



# TR-7750U

UHF AM DIGITAL RADIO



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## ▶ Jotron 7000 Series

- Excellent RF performance in congested areas
- Advanced digital signal processing (DSP)
- Remote control through Ethernet
- Easy set-up and control
- 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 mo-

dulaton 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 historical events.

### **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.

### **Compact and flexible design**

A complete transceiver consists of 3 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 con-

TR-7750U Transceiver



TA-7650U Transmitter



RA-7203U Receiver



tinuously monitors the technical parameters and reports real-time activity.

#### Keying options

The transmitter includes the following keying options: Positive and negative voltages (up to 50V), 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 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 minimized, 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.





# TECHNICAL SPECIFICATIONS

General – All units	AM 25 kHz	AM 12,5 kHz	FM
Frequency range	225-400 MHz		
RF Modes	6K80A3EJN	5K00A3EJN	
Keying time	< 25ms	< 25ms	< 25ms
Frequency response	300-3400 Hz	350-2500 Hz	300-3400 Hz
Frequency stability	<1.0 ppm		
Data ports	RS232, RS485, Ethernet (100BaseT)		
Protocol	Remote control: SNMP (UDP/IP), Jotron monitoring (TCP/IP) Voice over IP: RTP (ED-137)		
BITE monitoring	VSWR, Voltages, Currents, Levels, Lock detect, Temperature, Output power, Reflected power, a.o.		
Supply voltage, AC	85 to 264VAC, 47-63Hz		
Supply voltage, DC	21.6 - 31.2VDC negative ground		
MTBF	>10 years / unit		
MTTR	<30 minutes at lowest replaceable unit		

Transmitter (TA-7650U)	AM 25 kHz	AM 12,5 kHz	FM
Output power	1-50W		
Adjacent channel power	>65 dBc	>60 dBc	>65 dBc
Modulation level	up to 95%		
Distortion	< 5%		
Line input	600Ω, -40 - +10dBm		
Intermodulation attenuation	>70 dB when interfering signal is decoupled with at least 30 dB		
Tx timeout	10s to 5 min in 10s step		
Inband keying	Configurable tones: 2000-4000Hz		
Carrier offset	2,3 or 4		
Differential group delay	<60μs		
VSWR	1 : Infinity		
Duty cycle	100% continuous operation@ambient below 40°C		
Power consumption	<400VA		
Dimension Transmitter unit	142mm(28TE)(W) * 330mm(D) * 128mm (H), Weight 3.8 kg		
Dimension PSU unit	71mm (14TE)(W) * 303mm(D) * 128mm (H), Weight 1.3 kg		
Broadband noise	<150dBc/Hz @1% offset		
Spurious emissions	<-80dBc		

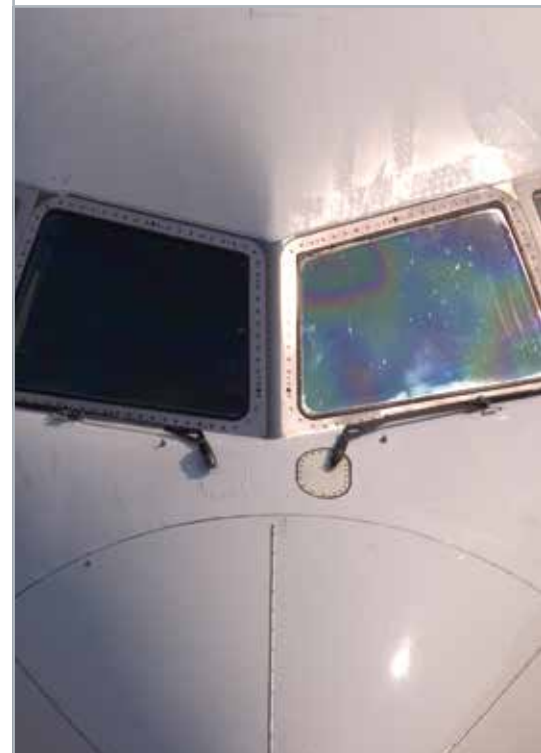
Receiver (RA-7203U)	AM 25 kHz	AM 12,5 kHz	FM
Sensitivity analogue @1μV / 30% pd	10dB SINAD (CCITT)		
Adjacent channel rejection	>75dB	>70dB	>80dB
Intermodulation	>75 dBc		
IF bandwidth	+/- 11kHz	+/- 3.5 kHz	+/- 11 kHz
Image and IF frequency response	>110 dB		
Squelch operation	Adjustable -112 dBm to -65 dBm/ 5 dB S/N to 20 dB S/N Combination of RF level and Signal/Noise (digital coherent squelch) Activation time <20ms Hysteresis typical 2 - 3 dB		
Audio AGC	30% - 90%, <1dB variation		
Signal / Noise	>45dB on any output @100μV, 30%		
Distortion	<5% @ 90% modulation		
AGC range	-107dBm to +5dBm		
AGC attach time	<30ms		NA
AGC decay time	<200ms		NA
Differential group delay	<60μs		
Inband squelch signal	Configurable tones: 100 to 5000 Hz		
Line output	600Ω, -36 - +10dBm @90% modulation		
Harmonic distortion	<5% @90% AM (line output)		
Cross-modulation	>95dB @ 1MHz frequency offset		
Blocking	>100dB @ 1MHz offset, >110 dB out of band signals		
Dynamic range	>120dB		
Spurious response rejection	>80dB		
Dimension receiver unit	71mm (14TE)(W) * 330mm(D) * 128mm (H), Weight 1.8 kg		

## Standards

EN302 617(AM)

## Environmental

Temperature range:	-20°C to +55°C (operating) -40°C to +70°C (storage)
Humidity:	90% @ +40°C (non condensing)
Random vibration:	ETSI EN 3000019-2-2(V2.1.2) IEC 60068-2-64
Bump:	ETSI EN 3000019-2-2(V2.1.2), IEC 60068-2-29
Free fall:	ETSI EN 3000019-2-2(V2.1.2), IEC 60068-2-32
EMC:	EN 301 489 – part 22
SAFETY:	IEC 60950-1, CSA-C22.2 No. 60950



Agent/Distributor:

Jotron AS reserves the right to change the design and/or specifications at any time without prior notice. Reservations are also taken towards any general errors that may occur.

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