

AUDIO SPECIFICATIONS

GENERAL

RF Output Power

Transmitter model number dependant
Capable of up to 700 W

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

RF Output Monitor

-39 dBc, BNC jack

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

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 Vp-p 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)

85 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 Vp-p 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

10,000 ohms, balanced by default (Internally configurable for either balanced or unbalanced)

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)

IMD Distortion

±0.05

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 ± 7.5 kHz deviation

Amplitude Response

± 0.2 dB, 30 Hz to 7.5 kHz

Pre-Emphasis

0 μ s, 50 μ s, 75 μ s or 150 μ 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 ± 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 ± 0.03 Hz

Injection Level

0% to 10%, user adjustable

Programming

ASCII, UECF (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.