



RT-9000D

SDR High Performance HF ISB Radio



- SOFTWARE DEFINED DSP IF & AUDIO
- SELECTABLE AGC & IF BANDWIDTHS
- VARIOUS REMOTE CONTROL OPTIONS
- MIL-STD-810F ENVIRONMENTAL RATINGS
- PRE / POST SELECTOR COMPATIBILITY
- INTUITIVE KEYPAD ENTRY
- DSP BASED SYLLABIC SQUELCH
- ISB TX GAIN CONTROL
- INTERNAL AC POWER SUPPLY (115 & 230 VAC)
- MIL-STD-188-203-1A TADIL-A LINK 11/22 COMPLIANT
- MIL-STD-188-110A/B WAVEFORM COMPATIBILITY
- MIL-STD-188-141A/B COMPLIANT ALE (OPTION)

The **RT-9000D** utilizes software defined digital signal processing (DSP) technology in the synthesizer, IF and audio stages. The transceiver is 100% duty cycle at 125 Watts RF output for the demanding requirements of data operations. The transceiver operates AM, FM, USB, LSB or ISB. The DSP IF is designed to support current and anticipated developments in high speed data waveform technology. Intuitive modular internal design allows for expansion and upgrades throughout the equipment life cycle at minimum expense. The **RT-9000D** has excellent demonstrated mean time between failure (MTBF) and mean time to repair (MTTR) figures, which assure maximum time in service.

Automatic Link Establishment (ALE) is provided as an internal or external option pursuant to interoperability requirements of MIL-STD-188-141 A/B and U.S. Federal Standard 1045A. **RT-9000D** supports STANAG 5066 and 4538 operation with external modem and PC.

The **RT-9000D** is designed and tested to be MIL-STD-188-203-1A STANAG 5511/5522 TADIL-A LINK 11/22 compliant and has MIL-STD-188-110A/B waveform compatibility. It is also compatible with all MIL type crypto such as: ANDVT, KY-99, KG-84(), KG-40 etc and various commercial privacy devices such as the TCC DSP-9000. A proprietary voice privacy function is offered as an option. The radio is specifically designed to accommodate single or split-site operation as a transmitter only **T-9000D** or receiver only **R-9000D**.

A large color TFT screen presents current operating status including frequency, channel, mode, BFO, AGC, power, and local or remote control status. A bar graph meter selectively indicates S-meter, forward and reverse RF power and 600 ohm transmit and receive audio levels. A soft key menu below the main display permits operator selection of a variety of sub-features such as metering and BITE control.

The **RT-9000D** incorporates advanced comprehensive built-in-test (BITE) capability to the lowest replaceable unit (LRU) sub assembly. The failed LRUs are listed on the front panel LCD in plain text, and internally, by an LED indicator. Rear panel connections allow direct interface of the Sunair Pre/Post Selector, Power Amplifier, Antenna Coupler, and other family accessories making the **RT-9000D** a seamless part of larger communications systems.

An internal linear power supply is optimized to minimize the undesirable RFI and EMC effects. The radio accommodates operation on both AC sources and 28 VDC (12 VDC with an optional PS-9010) inputs via separate connectors with automatic changeover if the AC power fails.

Enhanced operation features such as narrow band FM, 1.5 MHz lower transmit limit, 10 kHz lower receive limit and 1 Hz tuning are standard.

Mounting options include desktop or 19 inch EIA rackmount with slides.



RT-9000D SDR High Performance HF Radio

Product Specifications

GENERAL

FREQUENCY RANGE: TX: 1.5 to 30 MHz
RX: 10 kHz to 30 MHz
PROGRAMMABLE CHANNELS: 128 Simplex or half-duplex
FREQUENCY STABILITY: $\pm 1 \times 10^{-8}$
MODES OF OPERATION: ISB, USB, LSB, AM, FM, CW, and DATA (with external modems)
MEMORY RETENTION: Non-volatile
SCAN: Manual or Automatic
BFO: ± 1.99 kHz, 1 Hz resolution
SYNTHESIZER LOCK: 10 ms
SYNTHESIZER STEP: 1 Hz
T/R SWITCHING TIME: 10 ms
REMOTE INTERFACE: RS-232/422 (FSK Tone optional)
RF INPUT / OUTPUT IMPEDANCE: 50 ohms nominal, unbalanced.
BITE: Fault isolated to module level (LRU), descriptive readout on front panel and individual module indication.
INPUT POWER: DC: 26 V DC \pm 15%
AC: 115/230 VAC 15%, 47-400Hz
AC / DC Auto changeover
DIMENSIONS: INCHES (CM): 5.96" H (15.2) x 17.83" W (45.4) x 17.66" L (44.9)
WEIGHT: 49 LBS (22.3 KG)
CONSTRUCTION: Modular plug-in assemblies, field serviceable.
RF IMPEDANCE: 50 Ohms, unbalanced.

