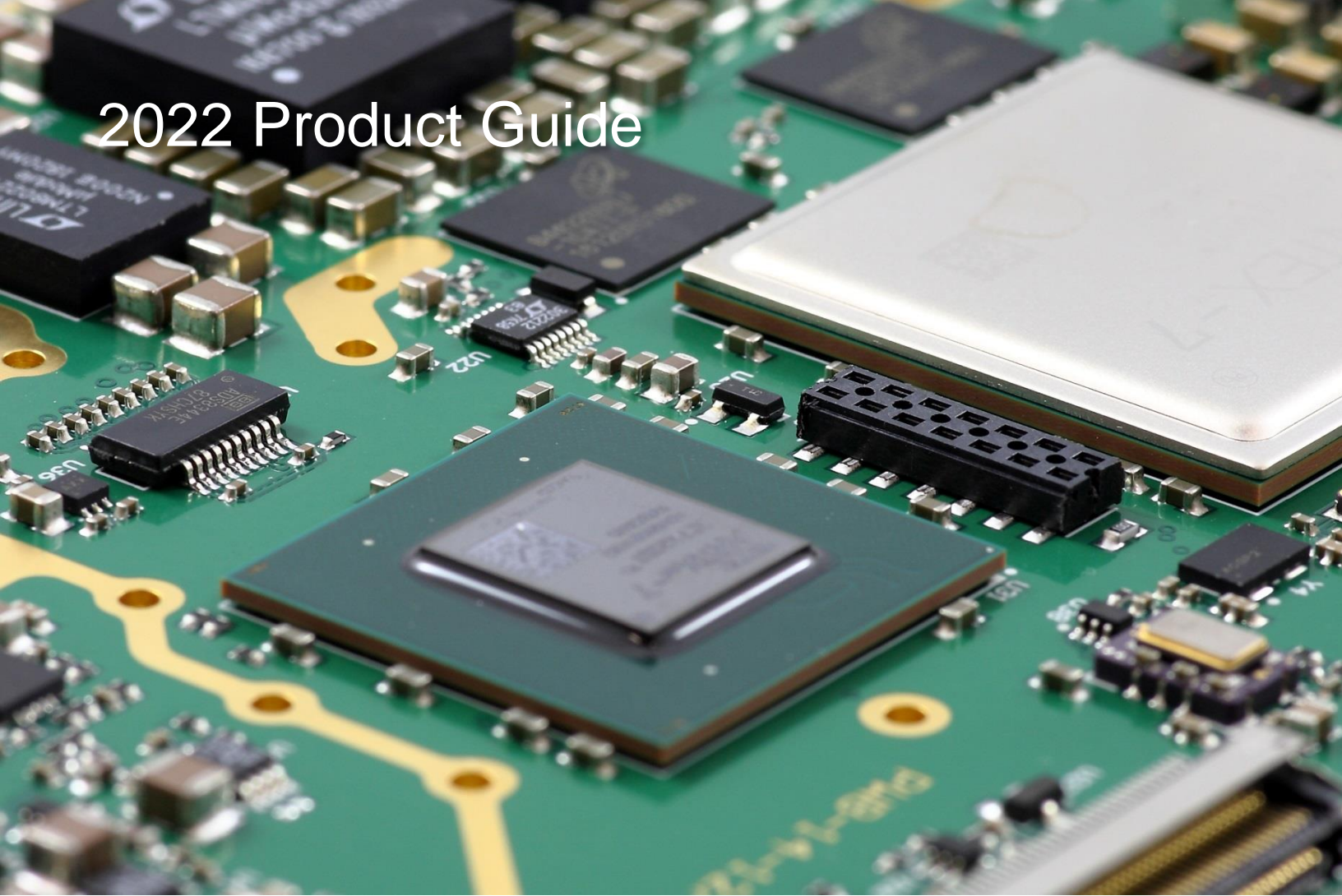


# 2022 Product Guide



Midwest Microwave Solutions Inc. designs and manufactures innovative and complex RF tuner, digitizer, converter, and transmitter products for SIGINT, COMINT, ELINT, and SDR applications.

The MMS engineering team has over 200 years of combined experience. MMS employs 30 Team Members, including 14 engineers. The core team has a long history of success developing state of the art receivers, tuners and DSP engines.

MMS's RF products feature miniature, high dynamic range front ends tunable from 100 kHz-70GHz that include embedded preselect filters and low noise, fast tuning synthesizers. The RF digitizer products feature open-architecture, customer flash-able DSP's & FPGA's, precision time tagging, and up to 1000MHz of digitized spectrum.

Midwest Microwave Solutions also provides very Quick Reaction Capability (QRC) to support customers as requirements and threats continually change.

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# NEW ULTRA-WIDEBAND PRODUCTS

# ULTRA-WIDEBAND TUNERS AND CONVERTERS (BW=1GHz+)

## **UWBT-126G-D-2G**

### **Ultra-Wideband Dual Channel Microwave Tuner (4 GHz BW)**

- 2-26 GHz tuning range
- Independent or phase coherent tuning
- Low Power: <25 W
- Fixed sub-octave preselectors
- Fast 500 usec tune time
- Super Wideband IF Bandwidth
  - 2000 MHz BW, centered at 4000 MHz
  - User selectable 2000, 1000, 500, and 250 MHz IF bandwidths
- -100 dBc/Hz phase noise @ 100 kHz offset
- <0.5° rms phase jitter, typ (10kHz-10 MHz)
- <14 dB noise figure (typ.)
- 40 dB Gain (other options available)
- Manual Gain Control (AGC optional)
- Network controlled (10/100 Mb Ethernet)



---

## **UWBT-126G-D**

### **Ultra-Wideband Dual Channel Microwave Tuner (2 GHz BW)**

- 1.5-26 GHz tuning range
- Independent or phase coherent tuning
- Low Power: <25 W
- Fixed and tracking preselectors
- Fast 500 usec tune time
- Super Wideband IF Bandwidth
  - 1000 MHz BW, centered at 1875 MHz
  - User selectable 1000, 500, 250, and 100 MHz IF bandwidths
- -100 dBc/Hz phase noise @ 100 kHz offset
- <0.5° rms phase jitter, typ (10kHz-10 MHz)
- <14 dB noise figure (typ.)
- 40 dB Gain (other options available)
- Manual Gain Control (AGC optional)
- Network controlled (10/100 Mb Ethernet)



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## **UWBT-140G-D**

### **Ultra-Wideband Dual Channel Network Controlled Microwave Tuner**

- 1.0 to 40.5 GHz input frequency range
- IF output at 1850 MHz
- Suitable for sampling at 2.5GSPS
- 1 GHz IF bandwidth
- 0.6° rms phase jitter (10 kHz - 10 MHz)
- Low power: <40 W
- Fixed / Tracking sub-octave preselect filters
- Fast 500  $\mu$ s tune time
- Low 16 dB noise figure (typical)
- 40 dB Gain (other options available)
- Automatic & manual gain control
- -5 dBm IIP3 (typ.)



## **UWBT-2640G**

### **Ultra-Wideband Network Controlled Microwave Tuner**

- 26 to 40.5 GHz input frequency range
- IF output at 1825 MHz
- Suitable for sampling at 2.5GSPS
- 1 GHz IF bandwidth
- 0.6° rms phase jitter (10 kHz - 10 MHz)
- Low power: <25 W
- Fixed sub-octave preselect filters
- Fast 500  $\mu$ s tune time
- Low 16 dB noise figure (typical)
- 40 dB Gain (other options available)
- Automatic & manual gain control
- -10 dBm IIP3 (typ.)



---

## **UWBT-140G**

### **Ultra-Wideband Network Controlled Microwave Tuner**

- 1 to 40.5 GHz input frequency range
- IF output at 1825 MHz
- Suitable for sampling at 2.5GSPS
- 1 GHz IF bandwidth
- 0.6° rms phase jitter (10 kHz - 10 MHz)
- Low power: <25 W
- Fixed sub-octave preselect filters
- Fast 500  $\mu$ s tune time
- Low 16 dB noise figure (typical)
- 40 dB Gain (other options available)
- Automatic & manual gain control
- -10 dBm IIP3 (typ.)



