



MISTRAL

... Partners in Real Time



Through-wall Radar

See through walls

INTRODUCTION

Through-wall Radar (TWR) is a portable handheld RADAR used for the detection and location of static and/or moving targets, especially humans behind solid barriers or walls. It is ideal for Defense and Homeland Security applications that require through-wall detection of living and non-living things.

The TWR is ideal for locating hostages in a building where all modes of communication links are shut off. In such hostile situation, the rescue operators may have to spend a considerable amount of time to locate the hostages. TWR facilitates rescue operators with the much-needed situational awareness and aids them in locating people and weapons in the building.

The Through-wall Radar comprises of an RF Subsystem, Signal and Image Processor, Radar Controller, Display / HMI, Wireless Video Transmitter and wideband Transmit and Receive Antenna.

The HMI has multiple physical buttons for Power on/off, Range selection, operating mode selection, Wireless transmission, System reset and Playback among others.

The Through-Wall Radar operates at -20°C to $+55^{\circ}\text{C}$ and is qualified for IP65 and MIL-STD-810-F for thermal, humidity, rain, vibration and shock operations. The TWR has been developed by Mistral in collaboration with LRDE-DRDO. Mistral has received Transfer of Technology (ToT) certificate to upgrade, manufacture and sell the product in India and abroad.



FEATURES

The ultra-wide band portable Through Wall Radar based on SFCW Technology aids in seeing targets through walls and help detect, locate, classify and monitor them during tactical operations.

Penetration	High penetration through various types of walls (Brick, concrete, stone, adobe, schist, wood) in rain or humid conditions
Portability	Rugged, compact and light-weight design
Operation	Handheld or Tripod Mountable (Able to operate at a distance of 10m from a wall)
Detection Capability	Detection of living or static objects behind a wall
Tracking of Objects	Locate and track moving objects
Range and Resolution	Detection range up to 20m and resolution of 50mm
Wireless Video	Transmits video output on a monitor at following ranges LOS - 100 meter NLOS - 50 meter
Doppler	Heartbeat, Breathe detection
Usability	Easy to use with simple user interface and ready at the push of a button
Display	6 x 4" LCD
Display Mode	2D/3D view of subjects detected
Connectivity	Wi-Fi, Ethernet, UART
Location Accuracy	+/_ 5cms between two targets in free space
Operation Ready	Operation ready in 30 seconds
Data Storage	300min video Data storage at Remote Video Monitor

USER INTERFACE

The HMI of the system integrates a display of 640x480 pixels resolution. The HMI includes multiple soft and physical buttons to select various operational modes and functional features of the Through-wall Radar.

- ▶ Display screen size: 6x4 inches
- ▶ Display Resolution: 640x480 pixels
- ▶ Target Display Resolution: 400x100 Pixels (Data Output)
- ▶ Physical Buttons
 - Power On/Off/Standby
 - Range Selection (4M, 8M and 16M)
 - Transmission (Tx)/BITE Operation Modes
 - Active Mode - Normal, Tracker and Doppler
 - Wireless Transmission (On/Off)
 - Data Logging (On/Off)
 - Logged Data Read Back (On/Off)
 - System Reset
 - Playback
- ▶ Two types of Data Representation
- ▶ 2D Image Display
- ▶ Time v/s Range Display

