

## GENERAL

### Transmitter Type

Medium wave, AM, 100% solid state

### Configuration

160 RF power modules, each including a single integrated RF amplifier/modulator

No frequency dependant parts in RF module

Each module is hot pluggable and has internal microcontroller for protection and monitoring over a serial bus

Short circuit protection at the module level offers an added layer of protection

Dual redundant digital single board exciters utilizing FPGA/DSP technology with automatic changeover

Pre-correction utilized specifically to improve digital performance

Redundant low voltage power supplies

### RF Output Power

**Continuous Average:** 600 kW

**Peak Capability:** 2200 kW

**AM Carrier:** 0 to 440 kW (adjustable)

Up to 62 preset levels, presets may include other operational parameters such as DRM vs Analog and different program inputs

Output level stabilized against AC supply voltage variations

Built in Dynamic Carrier Control

Built in AM stereo

### RF Output Connection

6 1/8 EIA female standard, other outputs on request

### RF Output Impedance

50 ohms, unbalanced

### Efficiency

90% typical at 400 kW

### RF Load VSWR

64000 peak reflected watts (1.5:1 VSWR @ 400 kW, 100% modulation) results in instantaneous power shutback

16000 average reflected watts (1.5:1 VSWR @ 400 kW, 0% modulation) results in a graceful power reduction

### Frequency Range

531 kHz to 1,620 kHz.

"Quick frequency change capability"

### Frequency Stability

±2 ppm over temperature range

Optional 300 ppb ovenized source with GPS option

### Modulation Type

6 phase direct digital modulation

1.8 MHz modulation sample rate

### Modulation Capability

135% positive peak modulation to 400 kW

120% positive peak modulation to 440 kW

### Spurious and Harmonic

Meets ITU-R SM.328-10

Meets ITU-R SM.329-9

## AC INPUT

### Voltage

340 V to 440 V, 3 phase or to customer specifications

### Power Supply Variation

±10% voltage, 47 Hz to 63 Hz

### Power Consumption

444 kW typical at 400 kW, 0% modulation

666 kW typical at 400 kW, 100% modulation

### Cos (theta)

0.95 typical @ nominal line voltage

## ENVIRONMENTAL

### Temperature Range

0°C to + 50°C

Derate 3°C per 500 m above sea level (2°C per 1,000 ft)

### Humidity Range

0% to 95% non-condensing

### Altitude

0 m to 4,000 m (0 ft to 13,000 ft)

### Cooling Air Requirements

10,200 m<sup>3</sup>/hr (6000 CFM)

## SAFETY

Meets EN60215: 1996 Safety Requirements for Radio Transmitting Equipment



## PHYSICAL

### Dimensions

Transmitter Cabinet

184.2\* cm H x 383 cm W x 120 cm D  
(72.4" H x 150.8" W x 47.2" D)

\*not including antenna grounding switch

External Transformer Cabinet

203.2 cm H x 185.4 cm W x 114.3 cm D  
(80" H x 73" W x 45" D)

### Weight

Main transmitter cabinet with modules installed:

2268 kg (5000 lbs)

Power transformer:

2000 kg (4400 lbs)

## AUDIO PERFORMANCE

### Analog Broadcast Inputs

Dual AES-EBU Digital Audio inputs\* adjustable from -30dBFS to 0dBFS for 100% modulation

600 ohms balanced analog audio input +10 dBm nominal for 100% modulation, adjustable from -10 to +12 dBm

### Digital Broadcasting Inputs

I,Q over AES-EBU, SRC available\* with sample rate converter

I,Q over LVDS, 3 pairs, Clock, Data, frame sync

\*Two AES-EBU inputs provided and may be used for either analog audio or digital I,Q inputs

Optional DRM Generator/Content Server

Optional Embedded HD Radio Generator (Exgine™)

### Frequency Response

+0.2 dB/-0.8 dB, 30 Hz to 10,000 Hz.

Optional audio input filters available to meet regional bandwidth restrictions

### Total Harmonic Distortion

Better than 0.8% (THD), 30 Hz to 10,000 Hz at 95% modulation (typical)

### Intermodulation Distortion

SMPTE 1:1 Ratio, 60Hz/7kHz, 95% Mod Peak - 0.5% @ 400kW (typical)

DIM-B, 2.96kHz/9kHz, 80% Mod Peak - 0.5% @ 400kW

### Carrier Shift

0.5% or less

### Hum and Noise

-65 dB or better below 400kW, 100% modulation

## CONTROL AND MONITORING

Extensive Control/Monitoring/Troubleshooting system through 17" front panel LCD touchscreen. Touch panel control system is non-critical and may be removed from the system without affecting transmitter operation or remote control/monitor via direct wired connections. Redundant back-up control interface provides control in case of front panel computer system failure. Built in instrumentation providing detailed spectrum/impedance and modulation analysis.

### Metering

#### Cube

DC Voltages (B+, PA and 15V)

DC Current

Sample Levels (PDM and RF Drive)

Fan Speeds

Heat Sink Temperature

#### Rack

DC Voltage levels (15V, 5V, 30V, 48V and B+)

Rectifier Fan Speeds

DC Current

Rectifier Heat Sink Temperature

AC Voltage

#### Exciter

Output Current (RMS, Peak, Carrier)

Output Voltage (RMS, Peak, Carrier)

Forward Power (RMS, Peak, Carrier)

Reflected Power (RMS, Peak, Carrier)

Audio/Modulation Levels (RMS and Peak - Positive/Negative)

Load Impedance

### Controller

PDM and RF Drive Levels

Ambient Temp

### RF Monitor

RF monitor is a power sample (using a directional coupler) that will allow for accurate audio performance measurements

### Status

Easy access to current transmitter operating state, past and present alarm conditions and historical trends of both digital and analog channels

### Schedule

Intuitive easy to read built in scheduler

Up to 144 yearly rules can be defined by user

### Remote Control/ Monitoring

Three Remote interfaces:

- Direct wired optically isolated inputs and open collector outputs
- Web interface - All locally available control is available over TCP/IP web interface
- SNMPv1

### Notes:

Specifications defined in a laboratory environment with high grade source and demodulation equipment. Standard factory measurements does not include all items.