---

## **UWBT-123G**

### **Ultra-WideBand Microwave Tuner**

- 1.5-22.5GHz tuning range
- Low Power: <12 W
- Fixed and tracking preselectors
- Fast 500usec tune time
- Super Wideband IF Bandwidth
  - 1200MHz BW, centered at 1550MHz
  - User selectable 1200, 500, 250, and 100MHz IF bandwidths
- -100 dBc/Hz phase noise @ 100kHz offset
- 2.0° rms phase jitter, typ (10Hz-10MHz)
- 17 dB noise figure (typ.)
- 20 dB Gain (other options available)
- Manual Gain Control (AGC optional)
- High +6 dBm IIP3 (typ.)
- Network controlled (10/100 Mb Ethernet)





## **PST-144G-D-1000**

### **1-44GHz Ultra-Wideband Dual Channel Tuner**

- 1 to 44GHz tuning range
- Two complete phase coherent RF tuners
- IF output at 1850 MHz
- Suitable for sampling at 2.5GSPS
- Multiple IF outputs / BWs
  - 1.85GHz analog IF
    - 1000/500/250/125MHz BWs
  - 140MHz analog IF
    - 80/60/50/40/30/20MHz BWs
  - 140MHz digitized IF
    - 16MHz BW
- 0.5° rms phase jitter (10kHz-10MHz)
- Low power: <55W
- Fixed and tracking preselectors
- Low 16dB noise figure



## **WBC-118G-2-VPX**

### **Ultra-WideBand 3U OpenVPX Microwave UP/DWN Converters**

- Two Up/Down Converter Pairs
- Phase Coherent LO's per Up/Down Pair
- 2-18GHz tuning range
- Ultra-Wide IF Bandwidth
  - 1000 MHz BW, centered at 1850MHz
- Optimized for 2.5GspS Sampling ADCs
- Low Power: <30 W
- Low 14 dB NF (downconverter)
- +5dBm Output P1dB (upconverter)
- 20 dB Gain (other options available)
- 40dB Manual Gain Control
- High 0 dBm IIP3 (typ.)
- 1000Base-T Ethernet Control over VPX backplane
- Vita 67 Configurable RF connectors
- SOSA Aligned Interface
- Ideal Front End for RFSoc based systems



## **MT-4070G**

### **40-70GHz Millimeter Wave Downconverter**

- 40-70GHz Down-conversion
  - 2.4-17.6G Down-converted output
- 30 MHz to 26.5 GHz bypass path
- Fixed sub-octave preselector filtering
- 4 dB gain typical
- Low phase noise fixed CRO LO's
- 1.0° rms phase jitter typ. (10 kHz - 10 MHz)
- Low 14 dB noise figure
- High +0 dBm IIP3
- High +30 dBm IIP2
- Compact rugged package
- Low power: 15W typ.
- Mini USB controlled



# ULTRA-WIDEBAND RF DIGITIZERS (BW=1GHz+)

## WRX-218G-1000

### Ultra-WideBand Microwave Digital Receiver

- Complete Ultra-Wideband RF tuner/digitizer
- 2 to 18 GHz tuning range
- 1 GHz Max Digitized BW
- 1 Gb Ethernet Control and Spectrum
- 40 Gb I/Q Data Transport (QSFP+)
- Jumbo I/Q Packet Transport
- Independent Client Destinations
- Integrated FFT and SCAN functions
- User Configurable Multi-Stream Architecture
- Precision Time Tagged I/Q Data Streams
- Programmable FFT/SCAN options
- VITA-49 and SDDS data formats
- Low power: <35 W
- Fixed and tracking preselectors
- Fast tune times (< 300  $\mu$ s)
- Low noise figure (< 17 dB)



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## WRX-2640G-1000

### Ultra-WideBand Microwave Digital Receiver

- Ultra-Wideband RF tuner/digitizer
- 26 to 40 GHz tuning range
- 1 GHz Max Digitized BW
- Selectable output I/Q component data width 8, 10, 12, 14, and 16-bit
- 1.25 GSPS I/Q output
- 1 Gb Ethernet Control and Spectrum
- 40Gb Ethernet I/Q Data Transport (QSFP+)
- Supports Jumbo I/Q Packet Transport
- Independent Client Destinations
- Integrated FFT and SCAN Functions
- User Configurable Multi-Stream Architecture
- Precision Time Tagged I/Q Data Packets
- Flexible FPGA/DSP Processing Architecture
- Programmable FFT/SCAN Parameters
- Spectrum Display Monitoring
- VITA-49 and SDDS data formats
- 1.0° rms IF phase jitter (10 kHz - 10 MHz)
- Low power: <50 W
- Fixed preselectors
- Fast tune times (< 500  $\mu$ s)
- Low noise figure (< 16 dB)



## **WRX-140G-1000**

### **Ultra-WideBand Microwave Digital Receiver**

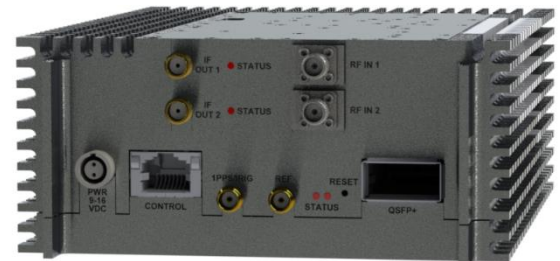
- Ultra-Wideband RF tuner/digitizer
- 1 to 40 GHz tuning range
- 1 GHz Max Digitized BW
- Selectable output I/Q component data width 8, 10, 12, 14, and 16-bit
- 1.25 GSPS I/Q output
- 1 Gb Ethernet Control and Spectrum
- 40Gb Ethernet I/Q Data Transport (QSFP+)
- Supports Jumbo I/Q Packet Transport
- Independent Client Destinations
- Integrated FFT and SCAN Functions
- User Configurable Multi-Stream Architecture
- Precision Time Tagged I/Q Data Packets
- Flexible FPGA/DSP Processing Architecture
- Programmable FFT/SCAN Parameters
- Spectrum Display Monitoring
- VITA-49 and SDDS data formats
- 1.0° rms IF phase jitter (10 kHz - 10 MHz)
- Low power: <50 W
- Fixed preselectors
- Fast tune times (< 500  $\mu$ s)
- Low noise figure (< 16 dB)



## **EWRX-126G-D**

### **Dual Channel, Ultra-WideBand Microwave Tuner**

- 1.0-26.5GHz input frequency range
- Two complete RF Tuners
- Independent or phase coherent tuning
- 1 GHz Digitized BW per RF Tuner
- User selectable 1000, 500, 250, and 100 MHz IF bandwidths
- 1.25 GSPS I/Q output
- Selectable output I/Q component data width 8, 10, 12, 14, 16-bit
- 1Gb Ethernet Control and Spectrum
- 100Gb Streaming Data Interface (QSFP28)
- Multiple Independent Client IQ Data Destinations
- Integral FFT and SCAN functions
- User Configurable Multi-Stream Architecture
- Spectrum Display Monitor
- Low Power: <60W
- 1GHz standard Analog IF BW
- VITA-49 and SDDS data formats
- <0.5° rms phase jitter typ. (10 kHz - 10 MHz)
- Low 14 dB noise figure
- 40dB Manual Gain Control



# ULTRA-WIDEBAND DIGITAL TRANSMITTERS (BW=1GHz+)

## **ETRX-118G**

### **Ultra-WideBand Microwave Digital Transceiver**

- 1 to 18 GHz tuning RX/TX
- Dedicated RX and TX converters
- 1 GHz Max Digitized BW
- 1250 MSPS I/Q RX/TX data
- 1 Gb Ethernet Control and Spectrum
- 100Gb I/Q Data Transport (QSFP28)
- Jumbo I/Q Packet Transport
- Independent RX Client Destinations
- User Configurable Multi-Stream Architecture
- Spectrum Display Monitoring
- VITA-49 and SDDS data formats
- 0.5° rms IF phase jitter (10 kHz - 10 MHz)
- Low power: <50 W
- Fixed and tracking input/output filtering
- Fast tune times (< 500  $\mu$ s)
- Low noise figure (< 17 dB)



