

RT7700H

High Performance HF SDR Transceiver

STRATEGIC HF



The RT7700H is an IP addressable, digital HF software defined radio (SDR) which combines DSP-IF circuitry and powerful microprocessors in a robust desktop or rack-mountable package supporting the demands for HF voice and data communications. The RT7700H is the transceiver component of Datron's 7700-Series Strategic HF Communications System. The RT7700H is fully interoperable with Datron's Spectre H™ PRC7700H tactical manpack.

The Joint Interoperability Test Command (JITC) certifies that the RT7700H, manufactured in the USA, conforms to the mandatory requirements of Military Standard MIL-STD-188-141B, including conformance to the Automatic Link Establishment (ALE) specifications in Appendix A. The RT7700H is validated compatibility per MIL-STD-188-203-1A with external Link-11 MODEM in both CLEW and SLEW modes.

It is capable of supplying up to 125 Watts SSB and CW over a 100% duty cycle. The DSP-IF and audio circuitry are optimized to support both current and future voice and data requirements. The radio provides excellent AGC group delay characteristics through the DSP based IF and audio circuitry. Modes of operation include ISB, USB, LSB, AM, AME, CW, Data and Digital Voice (MELPe), with optimized bandwidths.

The RT7700H integrates a MIL-STD-188-141B ALE MODEM and a MIL-STD-188-110B HF MODEM which supports the core requirements. Supported modes are FSK to 600 bps, Serial Tone (PSK to 2400 bps) and PSK/QAM (to 9600 bps). 19,200 bps is supported using ISB.

The RT7700H can be remotely controlled via a built-in Ethernet port. Being IP addressable, the RT7700H can be remote controlled over a LAN or WAN. The RT7700H is fully supported with a virtual remote control and messaging software application. This offers the flexibility of managing the radio system from a remote computer or from an optional ruggedized laptop PC. In order to facilitate maintenance, the RT7700H incorporates a comprehensive BITE system with the ability of isolating faults down to the LRU level (Lowest Replaceable Unit). A full range of software and hardware accessories are available.

The RT7700 can be supplied with an integrated ICAO ground-to-air SELCAL option and compatible DL7700-VRCU software.

Datron 7700-Series Strategic HF solutions deliver the continent-spanning communications your critical missions require.

- AM, AME, USB, LSB, ISB, DATA and Digital Audio (MELPe)
- Configurable as Transceiver, Transmitter-only, or Receiver-only
- DSP-IF Based with Direct Digital Synthesizer
- JITC-Certified Integrated 2G ALE Modem MIL-STD-188-141B (Basic and Appendix A)
- STANAG 4538 (3G ALE)
- Validated Link-11 Compatibility/ Link-22 Compatibility
- MIL-STD-810G Construction
- Integrated MIL-STD-188-110B Modem/ STANAG 4539
- AES-256 COMSEC
- ECCM - Up to 25 hops/sec
- Support for External Pre/Post-Selector
- Ground-to-Air SELCAL Option
- Support for 500W, 1000W, 5kW, and 10kW



RT7700H

High Performance HF SDR Transceiver



Datron World Communications, Inc.

3055 Enterprise Ct.
Vista, CA, USA 92081

Tel: +1-760-597-1500

Fax: +1-760-597-1510

E-mail: sales@dtwc.com

Web: <http://www.dtwc.com>



Certification # 08.347.1
ISO 9001:2015
Registered Quality System
Datron World Communications, Inc.

* Subject to export regulations

** As permitted by core hardware design

Specifications subject to change without
notice - rev 190401

Made in the USA

This datasheet contains no ITAR data.

GENERAL

- FREQUENCY RANGE
TX: 1.5 to 30 MHz (1 Hz steps)
RX: 100 kHz to 30 MHz
- TOTAL CHANNELS
≥280,000
- PROGRAMMABLE CHANNELS
1000 Simplex or half-duplex
- FREQUENCY STABILITY
±0.5 x 10⁻⁶ (optional ±1 x 10⁻⁸) external clock input available
- MODES OF OPERATION
Clear, Digital, Encryption (COMSEC option must be enabled)
- SIGNAL TYPES
Voice, Data, CW, and Dual audio
- MODULATION
USB, LSB, AM, AME-USB, AME-LSB, and ISB
- SCAN
Manual or Automatic (2 or 5 channels/sec w/ALE)
- LOCAL CONTROL
Front Panel Keypad for frequency, Optional Ground-to-Air SELCAL, modes, and other core parameters
- REMOTE INTERFACE
Ethernet (10/100BaseT) - IP Addressable
- RADIO TYPE
SDR Radio. Waveforms, modulation types, wide/narrow bands and communications security can be updated via software**.
- DATA MODEM
Integrated MIL-STD-188-110B Appendix C, STANAG 4539
- ALE MODEM
Integrated MIL-STD-188-141B (2G ALE) and STANAG 4538 (3G ALE)
- COMSEC
AES-256 BIT
- ECCM
- RF INPUT/OUTPUT IMPEDANCE
Analog/Digital Voice and Data up to 25 hops/sec
- ANTENNA INPUT PROTECTION
50-Ohm nominal, unbalanced.
- BITE
To +43 dBm.
- MTBF
Fault isolated to module level (LRU), descriptive readout on front panel and individual module indication.
- MTTR
≥ 5000 Hours, per MIL-HDBK-217F
≤ 15 Minutes, per MIL-HDBK-472, Procedure V, part B
- INPUT POWER
DC: 19.2-32 VDC
AC: 115/230 VAC 10%, with external power supply

ENVIRONMENTAL

- TEMPERATURE
-40°C to +70°C (Full operating spec. -30°C to +60°C)
- HUMIDITY
95% at +50°C
- ENVIRONMENTAL TESTING
MIL-STD-810G
- VIBRATION
MIL-STD-810G
- IMMERSION
MIL-STD 810G and Per IP67 (1m)
- EMI
MIL-STD-461E, CS101, CE102, RE102 and RS103

RECEIVER

- SELECTIVITY - SSB
300 Hz to 3050 Hz, per MIL-STD 141B paragraph 5.2.7.1
- SELECTIVITY - AM
±3000 Hz
- ADJACENT CHANNEL REJECTION
Greater than 50 dB
- SENSITIVITY
SSB/ISB: -113 dBm for 10 dB SINAD (2-30 MHz)
AM: -97.5 dBm for 10 dB SINAD (2-30 MHz)
CW: -116 dBm for 10 dB SINAD (2-30 MHz)
- AUDIO OUTPUT
5 watts into internal speaker @ <10% distortion.
Line audio up to 15 mW into 600-Ohm.
Handset: low impedance.
- IMAGE & IF REJECTION
80 dB minimum
- AGC
Fast, Medium, and slow (compatible with selected mode of operation)
- SQUELCH
Syllabic

TRANSMITTER

- OUTPUT POWER
SSB: 125W PEP; CW: 125W; ISB: 125W PEP Total;
AM: 40W Typical
- HARMONIC SUPPRESSION
Greater than 50 dB
- CARRIER SUPPRESSION
Greater than 50 dB
- UNDESIRED SIDEBAND
Greater than 50 dB
- VSWR
Automatic power reduction above 2:1
- AUDIO INPUT
Microphone and 600-Ohm lines
- DUTY CYCLE
100%
- GPS
Integrated w/external antenna
- Synchronization
GPS or TOD