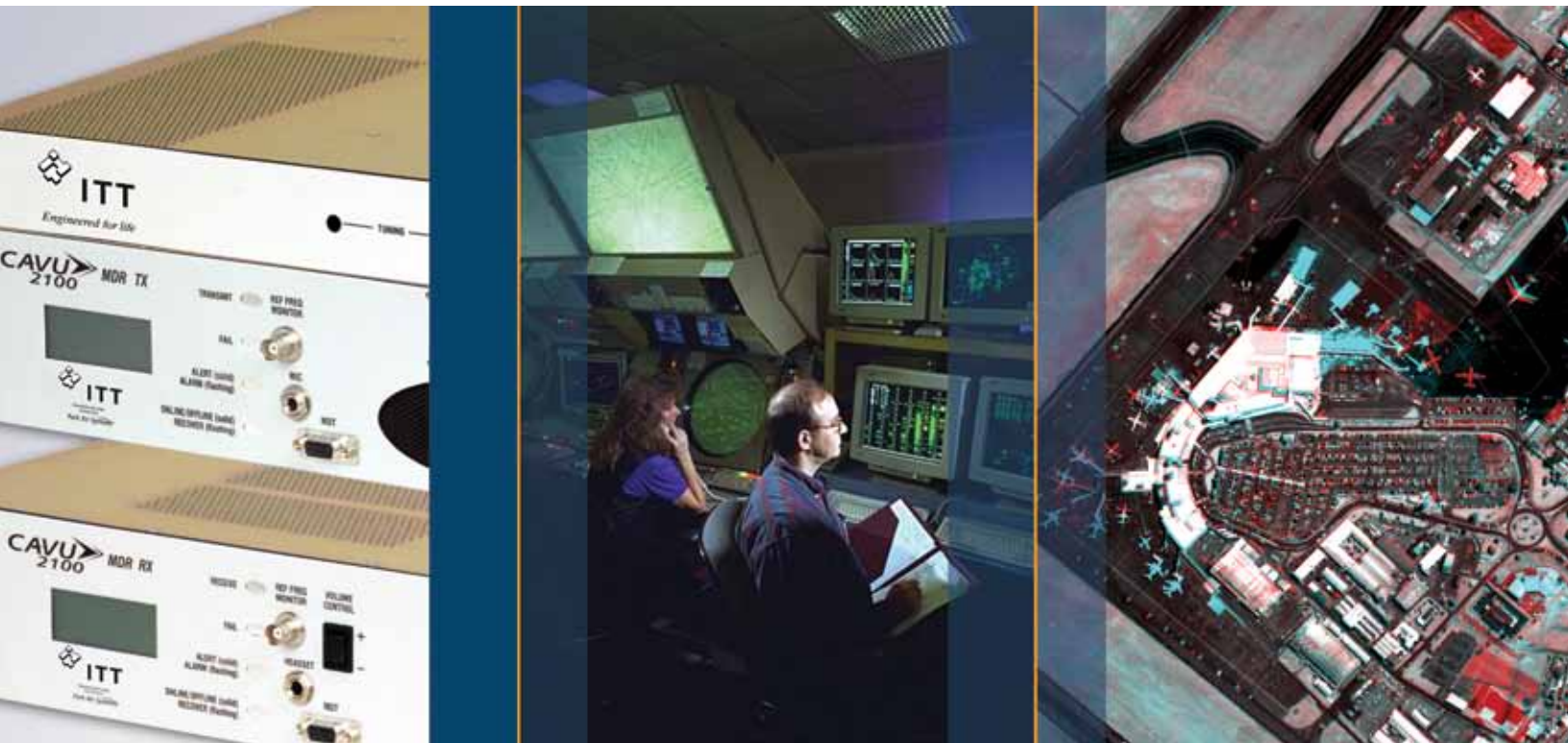




ITT/Park Air Systems CAVU2100 Multi-mode Digital Radio (MDR)

The MDR's many features accommodate increased traffic demands while maintaining air traffic safety.



Engineered for life

Photos courtesy of the U.S. DoD and ITT Corporation.

ITT/Park Air Systems CAVU 2100® Multi-Mode Digital Radio

The ITT Corporation/Park Air Systems CAVU 2100® Multi-mode Digital Radio (MDR) uses proven commercial off-the-shelf digital technology to combine reliability with the flexibility to meet the demands for new enroute services.