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# ULTRA-WIDEBAND DIGITAL SIGNAL PROCESSORS (40Gb/100Gb)

## **DPU-40/ DPU-100**

### **Ultra-WideBand Digital Signal Processing Unit**

- High Performance Digital Signal Processing (DSP) Platform supporting up to 100Gb Ethernet Signal Transport
- Up to 1000MHz bandwidth (1250 MSPS) digital input streams with Jumbo Packet Transport and Programmable Data Width Selection (8, 10, 12, 14, or 16-bit)
- 1250 MSPS I/Q 16-bit data Components
- 1Gb Ethernet Control Interface supporting field reprogramming and optional PSD Channel Monitoring
- Optional Expansion for Observation Monitoring from external RF-IF receiver.
- 10/40/100Gb IQ Data Interface (QSFP28)
- Multiple Independent Client Addresses
- Integral FFT and SCAN Functions
- Precision or Relative Time Data Processing
- Flexible FPGA/DSP Hardware Architecture for Spectrum Display/Signal Detection and Analysis
- Variable Data Width Selections (8, 10, 12, 14, or 16-bit complex sample components)
- Low Power: <45W
- Supports Input Data Formats for VITA-49 and SDDS
- Software Field Programmability Supporting User Developed FPGA Firmware (XCKU11P) and DSP (TI C6457) Hardware Elements.
- Software Framework Supporting Application Specific Capability Development.



# 10GbE DIGITIZER PRODUCTS

## ***XR-40GLX-D***

### ***Dual Channel Microwave Digital Receiver***

- 100MHz - 40GHz tuning range
- Dual Channel
- Phase Coherent or Independent Modes
- 1Gb Control and Data Ethernet Port
- 10Gb Data Interface (SFP+)
- 100 MSPS streaming I/Q data
- Precision Time Tagging
- Low Power: <34W (<26.5GHz), <42W (>26.5GHz)
- Multiple IF / BW's options
- Analog IF Outputs (user selectable BW's of 20, 30, 40, 50, 60, 70, or 80MHz)
- Digitized IF BW of up to 80 MHz
- VITA-49 and SDDS data formats
- Low Phase Noise (0.7° typ. jitter, 1-40GHz)
- Low 16 dB noise figure
- Adjustable 60dB RF gain
- Manual and Automatic Gain Control



## ***XR-44GLX-D-100***

### ***Dual Channel Microwave Digital Receiver***

- 100 MHz – 44 GHz tuning range
- Dual Channel
- Phase Coherent or Independent Modes
- 1 Gb Control and Data Ethernet Port
- 10 Gb Data Interface (SFP+)
- 125 MSPS streaming I/Q data
- Precision Time Tagging
- Low Power: <40 W
- 187.5 MHz IF Center Frequency
- 100 MHz Analog IF BW
- 100 MHz Digitized BW
- VITA-49 and SDDS data formats
- Low Phase Noise (0.7° typ. jitter, 1-40 GHz)
- Low 16 dB noise figure
- Adjustable 60 dB RF gain
- Manual and Automatic Gain Control





# VHF/UHF TUNERS

# RS-232 CONTROLLED PRODUCTS

## **MT-3001-LP**

### **30-3000MHz Xtremely Low Power RF Tuner (1.25W)**

- 30-3000MHz tuning range
- Low Power <1.25W
- Sub-octave preselection
- Selectable IF filter BW's
- -100 dBc/Hz phase noise, 100kHz offset
- Low 12 dB noise figure, -10 dBm input IP3
- Miniature 9 cubic inches, 8 oz. package
- 



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## **MT-3001**

### **Ultra-Miniature 3GHz RF Tuner (2.5W, 9cu in, 8oz)**

- 30-3000MHz tuning range
- HF bypass: 2-30MHz to IF Out
- Low Power 2.5W
- Tracking preselector
- Fast 300usec tune time
- 20 MHz<sup>1</sup> bandwidth std, 70 MHz IF Out
- -100 dBc/Hz phase noise, 100kHz offset
- Low 12 dB noise figure, -3 dBm input IP3
- Miniature 9 cubic inches, 8 oz. package



**(3.6V and 40MHz BW versions available!)**

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## **MT-3002**

### **Ultra-Miniature Dual Channel 3GHz RF Tuner (2.5W/ch. 14cu in, 12oz)**

- **Two wideband tuners in a single miniature package**
- **Phase coherent or independent modes (software selectable)**
- 30-3000MHz frequency range
- HF bypass to IF Out (2-30MHz)
- Low Power 2.5W per channel
- Tracking preselector
- Fast 300usec tune time
- 20 MHz<sup>1</sup> bandwidth std, 70 MHz IF
- -100 dBc/Hz phase noise, 100kHz offset
- Low 12 dB noise figure
- Miniature 14 inch<sup>3</sup>, 12 oz. package



**(40MHz BW versions available!)**

## **MT-6000**

### **Miniature 30MHz-6GHz RF Tuner (14 cu in) compact size!**

- 30-6000MHz tuning range
- Low Power 5.5W
- Tracking preselector
- Fast 300usec tune time
- 70MHz IF Output with up to 40MHz BW
- -100 dBc/Hz phase noise, 100kHz offset
- Low 13 dB noise figure, high +3 dBm input IP3
- Power Saving Mode
- Miniature 14 cubic inches, 10 oz. package



## **MT-6000-D**

### **Ultra-Miniature 30MHz-6GHz Dual Channel RF Tuner**

- Two wideband RF tuners in a single miniature package
- Phase Coherent or Independent tuning modes
- 30-6000MHz tuning range
- Low Power 6W/Ch
- Fixed and Tracking Preselectors
- Fast 300usec tune time
- 70MHz IF Output with up to 40MHz<sup>1</sup> BW
- -100 dBc/Hz phase noise, 100kHz offset
- Low 13 dB noise figure, high +3 dBm input IP3
- Miniature 30 inch<sup>3</sup>, 25 oz. package



## **MT-6600**

### **Ultra-Miniature Wideband Tuner (7cu in)**

- 30-6000MHz tuning range
- Low Power < 3.5W
- Tracking preselector
- Fast 300usec tune time
- 150MHz IF Output with up to 80MHz BW
- -100 dBc/Hz phase noise, 100kHz offset
- Low 13 dB noise figure, high +3 dBm input IP3
- Power Saving Mode
- Miniature 7 cubic inch, 6 oz. package



## **MX-6631**

### **3 Down-converter Channels, 1 Up-converter Channel**

- Coverage from 30MHz to 6000MHz
- 80MHz IF BW
- IF input/outputs at 150MHz
- 3 Independent or coherent down-converters
- 1 up-converter
- Low Power <15W typical
- Ability to power down unused channels
- Miniature packaging for modular fan-less installations
- Software GUI for control and demonstration





# 10/100Mb ETHERNET CONTROLLED PRODUCTS

## **NT-6640-AGC**

### **Network Controlled Quad Channel Tuner**

- 30-6000 MHz tuning range
- Four complete tuners
- Configurable to be Independent or Phase Coherent
- 80 MHz output bandwidth
- 300  $\mu$ s tune time
- -95 dBc/Hz phase noise, 100 kHz away
- 10/100 MB Ethernet



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## **NT-6680**

### **Network Controlled Eight Channel Tuner**

- 30-6000MHz tuning range
- Eight complete tuners
- Low power
- Ultra-compact
- Configurable to be Independent or Phase Coherent
- 40MHz output bandwidth standard
  - 80MHz bandwidth option
- 300 $\mu$ s tune time
- -95dBc/Hz phase noise, 100kHz away
- 10/100MB Ethernet





