

# TR-7750

## VHF AM Digital Radio



- Flexible and modular
- Enhanced Security
- Innovative technology
- Analogue and VoIP (ED-137) interface
- Remote or local operation
- 112 -156 MHz frequency range

# Jotron 7000-series VHF AM radios

## Features

- 112 - 156 MHz frequency range
- Excellent RF performance in congested areas
- Advanced digital signal processing (DSP)
- Remote control through Ethernet.
- Three separate LAN-interfaces
- Easy set-up and control
- AM and VDL mode 2 operation
- Compact design
- In-band signalling for PTT and squelch
- Continuous duty cycle
- Offset carrier
- VoIP according to ED-137
- Start-up time < 10 seconds
- Parallel operation (analogue and VoIP interfaces)

## Excellent RF performance in congested areas

Careful analogue design is the key to achieving the best collocation capabilities possible.

The 7000 series of radios are designed without compromising the synthesizers and analogue front end. Together with a linear power amplifier design and strict control by an ultra fast digital signal processor, making these the ultimate radios of choice for professional air traffic control applications.

## Advanced digital signal processing (DSP)

The receiver and transmitter use the most powerful digital signal processors to perform the intermediate frequency (IF) and the audio frequency (AF) filtering. In addition, all the modulation and demodulation tasks are performed in the signal processor. This means improved product control, less tunable parts and improved reliability.

## Remote control through Ethernet

The radio has alternative ways of being controlled, allowing it to fit easily into an existing onsite infrastructure. The radio is controlled and monitored using Simple Network Management Protocol (SNMP) and the Jotron dedicated

Remote Control and Monitoring System (RCMS) or by a standard SNMP management application.

Alternatively, set-up and control can be either TCP/IP on the Ethernet, or the RS232/RS485 ports. The radio has a built in web-server for displaying current status and event history.

## Easy set-up and control

All parameters can be set and adjusted electronically from the front panel or from the remote interface. The front panel contains a graphical display, menu buttons and switches that are used during set-up of the radio.

## AM and VDL mode 2 operation

The radio can be operated in the following modes: AM voice, AM-MSK (ACARS) or D8PSK (VDL mode 2). AM voice mode is used with channel bandwidth 8.33 or 25 kHz and is automatically selected based on the frequency choice. AM-MSK mode is used when the radio is operated as the physical layer of an ACARS ground station. D8PSK mode is used when the radio is operated as the physical layer of a VDL ground station.

## Compact and flexible design

A complete transceiver consists of 3 units; transmitter, receiver and power supply. A 3 U/19" sub-rack can hold one transceiver, up to 6 receiver units or 2



transmitter units, therefore offering a flexible and compact design.

## BITE system

The Built In Test Equipment (BITE) system continuously monitors the technical parameters and reports real-time activity.

## Keying options

The transmitter includes the following keying options: Positive and negative voltages (up to 50 V), ground keying and phantom keying on the audio line. In addition, in-band tone signalling with configurable tones for easy integration is also an option.

## Duty cycle

The transmitter is designed for continuous duty cycle. The unique cooling concept in the transmitter, keeps the temperature low, ensuring the best maximum operational life. This makes the radio the perfect choice for VOLMET and ATIS applications requiring continuous transmission.

## Offset carrier

Up to 5 offset carriers are available using the temperature controlled oscillator in the transmitter.

## Squelch system

The squelch system consists of a level and a noise compensated squelch, both are adjustable, which is useful in radio



**TR-7750 Transceiver**

**TA-7650 Transmitter**

**RA-7203 Receiver**

frequency congested areas. Relay contacts with configurable logic and in-band tone signaling are available, making this system flexible.

**VoIP according to ED-137**

VoIP has been an option in Jotron radios since 2009. These radios are fully compliant with the ED-137 standard. Additional options for IPv6 and G.729 compression codec for use through connections with bandwidth limitations are available.

By using VoIP interface the audio delay is minimalized, therefore, comparable to a radio operated with an analogue or a TDM line.

**Parallel operation on all interfaces**

A Voice Communication and Control System (VCCS) using an analogue interface can be connected and operated in parallel with a VCCS VoIP interface, allowing a seamless transition between analogue and VoIP.

**Security features**

- Jotron is ISO 27001 certified
- Modular design to enhance security and isolation (layered structure)
- Secure software coding practices to mitigate vulnerabilities (Static code analysis, threat modelling, security testing)
- Detects Denial of Service (DoS) attacks
- Radio Security Hardening with Secure Mode
- Role-based access control and authentication
- Secure monitoring through Simple Network Management Protocol Version 3 (SNMPv3)
- Encrypted communication and storage protection
- Firewall enabled
- Audit trails, alarms, event logs and backups

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## Standards

AM, AM-MSK VHF	ICAO annex 10, ETSI EN 300676, STANAG 4204
AM UHF	ETSI EN 302617, STANAG 4205
VDL mode 2	ETSI EN-301841 - 1
Voice over IP	EUROCAE ED-137 (B, C) part 1,4 and 5. 4 or 10 (optional) independent VCS voice streams available + 4 recorder streams available. Adaptive jitter buffer for minimum delay, packet loss concealment, G.711 and G.729 (optional) codecs dynamic delay compensation, linked sessions, receiver multicast
EMC	ETSI EN-301489 part 1/22, FCC rule 15B and 87, IC RSS-141
Random Vibration	ETSI EN 300019-2-2(V2.1.2) method: IEC 60068-2-64
Bump	ETSI EN 300019-2-2(V2.1.2), method: IEC 60068-2-29
Free Fall	ETSI EN 300019-2-2(V2.1.2), method: IEC 60068-2-32
Safety	IEC 62368-1 ed.3.
RoHS	IEC 63000:2018
MTBF	MIL-HDBK-217F notice 2, part count is used for all MTBF calculations below. For the MTBF calculations 'Ground Benign' environment is assumed.

## Dimension drawings