The MDR is a Digital Signal Processing-based (DSP) radio built on a modular hardware and software design. When operating in Amplitude Modulation (AM) voice mode, the MDR provides the same functionality as legacy systems and is fully backward compatible with components such as remote controlled equipment, antenna transfer relays, voice switching and control systems. Operations in both 25 kHz and 8.33 kHz AM modes is supported.

The MDR also provides full VDL-3 digital communications per Radio Technical Commission for Aeronautics (RTCA) DO-224a, Minimum Aviation System Performance Standards (MASPS) and International Civil Aviation Organization (ICAO) Annex 10 to support an all digital National Airspace System.

Unique Features

- Local/remote control monitoring capability and internal event log records radio activity for maintenance and performance analysis
- Common transmitter design with optional high or low power "tophats" with integrated low loss filters for fixed tuned applications
- Software reprogrammable both locally and remotely
- Control access via FIPS-140 certified authentication process
- Fully compatible with digital Ground Network System
- High speed digital antenna transfer relay switch
- 100% processor and memory capacity overheads available for future functional upgrades
- Utilizes public domain operating system (Linux)
- Windows based Maintenance Data Terminal Software
- All digital architecture supports all baseband processing protocol functions and the next generation ATC waveforms

General Characteristics

- Frequency Range: 112 to 136.975 MHz
- Frequency Stability: ± 1 ppm
- Operating Modes: DSB AM 25 kHz or 8.33 kHz and VDL-3 (D8PSK)

Reliability

- MTBF: > 30,000 hours

Maintainability

- MTTR: < 30 minutes at lowest replaceable unit

BIT

- Probability of detection: 90%
- Traffic paths tested from end to end
- Fault detectors continuously monitor voltage levels and phase lock

EMI/EM

- Applicable requirements of MIL-STD 461/462

Environmental Requirements

- Operating Temperature: -10°C to +50°C
- Storage Temperature: -40°C to +70°C
- Altitude: Operating: 0 to 15,000 feet
Non-operating: 0 to 50,000 feet
- Relative Humidity: Operating: 5 to 90%
Non-operating: up to 100%

Receiver Performance

- Sensitivity: AM: -110 dBm for 10 dB SINAD
VDL-3: -100 dBm for 5×10^{-4} BER
- Audio Distortion: <2%
- Adjacent channel protection: >80 dB (25 kHz)
- Collocation: Maintain 10dB SINAD with up to a +14 dBm interferer
- Squelch: Adjustable audio signal-to-noise and RF power thresholds

Transmitter Performance

- RF output power: 2 to 50 Watts (100% duty cycle)
- Spurious emissions and harmonics: <-80 dBc
- Adjacent channel power: <-60 dBc (25 kHz)
- Broadband noise: Better than -144 dBc/Hz
- D8PSK: EVM <3% rms
- Distortion: $\leq 5\%$ for 90% modulation (300Hz-3 kHz)
- VSWR: Operate into any load with no damage

Control and Connections

- Front panel: Power, alert and alarm indicators, LCD display
- Receiver signal, transmitter indicator, AC/DC selection
- Headset/mic port, MDT (9-pin D)
- Frequency Reference (BNC)
- Back Panel: Antenna (N), Power (IEC320), Radio control (15-pin D), Radio interface (RJ-45)

Input Power

- 99-132 VAC, 50-60 Hz, 3 amps (transmitter), 1 amp (receiver)
- 21.6-32 VDC, 15 amps (transmitter), 3 amps (receiver)
- Modifiable to accept up to 240 VAC

Dimensions

- Receiver/Transmitter Size: Standard rack-mount with 2 slide options
19 in (48.3cm) wide x 3.5 in (8.9 cm) high x 17.5 in (44.5 cm) deep
- High Power Tophat Size: Mounts to transmitter
19 in (48.3cm) wide x 3.5 in (8.9 cm) high x 17.5 in (44.5 cm) deep
- Low Power Tophat Size: Mounts to transmitter
19 in (48.3cm) wide x 1.8 in (4.5 cm) high x 17.7 in (44.0 cm) deep

Weight

- Receiver Weight: 17.55 lbs (7.96 kg)
- Transmitter Weight: 35.74 lbs (16.21kg)
- High Power Tophat Weight: 12.49 lbs (5.66 kg)
- Low Power Tophat Weight 8.50 lbs (3.86 kg)

The all-digital architecture supports all baseband processing and protocol functions as well as the next generation of ATC waveforms.



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