

# Verona™ 4 Tuner QAM/HD-SDI+IP

Broadcast Quality, Frequency Agile, 1 RU, Modular, 1-4 Tuner QAM Receiver or Demodulator and Decoder with 4 Each On Board HD or SD MPEG-2 TS Decoders with RF (QAM Annex B), IP Unicast or Multicast (FEC), or ASI In and SDI, HD-SDI, SMPTE 310M, ASI, or IP Out. Dolby AC-3 and MPEG Audio Decoder with BNC Connectors. Ideal Receiver for Comprehensive Off Air Monitoring of Multiple On Airs via RF or IP for Master Control or ENG Trucks. Features Many On Screen Diagnostics Displayed as Overlay. Supports AES-3 id Audio as well as MPEG-1/2, PCM, and AC-3. Supports BISS and Other CA. SNMP Management. Optional 2nd Audio Outputs (SAP) for More Audio Choices.



## Features

- Receiver/Decoder with up to 4 tuner/decoder modules
- Supports Pro-MPEG FEC on IP input
- Inputs: Up to 4 channels each of QAM, IP, and DVB-ASI
- Each tuner/decoder module may have up to three BNC connectors which can be DVB-ASI input, IP input, SMPTE-310M input, DVB-ASI output, SMPTE-310M output or AES-3 PCM or compressed audio output
- Outputs: Up to four mirrored HD-SDI/SDI outputs (one per module), plus ASI, HDMI, SMPTE-310M, and/or MPEG over IP
- IP output supports MPTS or SPTS
- New preview screen displays decoded output
- Gigabit Ethernet media port on each module supports four IP outputs and one IP input
- Audio outputs: MPEG, PCM, or AC-3
- Optional Second Audio Outputs (SAP) for 1-4 Tuner/Decoder Modules
- Includes CAM module and BISS-1/E support
- Supports "Stream All" for all RF to IP
- May choose or automate choice of digital stream from QAM or DVB-ASI or SMPTE-310M or IP signal. Auto switching with sync loss.
- H.264 (MPEG-4) or MPEG-2 MP@HL compliant video decoder supplies digital video signal
- Digital video signal compliant with SMPTE-259M or SMPTE-292M (SDI) with embedded 8 channel audio (SMPTE-299M) or embedded compressed audio
- Dolby Digital® AC-3 and HE-AAC and MPEG-1/2 5.1 channel audio decoder, MPEG-2 AAC-LC (13818-7), MPEG-4 HE-AACv1 (14496-3.2003) support, MPEG-4 HE-AACv2 (14496-3.2004) not available
- Dolby Digital® AC-3 or PCM stereo audio selectable over BNC connector
- SDI video signal with 1080i/720p/576p/576i (480i) video mode along with SCTE 35/104
- PSIP/EIA-608, 708 closed caption compliant
- Down converts HD input to SD out if requested
- Firmware upgradeable via Internet
- SNMP management support (GigE)
- 2 lines by 40 characters LCD display
- Dual power supply option available

## Overview

QAM is the North American standard for cable modulation. It is designed to deliver digital streams over cable at up to 38 Mbits per second.

The Verona™ 4 Tuner QAM/HD-SDI+IP is a modular four channel professional broadcast digital TV demodulator/decoder. It has five slots. Each slot can have an AC to DC power supply module or a tuner/decoder module. The typical application uses one AC to DC power supply and up to four tuner/decoder modules.

Each tuner/decoder module can have a QAM tuner with DVB-ASI input, SMPTE-310M input, or MPEG over IP input. MPEG stream output is available through DVB-ASI, SMPTE-310M and MPEG over IP. IP outputs can have up to five transport streams. A useful feature is its ability to automatically switch between RF and IP inputs.

Designed to decode all broadcast industry standard forms of the North American standard, the Verona supports 576i/480i, 576p/480p, 720p and 1080i decoding. Video output is in SDI/HD-SDI digital format with embedded audio. Audio output is available through embedded audio and AES-3 BNC connectors. The compressed audio on the BNC has a Dolby AC-3 with 5.1 channels.

## Applications

- Multichannel "Off Cable" terrestrial receiver
- Multichannel MPEG-2/4/H.264 HD Decoder
- Content repurposing
- RF to IP with RFC 3022 out
- Multichannel IP decoder
- Reduce CAPEX and OPEX with density



Computer Modules, Inc.

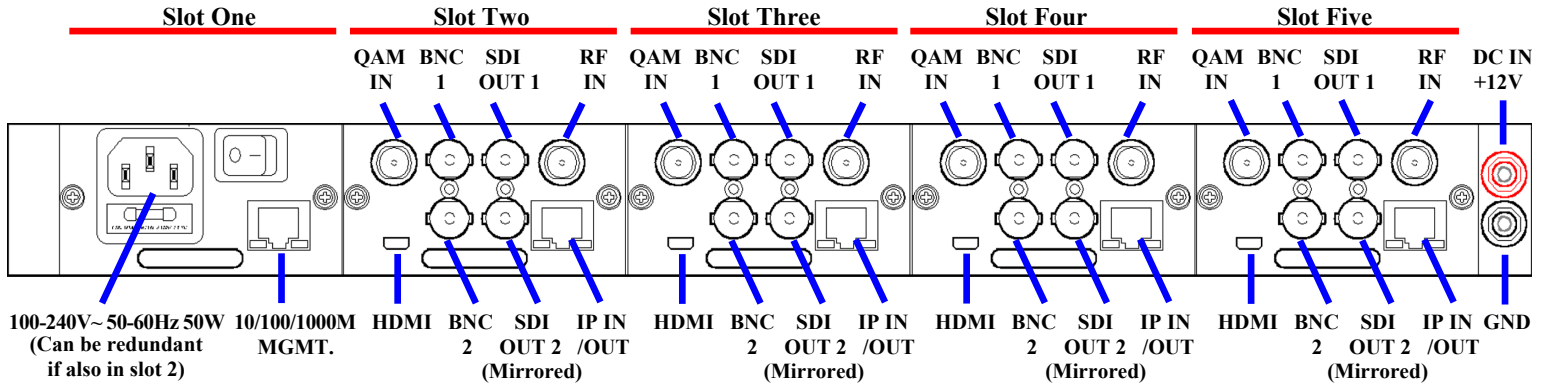
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# Rear View



