



MRX4000 Plus Integrated Receiver

High Dynamic Range ENG Central Receiver Demodulator & Decoder

The MRX4000 Plus is an advanced, full featured digital and analog Central Receiver that offers all the features of the original MRX4000 Decoder - Demodulator, with the addition of new, high performance RF and IF subsystems that can maintain ENG link integrity in the most demanding situations.



The MRX4000 Plus is the ultimate choice for new ENG receive locations, and the perfect solution for upgrading existing sites with advanced digital capabilities.

The MRX4000 Plus meets both the current and the new 2 GHz BAS channel plans, and can integrate with most antenna control systems. Channel bandwidth, video deviation, and analog or digital modes can be locally and remotely switched between legacy and new band plans. ENG signal metrics as well as receiver alarms and diagnostics are available through a serial data port, or an Ethernet interface. User programmable presets may be accessed via the front panel, or through the remote interface.

The MRX4000 Plus provides these standard features for the BAS Transition:

- Analog FM Demodulation:
- COFDM DVB-T Demodulation
- Standard 2K Carrier Mode
- Optimized LMS-T Demodulation
- Fully inter-operable with MRC Digital Transmitters
- MPEG-2 SD Decoding (HD Optional)

Key Features

- Feature Seamlessly integrated Digital and Analog Central Receiver in a 1 RU shelf
- Full remote control via Ethernet or Serial interfaces to simplify remote management and troubleshooting
- Very high dynamic range that exceeds the tough demands of digital broadcasting
- Digital and Digital/Analog configurations available for all major broadcast applications
- SD and HD ready platform
- Works seamlessly with MRC's ENG and IP solutions

Typical Applications

- New ENG receive locations
- Upgrading existing sites with advanced digital capabilities



datasheet

at the heart of the action

General

Frequency Bands

- 1.99 to 2.5 GHz
- 2.3 to 2.7 GHz
- 6.4 to 7.1 GHz (requires external LNC)

RF Input Range

- 96 to 0 dBm

IF Outputs

- 70 & 900 MHz

IF/AGC Level Output

- +0 dBm (± 1 dB) - Analog
- 10 dBm (± 1 dB) Digital

Stability (RF-IF)

- ± 2.5 ppm

Standard IF Filter Bandwidths

- NTSC & PAL:
 - 1 = 6 MHz
 - 2 = 8 MHz
 - 3 = 10 MHz
 - 4 = 15 MHz

IF Linearity (IMR)

- >40 dB @ 70 MHz

Squelch Adjust

- ON/OFF
- Level (25 dB from threshold)

Audio Performance

Frequency Response

- 40 Hz to 15 kHz
- ± 1.0 dB
- 40 Hz to 10 kHz
- ± 0.5 dB

THD

- 0.5 % @ 1 kHz (75 kHz deviation)
- 2.0 % @ 1 kHz (200 kHz deviation)

Signal/Noise

- 68 dB (min)

Output Impedance

- 600 ohms balanced

Output Level (adjust)

- 0 dBm to +18 dBm - local/serial (+8 dBm - line level - nominal)

Audio Channel Crosstalk

- 60 dB

De-emphasis

- 50 μ S/75 μ S, flat

Power

- Power Supply
 - 90 to 264 VAC, 47 to 63 Hz
 - ± 24 VDC to ± 48 VDC

COFDM Demodulation

IF Input

- 70 MHz

Input Range

- -10 dBm to 20 dBm (-10 dBm nominal)

Bandwidth (Selectable)

- 6 MHz, 7 MHz, 8 MHz

Threshold

- C/N-within 2 dB of ETSI 300 744 Std.

COFDM Acquisition Speed

- 100 mSec (typical)

Modulation Type

- QPSK, 16QAM, 64QAM

Output

- DVB-ASI

Packet Length

- 188 bytes

Forward Error Correction (FEC)-Auto Detect

- 1/2, 2/3, 3/4, 5/6, 7/8

Guard Intervals-Auto Detect

- 1/16, 1/8, 1/4

Sub-carrier Frequency Input Tune Range

- 4.5 MHz to 8.59 MHz tunable in 5 kHz steps (local/serial control)

MPEG Decoder

Output

- SDI, Composite Video

Chroma Profile

- 4:2:2 / 4:2:0

Line Standard

- 525/625

GOP Structures

- Variable GOP

Horizontal Resolution (Selectable)

- 720, 704, 544, 352

Vertical Resolution

- 576 (625 lines)
- 480 (525 lines)

Bit Rates

- 4:2:0 1.5 Mbits - 15 Mbits
- 4:2:2 2.0 Mbits - 50 Mbits

Decoding Type

- MPEG II Layer 2

- Power Connector
 - SIEC320-C14
- Power Consumption
 - 26 Watts

Video Performance (with 15 MHz Filter)

Signal/Noise

- >68 dB (weighted per RS250C)

Signal/Hum

- >63 dB (weighted per RS250C)

Differential Phase

- 1 degree

Differential Gain

- 1%

Chroma/Luminance Gain

- 4%

Chroma/Luminance Delay

- ± 20 nS

Field Tilt

- 1%

Output Level

- Baseband Response:
 - 10 kHz to 8 MHz +0.5 dB
 - 8 MHz to 12 MHz < 2dB
- Audio Channels:
 - Demodulation of Four Independent Sub-carriers

Bit Rates

- 384 k/Stereo Pair

Sampling

- 48 kHz

Composite Video Output

- NTSC (w/ and w/o pedestal)
- PAL

Front Panel Controls & Displays

Selection Buttons

- SEL (Select), ESC (Escape)

Navigation Buttons

- Left, Right, Up, and Down

LED

- Power, Alert, and Alarm

LCD Display

- Four line

Physical & Environmental

- Weight
 - 7.0 lbs (3.2 kg)
- Operational:
 - 10°C to +50°C (+50°F to 122°F)

Wayside Channel

Embedded Data Channel on MPEG Module

- Uses the RS-232 port for DCE Data Path

Supported Data Rates

- 1200, 2400, 4800, 9600, 19200, 38400

Analog Audio & Video Demodulator

IF Input

- 70 MHz

Level Input

- 0 dBm to 2 dBm (0 dBm nominal)

Impedance

- 75 ohms

Composite Outputs

- Switched (Baseband/video)

Video Output

- 1 Vpp (75 ohms) 525 /625 line

Return Loss

- >26 dB

Plug-in Video Low Pass Filters

- 4.2, 5.0, or 5.5 MHz

Video Response

- ± 0.25 dB @within video filter bandwidth

Connections

2-pin Weidmuller

- +24 VDC Output @ 100 mA

3-pin Weidmuller

- Audio (4 Channels)

9-pin "D"

- Wayside Channel
- Remote / LQ (standard)
- Summary Alarm
- Configurator (front panel)

BNC

- Video Output
- Video Monitor
- Baseband Output
- ASI Output
- SDI Output
- 900 MHz Monitor Output
- IF Input
- 70 MHz IF Output

"N" Type

- RF Input

RJ45

- Remote / LQ (optional)

- Relative Humidity
 - 95% @ +10°C to +40°C (+50°F to 104°F)