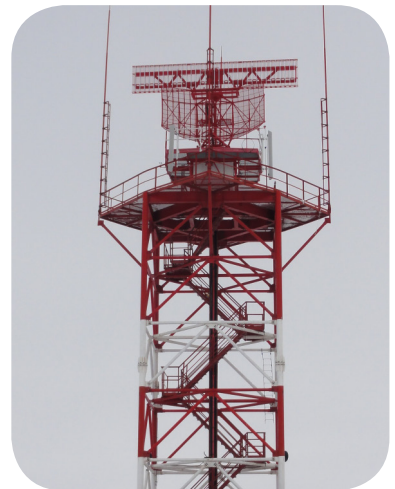


Mode-S MSSR



nrpl.aero

Mode-S Monopulse Secondary Surveillance Radar M10S

M10S is a new generation Mode-S MSSR designed and manufactured by NRPL under ISO 9001:2008 certified quality system in full compliance with ICAO and Eurocontrol standards. It is intended for air traffic control cooperative surveillance in accordance with elementary and enhanced Mode-S specifications. It was designed using the latest, best-known technological improvements.

M10S can be used either stand-alone or can be easily integrated with PSR, ADS-B and MLAT systems. In this case, a common CMS will display status and performance parameters of all systems simultaneously and PPI screen will display combined targets processed by advanced built-in tracking system.

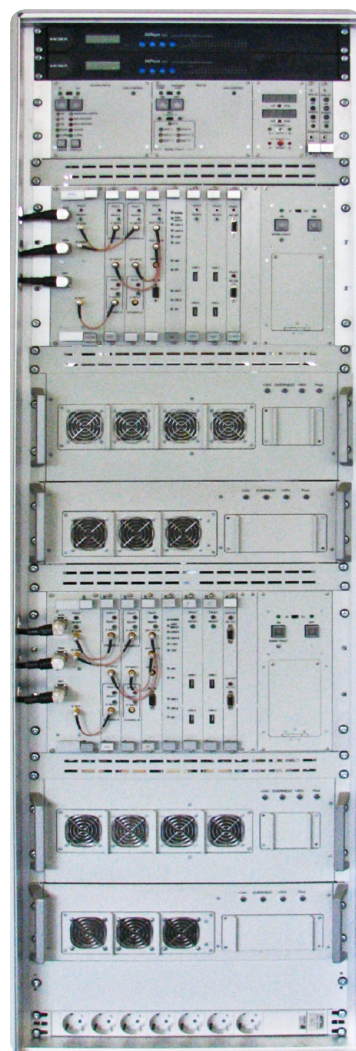
M10S is highly flexible, high performance turnkey solution with open architecture easily adaptable to customer requirements and needs of different sites, such as communication and maintenance facilities.

Operation mode	1, 2, 3/A, C and S ELS/EHS
Antenna drive	Dual motor
Rotation rates	6-15 RPM
Coverage	
▪ maximal range	256 NM
▪ minimal range	0.25 NM
▪ height	66,000 ft
▪ elevation	0.3° - 45.0°
Maximal number of aircrafts	1000
Accuracy (random errors)	
▪ azimuth	0.068°
▪ range, mode A/C	30 m
▪ range, Mode-S	15 m
Detection probability	≥ 0.99
Code detection probability	≥ 0.99
Probability of combining	≥ 0.95
Output format	ASTERIX
Output data link type	Serial/LAN/optic

Full Mode-S functionalities were certified by CAA of the Czech Republic, a member of Eurocontrol, and field proven by numerous installations in different countries.

MSSR M10S features extremely compact, fully solid-state, highly modular and reliable design with very low life-cycle cost. The system is fully redundant with automatic switch-over and hot swapping functions ensuring high availability.

CMS software is OS independent and can be installed on any number of computers. CMS features user friendly interface and provides factory remote support capability.