# MICROWAVE TUNERS

# RS-232 CONTROLLED PRODUCTS

## **MT-1870G “SkyHawk”**

### **Ultra-Miniature 30MHz to 70GHz Downconverter**

- 18-70GHz Down-converting
- 30MHz-18GHz Bypass
- 12dB Noise Figure typical
- 0.6° rms phase jitter, typ <40GHz (10kHz-10MHz)
- 1° rms phase jitter, typ >40GHz (10kHz-10MHz)
- <13Watts typical @ 12V
- Compact rugged package
- **USB 2.0 controlled**



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## **MT-18GLX**

### **Wideband Microwave Tuner**

- 0.03-18 GHz Tuning Range
- IF Out at 150 MHz
- Low Power <6 W
- Fast 300  $\mu$ s Tune Time
- 0.30° rms Phase Jitter typical
- Low 14 dB Noise Figure
- 60 dB Gain
- Automatic & Manual Gain Control
- High -3 dBm IIP3 (at 20 dB gain)
- 80 MHz Bandwidth
- Serial Control (RS-232)



# 10/100Mb ETHERNET CONTROLLED PRODUCTS

## **NT-140G**

### **800MHz to 40GHz Network Controlled Microwave Tuner**

- 800MHz-40GHz tuning range
- Low Power: 0.8-18GHz <20W  
18-26.5GHz <23W  
26.5-40GHz <25W
- Fixed and tracking preselectors
- 60 dB gain, with AGC/MGC
- Fast 50usec tune time (F1-F2 scan typ)
- 10-60 MHz BW's: 70MHz IF (std)
- 20-80 MHz BW's,(-140 MHz IF option)
- 0.5° rms phase jitter, typ <18GHz (10kHz-10MHz)
- Low 14 dB noise figure, high 0 dBm input IP3



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## **NT-20GLX**

### **30MHz to 20GHz Network Controlled Microwave Tuner**

- 30MHz-20GHz tuning range
- Low Power: 7W
- User Selectable BW at 140 MHz
  - 20, 30, 40, 50, 60, 70, or 80 MHz
- Fixed 80 MHz BW at 150 MHz
- 0.4° RMS Phase Jitter
- Automatic & Manual Gain Control
- Ethernet Control
- SNMP Access to SOH/SOM
- Non-volatile Memory Saving of Settings



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## **WBT-126G**

### **800MHz to 26.5GHz Network Controlled Wideband Microwave Tuner**

- 800MHz-26.5GHz tuning
- Low Power: <18W
- Fixed and tracking preselectors
- Fast 500usec tune time
- Wideband IF Bandwidth
  - **500 MHz BW, centered at 1000MHz**
- 0.5° rms phase jitter typical (10kHz-10MHz)
- 60 dB gain, with AGC/MGC
- Low 14 dB noise figure, high 0 dBm input IP3



## **WBT-126G-D**

### **800 MHz to 26.5GHz Dual Channel Phase Coherent Wideband Microwave Tuner**

- Two complete RF Tuners
- 800MHz–26.5GHz tuning
- Low power <24W
- Fixed and tracking preselectors
- Fast 50usec tune speed (F1-F2 scan typ)
- Wideband IF Bandwidth
  - **500 MHz BW, centered at 1000MHz**
- 0.5° rms phase jitter typical (10kHz-10MHz)
- Low 14 dB noise figure, high 0 dBm input IP3



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## **WBT-140G-D**

### **Wideband Dual Channel Network Controlled Microwave Tuner**

- Two complete phase coherent RF tuners
- 1 to 40GHz tuning range
- Wideband IF Bandwidth centered at 1GHz
  - 500/250/125MHz selectable BW
- 0.5° rms phase jitter (10kHz-10MHz)
- Low power: <35W
- Fixed and tracking preselectors
- Fast 500µs tune time
- Low 16dB noise figure, 0dBm IIP3
- 60dB Gain
- Automatic & manual gain control



# 10/100Mb ETHERNET CONTROLLED TUNERS WITH SPECTRAL DISPLAY PRODUCTS

## ST-140G

### 1-40GHz Wideband Microwave Tuner with Spectral Display

- 800MHz–40GHz tuning range
- Low Power: <30W
- Fixed and tracking preselectors
- Fast 500usec tune time
- Low Phase Noise (0.6° typical jitter)
- Low 16 dB noise figure, high 0dBm input IP3
- 60 dB Gain with AGC/MGC
- 32 MHz digitized bandwidth



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## DST-126G-D

### 1-26.5GHz Wideband Dual Channel Microwave Tuner with Spectral Display

- Two complete RF tuners
- 800MHz –18GHz tuning range
- Low Power: <26W
- Fixed and tracking preselectors
- Fast 500usec tune time
- User selectable IF BW 's
- Low 14 dB noise figure with 60 dB gain
- 30 MHz digitized bandwidth
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## DST-140G-D

### 1-40GHz Wideband Dual Channel Tuner with Spectral Display

- Two complete RF tuners
- 800MHz – 40GHz tuning range
- Low Power: <38W
- Fixed and tracking preselectors
- Fast 500usec tune time
- User selectable IF BW 's
- Low 14 dB noise figure with 60 dB gain
- Low Power Digital Signal Processor
- 33 MHz digitized bandwidth



## **DST-626G-ULN**

### **Ultra-Low Noise Wideband Dual Channel Tuner with Spectral Display**

- 6-26GHz RF Tuning Range
- Two phase coherent tuners
- IF Out at 140/150/1000/1350MHz
- 20, 30, 40, 50, 60, 70, 80, & 500MHz BW's
- Low Power 23W
- Fast 300 $\mu$ s Tune Time
- 0.2° rms Phase Jitter, typ (6-18GHz)
- 0.3° rms Phase Jitter, typ (18-26GHz)
- Low 14dB Noise Figure
- Automatic & Manual Gain Control
- High -3dBm IIP3 (at 20dB gain)
- Spectral Display of Each Channel
- 80MHz Digitized Display Bandwidth
- 10/100BASE-T Ethernet



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## **PST-140G-D**

### **“Performance Series” 1-40GHz Wideband Dual Channel Tuner**

- Two complete phase coherent RF tuners
- 1GHz – 40GHz tuning range
- Low Power: <48W
- Multiple IF outputs / BWs
  - 1GHz analog IF with 500/250/125MHz BWs
  - 140MHz analog IF with 80/60/50/40/30/20MHz BWs
  - 140MHz digitized IF with 16MHz BW
- Fixed and tracking preselectors
- Fast 500 $\mu$ sec tune time
- Low 16dB noise figure with 60 dB gain



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## **QST-626G**

### **6-26.5GHz Wideband Four Channel Tuner with Spectral Display**

- 6-26GHz RF Tuning Range
- Four (4) Complete RF tuners – 2 coherent pairs
- IF Outputs at 140/150/1350MHz
- IF BW's from 20MHz to 500MHz
- Low Power: 20W
- Fixed and tracking preselectors
- Low 14dB noise figure with 60 dB gain
- 80MHz Digitized Display Bandwidth



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## **TN-26GLX**

### **30MHz-26GHz Wideband Tuner with Spectral Display**

- 30MHz-26GHz RF Tuning Range
- IF Out at 140/150MHz (80MHz BW)
- Low Power: <10W
- Fixed and tracking preselectors
- Low 14dB noise figure, with 60 dB gain
- 80MHz Digitized Display Bandwidth



## **TN-26GLX-D**

### **30MHz-26GHz Dual Channel Wideband Tuner with Spectral Display**

- 30MHz-26GHz RF Tuning Range
- **Phase coherent or independent modes**
- IF Out at 140/150MHz
- Low Power: <15W
- Fixed and tracking preselectors
- Low 14dB noise figure with 60 dB gain
- 80MHz Digitized Display Bandwidth