ENVIRONMENTAL

TEMPERATURE: -30°C to +55°C operating
-40°C to +85°C storage
RFI EMI/EMC: MIL-STD-461
HUMIDITY: 100% at 50°C
RAIN: MIL-STD-810F, Method 506.4
SHOCK: MIL-STD-810F, Method 516.5 Procedure 1
VIBRATION: MIL-STD-810F, Method 514.5
MTBF / MTTR: 6,500h / 15min

RECEIVER

SELECTIVITY: SSB / ISB: 300-3300 Hz @ 6dB
CW: 500 Hz @ 3dB, centered at 1 kHz
AM: ± 3000 Hz @ 6dB
SENSITIVITY: SSB / ISB: 0.5uV for 10dB (S+N)/N
AM: 3.0uV for 10dB (S+N)/N
CW: 0.3uV for 10dB (S+N)/N
AUDIO OUTPUT: 5 watts into internal speaker, <5% THD
600 Ohms balanced at -20dBm to +10dBm
Headset: Low impedance
IMAGE & IF REJECTION: 90 dB minimum
SPURIOUS REJECTION: 80 dB minimum
AGC ATTACK TIME: 10 ms nominal
AGC RELEASE TIME: Fast - 23 ms nominal
Medium - 200 \pm 100 ms
Slow - 3 \pm 1 sec
SQUELCH: Syllabic
ANTENNA INPUT PROTECTION: 100 V RMS, self-resetting

INTERNAL GENERATED SPURIOUS: 99.5% of the available
Frequencies from 100 kHz to 30 MHz at or below 0.5 uV equivalent
Input at the antenna terminal.

TRANSMITTER

OUTPUT POWER:
NORMAL: SSB: 125 Watts PEP and average
ISB: 100 Watts PEP
CW: 125 Watts
AME: 40 Watts carrier
MEDIUM: SSB: 65 Watts PEP and average (adjustable)
ISB: 50 Watts
CW: 65 Watts (adjustable)
LOW: SSB: 30 Watts PEP and average (adjustable)
ISB: 25 Watts
CW: 30 Watts (adjustable)

HARMONIC SUPPRESSION: With CU-9125 coupler the measured
suppression of the second and third order harmonics is greater than 65
dB. With CU-9150 coupler in a 1 kW system the measured suppression
is greater than 70 dB.

INTERMODULATION DISTORTION: 36 dB below PEP
CARRIER SUPPRESSION: 70 dB below PEP
UNDESIRE SIDEBAND: 70 dB below PEP @ 1 kHz
HUM & NOISE LEVEL: 50 dB below PEP
VSWR: Full power up to VSWR 2.0:1 (Automatic graceful power reduc-
tion above 2.0:1)
AUDIO INPUT: Microphone and 600 Ohm balance at -20dBm to
+10dBm
AUTOMATIC LEVEL CONTROL: 125 Watts \pm 1 dB
AUDIO COMPRESSION: 10 dB nominal (Internal disable)
**OVERLOAD PROTECTION, ANTENNA MISMATCH OPEN/SHORT
CIRCUIT**

INTERNAL OPTIONS

VOICE PRIVACY: Embedded software option
ALE: MIL-STD-188-141 A/B
FILTER BANDWIDTHS: Custom filter bandwidths and center frequen-
cies are available. Consult Sunair for additional details.

PERIPHERAL EQUIPMENT (Optional)

RACK MOUNTING KIT: Shroud and rack slides
PRE/POST SELECTOR: F-9800
1 KW POST SELECTOR: F-9950
10 KW/ 5 KW Power Amplifiers: LPA-10000A/LPA-5000A
1 KW/500W POWER AMPLIFIERS: LPA-9600/LPA-9500
ANTENNA COUPLERS: 1kW CU-9150 or 150W CU-9125
REMOTE CONTROL: PATHFINDER II, RCU-9310D or RCU-9320
DC-DC CONVERTER: PS-9010 12 V DC to 28 V DC

Due to Sunair's policy of continuous
product improvement specifications are
subject to change without notice or obligation.

Designed & manufactured in the U.S.A.



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