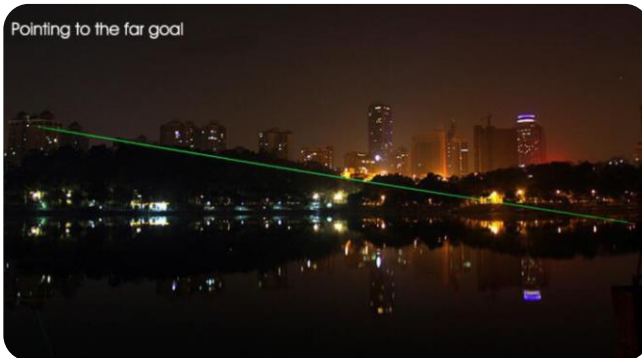
- 532nm Wavelength Green Laser
- Optical Power for Laser Pointer
 - 5mW / 50mW
 - Effective Distance : 1~2km
- Dazzler
 - 500mW
 - Effective Distance : 2~3km



📍 5mW / 50mW Laser Pointer



📍 500mW Laser Pointer



📍 Laser Pointer



📍 Laser Dazzler

- NOHD(Nominal Ocular Hazard Distance)
 - It specifies the distance from the laser source at which the intensity of a single laser beam becomes safe by not exceeding the MPE (Maximum Permissible Exposure) any more.
- NOHD is calculated at this site : <https://www.laserworld.com>
- NOHD as Power
 - Divergence : 1.2mrad, Diameter at aperture : 3mm

Item	Optical Laser Power	Distances(m)
Laser Pointer	5mW	11
	50mW	39
Dazzler	500mW	129

Equipment Performance

❖ Searchlight(Optional)

- Two Searchlights(360W) are mounted on PROPA-250R.



LED	LED 10W(12EA)
Size	180 x 207 x 92mm
Divergence Angle	15°
Power Consumption	120W
Power	DC 12~60V
Brightness	10000LUMEN
LED Color	White
Water Proof	IP67



📍 The beam of a searchlight is arrived to about 1km



❖ Console with Control Program



CONSOLE LAYOUTS AND SPECIFICATIONS

Control Panel

- Joystick for PTZ
- Thermal Power on button
- Laser Pointer on button
- Main Window exchange button
- Motor Speed Control
- Audio File Play/Stop/FWD/FWD

- Toggle Microphone
- Amp Power and Volume Control

- Monitor 17.3inch TFT-LCD
- Resolution : 1920x1080
- Brightness : 400 cd/m²
- CPU Intel 6th Gen i5(2.4GHz)
- 8GB RAM
- SSD 128GB