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## **TN-26GLX-D-ULN**

### **Ultra-Low Phase Noise, Dual Channel Wideband Tuner With Spectral Display**

- 30MHz-26.5GHz RF Tuning Range
- Dual Channel
- Phase Coherent (.03-26.5GHz) or Independent Mode (.03-18GHz)
- IF Out at 140/150MHz
- Fast 300 $\mu$ s Tune Time typical
- Ultra-Low Phase Jitter in Coherent Mode
  - 0.10° rms max (.03-6GHz)
  - 0.20° rms max (6-26GHz)
- Low 14dB Noise Figure
- 60dB Gain
- Automatic & Manual Gain Control
- High -3dBm IIP3 (at 20dB gain)
- Low Power Digital Signal Processor
- Spectral Display
- 80MHz Digitized Display Bandwidth
- FFT, SCAN, Outputs
- 10/100BASE-T Ethernet
- Software GUI's and Support Utilities







# VHF/UHF DIGITIZERS

# 1GbE DIGITIZER PRODUCTS

## **MSDD-3000-PPS**

### **Miniature VHF/UHF Digitizer with Precision Time Tagged Data Outputs**

- 30-3000MHz tuning range
- Optional 6GHz frequency extender
- 25 MSPS I/Q data 16-bit at 20 MHz BW
- High Dynamic Range
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- Altera Cyclone II FPGA with TI 6455 DSP
- FFT, SCAN, IQ and DET Outputs
- SDDS or Vita-49 data transport formats
- Miniature 24 cubic inches, 16 oz. package
- 1PPS or IRIG-B 002 timing input



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## **MSDD-3000EX**

### **Miniature wideband VHF/UHF Digitizer with Enhanced BW and FPGA**

- 30-3000MHz tuning range
- Optional 6GHz frequency extender
- 25 MSPS I/Q data 16-bit at 20 MHz BW
- **50 MSPS I/Q 8-bit data at 40 MHz BW**
- High Dynamic Range
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- **Altera Cyclone IV FPGA with TI 6455 DSP**
- FFT, SCAN, IQ and DET Outputs
- **Up to 32 Digital Down Converters (DDCs)**
- SDDS or Vita-49 data transport formats
- Miniature 24 cubic inches, 16 oz. package
- 1PPS or IRIG-B 002 timing input



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## **MSDD-3001-XLP**

### **Miniature VHF/UHF Low Power Digitizer (25MSPS and 100MSPS options)**

- Low Power (<6W)
- 30-3000MHz tuning range
- Up to 20 MHz digitized bandwidth
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- Altera Cyclone V FPGA
- TI 6424DSP
- FFT, SCAN, IQ and DET Outputs
- **Up to 32 Digital Down Converters (DDCs)**
- SDDS or Vita-49 data transport formats
- Miniature package
- 1PPS or IRIG-B 002 timing input



## **MSDD-6000-PPS**

### **Miniature VHF/UHF Digitizer with Precision Time Tagged Data Outputs**

- 30-6000MHz tuning range
- Up to 20 MHz digitized bandwidth
- 25 MSPS I/Q data 16-bit at 20 MHz BW
- High Dynamic Range
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- Altera Cyclone II FPGA with TI 6455 DSP
- FFT, SCAN, IQ and DET Outputs
- SDDS or Vita-49 data transport formats
- Miniature 24 cubic inches, 16 oz. package
- 1PPS or IRIG-B 002 timing input



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## **MSDD-6000EX**

### **Miniature wideband VHF/UHF Digitizer with Enhanced BW and FPGA**

- 30-6000 MHz tuning range
- **Up to 40 MHz digitized bandwidth**
- 25 MSPS I/Q data 16-bit at 20 MHz BW
- 50 MSPS I/Q 8-bit data at 40 MHz BW
- High Dynamic Range
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- **Altera Cyclone IV FPGA with TI 6455 DSP**
- FFT, SCAN, IQ and DET Outputs
- **Up to 32 Digital Down Converters (DDCs)**
- SDDS or Vita-49 data transport formats
- Miniature 24 cubic inches, 16 oz. package
- 1PPS or IRIG-B 002 timing input



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## **MSDD-0660D-V**

### **30MHz-6GHz Dual Channel Phase Coherent RF Digitizer**

- 30-6000 MHz tuning range
- **Dual Channel capability**
- **Independent or Phase Coherent LO's**
- 25/33.3/50MSPS streaming I/Q data
- Precision Time Tagging
- Flexible FPGA/DSP Architecture
- Software definable FFT/DDC options
- Fast 300usec tune time
- 30 MHz<sup>1</sup> max bandwidth
- -105 dBc/Hz phase noise, 100kHz away
- Dual 10/100/1000 Ethernet
- Vita-49 and SDDS data outputs available



## **MSDD-6600**

### **Ultra-Miniature Low Power Digital Receiver**

- 30-6000MHz tuning range
- Less than 10W
- Up to 40 MHz digitized bandwidth
- Tracking Preselector
- Fast 300usec tune time
- Up to 64 Digital Down Converters (DDC's)
- 8 user programmable GPIO lines



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## **RGD-6600**

### **Ruggedized Ultra-Miniature Low Power Digital Receiver**

- 30-6000MHz tuning range
- Less than 10W
- Up to 40 MHz digitized bandwidth
- Tracking Preselector
- Fast 300usec tune time
- Up to 64 Digital Down Converters (DDC's)



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## **RGD-6600-D**

### **Ruggedized Miniature Dual Channel Digital Receiver**

- Low Power <14W streaming
- Ruggedized Miniature package
- Dual Channel
- 30-6000 MHz tuning range
- Up to 40 MHz digitized bandwidth
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 300  $\mu$ sec tune time
- Precision Time Tagging
- Altera Cyclone V FPGA
- TI C64+ DSP
- Streaming data architecture software
- FFT, SCAN, IQ and AM/FM Demodulation
- Software definable FFT/SCAN/DDC options
- Up to 64 Digital Down Converters (DDCs)
- Variety of FPGA loads
- SDDS or Vita-49 data transport formats
- 10/100/1000BASE-T Ethernet Interface
- 1PPS and IRIG-B 002 timing input



## **MSDD-6600-D**

### **Ultra-Miniature Dual Channel Receiver**

- 30-6000MHz tuning range
- Independent or Coherent Tuning
- Less than 15W
- **Up to 40 MHz Digitized Bandwidth**
- **Fast 300usec tune time**
- Precision Time Tagging
- Software definable FFT/DDC options
- Up to 64 Digital Down Converters (DDC's)



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## **MSDD-6000LX / 8000LX**

### **Miniature wideband VHF/UHF Digitizer**

- **Up to 8GHz coverage in same package as MSDD-3000**
- 30-6000/8000MHz tuning range
- 25 MSPS I/Q data 16-bit at 20 MHz BW
- **50 MSPS I/Q 8-bit data at 40 MHz BW**
- High Dynamic Range
- -100 dBc/Hz phase noise, 100kHz away
- Tracking preselector
- Fast 500 usec tune time
- Precision Time Tagging
- **Altera Cyclone V FPGA with TI 6455 DSP**
- FFT, SCAN, IQ and DET Outputs
- **Up to 64 Digital Down Converters (DDCs)**
- SDDS or Vita-49 data transport formats
- 1PPS or IRIG-B 002 timing input



# 10GbE DIGITIZER PRODUCTS

## **RX-6200**

### **Dual Channel RF Digital Receiver**

- 30-6000MHz tuning range
  - Two complete receivers
  - 40MHz or 80MHz digitized BW (120MHz BW, -120M version)
  - 50MSPS or 100MSPS streaming I/Q data
  - Precision time tagging
  - 300usec tune time
  - -95dBc/Hz phase noise, 100kHz away
  - 10/100/1000 Ethernet and 10GB SFP+
  - Vita-49 and SDDS data outputs available
- 



## **RX-6400**

### **Quad Channel RF Digital Receiver**

- 30-6000MHz tuning range
  - **Four independent receivers**
  - 40MHz digitized BW
  - 50MSPS streaming I/Q data
  - Precision time tagging
  - 300usec tune time
  - -95dBc/Hz phase noise, 100kHz away
  - 10/100/1000 Ethernet and 10GB SFP+
  - Vita-49 and SDDS data outputs available
- 



