



# TR-7750C

## VHF COASTAL RADIO



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# ▶ JOTRON 7000C SERIES VHF COAST TO SHIP COMMUNICATION RADIOS

- Flexible and modular design
- Utilizing the latest technology
- Remote or local control and operation



### Excellent RF performance in congested areas

Careful analogue design is still the key issue to achieve the best collocation capabilities possible. The 7000 series of radios are designed with no compromises regarding the synthesizers and analogue front end. This together with a linear power amplifier design, strictly controlled by an ultra fast digital signal processor, makes the radio the ultimate choice for professional 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 tuneable parts and improved reliability.

### Remote control over Ethernet /RS232/RS485

The radio units has alternative ways of being remotely controlled, making them easy to fit into an existing infrastructure already available on the site. The radio units are controlled using SNMP v.2 (Simple Network Management Protocol) over UDP (User Datagram Protocol), this together with 100BaseT ethernet interface makes it easy to control the radios either by using Jotrons Remote Access Control System or by a standard SNMP management application.

### No tuneable parts

There are no tuneable parts inside the radio units. No tuning, nor special tools are necessary when changing frequency/ modulation or to maintain the radio.

### 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 LED display and three push buttons that are used to set up the radio – no external equipment like a PC or a signal generator are necessary to control the frequency or to adjust any parameter internally in the radio.

### FM and DSC operation

The radio can operate either in FM mode or in DSC mode. The FM channel bandwidth (12.5 or 25 kHz) is automatically selected by the channel choice. The DSC mode is used when the radio is operated as a DSC transceiver, messages to/from the radio is either communicated on the LAN or over the analogue line interface.

### Most compact radio units available

The VHF Coastal radio TR 7750C consist of a trans-

### Coastal radio

The VHF Coastal radio is for coast stations and off-shore installations requiring high quality FM voice and digital selective calling (DSC). The radio is intended for use primarily as a coast station providing communication between coast and ships. Jotron radios have a worldwide reputation for outstanding performance in harsh environmental conditions. The mechanical design of the transceiver is based on the well proven Jotron 7000 series.

### FEATURES

#### Complete solution using LAN only

The coastal radios are equipped with an industry-standard set of protocols communicating through a Local Area Network. This feature may be used extensively, and the radios are designed with a LAN-only option in mind.

#### VoIP

The radios stream audio according to the EuroCAE ED137 standard for Voice over IP (VoIP). This transfers voice data to/from the radios using the network connection only, hence the traditional EEM interface may remain disconnected in this case. At the same time, the network may be used concurrently for radio parameter setup and surveillance

#### SNMP

An implementation of the Simple Network Management Protocol (SNMP) is running inside the radio. Each radio works as an independent SNMP-agent, and may be managed by either a freely available MIB-browser or by Jotrons Remote Access Control System. Due to the fact that SNMP is a standard protocol, customer specific implementations are made easy. The MIB file will be made accessible upon request.

mitter unit (TA 7650C) and receiver unit (RA 7203C). The receiver unit is a complete stand-alone receiver with built in power supply weighting only 1.7 kg. The transmitter unit weights only 3.0 kg but needs an additional power supply, which weights 1.3 kg. All in all a complete transceiver consists of 3 units (transmitter, receiver and power supply) and the total weight is only 6.0 kg. The modular and compact design makes the radio the perfect choice for distant sites that are hard to reach.

#### Continuous duty cycle

The transmitter is designed for continuous duty cycle. This makes the radio the perfect choice for messaging systems that requires high duty cycle. The unique cooling concept used on the transmitter keeps the temperature low and the operational lifetime of the equipment high.

### Complete BITE System

Built In Test Equipment (BITE) will monitor the internal status of the radio continuously. If a parameter is outside its legal range, an alarm condition will be reported in several ways. LED's and dedicated hardware lines are set to reflect the error condition, in addition to generating SNMP traps for alarm reports to the remote system.

### ADDITIONAL FEATURES

#### Audio Line Interface

The coastal radio is designed with an analogue interface for the voice communication by using 4 wire EEM within the frequency range of 300-3400 Hz.

#### Inband squelch and keying

At radio sites where the number of interfacing lines are limited, inband features will make installations easier. The inband filters are sharp, narrow notch filters generated dynamically according to the parameters set. The transmitter has programmable inband frequency and detection level for keying. No residual inband tones will be present in the final RF signal. The receiver has programmable output frequency and output level for squelch operation. By using this option the audio line interface might be limited to 4 wires only.

