



ADS-B GROUND STATION E-MANAGEMENT SYSTEM

MXC (Mode-S eXtended squitter Capability) is a high performance ADS-B (Automatic Dependent Surveillance Broadcast) Ground Station for en-route, terminal and airport surveillance applications, compliant with the 1090MHz Mode-S Extended Squitter standard.

SYSTEM ARCHITECTURE

Taking advantage of the wide experience gathered in ADS-B technologies, systems and applications since mid 1990s, the company has designed and developed the MXC as a fail-safe, modular system that fulfils stringent operational requirements and maintains growth possibilities through hardware and software upgrades.

MXC receives and processes broadcasted messages over the 1090MHz RF channel extended squitter (DF17/18), which contain identification, position, altitude, velocity, and other airborne derived data.

MXC distributes the collected surveillance information to ground ATM systems (e.g. Tracker, Surveillance Data Processing Systems, Flight Data Processing Systems), using the ASTERIX CAT. 21 standard formats over LAN or WAN communications infrastructures. MXC can be integrated with other systems for cooperative ATC surveillance (Mode A/C/S secondary radars and multilateration system).

TECHNICAL FEATURES

MXC makes use of an advanced receiver and innovative processing of signals transmitted by the targets. These characteristics guarantee high reliable detection of cooperative targets in the most demanding scenarios.

Features include:

- Surface Position messages (BDS0,6)
- Airborne Position messages (BDS0,5)
- Velocity messages (BDS0,9)
- A/C Identification & Type messages (BDS0,8)
- A/C Operational Status messages (BDS6,5)
- Emergency/Priority/Status messages (BDS6,1)

MXC

In addition, MXC is also capable to receive and decode other Mode S defined messages transmitted by aircraft in reply to interrogations made by Mode S radars:

- DF 4, 5 (surveillance altitude/identity reply)
- DF 11 (All Call Reply/Acquisition Squitter)
- DF 20, 21 (Comm-B altitude/identity reply)

After decoding, information received for each target are assembled, formatted in standard ASTERIX CAT 21 messages and distributed to ground users subscribing to the MXC service. ASTERIX messages can also directly feed a local tracker hosted on board the MXC.

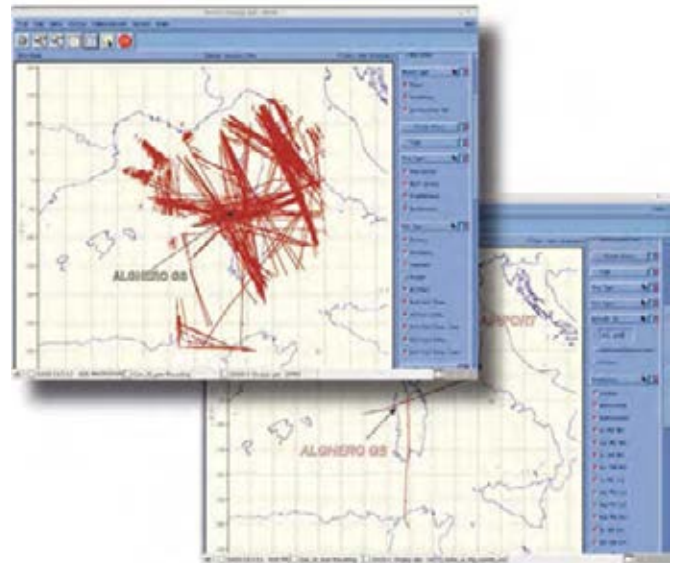
The basic MXC configuration includes:

- 1090MHz Receiver unit
- Low Noise Amplifier
- High gain antennas (sectorised or omnidirectional)
- Ground-station Data Processing (GDP)
- UTC time reference subsystem via GPS receiver
- Ground-station Maintenance Monitor (GMM)

OPTIONAL SUBSYSTEMS

The modular design allows for easy system expansion as well as specifically tailored MXC configurations, which extend the capability of the basic system with additional data link technologies and/or applications. Features that can be added to the basic MXC configurations are:

- A 1090MHz transmitter, which enables the MXC to broadcast TIS-B (Traffic Information Surveillance Broadcast) messages
- A VDL Mode 4 base transponder, which makes the MXC capable to support the dual link concept, while maintaining the same interface with the ATM systems



ADS-B Data SASS-C Analysis

TECHNICAL SPECIFICATION

Operating Frequency	1090MHz
Data Formats	ASTERIX CAT21/CAT23 CAT22/CAT62
Capacity	Up to 600 targets
Mode-S downlink formats	DF 17/ 18, DF 4/5, DF 11,DF 20/21
Coverage	up to 250NM - 360°
Availability	99.9%
Continuity	> 99.98% per hour of flight
MTBF	>20000 hours
Applicable Standards	ICAO Annex 10 RTCA DO-260A (and Change1) RTCA DO-260 ED-129 (ADS-B GS TS from WG51 SG4) - VDL 4 SARPs ETSI EN 301 842-1 ETSI EN 301 842-2