## **RX-6640**

### **Quad Channel RF Digital Receiver**

- 30-6000MHz tuning range
  - Four complete receivers
  - **Independent or coherent operation**
  - 40MHz digitized BW
  - 50MSPS streaming I/Q data
  - Precision time tagging
  - 300usec tune time
  - -95dBc/Hz phase noise, 100kHz away
  - 10/100/1000 Ethernet and 10GB SFP+
  - Vita-49 and SDDS data outputs available
- 



## **XR-6000-02**

### **RF Digital Receiver**

- 30-6000MHz tuning range
- 40MHz Digitized BW
- 50MSPS streaming I/Q data
- Precision Time Tagging
- Fast 180usec tune time
- -95 dBc/Hz phase noise, 100kHz away
- 10/100/1000 Ethernet and 10GB SFP+
- Vita-49 and SDDS data outputs available



## **XR-6000D-01**

### **Dual Channel RF Digital Receiver**

- 30-6000MHz tuning range
- Two complete receivers
- 80MHz Digitized BW
- 50MSPS streaming I/Q data
- Precision Time Tagging
- Fast 180usec tune time
- -95 dBc/Hz phase noise, 100kHz away
- 10/100/1000 Ethernet and 10GB SFP+
- Vita-49 and SDDS data outputs available



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## **XR-6200**

### **Dual Channel RF Digital Receiver**

- 30-6000MHz tuning range
- Two independent receiver channels
- 80MHz digitized BW per receiver
- 100MSPS wideband streaming I/Q data
- Precision time tagging
- 300usec tune time
- -95dBc/Hz phase noise, 100kHz away
- 10/100/1000 Ethernet and 10GB SFP+
- Vita-49 and SDDS, SDDSX data formats
- FPGA support for up to 32 narrowband channels
- FFT and Scan PSD software functions
- Flexible IP and port assignment for clients
- Standard 10G Gen2 MMS software support





# MICROWAVE DIGITIZERS



# 1GbE DIGITIZER PRODUCTS

## **MSDD-26GLX-D**

### **0.03-26GHz Dual Channel, Microwave Digital Receiver**

- 30MHz to 26.5GHz RF tuning range
- Two RF channels
- Independent or Phase Coherent modes
- 25/33.3/50MSPS streaming I/Q data
- Precision Time Tagging
- Up to 30 MHz<sup>1</sup> Digitized bandwidth
- Extremely Low Power: Less than 15W
- Fast 400µsec Tune Time
- Dual 10/100/1000 Ethernet
- Streaming data architecture software
- FFT, SCAN, IQ and DET Outputs
- Variety of available FPGA loads
- SDDS or Vita-49 data transport formats
- 1PPS or IRIG-B 002 timing input



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# 10GbE DIGITIZER PRODUCTS

## **RX-26GLX-D**

### **0.03-26GHz Dual Channel, Wideband Digital Receiver**

- 0.03-26GHz RF Tuning Range
- Dual Channel
- Phase Coherent or Independent Modes
- IF Out at 140/150MHz
- Low Power: 24W
- Fast 300µs Tune Time
- 0.30° rms Phase Jitter, typ (1-18GHz)
- 0.45° rms Phase Jitter, typ (18-26GHz)
- Low 14dB Noise Figure
- 60dB Gain
- Automatic & Manual Gain Control
- High -3dBm IIP3 (at 20dB gain)
- 80MHz Digitized Display Bandwidth

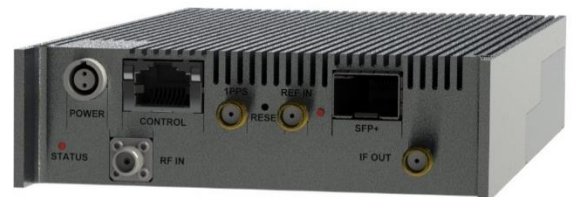


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## **RX-26GLX**

### **.03-26GHz Wideband Digital Receiver**

- 0.03-26GHz RF Tuning Range
- IF Out at 140/150MHz
- Low Power: 17W
- 0.30° rms Phase Jitter, typ (1-18GHz)
- 0.45° rms Phase Jitter, typ (18-26GHz)
- Low 14dB Noise Figure
- 60dB Gain
- Automatic & Manual Gain Control
- High -3dBm IIP3 (at 20dB gain)
- Spectral Display
- 80MHz Digitized Display Bandwidth



## **RX-626G-D-100**

### **Dual Channel RF Digital Receiver**

- 6-26GHz tuning range
- Two complete receivers
- Phase coherent operation
- 100MHz digitized BW
- 125MSPS streaming I/Q data
- 300usec tune time
- Low Phase Noise
  - 0.30° RMS typical, <18GHz
- 187.5MHz IF out center
- 10/100/1000 Ethernet and 10GB SFP+
- Vita-49 and SDDS data outputs available
- Low Power Digital Signal Processor
- Spectral Display
- 120MHz Digitized Display Bandwidth



## **RX-40GLX-D**

### **Dual Channel Digital Receiver**

- 100MHz – 40GHz tuning range
- Dual Channel
- Phase Coherent or Independent Modes
- 1Gb Control and Data Ethernet Port
- 10Gb Data Interface (SFP+)
- 100 MSPS streaming I/Q data (80MHz BW)
- Precision Time Tagging
- Low Power: <31W (<26.5GHz), <39W (>26.5GHz)
- Analog IF Outputs (user selectable BW's of 20, 30, 40, 50, 60, 70, or 80MHz)
- Low 16 dB noise figure
- Adjustable 60dB RF gain
- Manual and Automatic Gain Control



## **XR-26GLX-Q**

### **100MHz-26GHz Four Channel Wideband Digital Receiver**

- 100 MHz – 26 GHz Tuning Range
- Four Channels
- Phase Coherent Modes
  - 2, 3, or 4 Coherent Channels
  - Remaining Channels Independent
- 1 Gb Control and Data Ethernet Port
- Dual 10 Gb Data Interfaces (SFP+)
- 125 MSPS streaming I/Q data
- Precision Time Tagging
- Low Power: <60 W
- 100 MHz Digitized BW
- VITA-49 and SDDS data formats
- Low 14 dB noise figure
- Adjustable 60 dB RF gain
- Manual and Automatic Gain Control
- Wideband and Narrowband DDC's



## **RX-18GLX-D**

### **Dual Channel Wideband Digital Receiver**

- 0.03-18GHz RF Tuning Range
- Dual Channel
- Phase Coherent or Independent Modes
- IF Out at 140/150MHz
- Low Power: 24W
- Fast 300 $\mu$ s Tune Time
- 0.30° rms Phase Jitter, typ (1-18GHz)
- 0.45° rms Phase Jitter, typ (18-26GHz)
- Low 14dB Noise Figure
- 60dB Gain
- Automatic & Manual Gain Control
- High -3dBm IIP3 (at 20dB gain)
- 80MHz Digitized Display Bandwidth
- FFT, SCAN, Outputs
- 10GB Ethernet SFP+



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## **RX-40GLX**

### **Microwave Digital Receiver**

- 30MHz – 40GHz tuning range
- 1Gb Control and Data Ethernet Port
- 10Gb Data Interface (SFP+)
- 100 MSPS streaming I/Q data
- Precision Time Tagging
- Low Power: <17W (<18GHz), <29W (>18GHz)
- Analog IF Outputs (user selectable BW's of 20, 30, 40, 50, 60, 70, or 80MHz)
- Digitized IF BW of up to 80 MHz
- VITA-49 and SDDS data formats
- Low Phase Noise (0.7° typ. jitter, 1-40GHz)
- Low 16 dB noise figure
- Adjustable 60dB RF gain
- Manual and Automatic Gain Control



# 40GbE DIGITIZER PRODUCTS

## **WRX-626G-D**

### **Coherent Dual Channel Ultra-Wideband Microwave Digital Receiver**

- 6-26.5GHz RF tuning range
- Two Complete RF Tuners
- 500MHz Digitized BW per RF Tuner
- 8 DDC's (100MHz BW per DDC)
- 40Gb IQ Data Interface (QSFP+)
- Low Power: <14W
- Low 14dB Noise Figure
- Manual and Automatic Gain Control



