

## **RT7000** **Rugged HF Transceiver**



- **Rugged 125W HF Transceiver**
- **Mobile and Fixed Station**
- **Continuous Duty Operation –Voice and Data**
- **FED-STD-1045A ALE**
- **Embedded Voice Encryption**
- **DSP-Based Voice Processing**
- **Remote Control Capability**
- **Core of High-Power Systems**
- **B.I.T.E. Capability**
- **Separate Receivers and Transmitters Available**

The RT7000 is a rugged, 1.6 to 30 MHz transceiver that provides long distance voice and data capability over HF. A complete line of accessories including RF booster amplifiers, antenna tuners, and power supplies are available to complement the core RT7000 transceivers and form system configurations with RF power levels up to 1000W. Easily installable internal plug-in options add additional functionality to the basic transceiver.

Table 1 shows the basic transceivers available in the RT7000 family. All models are available in either +12Vdc or +28Vdc for use in any type of vehicle, and are fully protected against input power perturbations. The radios are waterproof and ruggedly built to meet a wide range of military specifications including MIL-STD-810 for environmental concerns. Modes include USB, LSB, CW, and AME, and up to 1000 preset memory channels are available. The RF output power is conservatively rated at 125W, PEP, and 100W, average, and there is complete protection against antenna mismatch. Automatic BITE capability, with fault detection down to the module level, is standard in all RT7000's. BITE status messages are shown on the display to allow even unskilled operators to easily repair the radio at the field level.

Table 2 shows the internal options available on all RT7000 models. For interoperability purposes, the RT7000 offers FED-STD-1045A automatic link establishment (ALE). Voice encryption, DSP-based voice enhancement, and a special data filter are other embedded features that can easily be added to the standard transceiver. For a complete, detailed description of 7000-series internal options, please see Datron's "HF Internal Options" data sheet.

Multiple systems can be created using the RT7000 and its complete line of accessory equipment. Configurations, including a full line of extended and remote control units, are available for voice and data systems up to 1 kW using either broadband or narrow-band antenna systems. Datron also has high-speed modems, data terminals, and application software packages to help configure even the most complex network data system. Table 3 is a listing of major accessory products offered with the RT7000 family.



<u>Transceiver Model</u>	<u>Description</u>
RT7000-12 or RT7000-28	1.6 to 30 MHz HF Transceiver with full-function front panel.
RT7000E-12 or RT7000E-28	Transceiver with blank front panel designed for extended (up to 50 ft.) control from RT7201E Control Console.
RT7000RF-12 or RT7000-28	Transceiver with blank front panel designed for long-range remote control from RT7201F FSK-based Control Console. Includes internal 7000RF modem.
RT7000RI-12 or RT7000-28	Transceiver with blank front panel designed for 2 - 4 km remote control from RT7201I ISDN-based Control Console. Includes internal 7000RI modem.
RT7000C-12 or RT7000C-28 only	Transceiver with blank front panel designed for computer-only control from external PC.
RT7000RX-12 or RT7000RX-28	Receiver-only model of RT7000. 100 kHz to 30 MHz.
RT7000TX-12 or RT7000TX-28	Transmitter-only version of RT7000. 1.6 to 30 MHz.

**Table 1. RT7000 Transceiver models (+12Vdc or +28Vdc as indicated). RT7000 can also be remotely controlled to provide a transceiver with both local (front panel) and remote control capability.**

<u>Internal Option</u>	<u>P/N</u>	<u>Description</u>
FED-1045A ALE	7000ALE	ALE compatible to FED-STD-1045A
DSP Voice Enhancement	7000VEM	Voice enhancement module using special DSP algorithms to enhance speech processing
GPS	7000GPS	Internal GPS Receiver; location data on front panel
Memory channel Expansion	7000ACH	Provides up to 1000 preset memory channels
High Stability	7000HS	Provides 0.1 ppm frequency stability
Voice Encryption	7000ENCR	High-level embedded voice encryption
Noise blanker	7000NB	Impulse-type noise blanker
COM port protocol	7000RS	RS422/423/485 protocol for 2 <sup>nd</sup> COM port
Wideband data filter	7000WB1	300-3300 kHz wideband data filter
CW filter	7000CW	Narrowband CW filter
FSK remote control modem	7000RF	FSK modem for "RF" remote control radios (RT7000RF)
ISDN remote control modem	7000RI	ISDN modem for "RI" remote control radios (RT7000RI)

**Table 2. RT7000 internal options. All options are plug-in PC cards and are easily installed in the field using standard tools.**

