

P-12/18 SM modernization program FULL SOLID STATE RADAR



Radars

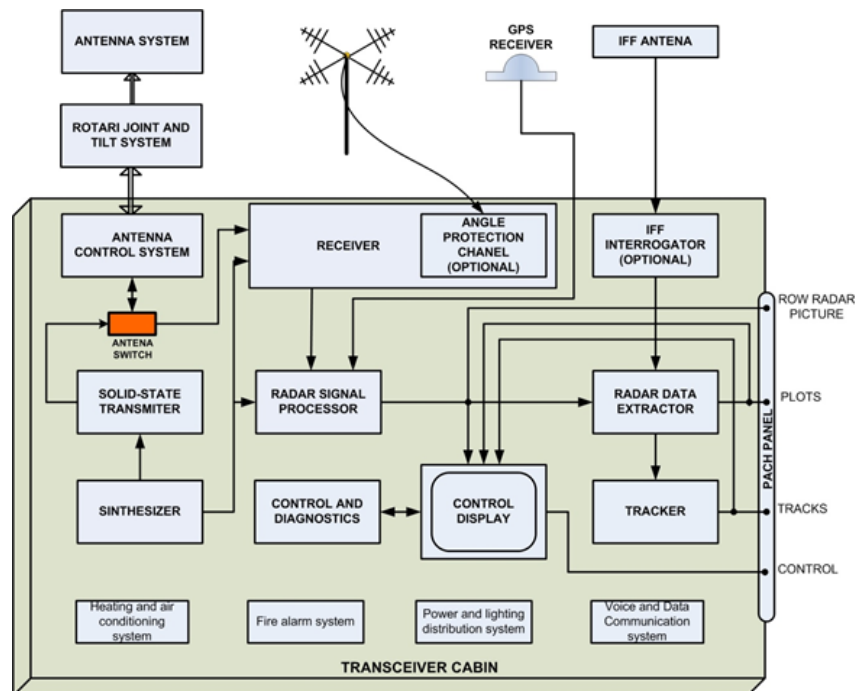
The P-12/18 SM is the surveillance full solid state radar designed for automatic target detection, range finding and automatic tracking.

The P-12/18 SM radar performs:

- Automatic detection and displaying of targets (target azimuth and range);
- Automatic tracking of target and parameters computation;
- Automated and semi - automated control of the Interrogator Radar;
- Automatic control of Height Finder (HFR), equipped by extractor. Altitude calculation and referencing with two – dimensional coordinates;
- Automatic distribution of radar information
- Intentional and unintentional interference protection by software reconfiguration,
- Selection of digital clutter cancellation type realized by software reconfiguration with option to turn off MTI function.

GENERAL BLOCK-DIAGRAM OF P-12/18 SM RADAR

General block diagram and configuration of full solid state P-12/18 SM radar is shown in Figure



Basic block scheme OF P-12/18 SM RADAR

BASIC TECHNICAL CHARACTERISTICS:

- | | |
|----------------------------------|---------------|
| • Scanning speed on azimuth | 3/6 rpm |
| • Range measurement accuracy: | 150 m |
| • Transmitter peak pulse power | 12 kW |
| • Transmitting signals duration: | 128 μsec |
| • Frequency: | 150 - 180 MHz |
| tuning | electronic |
| Channel Raster | 1 MHz |

- Receiver noise figure (not more than) 4 dB
- Receiver dynamic range 90 dB
- Sensitivity -113.5 dBm at:
Pd=0,9 (probability detection),
Pfa =10-6 (false alarm probability).
- Sampling rate 1 MSamples/s with
- resolution 16 bits,
- Clutter suppressing factor > 50 dB
- Number of plots minimum 1000
- Number of tracked targets minimum 500
- powering 3 phase AC (230V, 50Hz)

Comparison between original Russian solution and modernized One

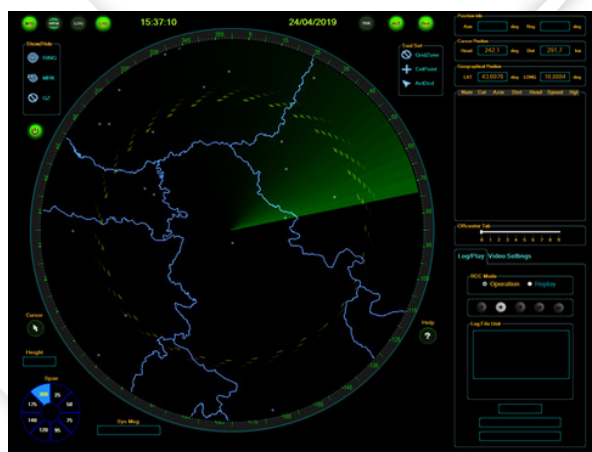
Technical characteristics	Original	Modernized
Frequency	150 - 170 MHz	150 - 180 MHz
Frequency change	8 sec	Pulse to pulse
Minimal range	10 km	500 m
Range resolution	800 m	150 m
Technology	Tube, noncoherent	Solid state, coherent
Peak output power	180 kW	>10 kW
Transmitt pulse duration	6 μs	128 μs (1 μs base pulse)
Receiver noise factor	8 dB	4 dB
Receiver dynamic range	50 dB	>100 dB
Clutter cancellation	17 dB	50 dB
Extracted targets	Does not exist	>2000 per rotation
Tracked targets	Does not exist	>1000 per rotation
Power consumption	10 kW	<4 kW
Output signal	Analog	Digital/ethernet
Connection with IFF	Not exist	Possible
Connection with Modernized Heightfinder	Not exist	Possible
BITE	Not exist	Built in



The digital radar transceiver
P-12/18 SM



Workstation of the radar
technician DRD-T



Video monitor – Air surveillance mode