



United  
Instrument Manufacturing  
Corporation

# AORL-1AS

AIRDROME SURVEILLANCE PRIMARY -  
SECONDARY RADAR



The primary-secondary airdrome surveillance radar AORL-1AS is intended for operation in airports with congested traffic or average intensity of flights.



## MAIN FEATURES:

- entire conformity with ICAO recommendations and international standards;
- high reliability due to solid-state components in principal equipment and placement of facilities with antenna drive inside thermo-stable shelter;
- continuous around-the-clock operation with maintaining of required equipment parameters;
- transistors-based design of primary and secondary channel transmitters;
- up-to-date methods of information processing using processors and VLSI;
- high resolution capability / high accuracy of coordinate determination;
- detection of small-sized aircraft;
- reduced costs for civil works;
- low power consumption;
- air cooling applied for all equipment;
- efficient remote control and monitoring system (RC&M);
- fast and easy elimination of most hardware failures with LRU replacement;
- two simultaneously operated strengthened reduction gears of antenna rotation drives with increased reliability allow to dismantle and assemble motors during antenna rotation;
- 100% units and parts down to LRU level in set of spares.

## COMPONENT PARTS:

- control room, equipment room (in separate containers);
- antenna drive with slip ring and rotary joints;
- antenna system on basement (only on top of container with operation room);
- ATC site equipment set (remote controller's desk, monitor transponder with antennas);
- complete set of spares, accessories and operational manuals.





### SPECIFICATIONS OF AORL-1AS

#### PRIMARY CHANNEL

Maximum range of detection at $St=5 \text{ m}^2$ $P_{det}=0.8$ , $P_{fa}=10^{-6}$		160 km
Instrumental range		162 km
Minimum range		1.0 km
Antenna vertical pattern		45°
Antenna gain		29 dB
Antenna horizontal pattern		2°15'
Antenna rotation speed		12 rpm
Frequency range		1215-1279 MHz
Output pulse power		10 kW
Pulse duration		88 $\mu\text{s}$ and 6 $\mu\text{s}$
Input amplifier noise factor		1.3 dB
Dynamic range of receiver		50 dB
Ground clutter cancellation ratio		48 dB
Resolution by processor output,	- distance	230 m
	- azimuth	3.5°
Accuracy of coordinate measuring at extractor output,	- distance	<40 m
	- azimuth	<8'

#### SECONDARY CHANNEL

Maximum range of detection at $P_{det}=0.8$ , $P_{fa}=10^{-6}$		400 km
Minimum range		1.0 km
Antenna vertical pattern		45°
Frequency range		
RBS-interrogation		1030 MHz
RBS-reception (ICAO)		1090 MHz
ATC-reception (Russia)		740 MHz
Resolution by digital output	- distance	225 m
	- azimuth	1.1°
Accuracy of coordinate measuring at digital output,	- distance	<40 m
	- azimuth	<8'
Probability of additional information obtaining by secondary channel		0.98

#### Operating Conditions

Temperature	- 50 to + 50 °C
Wind load (operational / withstanding)	30 / 50 m/s

#### Power Supply

Circuit, three-phase	380 V, 50 Hz
Consumed power (with heating and air conditioning)	< 30 kW

#### Reliability

MTBF	30000 hrs
Lifetime	120000 hrs
Service life	15 years
Mean time to repair	30 min.

\* specifications are subjected to change without prior notice

