MONOPULSE SECONDARY SURVEILLANCE RADAR WITH MODE S CAPABILITY

MSSR-1 - Monopulse Secondary Surveillance Radar developed by ELDIS Pardubice, s.r.o. - is a fully modular system, which meets or exceeds ICAO and MARK X standards and allows extending of configuration according to specific customer needs for both ATC and Air Defence systems applications.

Radar configuration
- Antenna unit (ASSR)
- Control transponder
- Dual interrogator-receiver units (Hot master / standby)
- Dual extractors (Hot master / standby)
- Maintenance display unit
- Control and monitoring system

Transmitter / Receiver unit
- Variable output power
- Overload protection
- Automatic calibration and testing using a test signal injection
- Fully duplicated configuration with automatic backup switchover

Display unit
- Display analogue (RAW) signals
- Extracted digital data, PLOTs and TRACKs
- Mode S information
- Local and remote control and monitoring system

High Dynamic Range
Automatic Parameter Calibration
Modular Design
Antenna Unit ASSR
The unit is composed from antenna pedestal, drive, antenna frame and antenna itself. The drive rotates together with the antenna support frame and the antenna. The unit is fitted with two asynchronous motors, the gear-box, the three-channel rotary joint and two azimuth encoders. High resistance against wind.

ASSR-35 LVA
- 3 - channel SSR antenna (35 column radiators)
- SUM DIFF OMEGA beams for monopulse processing

Interrogator
- Circuits for interrogations generation
- Receiving and signal processing in individual interrogation modes
- Extensive BITE internal diagnostics
- Fully duplicated configuration with automatic backup switchover

MSSR-1 System Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Frequency band</td>
<td>1030 &amp; 1090 MHz</td>
</tr>
<tr>
<td>Antenna gain</td>
<td>&gt; 27 dBi</td>
</tr>
<tr>
<td>Mode</td>
<td>1; 2; 3; A; C; Mode S (up to level 5)</td>
</tr>
<tr>
<td>Transmitter output peak power</td>
<td>min. 2.6 kW</td>
</tr>
<tr>
<td>Operating temperature range (outdoor parts of the equipment)</td>
<td>-40 °C to +50 °C</td>
</tr>
<tr>
<td>Operating temperature range (indoor parts of the equipment)</td>
<td>-10 °C to +50 °C</td>
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<tr>
<td>Range</td>
<td>from 0.5 to 256 NM</td>
</tr>
<tr>
<td>Range accuracy</td>
<td>±27 m (r.m.s.)</td>
</tr>
<tr>
<td>Antenna revolution</td>
<td>from 4.5 to 75 / min</td>
</tr>
<tr>
<td>Antenna beam width in a horizontal plane</td>
<td>2.2° at -3 dB level</td>
</tr>
<tr>
<td>Azimuth accuracy</td>
<td>0.08°</td>
</tr>
<tr>
<td>Targets processing capacity</td>
<td>min. 125 / sec</td>
</tr>
<tr>
<td>Output data format</td>
<td>ASTERIX Cat. 048, 034, 001, 002</td>
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Data processing
- Garble and interference replies suppression
- Tracking and target correlations
- Mode S information database updating
- Statistical information about targets
- On-line monitoring of signal quality and internal diagnostics
- Variable data interface for ATCC

Extractor unit
The Extractor analyzes all received signals and detects individual reply codes and aerial targets. It is composed from the reply detection unit, individual modes processing unit and target correlation unit.