GENERAL SPECS

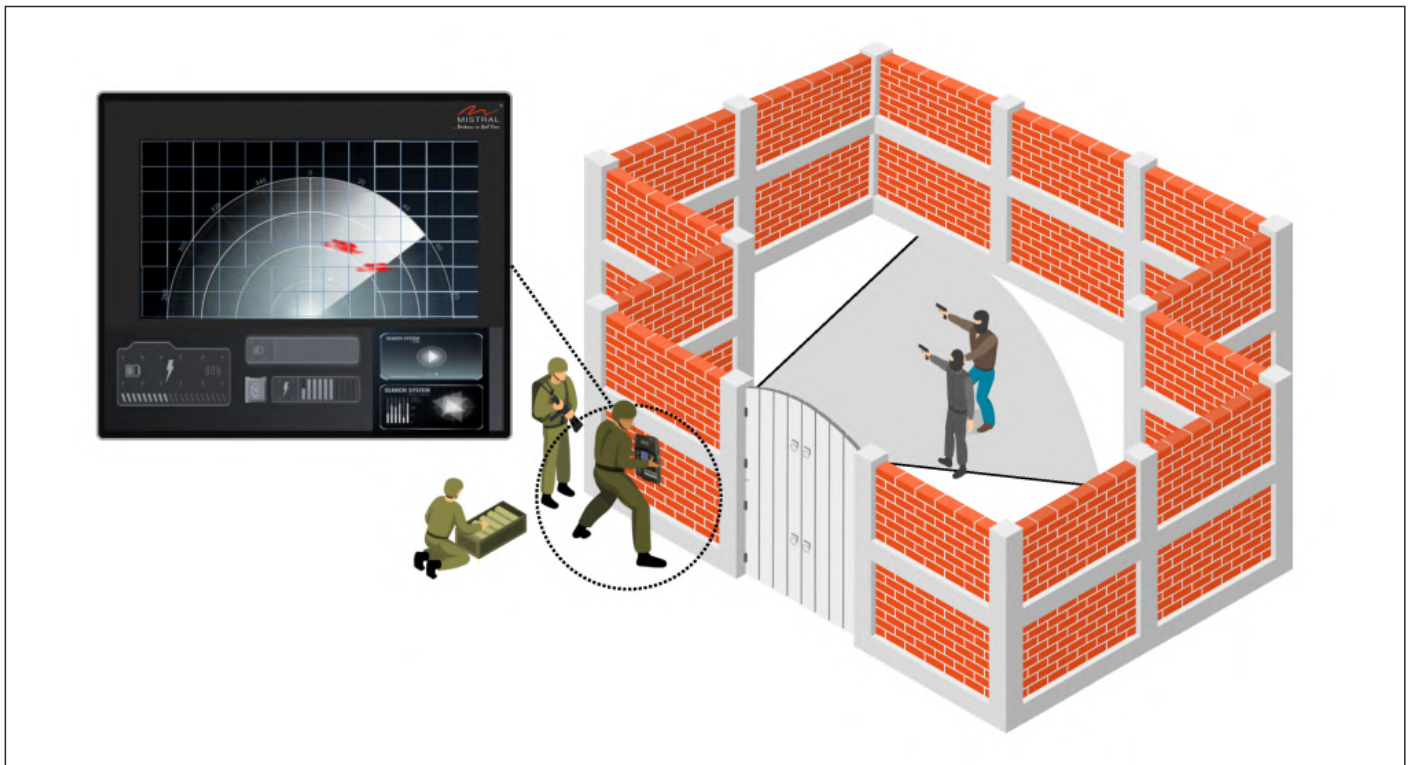
External Power	: Operates at 200 to 240 V AC and minimum 12 to 24 VDC
Battery	: Rechargeable Battery with Two Hours of continuous operation
Weight	: Less than 6.0kg
Operating temperature	: -20°C to +55°C
Ruggedness	: IP65 compliant MIL-STD-810-F for thermal, humidity, rain, vibration and shock operations
Mechanical Dimension	: 38 x 46 x 25cm

WIRELESS TRANSMISSION OF DATA

The system can wirelessly transmit video output to a range of 100 meters (Line of Sight) and 50 meters (Non-Line of Sight). The system software co-ordinates with the wireless communication module to send the video frames to the remote wireless device.

OFFLINE/POST ANALYSIS OF DATA

The software supports logging, readback and playback of the captured data for offline analysis and monitoring.



An illustration of Through wall Radar functionality

APPLICATIONS

- ▶ Hostage Recovery
- ▶ Search & Rescue Operation
- ▶ Force Protection
- ▶ Avalanche Victims Search & Rescue
- ▶ Tactical Operations

ADVANTAGES OF TWR

- ▶ Enables quick tactical decision making in urban operations
- ▶ Allows rapid determination of the presence and location of multiple people behind walls, victims buried under debris, etc
- ▶ Both static and moving objects can and displayed simultaneously
- ▶ The system can see through many types of walls including brick, wood, stone and reinforced concrete.

ORDERING

- ▶ Part No: MISTR-TWR-K7

For ordering information please email us at sales@mistralsolutions.com or call +1-408-705-2240 for USA and +91-80-4562-1100 for rest of the world.

ABOUT MISTRAL

Mistral is a technology design and systems engineering company providing end-to-end solutions for product design and application deployment. Mistral focuses in three business domains: Product Engineering Services, Aerospace Defense & Homeland Security.

Mistral provides total solutions for a given requirement, which may include hardware board design, embedded software

development, FPGA design, systems integration and customized turnkey solutions.

Mistral's strategic partnerships with leading technology companies help provide customers with a comprehensive package of end-to-end solutions.



Mistral Solutions Pvt. Ltd.,
No.60, 'Adarsh Regent',
100 Feet Ring Road,
Domlur Extension, Bangalore - 560 071
Tel: +91-80-4562-1100
Fax: +91-80-2535-6444
E-mail: info@mistralsolutions.com

Mistral Solutions Inc.,
43092 Christy Street
Fremont, CA 94538
USA
Tel: +1-408-705-2240
E-mail: usa@mistralsolutions.com

Branch Offices:
INDIA
• Hyderabad
• New Delhi
USA
• Dallas, Texas