## **WRX-218G-1000**

### **Ultra-Wideband Microwave Digital Receiver**

- Complete Ultra-Wideband RF tuner/digitizer
- 2 to 18 GHz tuning range
- 1 GHz Max Digitized BW
- 1 Gb Ethernet Control and Spectrum
- 40 Gb I/Q Data Transport (QSFP+)
- Jumbo I/Q Packet Transport
- Independent Client Destinations
- Integrated FFT and SCAN functions
- User Configurable Multi-Stream Architecture
- Precision Time Tagged I/Q Data Streams
- Programmable FFT/SCAN options
- Spectrum Display Monitoring
- Low power: <35 W
- Fixed and tracking preselectors
- Fast tune times (< 500  $\mu$ s)
- Low noise figure (< 17 dB)



## **WRX-218G-D-1000**

### **Ultra-Wideband Dual Channel Microwave Digital Receiver**

- 2 to 18 GHz tuning range
- Two Channels
- Independent or Coherent LO's
- 1 GHz Max Digitized BW
- Two channels of 1GHz bandwidth streaming
- Variable transport sample size (8, 10, 12 or 16 bit complex samples)
- 1250 MSPS I/Q 16-bit data per channel
- 1 Gb Ethernet Control and Spectrum
- 100Gb Ethernet I/Q Data Transport
- Jumbo I/Q Packet Transport
- Independent Client Destinations
- User Configurable Multi-Stream Architecture
- 0.5° rms IF phase jitter (10 kHz - 10 MHz)
- Low power: <45 W
- Fixed and tracking preselectors
- Low noise figure (14dB typ)



## **WRX-6200**

### **Dual Channel Ultra-Wideband Microwave Digital Receiver**

- 1000-6000 MHz tuning range
- 750-6250 MHz RF input range
- Two complete RF Tuners
- 500 MHz Digitized BW per RF Tuner
- Dual channel 500MHz bandwidth
- Variable data width streaming IQ transport with block sampled IQ wideband monitor.
- One wideband DDC per RF channel and up to 32 narrowband DDCs in 8 channel banks.
- Up to 625MSPS I/Q with 16-bit data for each wideband DDC with selectable decimations of 2 to 32 and independently tunable narrowband DDC channels with bank selectable decimations from 4 to 1024
- QSFP+ support for 40G or up to four 10G Ethernet interfaces
- Control and FFT data via RJ45 (1GbE) or QSFP+ (10/40GbE) interfaces
- Streaming IQ Data Interface (QSFP+)
- Multiple Independent Client IQ Data Destinations
- Integral FFT and SCAN functions
- User Configurable Multi-Stream Architecture
- Flexible FPGA/DSP Architecture
- Software programmable FFT/DDC options
- Spectrum Display Monitor
- Low Power: <33 W
- VITA-49 and SDDS data formats
- Manual Gain Control



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## **WRX-140G-500**

### **Ultra-Wideband Microwave Digital Receiver**

- Ultra-Wideband RF tuner/digitizer
- 1 to 40 GHz tuning range
- 500 MHz Max Digitized BW
- Selectable output I/Q component data width 8, 10, 12, 14, and 16-bit
- 1.25 GSPS I/Q output
- 1 Gb Ethernet Control and Spectrum
- 40Gb Ethernet I/Q Data Transport (QSFP+)
- Supports Jumbo I/Q Packet Transport
- Independent Client Destinations
- Integrated FFT and SCAN Functions
- User Configurable Multi-Stream Architecture
- Precision Time Tagged I/Q Data Packets
- Flexible FPGA/DSP Processing Architecture
- Programmable FFT/SCAN Parameters
- Spectrum Display Monitoring
- VITA-49 and SDDS data formats
- 1.0° rms IF phase jitter (10 kHz - 10 MHz)
- Low power: <40 W
- Fixed preselectors
- Fast tune times (< 500  $\mu$ s)
- Low noise figure (< 16 dB)



## **WRX-6800**

### ***Eight Channel Wideband Digital Receiver***

- 30-6000 MHz tuning range
- Eight Channels
- Phase Coherent or Independent Tuning
- 100 MHz Digitized BW per RF Tuner
- Full bandwidth streaming (8 x 100MHz)
- 125 MSPS I/Q 16-bit data
- 1 Gb Ethernet Control and Spectrum
- 40 Gb IQ Data Interface (QSFP+)
  - 4 x 10Gb with splitter
- Software programmable FFT/DDC options
- Multiple Independent Client IQ Data Destinations
- Integral FFT and SCAN functions
- Precision Time Tagged Data Streams
- Flexible FPGA/DSP Architecture
- Spectrum Display Monitor
- Low Power: <50 W (coherent mode)
- VITA-49 and SDDS data formats
- Low Phase Noise
- Low 14 dB NF
- Manual Gain Control





# RF SUBSYSTEMS

## **PRE-226G-D-R** **2-26GHz Dual Channel Switched Pre-Selector**



The PRE-226G-D-R contains two high performance RF front end modules covering the 2-26.5GHz frequency range. It utilizes state-of-the-art integrated circuit receiver technology and custom distributed circuit designs to produce a miniature RF front end. The module is packaged in a ruggedized, shielded aluminum case, providing a durable design suitable for field and portable use.

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## **FS-3000** **Ruggedized Tactical Receiving System**



Embedded MSDD-3000-PPS Digital Receiver, GPS receiver, 100W RF input limiter, 4 port 1GB Ethernet switch, 120W power supply with 16V Auxiliary Output, Mil connectors, GPIO connections, optional blower.

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## **1U-3000 / 6000-PPS** **1U Rack Mount Receiver Systems**



Up to 4 MSDD-3000-PPS or MSDD-6000-PPS digital receivers, optional GPS receiver with disciplined oscillator, optional RF multicoupler, internal clock/reference distribution, user reconfigurable.

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## **1U-3000 / 6000EX** **1U Rack Mount Receiver System**



Up to 4 MSDD-3000/6000EX digital receivers, optional GPS receiver with disciplined oscillator, optional RF multicoupler, internal clock/reference distribution, user reconfigurable.



**1U-3001-XLP-8**  
**1U Rack Mount Receiver System**



Up to 8 MSDD-3001-XLP digital receivers, optional GPS receiver with disciplined oscillator, optional RF multicoupler, internal clock/reference distribution, user reconfigurable.

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**1U-126G-C**  
**RavenHawk 1-26GHz Dual Channel Real Time Spectrum Analyzer**



The 1U-126G-C is a remote controlled Real Time Spectrum Analyzer suitable for spectrum monitoring, EMC testing, WIFI, or wireless network measurements. The RavenHawk architecture is designed to support both streaming and snapshot data that can be processed in spectral scans, fixed IF displays, filtering, and further streaming signals processing.

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**TMS-140G-D**  
**1-40GHz Tower Mount Receiving System**



The TMS-140G-D is a tower mount integrated receiver system complete with internal power supplies for powering the receivers as well as external peripherals. At the core of the system is a MMS RF Digital Receiver with Low Phase Noise as well as Independent and Coherent tuning. Also included in the system is a dual channel 26-40GHz block downconverter. The complete system provides down-conversion and digitization of RF signals in the 30MHz to 40GHz frequency range.



