

DAX-5/6

5 or 6kW AM/IBOC Transmitter

The Harris DAX-5/6 is the first in a dynamic family of 1-6 kW AM transmitters designed from the ground up to provide superior IBOC and analog performance. The DAX transmitter's exceptional linearity and bandwidth will not only deliver the cleanest analog sound in this power range, but also the most accurate reproduction of digital radio signals. Accurate digital signal reproduction with low bit error rate is essential to maximizing digital coverage.

With DAX, Harris — the company that has pioneered every AM modulation standard in use today — introduces a brand new, high-efficiency/high-performance modulation technique. Called Digital Adaptive Modulation, this new modulation technology uses a digitally generated AM waveform with DSP-based adaptive correction to give the user a high performance transmitter in a cost-effective platform. Digital Adaptive Modulation constantly samples the modulated output and dynamically corrects for nonlinearity. The result is the cleanest, purest analog or digital (DRM™ or HD Radio®) signal in this power level.

When you combine Digital Adaptive Modulation with redundant "hot-swappable" RF modules and a number of proprietary features, the result is irresistible: unmatched performance and reliability today, plus a "plug-and-play" migration path to digital — all at a competitive price.



DAX-5/6 Specifications

General

Type of Modulation:	Harris Digital Adaptive Modulation (Patent pending).
Transmitter Type:	Medium Wave, 100% solid-state.
Power Output Range:	DAX-5: 25 w-5.75 kW. DAX-6: 25 w-7.0 kW. Five adjustable power levels are provided.
Frequency Range:	529 kHz to 1705 kHz. Supplied, tuned and tested on one frequency as specified. Direct, digital, synthesized (DDS) in 1 kHz steps.
AC Mains Input:	Standard: 3-phase 197-251VAC, Optional: 3-phase 380-415VAC, Single phase 220-240VAC, 50/60 Hz.
Power Supply Variation:	±5% voltage, ±3 Hz frequency for full performance. +10/-15% voltage transmitter operational.
Output Power Regulation:	Less than 1% for all power line voltage variations.
Transient Protection:	Meets ANSI/IEEE C62.41-1980 requirements; includes high energy MOVs.
Frequency Stability:	±2 PPM over frequency range and temperature range 0 to 50° C. Higher stability available with external 10 MHz reference. Optional internal precision frequency reference.
Audio Input:	-10 to +10 dBm, adjustable transformerless input; 600 and 10k terminators provided.
Dedicated Digital Magnitude (IBOC/DRM) Input:	-10 to +10 dBm; Phase: 2V-20V P-P, remote switchable.
RF Output:	7/8" EIA flange, bullet provided..
RF Load:	50 ohms, fixed, unbalanced, resistive
VSWR:	1.3:1 for full rated power, no tuning required.
Cabinet & Harmonic/Spurious Radiation:	Meets or exceeds FCC, IC, and other world standards.
Overall AC to RF Efficiency:	77% or better at rated power output (0 to 100% sinusoidal modulation). 82% typical.
Metering:	Nine parameters from front panel. Additional diagnostics and metering through serial interface.
Monitoring and Control:	Parallel and serial (VT100) interface.
Audio Performance	
Audio Frequency Response:	+0.2/-0.8 dB at 90% or 95% modulation, 30 Hz to 10 kHz.
Reference:	1 kHz. No audio filter required.
Total Harmonic Distortion+Noise:	90% or 95% modulation, 30 Hz to 10 kHz, 5 kW (DAX-5), 6 kW (DAX -6): 0.7% or less; 0.15% typical. 2.25 kW: 0.8% or less 1.25 kW: 1.0% or less 500 w: 1.25% or less
Intermodulation Distortion:	1% or less 1:1, 60/7000 Hz; SMPTE at 95% modulation. 1.5% or less 4:1.

Transient Intermodulation Distortion:	0.6% or less at 85% modulation, 2.96/8.0 kHz, 4:1. 30 kHz bandwidth.
CCIF Intermodulation Distortion:	0.2% or less, 1:1 80/5000, 85% modulation.
Squarewave Overshoot:	1% or less, 400 Hz, 70% modulation. (No linear phase filter required, rise time limited to 100 uS.)
Squarewave Tilt:	0.5% or less at 40 Hz, 70% modulation.
Carrier Shift:	Less than 1% at 95% modulation at 1 kHz.
Hum and Noise:	-60 dB or better below 100% modulation (unweighted).
Incidental Quadrature Modulation:	-38 dB at 1 kHz, 95% modulation; -45 dB typical.
Positive Peak Capability:	+145% or greater at 5 kW (DAX-5), 6 kW (DAX-6) audio program modulation, at ±5% mains voltage.
Duty Cycle:	Continuous 100% modulated sine wave at rated power.

IBOC/DRM Compatibility

Audio Frequency Response:	+0.2/-1.2 dB, 30 Hz to 15 kHz, 90% or 95% modulation, ref 1 kHz.
Audio Total Harmonic Distortion (THD+N):	0.8% or less, 30 Hz to 15 kHz, 90% or 95% modulation.
Group Delay Variation:	±3 uS, 200 Hz-15 kHz, ref 1 kHz at 90% or 95% modulation.
J3E Linearity Test:	(Single Sideband suppressed carrier) -50 dB, 4/5 kHz equal amplitude tones. -50 dB, 4/5 kHz 5 kHz -1 dB relative to 4 kHz. -65 dB, 5/8 kHz 8 kHz -30 dB relative to 5 kHz.

Service Conditions

Power Consumption:	DAX-5 (DAX-6): 6.1 kW (7.3 kW) or less typical at 5 kW (6 kW), 0% modulation; 9.1 kW (11.0 kW) or less typical at 5 kW (6 kW), 100% tone modulation.
Ambient Temperature:	0° C to 50° C; derate 2° C per 1,000 feet (305 meters) of altitude.
Humidity Range:	0 to 95% non-condensing.
Altitude:	Up to 13,000 feet (3962 meters).
Size:	183 cmH x 59 cm W x 86 cm D (72" H x 23.2" W x 34" D)
Weight:	329 KG (725 lbs.)

GENERAL NOTES:

1. All measurements made into test load at rated power, unless otherwise indicated, with adaptive correction circuits enabled.
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 are subject to change. For a complete listing of the most current specifications, please visit our website at www.broadcast.harris.com.

For more information please visit www.broadcast.harris.com.

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