

## AUDIO SPECIFICATIONS

### GENERAL

#### RF Output Power

Transmitter model number dependant

Dual RF output

Capable of up to 700 W per output

#### RF Frequency Range

87.5 MHz to 108 MHz

Digitally programmable in 1 Hz steps

#### RF Terminating Impedance

50 ohms unbalanced

N-type jack VSWR protected (each output)

#### RF Output Monitor

-39 dBc, BNC jack (each output)

#### Frequency Stability

± 200 Hz

0°C to +50°C ambient temperature range

#### Modulation Type

Direct Digital Synthesis (DDS) using a 32 bit NCO

Direct-to-channel RF generation at 635 MS/s with

a 16-bit DAC

#### Modulation Capability

160% (4 dB) ±75 kHz reference standard

±300 kHz modulation capable upon request

### STEREO PERFORMANCE WITH DIGITAL AUDIO INPUT AND MPX OVER AES

#### Input Connector

One XLR female and one DB15 male

#### AES/EBU Input Impedance

110 ohms, nominal

#### Input Level

0 dBfs to -25.5 dBfs for 100% modulation

#### Data Format

AES/EBU (XLR, DB15), 16 bits to 24 bits resolution

#### Data Rate

20 kHz to 192 kHz

#### Pilot Carrier

19 kHz ±0.01 Hz, programmable 6% to 12%

injection level. Available on rear panel BNC as

1 V<sub>p-p</sub> sine wave. Pilot phase may be referenced to

GPS 1 PPS (BNC) and adjusted with 1° resolution.

#### 38 kHz Suppression

80 dB below ±75 kHz deviation reference

#### Stereo Separation

Better than 60 dB, 30 Hz to 15 kHz

#### Amplitude Response (L or R)

±0.1 dB, 30 Hz to 15 kHz referenced to 0 dB at

400 Hz

#### FM Signal-to-Noise Ratio (L or R)

80 dB below 100% modulation (reference 400 Hz,

measured in 22 Hz to 22 kHz bandwidth with 75 μs

de-emphasis and DIN 'A' weighting)

#### Stereo Total Harmonic Distortion (L or R)

0.025% or less, 30 Hz to 15 kHz, measured in 22 Hz

to 22 kHz bandwidth with 75 μs de-emphasis

#### Stereo Crosstalk

60 dB below 100% (30 Hz to 15 kHz).

Modulation reference: L+R to L-R and L-R to L+R

#### Intermodulation Distortion (L or R)

CCIF: 0.008% or less (14/15 kHz, 1:1)

SMPTE: 0.025% or less (60 Hz and 7,000 Hz, 1:1)

#### Transient Intermodulation Distortion (DIM) (L or R)

0.05% or less (2.96 kHz square wave/14 kHz sine wave)

#### Stereo/Monaural Mode Control

Monaural mode selectable using left or right

channel

### STEREO PERFORMANCE WITH ANALOG STEREO INPUT

#### Input Connector

DB15 male

#### Input Impedance

balanced (no transformers) 600 ohms

#### Input Level

-12 dBu to 12 dBu for 100% modulation

#### Input Quantization

Sampled at 77.5 kHz with 24-bit ADC

#### Pre-Emphasis

0 μs, 25 μs, 50 μs or 75 μs, user selectable

#### Pilot Carrier

19 kHz ±0.01 Hz, programmable 6% to 12%

injection level. Available on rear panel BNC as

1 V<sub>p-p</sub> sine wave. Pilot phase may be referenced to

GPS 1 PPS (BNC) and adjusted with 1° resolution.

#### 38 kHz Suppression

80 dB below ±75 kHz deviation reference

## AUDIO SPECIFICATIONS

### Stereo Separation

Better than 60 dB, 30 Hz to 15 kHz

### Amplitude Response (L or R)

±0.1 dB, 30 Hz to 15 kHz referenced to 0 dB at 400 Hz

### FM Signal-to-Noise Ratio (L or R)

80 dB below 100% modulation (reference 400 Hz, measured in 22 Hz to 22 kHz bandwidth with 75 µs de-emphasis and DIN 'A' weighting)

### Stereo Total Harmonic Distortion (L or R)

0.025% or less, 30 Hz to 15 kHz, measured in 22 Hz to 22 kHz bandwidth with 75 µs de-emphasis

### Stereo Crosstalk

50 dB below 100% (30 Hz to 15 kHz).