# RF UPCONVERTERS / TRANSMITTERS

## **MUP-6000**

### **Ultra-Miniature VHF/UHF Upconverter**

- 30-6000MHz, 1-kHz RF tuning step size.
- 70MHz IF IN
- 10, 20, 30, 50MHz IF BW's
- 30dB nom Gain
- +7dBm P1dB
- 10% tracking Post-select Filters
- Low Phase noise and Spurious
- 9-16V at 6W



## **MUP-18G**

### **Wideband Microwave Up-Converter**

- 0.03-18 GHz Tuning Range
- Low power <11.25 W
- Fixed and tracking post-selector
- Fast 500  $\mu$ s tune speed
- 150 MHz IF input
- 60 MHz bandwidth
- -100 dBc/Hz phase noise, 100 kHz offset
- 0.5° rms phase jitter, typ (10 kHz - 10 MHz)
- Low 25 dB noise figure
- High +5 dBm P1dB
- Serial Control (RS-232)



## **NUP-118G-D / 126G-D**

### **Dual Channel, Phase Coherent, Network Controlled, Microwave Upconverter**

- Two complete RF Upconverters
- Phase Coherent Operation
- 800 MHz – 18/26.5 GHz tuning range
- Low Power: 0.8 – 18 GHz <20W  
18 – 26.5 GHz <23W
- Fixed and tracking post-selectors
- Fast 500usec tune speed (F1-F2 scan typ))
- Multiple IF / BW options
  - 140 MHz IF, 20 – 80 MHz BW's (-140)
  - 70 MHz IF, 10 – 60 MHz BW's (std)



## **XT-6000 / 18G / 118G**

### **30MHz-6GHz/30MHz-18GHz/1-18GHz Digital Transmitters**

- Three variants: 30 MHz to 6GHz, 30MHz to 18GHz, 1-18GHz
- 80MHz BW, 1-kHz RF tuning step size.
- User defined IQ or internal modulation.
- Field loadable DSP and FPGA images
- Ethernet interface for module control and narrowband IQ signal sources.
- SFP+ interface for 10 Gb streaming IQ data sources.
- TI C6455 DSP and Xilinx Kintex-7 FPGA processing engines.
- Multi-channel stream combining architecture for multi-channel sources.
- Miniature packaging for modular fan-less installations.
- 10/100/1000BASE-T Ethernet control/data and a SFP+ for 1Gb or 10Gb Ethernet data.
- I/O interface to support parallel controls and peripherals.



## **TX-6100-120M**

### **VHF/UHF Digital Transmitter**

- Coverage from 30MHz to 6000MHz
- 120MHz bandwidth
- 1kHz RF tuning step size
- User defined IQ or internal modulation
- Field loadable DSP and FPGA images
- Ethernet interface
- 10Gb SFP+ interface
- TI C6455 DSP
- Xilinx Kintex-7 FPGA
- Multi-channel stream combining architecture
- Miniature packaging for modular fan-less installations



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## **TX-6200**

### **VHF/UHF Dual Channel Digital Transmitter**

- Coverage from 30MHz to 6000MHz
- 60MHz BW per channel
- Dual independent channels
- User defined IQ or internal modulation
- Field loadable DSP and FPGA images
- Ethernet interface
- 10Gb SFP+ interface
- TI C6455 DSP
- Miniature packaging for modular fan-less installations



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## **TX-6200-120M**

### **Dual Channel VHF/UHF Digital Transmitter**

- Coverage from 30MHz to 6000MHz, 120MHz BW, 1kHz RF tuning step size
- Two independent digital transmitters packaged together
- User defined IQ or internal modulation
- Field loadable DSP and FPGA images with support for password protected remote uploading
- Ethernet interface for module control and narrowband IQ signal sources
- SFP+ interface for 10Gb wideband streaming IQ data sources
- TI C6455 DSP and Xilinx Kintex-7 FPGA processing engines
- Multi-channel stream combining architecture for multi-channel sources
- Miniature packaging for modular fan-less installations
- 10/100/1000BASE-T Ethernet control/data and a SFP+ for 1Gb or 10Gb Ethernet data
- I/O interface to support parallel controls and peripherals
- Sync input for digital timing control
- Software GUI for control and demonstration



## **MUP-6600**

### **Ultra-Miniature Up Converter**

- 30-6000 MHz tuning range
- Low Power < 4W
- Tracking post filters
- Fast 500usec tune time
- 150MHz IF Input
- 80MHz Max BW
- Power Saving Mode
- Miniature 7 cubic inch, 6 oz. package
- RS-232 controlled





# MMWAVE BLOCK CONVERTERS

## **MBC-2640G**

### **Ultra-Miniature 26.5 to 40GHz Block Converter**

- 26.5 - 40GHz RF Input Frequency Range
- Dedicated Microwave Down-converter
- 3.2 – 16.7GHz IF Output Frequency Range
- External or Internal Phase Locked
- Low 12dB Noise Figure (typ.)
- -5dBm IIP3 (typ.)
- Nominal 5dB Gain to IF Output
- Low Phase Noise (<1.0°typ. jitter)
- Plug-and-play (no control required)
- Miniature Package
- Low Power Dissipation < 8W typ.



## **MBC-2640G-D**

### **26.5 to 40GHz Dual Channel Miniature Microwave Down-converter**

- 26.5 - 40GHz RF Input Frequency Range
- Two Independent Channels
- Dual Dedicated Microwave Down-converters
- 3.2 – 16.7GHz IF Output Frequency Range
- External or Internal Phase Locked
- Low 12dB Noise Figure (typ.)
- -5dBm IIP3 (typ.)
- Nominal 5dB Gain to IF Output
- Low Phase Noise (<1.0°typ. jitter)
- Plug-and-play (no control required)
- Miniature Package
- Low Power Dissipation < 18W typ.



## **MBC-2650G**

### **Ultra-Miniature 26.5 to 50GHz Miniature Microwave Down-converter**

- 0.5-50GHz RF Input Frequency Range
- Dedicated Microwave Down-converter
- 0.5 – 26.5GHz IF Output Frequency Range
- External or Internal Phase Locked
- Low 16dB Noise Figure (typ.)
- -3dBm IIP3 (typ.)
- Nominal 5dB Gain to IF Output
- Low Phase Noise (<1.0°typ. jitter)
- Miniature Package
- Low Power Dissipation < 10W typ.



## **MBC-144G-D**

### **26 to 44GHz Dual Channel Microwave Down-Converter with 1-26.5GHz Bypass**

- 1-44 GHz RF Input Frequency Range
- Dual Antenna Inputs (1-26 GHz and 26-44 GHz)
- 1-26.5 GHz Pass Through Function
- 26-44 GHz Block Down-conversion
- 4-22 GHz Down-converted IF Range
- External or Internal Phase Locked
- Nominal 6 dB Gain to IF Output
- Low Phase Noise (<0.35° typ jitter)
- Manual Band Select or Network Controlled
- Low Power Dissipation < 25 W typ.



## **MBC-0544G-D**

### **Microwave Down-converter with Bypass**

- Dedicated Microwave Down-converter
- Two Channel, Coherently Tuned
- 0.5-44 GHz RF Input Frequency Range
- Two Antenna Inputs (0.5-26.5GHz & 26-44GHz) per Channel
- 0.5-26.5 GHz Pass Through Function
- 26-44 GHz Block Down-conversion
- 3-12 GHz Down-converted IF Range
- External or Internal Phase Locked
- Low 14 dB Noise Figure (typ.)
- >0 dBm IIP3 (typ.)
- Nominal 6 dB Gain to IF Output
- Low Phase Noise (<0.5° typ jitter)
- Manual Band Select or Network Controlled
- Miniature Package
- Low Power Dissipation < 25 W typ.



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## **MBC-2644G-D**

### **Microwave Down-converter**

- Dedicated Microwave Down-converter
- Two Channel, Coherently Tuned
- 26-44 GHz RF Input Frequency Range
- Antenna Input 26-44 GHz
- 26-44 GHz Block Down-conversion
- 4-22 GHz Down-converted IF Range
- External or Internal Phase Locked
- Low 14 dB Noise Figure (typ.)
- >0 dBm IIP3 (typ.)
- Nominal 6 dB Gain to IF Output
- Low Phase Noise (<0.5° typ jitter)
- Plug and Play, No Control Needed
- Miniature Package
- Low Power Dissipation <20 W typ.



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## **MBC-1840G**

### **Miniature Microwave Down-converter**

- 0.03-40 GHz RF Input Frequency Range
- 0.03-18 GHz Bypass Path
- Dedicated Microwave Down-converter
- 2.3-16.7 GHz IF Output Frequency Range
- External or Internal Phase Locked
- Low 12 dB Noise Figure typical
- -5 dBm IIP3 typical
- Nominal 4 dB Gain to IF Output
- Low Phase Noise (<1.0° typ jitter)
- USB controlled
- Miniature Package
- Low Power Dissipation <8 W