<u>Accessory</u>	<u>Description</u>
<b>RF Amplifiers</b>	
RA400	1.6 - 30 MHz, 400 W, voice & data RF Amplifier; waterproof, +28Vdc; vehicle or base station usage.
RA1000D	1.6 - 30 MHz, 1 kW, voice & data RF Amplifier with internal ac/dc supply (rack or desktop mounting); 220Vac.
RA500D	1.6 - 30 MHz, 500W, voice & data RF Amplifier with internal ac/dc supply
<b>Data Equipment</b>	
RT5200	FSK data modem (up to 300 bps)
RT5300	High-speed HF data modem (up to 3000 bps) with ARQ
E110, E110A	MIL-STD-110A/B HF data modems (PC Card, for embedding in PC)
DT9400	Rugged notebook computer
DT5300	Rugged notebook computer with embedded 5300-series HF modem
DT110	Rugged notebook computer with embedded MIL-STD-110A/B HF modem
<b>Antenna Tuners</b>	
RAT7000B	Waterproof, 125W, automatic 1.6 - 30 MHz tuner with 100 memory channels
RAT1000C	Waterproof, 1 kW, automatic 1.6 - 30 MHz tuner with 100 memory channels
<b>Antennas</b>	
RA-MAS	16 ft., 4-section, MIL whip antenna for mobile mounting
RA-PAS	32 ft., 8-section, MIL whip antenna for base station use
MAR-12, MAR-16, MAR-16T	MIL antenna for mobile use with flexible NVIS mounting bracket (Note: the MAR-16T comes with a ratcheted base for tilted mobile mounting)
ABB100-series	Broadband 2 - 30 MHz, 150W antenna
ABB1000-series	Broadband 2 - 30 MHz, 1 kW antenna
<b>Power Supplies</b>	
UPF7000A-12 or UPF7000A-28	Heavy-duty switch-mode power supplies for 125W systems; 90-260Vac input

**Table 3.** RT7000 major accessory equipment. In addition to the items shown above, a complete line of mounts, audio accessories, cables, spares, and miscellaneous interface devices are available. Please consult the appropriate individual equipment data sheet or Datron for detailed specifications.



Full-function remote control options available for the RT7000 include an **extended control unit (RT7201E)** for short distance (up to 50 feet) operation, and **remote control units (RT7201RI or RT7201RF)** for longer range using either an ISDN protocol (2-4 km range) or FSK tones (long range) over a voice-grade 2- or 4-wire line. The RT7000 is also capable of **full computer control (RT7000C)** from a PC. Both “remote-only” and “local-remote” configurations are available. The former uses a blank front panel, and the latter has the normal full-function front panel to allow multiple control points.

## SPECIFICATIONS (RT7000)

<b>GENERAL</b>	
Frequency Range	1.6 to 30 MHz (Tx); 100 Hz to 30 MHz (Rx); 10 Hz channel spacing
Preset Channels	256, standard; 1000, optional
Scanning	Multiple scan groups, operator-selectable scan rates
Channel Programming	From front panel or remotely via computer or dedicated remote control console
Frequency Stability	0.5 ppm
Modes	USB, LSB, CW, AME; simplex or half-duplex
Input Power Requirements	11 – 15 Vdc (+12Vdc models); 20-32Vdc (+28Vdc models)
Input power protection	Reverse polarity, transient and under/over-voltage
Antenna Port	50 ohms, type N connector
Antennas	50 ohms or automatic antenna tuner (RAT7000B, RAT1000B)
Interface	<u>Control</u> : two COM ports – RS232; compatible with EIA RS422/423/485 with option. <u>Audio</u> : 600 ohms, balanced and isolated.
<b>Mechanical, Environmental</b>	
Size	(H x W x D)
Weight	
Cooling	On-demand fan (internal)
Immersion	To 1 meter
Temperature	-30 to +60 degrees C., operating
Shock, vibration, humidity, fungus, sand & dust	Per MIL-STD-810
<b>Transmitter</b>	
RF Power Output	125W, PEP; 100W, average
Duty cycle	Continuous service, all modes; programmable – 3 levels
Harmonics	-60 dB (2 to 30 MHz)
<b>Receiver</b>	
Sensitivity	10 dB SINAD for 0.5uV input (2-30 MHz)
Attenuator	+20 dB, operator selectable
Audio	5W into 4 ohms; 0 dBm into 600 ohms.

**Note: all specifications subject to change without notice**



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