Modulation reference: L+R to L-R and L-R to L+R

### Intermodulation Distortion (L or R)

CCIF: 0.008% or less (14/15 kHz, 1:1)

SMPTE: 0.025% or less (60 Hz and 7 kHz, 1:1)

### Transient Intermodulation Distortion

#### (DIM) (L or R)

0.05% or less (2.96 kHz square wave/14 kHz sine wave)

### Stereo/Monaural Mode Control

Monaural mode selectable using left or right channel

## MONAURAL PERFORMANCE WITH DIGITAL OR ANALOG INPUTS

### Amplitude Response (L or R)

±0.05 dB, 30 Hz to 15 kHz referenced to 0 dB at 400 Hz

### FM Signal-to-Noise Ratio

90 dB below 100% modulation (reference 400 Hz at ±75 kHz deviation with 75 µs de-emphasis and DIN 'A' weighting in 22 Hz to 22 kHz passband)

### Harmonic Distortion

0.005% or less (reference 400 Hz at ±75 kHz deviation with 75 µs de-emphasis in 22 Hz to 22 kHz bandwidth)

## WIDEBAND COMPOSITE OPERATION

### Input Connector

BNC connector

### Input Impedance

1,210 ohms, balanced by default (Internally configurable for either balanced or unbalanced)

Optional 50 ohm input configuration upon request

### Input Quantization

Sampled at 620 KS/s with 16 bit ADC

### Input Level

3.5 Vpp nominal for 100% modulation

### Amplitude Response

±0.05 dB, 20 Hz to 100 kHz

Typical measure specification at factory acceptance test is ±0.03 dB, 20 Hz to 53kHz

### Phase Response

±0.1° from linear phase, 20 Hz to 100 kHz

### FM Signal-to-Noise Ratio

90 dB below 100% modulation (reference 400 Hz at ±75 kHz deviation with 75 µs de-emphasis and DIN 'A' weighting in 22 Hz to 80 kHz passband)

### Total Harmonic Distortion

0.005% or less, (reference 400 Hz at ±75 kHz

deviation with 75 µs de-emphasis and DIN 'A' weighting in 22 Hz to 80 kHz passband)

### Stereo Separation

50 dB, 20 Hz to 15 kHz

## MPX SCA (RDS/RBDS) PERFORMANCE

### Input Connector

Two BNC female connectors

### Input Impedance

10,000 ohms, unbalanced

### Input Level

3.5 Vpp nominal for ±7.5 kHz deviation

### Amplitude Response (L or R)

±0.2 dB, 20 kHz to 99 kHz

### Subcarrier Frequency Range

53 kHz to 99 kHz stereo (20 kHz to 99 kHz monaural)

## AUDIO SPECIFICATIONS

### INTERNAL SCA GENERATOR PERFORMANCE

**Input Connector**

DB15 male (two inputs)

**Input Impedance**

600 ohms, balanced

**Input Level**

-12 dBu to 12 dBu for  $\pm 7.5$  kHz deviation

**Amplitude Response**

$\pm 0.2$  dB, 30 Hz to 7.5 kHz

**Pre-Emphasis**

0  $\mu$ s, 50  $\mu$ s, 75  $\mu$ s or 150  $\mu$ s

**Signal-to-Noise Ratio**

60 dB or better

**Frequency**

20 kHz to 99 kHz, adjustable in 1 Hz steps

**Modulation Type**

Narrow band FM or DSB-SC with maximum deviation of  $\pm 7.5$  kHz

**Injection Level**

0% to 20%, user adjustable

### INTERNAL RDS/ RBDS GENERATOR PERFORMANCE

**Input Connector**

DB9, RS-232 (DCE, 75 to 115.2 kbps)

**Frequency**

57 kHz  $\pm 0.03$  Hz

**Injection Level**

0% to 10%, user adjustable

**Programming**

ASCII, UECP (external or over IP)

**Supported Commands**

PI, PS, PTY, PTYN, TA, TP, MS, DI, RT, AF, ODA (Free-format)

### HD RADIO COMPATIBILITY

**Classic Implementation:** Optional Nautel HD MultiCast+ Importer/Exporter combined with Exgine card.

**Just Add Audio\*:** Optional Software-based Air Chain, including "Omnia for Nautel" FM and HD audio processing, Blend-Lock FM/HD Synchronization, Gen4 vExgine modulator, Gen4 vPorter Importer/Exporter and Air Chain Selector.

**Input Connectors**

RJ45 (LVDS IQ), BNC (GPS 10 MHz)

**Notes:**

Specifications established at rated power unless otherwise noted.

All measurements into 50 ohm resistive load.

AC input voltage at nominal level.



\*To achieve similar analog TPO as provided by HD PowerBoost, customers implementing Software-Based Air Chain with PAR2 can expect 1 dB lower digital injection levels.