

TERMINAL AREA RADAR COMPLEX “LIRA-A10”

S-band Terminal Area Radar Complex “Lira-A10” is designed for provision of radar data on air situation in airport area for automated and non-automated ATC systems.

TARC “Lira-A10” comprises the following:

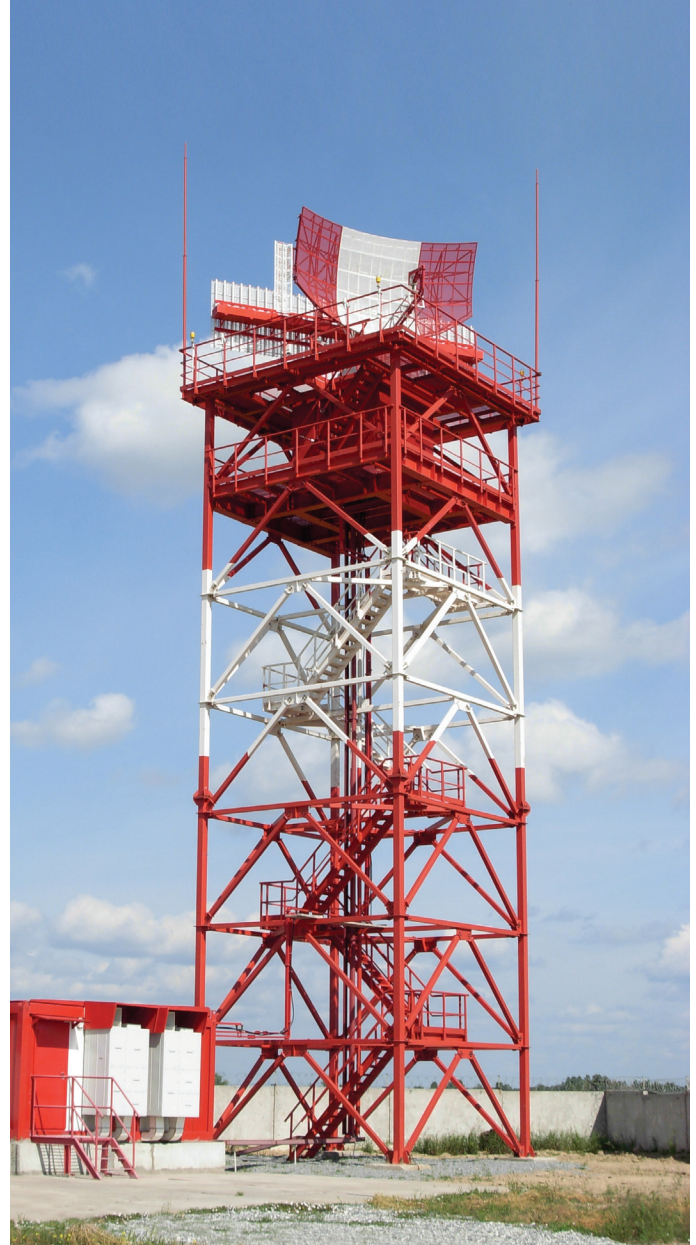
- » primary surveillance radar with equipment for processing and combining of radar data received from the PSR and SSR and output of the radar data to the consumers;
- » built-in monopulse secondary radar of MVRL-K type capable to operate in “S” mode. Interfacing with an independent SSR of any type can be ensured as well.

TARC “Lira-A10” features are:

- » high operating performances, which comply with the ICAO and Eurocontrol requirements;
- » high reliability of the radar complex ensured by automatic redundancy;
- » integrated system for remote control, monitoring and diagnostics;
- » operation without constant presence of operation personnel;
- » highly-stable solid state modular transmitter with air-cooling system and long service life;
- » application of state-of-art methods of information and signal processing;
- » gearless rotation drive;
- » recording and playback of radar data;
- » interfacing with modern ATC aids of any type.

Composition of TARC “Lira-A10” comprises the following:

- » antenna module;
- » hardware module, which consists of a transmitting device, receiving device, system for digital processing of echo-signals and radar data, and auxiliary systems.



Antenna system shapes a dual-beam antenna pattern. The MSSR antenna is installed on the support and rotation device together with the PSR antenna in “back-to-back” position.

Application of gearless rotation drive increases reliability of the drive as it excludes from the design the gearbox, which is the least reliable element of a standard drive.

PSR transmitting device is built on the principle of coherent power summation of 16 modules, each of which has a built-in secondary power supply source. The transmitter generates signals on two frequencies simultaneously.

Receiving system consists of four identical receiving channels with single-frequency conversion, which ensure simultaneous reception and conversion of radar signals from the upper and lower beams of the antenna pattern.

Signal and information processing system provides digital signal processing as well as primary and secondary radar information processing.

The digital processing equipment provides a dynamic range of processed signals of 80 dB at least without time automatic gain control (TAGC). The MTI algorithm is implemented within the special signal processor and is based on the principle of adaptive lattice Doppler filtration. Staggering of repetition periods of sounding signals is applied to exclude "blind" speeds.

Automated Control and Monitoring System (ACMS) provides remote and local control of equipment switching-on/off control over operation modes, monitoring over the system and its reconfiguration, etc. The built-in monitoring equipment performs diagnostics and malfunction detection down to the level of a line replaceable unit.

Structural design. The radar equipment is mounted inside of a Universal-type container that ensures all necessary conditions for equipment operation and personnel (air ventilation, air conditioning, heating, lighting, fire and security alarm, etc.).



BASIC SPECIFICATIONS

Operating frequency band	2700-2900
Coverage zone:	
» in range, km	160 (120)
» in azimuth, deg	360
» in elevation, deg	up to 45
» in altitude, km	10
Accuracy of coordinate determination (RMSE):	
» in range, m	50
» in azimuth, min	6
Resolution capability:	
» in range, m	225
» in azimuth, deg	1.5
Data update rate, s	5(4)
Static clutter suppression ratio, dB, at least	50
Power consumption, kW, at most	15
Mean time between failures, hours	20 000