Main Features

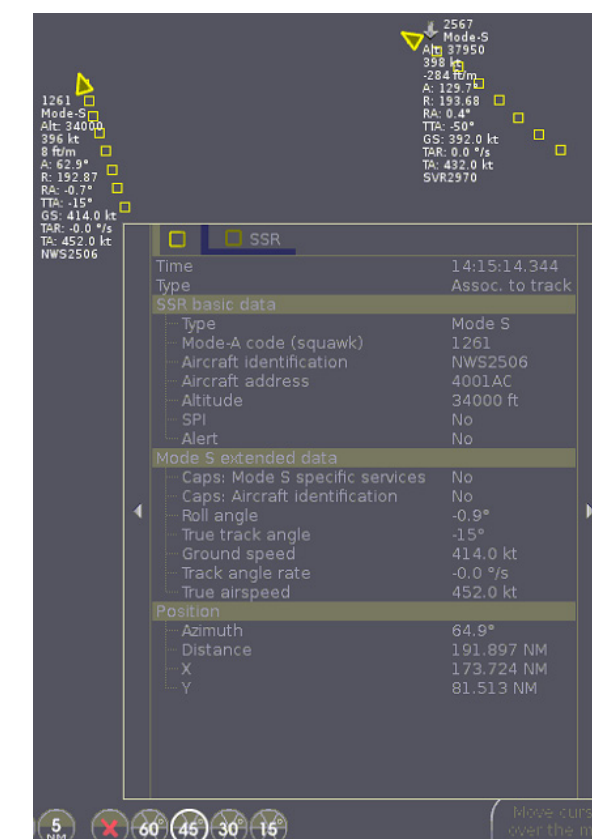
- Extremely compact single 19" cabinet solution
- Transportable version is also available
- Developed in full compliance with ICAO and Eurocontrol
- Mode 1, 2, 3/A, C and Mode-S ELS/EHS
- Automatic system reconfiguration and switch-over
- Built-in data processing and combining for MSSR, PSR, ADS-B and MLAT
- Built-in track processor and output data formatter
- BITE for continuous monitoring of MSSR M10S subsystems and non-radar equipment
- Diagnostic CMS to provide local and remote control of operation
- Archiving, playback and statistical analysis of surveillance data
- Unattended operation and easy maintenance
- Cost-effective and low maintenance cost solution
- Remotely controlled SSR Mode-S monitor
- Built-in extended reception channel testing

Interrogator

- Dual channel fully redundant system
- Interrogation, detection and acquisition of Modes 1, 2, 3/A, C and S
- Mode-S Addressed Elementary Surveillance
 - ICAO aircraft address
 - Flight identity
 - Transponder capability report
 - Altitude reporting to 25 ft
 - Flight status
- Mode-S Addressed Enhanced Surveillance
 - Lockout protocols
 - Basic data protocols
 - Standard length communication protocols
 - Extended length communication transactions
 - Aircraft identification protocol
- Interlace with up to 4 modes
- Programmable interrogation strategy based on target position
- Adaptive parameter adjustment including advanced anti-reflector
- Multiple input tracking and data combining

Antenna System

- Large vertical aperture (LVA) antenna with SUM, DIFF and OMNI channels
- Compact 2.5 meter antenna can be used as an option
- Open structure for low wind load
- Encapsulated weatherproof dipole columns
- Light weight
- Superior RF performance
- Shaped elevation patterns
- Meets ICAO requirements
- Dual motor antenna drive system
- Dual azimuth encoder system
- Antenna drive system can be environmentally protected by antenna shelter
- Antenna drive system includes comprehensive BITE with numerous sensors (oil level, vibration, temperature etc) displayed on CMS



Control and Monitoring System (CMS)

- Fully redundant system
- Any number of local and remote CMS terminals
- Highly adaptable to local communication lines such as serial, optic, LAN, radio link etc.
- Non-radar equipment control can be easily implemented in CMS displaying all available data
- Real-time performance calculation
- Information archiving, replay and analysis
- SNMP support
- Factory remote support capability

Radar Data Display

- Multiple data (plots and/or tracks) input display including PSR, MSSR, ADS-B and MLAT
- Display all enhanced Mode-S data
- Geographical maps and air navigation charts
- Surveillance data archiving and replay

