

DP-RDR-8035

X-Band Fully Solid State Surveillance Radar

KEY FEATURES

- Full Solid-State Radar Transmitter for high reliability
- Designed for coastal surveillance with a target detecting range of 0.5km to 100km
- Range simulation with configurable SNR
- Doppler simulation
- RF blanking ON/OFF selection
- Adaptive STC for enhanced target detection in clutter
- Pulse Doppler processing for sea clutter
- Selection for horizontal and vertical scanning
- Variable speed antenna from 1rpm to 10rpm
- Recording and storing of the received radar parameters for replay and analysis
- Built in self test and continuous status monitoring
- Optimized and user-friendly man-machine interface

APPLICATION

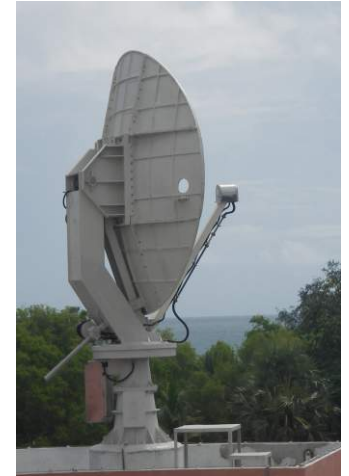
- Maritime, coastal and port security surveillance
- RADAR guidance
- Search and rescue operations



Control Console and Data Processing Subsystem



Transmitter and Receiver Subsystem



Antenna Subsystem

DESCRIPTION

The DP-RDR-8035 is an X-Band Surveillance Radar (also referred as PSR (Primary Surveillance Radar)) used for detection of coastal targets ranging from 1m² to 1000m². It primarily consists of a transmitter subsystem, receiver subsystem, antenna subsystem, a control system and data processing subsystem. The Radar consists of a touch screen display and hard switches for user interface. The antenna receives high power RF signal from the transmitter subsystem of the PSR. The received signal from the antenna is provided to the LNA (Low Noise Amplifier) module which provides the amplified signal to the receiver chain for dual stage down-conversion. The down-converted signal is provided to the data processing subsystem, where the signal is digitized and processed to get the required output at the display.

BLOCK LEVEL EXPLANATION

ANTENNA AND PEDESTAL SUBSYSTEM

This subsystem contains a Cossec² pattern antenna, motor and antenna control system required for controlling the azimuth and elevation of the antenna and also has a 17 bit encoder which helps in pointing the antenna position.

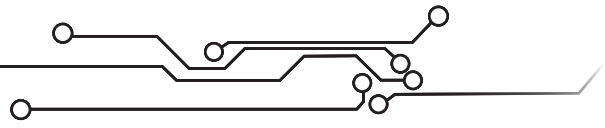
TRANSMITTER SUBSYSTEM

The transmitter subsystem is responsible for the generation of high power X-Band RF signal with required power level and pulse width. The output of this is provided to the circulator from which the power is radiated by the antenna.

RF SUBSYSTEM

RF subsystem consists of an exciter which is responsible for the generation of the C-Band and L-Band LO (Local Oscillator) signals. These signals are used for the up-conversion in case of the transmitting mode and down-conversion of the received pulse to an IF frequency of 70MHz in case of receiving mode. The exciter also generates the 60MHz ADC sampling clock and 840MHz clock for DAC.

The receiver first uses the C-Band LO signal (7670MHz to 7870MHz) for the down-conversion of the X-Band received signal to L-Band (1630MHz) and then uses an L-Band LO signal (1560MHz) for further down-conversion to an IF frequency for signal processing by the digital receiver.



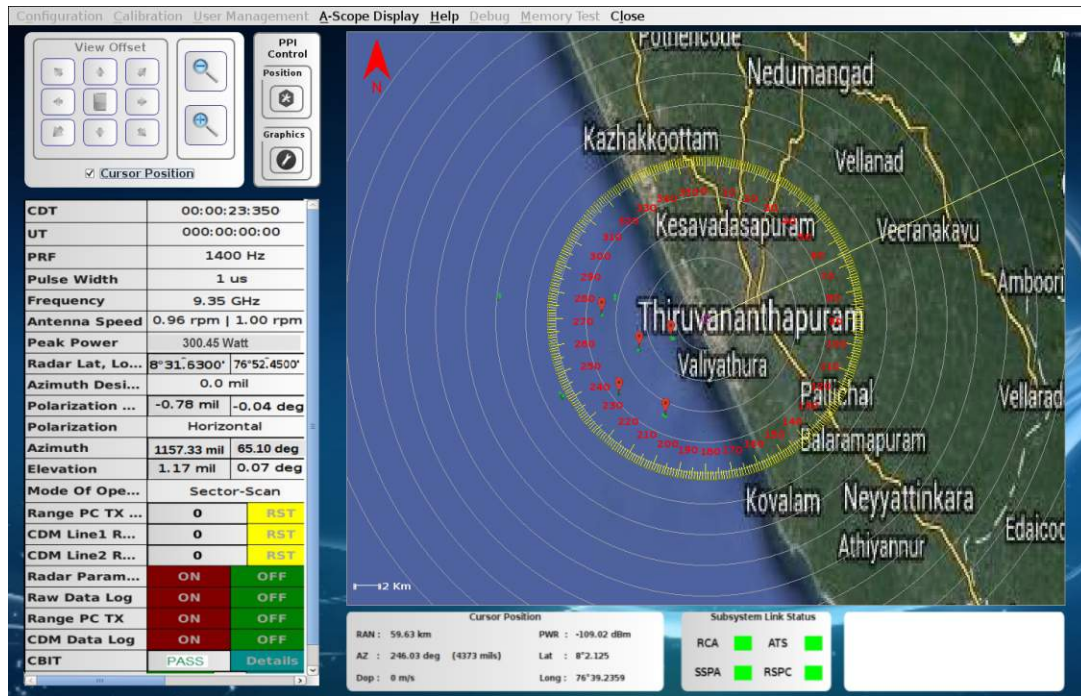
DP-RDR-8035 X-Band Fully Solid State Surveillance Radar