## Specifications

<b>Front Display/Keys</b>	<ul style="list-style-type: none"> <li>2 lines by 40 characters LCD</li> <li>11 keys for Easy Control</li> <li>ENTER, EXIT, ARROW, and Slot Selection Keys</li> </ul>
<b>Slots</b>	Five slots for power supply module and demodulator/decoder modules
<b>QAM RF Input</b>	
Channel:	54-864 MHz RF Selectable
Connector:	4 x 75 Ohm BNC-type Connector (DVB-S/S2 or DVB-T+T2 options available)
Sensitivity:	> 43.5 dBμ V (UHF) > 35.4 dBμ V (VHF HIGH) > 35.4 dBμ V (VHF LOW)
<b>TS Input</b>	
Format:	IP (with FEC), SMPTE-310M or DVB-ASI (Select ASI or 310M input at front panel)
Connectors:	75 ohm BNC, RJ-45
<b>Display</b>	Video and TS parameters displayed via "on screen" mode (see manual)
<b>Redundancy</b>	ASI or RF input with auto failover
<b>Audio Output</b>	
Signal:	AES3-id (Select ASI or 310M or AES3-id output at front panel)
Connectors:	75 Ohm BNC – one audio output per module
Format:	Dolby AC-3 audio with 5.1, AAC, MPEG 1/2, PCM
1st Audio Output (one per module):	Connector: 75 Ohm BNC
Optional 2nd Audio Output (SAP):	Connector: D-sub 9p connector
Audio Pairs Decoded:	Standard – Select any one of four stereo pairs Optional – audio decoder board for selecting one additional stereo pair, for a total of 2 of 4 stereo pairs
<b>Audio Levels</b>	Set to +4dBm for -20dBFS digital audio contents when the audio attenuation menu is set to zero. The audio level can be attenuated using the front panel audio configuration menu.

<b>Digital Audio Output</b>	Choose either PCM mode or COMPRESSED audio output mode for MAIN channel. The chosen audio mode is used for all BNC output ports. You can have PCM mode only for the SUB channel. You may have COMPRESSED audio out of MAIN channel over BNC port and PCM audio out of SUB channel over BNC port. Output supports 2 channels, not 5.1
<b>Audio Decoding Standard</b>	ISO/IEC 14496-3:2009 (MPEG-4 HE AACv2)
<b>TS Output</b>	
Format:	SMPTE 310M, DVB-ASI, or IP
Connectors:	75 ohm BNC, RJ-45
Decoding Standard:	ISO/IEC 14496-10:2012 (MPEG-4 AVC/H.264)
<b>Digital Video Output (SDI, HD-SDI)</b>	SMPTE259M/SMPTE292M with embedded audio (SMPTE-299M) with SCTE 104/35
<b>Decode Latency</b>	.500 milliseconds
<b>Ethernet Input/Output</b>	10/100/1000 Mbps MPEG over RTP/UDP FEC supported (Pro MPEG) (IP In)
<b>Management Ethernet</b>	10/100/1000 Mbps SNMP, Web-browser manager
<b>Conditional Access</b>	BISS-1/E and DVB-CI
<b>Network Management</b>	NMS supported through SNMP
<b>CPU and RAM</b>	MIPS 300 MHz 32 bit RISC
<b>Unit</b>	1 RU 19-inch rackmountable
<b>Operating Temperature</b>	+0 ~ +45°C (32 to 113°F)
<b>Storage Temperature</b>	-20 ~ +50°C (-4 to 122°F)
<b>Operating Humidity</b>	10 to 90%, Non-condensing
<b>Power Supply Module</b>	AC 100-240V~ 50-60Hz 120W max DC 12V 8A max output
<b>Dimensions</b>	HxWxL: 1.7 x 19 x 16.9 inches (4.3 x 48.26 x 42.93 cm)
<b>Weight</b>	14.1 lbs. (6.396 kg.)
<b>Conformities</b>	FCC, RoHS CE Mark: Electromagnetic Compatibility Directive 2004/108/EC Low Voltage Directive 2006/95/EC

## Ordering Info

Verona 4 Tuner QAM/HD-SDI+IP  
 Verona 4 Tuner QAM/HD-SDI+IP/+SAP – with SAP  
 Verona 4 Tuner QAM/HD-SDI+IP/PS – replace one or more tuner modules with an additional power supply

Also available:

Verona 4 Tuner 8VSB/HD-SDI+IP  
 Verona 4 Tuner S+S2/HD-SDI+IP  
 Verona 4 Tuner T+T2/HD-SDI+IP  
 Verona-MF – Multiformat: T+T2, S+S2, and/or 8VSB/QAM