TR-7750

VHF AM Digital Radio

➜ Designed for security

➜ Supports distributed VoIP systems

➜ Secure web server with built in spectrum analyzer

➜ Industry leading SCT algorithm

➜ 3 LAN interfaces

➜ 112 - 156 MHz frequency range

➜ Syslog support

JOTRON

Performance for Life

Jotron 7000-series VHF AM radios

Features

- Designed for security
- Supports up to 20 simultaneous VoIP streams!
- Excellent RF Performance even in congested areas
- Syslog support
- Industry leading SCT algorithm
- Multi-core digital signal processing (DSP)
- Secure remote configuraton and control
- Three separate LAN-interfaces
- Simple set-up and configuration
- ACARS and VDL mode 2 implemented as software modems
- In-band signalling for PTT and squelch
- Continuous duty cycle
- Offset carrier
- VoIP according to ED-137
- Parallel operation (analogue and VoIP interfaces)
- Future proof

Designed for security

Jotron has a strong focus on security and safety. We follow strict coding standards and procedures, such as BSA and NIST 800-218 Secure Development Framework, as well as CERT C/C++ Secure Coding Standard, to protect the radios against cyber threats. The radios support cryptographic protocols on all Ethernet interfaces, making Jotron radios among the most secure radios on the market.

20 simultaneous VoIP streams

Jotron's 7000-series radios support up to 20 VoIP streams. More than any radios currently on the market. This eliminates the need for a radio server for various applications. Each device also supports up to six recorder streams and six Syslog streams.

Excellent RF performance even 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.

Industry leading SCT algorithm

Jotron's algorithms for Simultaneous Call Transmission (SCT) detection are industry leading. With SCT detection operators get an alert when two or more incoming transmissions happens at the same time. Jotron's algorithms are accurate, intelligent and dependable as they reject false alarms with a confidence level exceeding 95%.

Syslog support

Jotron radios implement Syslog using the internet standard RFC 5424. This simplifies event logging and reporting.

Mutli-core digital signal processing (DSP)

The radios use powerful multi-core DSP's to perform the intermediate and audio frequency (IF & AF) filtering. In addition, the signal processor performs all the modulation and demodulation tasks. This means improved product control, less tunable parts, and improved reliability.

Secure remote configuration

Users configure and monitor the radio using Simple Network Management Protocol (SNMP) and the Jotron dedicated Remote Control and Monitoring System (RCMS) or via a standard SNMP management application. Jotron Radios supports SNMP v 3 for security hardening. All Ethernet interfaces also support

cryptographic protocols. The radio has a built-in secure webserver for displaying current status and event history. Alternatively, customers can set-up, configure and control the radios using the RS232/RS485 interface.

Simple set-up and configuration

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

Remote control operation

Jotron radios are compatible with the ED-137C standard, and remote operation is possible using a Voice Communication and Control System (VCCS) that supports this standard. We recommend Jotron's technically advanced Radio Remote Control software RRC-7700 or our user friendly RC-8 remote control units.

AM and VDL mode 2 operation

The radios operate 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 the radios select bandwidth automatically based on the frequency choice. When the radios operate as the physical layer of an ACARS ground station, they use AM-MSK mode. If operating as the physical layer of a VDL ground station, they use D8PSK mode.

TR-7750 Transceiver

TA-7650 Transmitter

RA-7203 Receiver

Compact and flexible design
A complete transceiver consists of three units: Transmitter, receiver and power supply. A 3U/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 signaling 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 a benefit in radio frequency congested areas. Relay contacts with configurable logic and in-band tone signaling are available, making Jotron radio systems highly adaptable.

VoIP according to ED-137
Jotron was one of the earliest adopters of VoIP and it has been an option in Jotron radios since 2009. These radios are fully compliant with the latest ED-137 standard.

Additional options for IPv6 and G.729 or Opus compression codecs for use through connections with bandwidth limitations are available.
When using the VoIP interface, the audio delay is minimized and is comparable to a radio using the analogue or TDM interface.

Parallel operation on all interfaces
A 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 systems.

Future proof
Jotron's portfolio of ATC radios and accessories, together with our world leading Ricochet Record & Replay system, provides a complete solution for a modern and future proof ecosystem for Air Traffic Control and Management services all around the World.
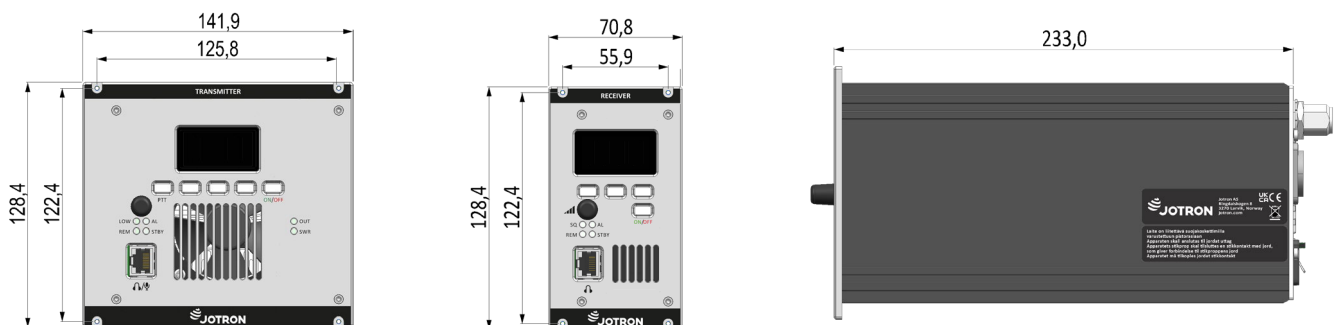
TR-7750 VHF AM digital radio

Security features

- Jotron is ISO 27001 certified
- Secure development (BSA and NIST 800-218 Secure Development Framework)
- CERT C/C++ Secure Coding Standard
- Powerful SCT algorithm based on FFT
- New secure web server with improved logging and a built-in spectrum analyzer
- WolfSSL security library w/maintenance agreement
- Ipv6 – Improved functionality with SLAAC and routing capabilities
- Security table (Individual configuration on protocol and interface level)

- Secure update (Secure upload (HTTPS), authentication/signing of FW)
- Included with security option
  - HTTPS (Web)
  - SIP-Auth(SHA-256)
  - SIP-TLS/SRTP
  - SIP-DTLS/SRTP
  - SNTP authorization
  - TLS 1.3 w/digest authorization on Recorder interface
  - mTLS on TCP protocols (DSC, VDL, TCP Remote)

Standards

AM, AM-MSK VHF	ICAO annex 10, ETSI EN 300676, STANAG 4204
VDL mode 2	ETSI EN-301841 - 1
Voice over IP	EUROCAE ED-137 (B, C) part 1,4 and 5. 4, 10 or 20 independent VCS voice streams available + 6 recorder and 6 Syslog streams available. Adaptive jitter buffer for minimum delay, packet loss concealment, G.711, G.729 and Opus 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

Dimension drawings

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