Equipment Performance

❖ External Connection Layouts

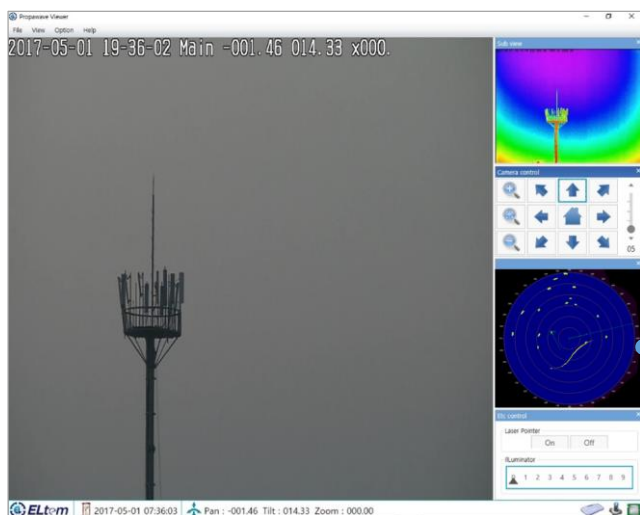
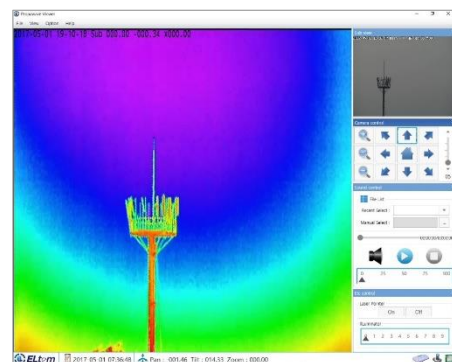
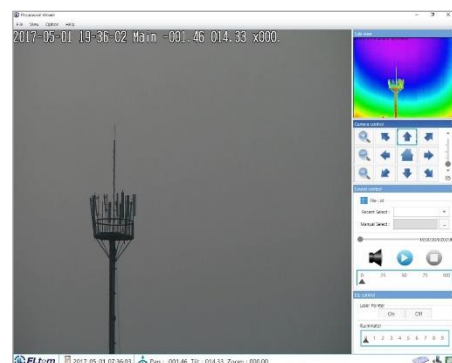
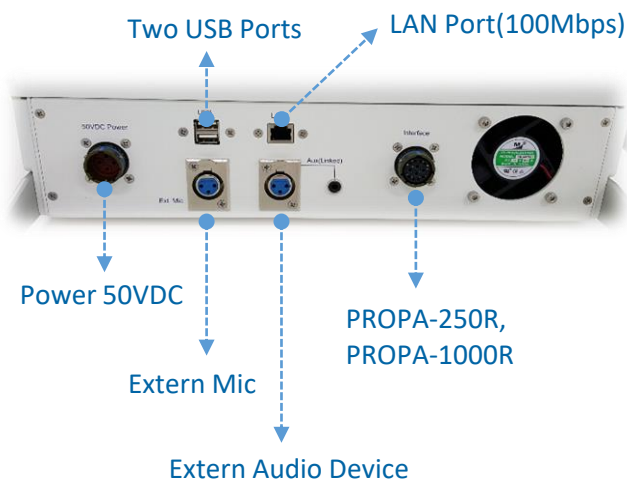
- Can connect external audio devices (MP3 Player, Wireless Microphone etc.) to the back panel of console.

❖ Control Program

- Video Recording and Image Saving
- Display of the video of day camera and thermal camera simultaneously
- PTZ control with motor speed control
- Playback and Stop audio files, voice sound out with a toggle microphone
- Laser Pointer Power ON/OFF

❖ Interfaced with ECDIS/Rader

- Receiving the objects information from ECDI (Electronic Chart Display and Information System) Radar through Serial Interface or TCP/IP.
- Display of the objects on the circular coordinate.
- If selects an object, Pan/Tilt is moved automatically.



Display of the objects

Environment Certifications

- Random Vibration : MIL-STD 810F, Method 514.4
- Shipboard Vibration : MIL-STD-167-1A
- Shipboard Shock : MIL-STD-910D, Class I
- Shock : MIL-STD-810F
- High Temperature Operation : MIL-STD-810F, Method 501.4
- Low Temperature Operation : MIL-STD-810F, Method 502.4
- Operating Humidity : MIL-STD-810F, Method 507.4
- Salt Fog : MIL-STD-810F, Method 509.4
- Safety Standard : MIL-STD-1474D
- EMC Standard : FCC Part 15 Class A Radiated and Conducted Emissions
- Water and Dust Protection : IP66

Main Features of Acoustic Hailing Device

- Since it broadcasts with directivity and high power, it can transmit highly clear sounds to a long distant (1 km).
- With maximum output above 142dB, it can get over the noise of the surrounding areas and can provide highly intelligible and clear communication and warning signals to the inside of vehicles, ships or buildings, overcoming the limitation of the existing broadcasting system (P.A. System).
- It is possible to broadcast using sound sources and a microphone.



General Loudspeaker



Acoustic Hailing Device

Applications of Acoustic Hailing Devices



Optical communication(network)



Emergency Warning & Fire Rescue

Fire Evacuation Broadcast, Public Place Guide and Evacuation Broadcast, Valley Evacuation Broadcast due to heavy rain, and Coastal Accident Prevention & Evacuation Broadcast



Law Enforcement, Homeland & Border Security

Illegal Activity Warning, Beach Announcement, Access Control Broadcast, Crowd Control

Military, Maritime, Security & Protection

Military Training control, Anti-Piracy, Major Facility Intruder Warning, Preserving Wildlife & Protecting Assets



Traffic Accident Broadcasting, Traffic Control

Traffic Control, Prevention of Secondary Accident, Traffic Accidents and Foggy Broadcast, Emergency Evacuation Broadcast.

Installation in Ships, Vehicles and Drones

Mounting on Warships, Ships, Fire Trucks, Ambulances, Police Cars, Helicopters, Drones

