HARRIS

Radio Systems Products

3DX-25

25 kW Digital Solid State AM Transmitter

The "Gold Standard" for AM medium wave modulation performance and reliability is now available at 25 kW. 3DX-25 follows the very successful launch of the first 3DX-50 in 2001. Offering unsurpassed signal linearity needed for today's digital transmission modes, 3DX-25 is unmatched in analog and digital performance, efficiency, and reliability.

Features/Benefits

Direct Digital Drive: Each power amplifier module is driven directly by a low-level signal, eliminating the RF driver section. This enhancement improves efficiency and reduces complexity.

Auto-Serviceability: 3DX technology makes the 3DX-25 virtually auto-servicing. Digital Serial Adaptive Modulation (DSAM) continuously monitors each serial modulation encoder and RF power amplifier and makes automatic module reassignments should any difficulty occur. Several modules can be out of service without affecting transmitter output power, signal accuracy, or normal modulation capability. Your transmitter keeps running until you are ready to perform maintenance.

Intelligent User Interface: 3DX-25 is designed for ease of operation through Intellistat™, the diagnostic user interface. The combination of large, internationally identified control buttons, a status panel with selectable metering, and 1/4 VGA display provides all important control and status parameters to show exactly how the transmitter is performing.

Hot-pluggability: This is a new feature of 3DX transmitters. An RF amplifier or binary amplifier can be removed for service without taking the transmitter off the air. A "key card" is provided with the transmitter for troubleshooting or safe removal of the module. Simply insert the card into the connector below the module to obtain module status information or use the disable switch for module removal.

Redundancy: 3DX-25 is available with optional dual digital exciters, dual low voltage power supplies, and redundant binary amplifier with power supply, all with automatic switchover.

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General

Type of Modulation: Harris patented Direct Digital Drive Amplitude Modulation.
Transmitter Type: Medium Wave, 100% solid state.
Power Output Range: 10-27.5 kW. Transmitter capable of combined operation. Three adjustable power levels are provided.
Frequency Range: 531 kHz to 1610 kHz. Supplied, tuned, and tested on one frequency as specified.
AC Mains Input: 208, 240 VAC, 50 or 60 Hz with ±11V taps. 380-485 VAC by special order.
Power Supply Variation: ±5% voltage, +5% frequency for full performance. +10/-15% voltage transmitter operational.
Transient Protection: Meets ANSI/IEEE C62.41-1980 requirements; includes high energy MOVs.
Power Factor: 0.97 typical.
Frequency Stability: 2 PPM over frequency range, 0 to 50° C. Higher stability available with external reference.
Audio Input: –10 to +10 dBm, adjustable transformerless input; 600 and 20k terminators provided. Optional AES3 digital input, 110 ohm, -20dBfs.
RF Output: 3-1/8" EIA flange, bullet provided.
RF Load: 50 ohms, fixed, unbalanced, resistive.
VSWR: 1.2:1 or better for full rated power. Typical 1.3:1.
Cabinet & Harmonic/Spurious Radiation: Meets or exceeds FCC, IC, and other world standards.
Overall AC Efficiency: 85% or better at 25 kW.

Audio Performance

Audio Frequency Response: +0.2/-0.8 dB at 95% modulation, 20 Hz to 10 kHz. Reference 1 kHz.
Total Harmonic Distortion: 0.7% or less at 95% modulation, 20 Hz to 10 kHz, 25 kW; 0.3% typical.
Intermodulation Distortion: 1.0% or less 1:1, 60/7000 Hz; SMPTE at 95% modulation. Typical 0.4% 1:1, 1.0% 4:1 at 25 kW.
Transient Intermodulation Distortion: 0.5% or less at 95% modulation, 2.96/8.0 kHz, 4:1. Typically 0.3%.
Squarewave Overshoot: 0.5% or less400 Hz, 80% modulation. Measured peak to peak. Typically less than 0.3%.
Squarewave Tilt: 0.5% or less at 40 Hz, 80 % modulation.
Carrier Shift: Less than 1% at 95% modulation at 1 kHz. Typically less than 0.5%.
Hum and Noise: -65 dB or better below 100% modulation (unweighted). Typically –70 dB.
IQM: -36 dB at 1 kHz, 95% modulation; -40 dB typical.
Positive Peak Capability: +145% or greater at 25 kW, audio program modulation, at nominal AC mains voltage.
Duty Cycle: Continuous 100% modulated sine wave.

Service Conditions

Power Consumption: 29.5 kW or less typical at 25 kW, 0% modulation; 44 kW or less typical at 25 kW, 100% tone modulation.
Ambient Temperature: 0° C to 50° C; derate 2° C per 1,000 feet (305 meters) of altitude.
Temperature Rise: Approximately 3° C (Inlet/Outlet Air) at 4000 CFM.
Humidity Range: 0 to 95% non-condensing.
Altitude: Up to 13,000 feet (3962 meters).
Size: 198 cm H x 260 cm W x 105 cm D (78" H x 102" W x 42" D) without fan/ filter assembly. 198 cm H x 260 cm W x 137 cm D (78" H x 102" W x 54" D) with fan/filter assembly.
Weight: 1506 Kg (3320 lbs.)

NOTES:
1. All measurements made into test load at rated power.
2. Noise may degrade if AC lines are unbalanced.
3. Audio performance measurements made with standard audio input, no special filters required to obtain these specifications.

Specifications subject to change without notice.

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