DIGITAL SUBSYSTEM

The digital subsystem is responsible of FFT (Fast Fourier Transform), doppler processing and other coherent integration techniques for the removal of clutter and improving the SNR (Signal Noise Ratio) of the received signal for achieving proper probability of detection.

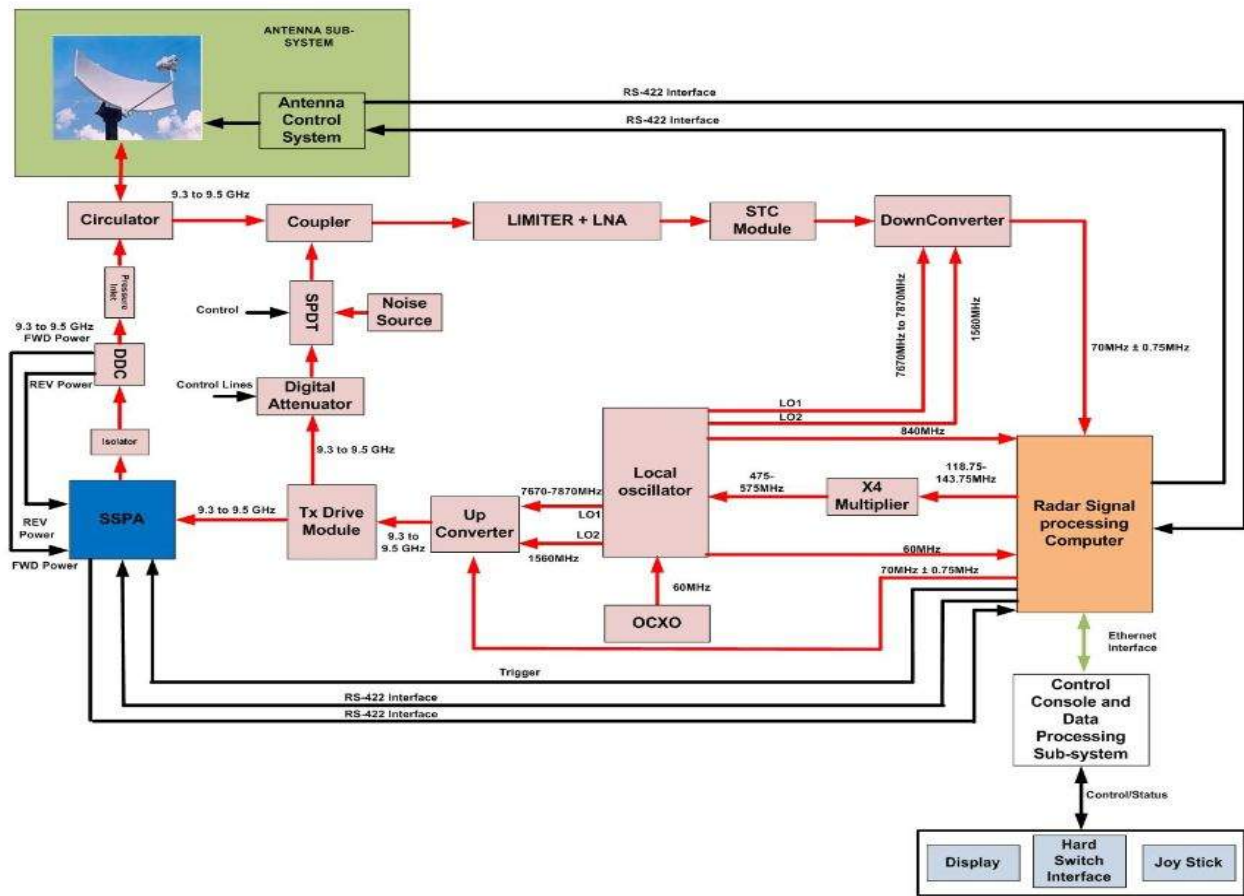
CONTROL CONSOLE AND DATA PROCESSING SUBSYSTEM

It consists of an LCD for real time display and a 10" control panel with soft switches. The real time monitor displays the A scope, PPI and important parameters of the radar for real time operation. A high configuration PC is used for this purpose. The subsystem consists of IRIG- interface, hard switches and joystick for user interface.



Typical PPI Display of DP-RDR-8035

BLOCK DIAGRAM OF DP-RDR-8035



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DATA PATTERNS (INDIA) PRIVATE LIMITED, No.19, Arya Gowder Road, West Mambalam, Chennai - 600 033, INDIA
 Tel: 24837460, 24848703, Fax: 91-44-4741 4444, Email: marketing@datapatterns.co.in
 Website: www.datapatternsindia.com