#### Built-in DSC modem

The coastal radio has a built-in modem for Digital Selective Calling (DSC) operation. This modem interfaces to remote system on TCP/IP. Upon receipt of a valid DSC frame on the TCP/IP interface, the radio will generate the DSC message on air according to DSC

#### BITE system that detects failures

The BITE system continuously monitors vital parts of the radio units. An error is instantly detected and reported in multiple ways. The unique main/standby concept of the Jotron 7000 series can automatically switch the operation to a standby set upon an error, providing seamless communication for the user.

#### Keying options

Keying options available in the transmitter, includes positive and negative voltages (up to 50V), keying to ground and phantom keying on the audio line. In addition the key options includes in-band tone signalling (both ways: ptt and squelch) with configurable tones and levels for easy integration with the VCS system.



specification. If network operation is not desired, the traditional EEM interface may be used to deliver already modulated DSC messages on the audio lines.

#### Remote operation using RS232 or RS485

The radios may be controlled using RS232 and/or RS485 as well. The same functionality as given through the SNMP protocol is available. Protocol document is available upon request.

#### On-site operation

The radios may be fully controlled on-site using the display, buttons and encoder. BITE measurements may be read out as well. Supervisors may restrict the access-levels of the radio to prevent unintentional setting of parameters.







# TECHNICAL SPECIFICATIONS

General – All units	FM 25 kHz	FM 12,5 kHz	DSC
Operating frequency	154-174MHz		
Frequency range, channels available	All channels, simplex and duplex within the maritime VHF band available		
Stability	<1.0 ppm, -20°C to 55°C		
RF Modes	G3E	G3E	G2B
Keying time	< 10.0ms		
Audio frequency response	300-3400 Hz	350-2500 Hz	
Data ports	RS232, RS485, 100BaseT (LAN)		
Protocols	Simple Network Management Protocol (SNMP v.2) VoIP Interface: EuroCAD ED 137 Standard for Voice over IP (VoIP)		
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		
MTRR	<30 minutes at lowest replaceable unit		
Dimension (Standard configuration)	Industrial standard 19" Rack, 3U high, Weight 8 kg		
Transmitter (TA-7650C)	FM 25 kHz	FM 12,5 kHz	DSC
Output power	1-50W (adjustable in 0,1 dB steps) also available in 100W edition		
Adjacent channel power	>80 dBc	>70 dBc	>80 dBc
Modulation level	Up to ± 5 kHz deviation		
Distortion	< 5%		
Line input	600Ω, -36 - +7dBm		
Tx timeout	10s to 5 min in 10s step		
Inband keying	Configurable tones: 150-3400Hz, Threshold Levels: -40 to -10 dBm		
VSWR	1: Infinity		
Duty cycle	100% continuous operation @ ambient below 40°C		
Power consumption	<280VA		
Dimension Transmitter unit	142mm(28TE)(W) * 230mm(D) * 128mm (H), Weight 3.0 kg		
Dimension PSU unit	71mm (14TE)(W) * 303mm(D) * 128mm (H), Weight 1.3 kg		
Receiver (RA-7203C)	FM 25 kHz	FM 12,5 kHz	DSC
Sensitivity	(@20dB SINAD) ≤ 1µV		BER < 10 <sup>-2</sup>
Adjacent channel rejection	>70dB	>60dB	>70dB
Intermodulation (3 signal)	>80 dBc		
IF bandwidth	+/- 11kHz	+/- 3.5 kHz	+/- 11 kHz
Image and IF frequency response	>110 dB		
Squelch operation	Adjustable -107dBm, 30dB / S/N + carrier override Activation time <20ms Hysteresis <3dB		
Signal / Noise	>40dB @30dB µV		
AGC range	-107dBm to +5dBm		
Inband squelch signal	Configurable tones: 150-3400Hz		
Line output	600Ω, -36 - +7dBm @90% modulation		
Harmonic distortion	<5% @5kHz FM (line output)		
Blocking	>100dB @1MHz offset, >110 dB out of band signals		
Dynamic range	>120dB		
Spurious response rejection	>80dB		
Dimension Receiver unit	71mm (14TE)(W) * 230mm(D) * 128mm (H), Weight 1.7 kg		
Standards	EN301 929-1(FM, DSC) EN301 929-2 ITU-R M.489-2 (FM,DSC)		
Environmental - All units	Temperature range: -20°C to +55°C (operating) -40°C to +70°C (storage) Humidity: 90% @ +40°C (non condensing) Shock: Transport: IEC-721-3-2, Class 2M3 Vibration: Transport: IEC-68-2-32, Class 2M3. IEC-68-2-6 EMC: EN 301 489 SAFETY: IEC 60950-1, CSA-C22.2		



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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