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AoIP Products

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RAVENNA

AVN-GMCS IEEE1588 PTP Grandmaster Clock with GPS Receiver

AVN-GMCS Front View.

AVN-GMCS Rear View.

Category: Audio Over IP Products.
Product Function: Provides a PTP time synchronised clock for use with AoIP audio networks.
Typical Applications: Synchronise a PTP AoIP network, provide a GPS referenced signal via AES-3id, provide a master wordclock studio output or distribute a PPS reference frequency to T&M equipment.

Features:

- AES67/RAVENNA/AES-R16 compatible.
- GPS satellites received indicator.
- Master and slave sync modes.
- 8ns PTPv2 time stamping resolution.
- Holdover drift <1ppm, with options for <0.01ppm & <0.0005ppm.
- AES-3id, wordclock & variable PPS outputs.
- Analogue master input.
- Dual power supply inputs.
- Front panel display.
- GPS sync and power supply present LED indicators.
- Real time clock for accurate date/time.
- Responsive design Ethernet webserver and front panel control & configuration.

RAVENNA **Sonifex joined the RAVENNA group in 2012 and the AVN-GMCS is the first result of our R&D in the area of audio over IP.**

The AVN-GMCS is a PTPv2 grandmaster clock for use with AoIP applications. IEEE1588-2008 PTPv2 (precision time protocol) is used to synchronise all the nodes within a network. To achieve this one of the nodes must become the master clock and distribute time packets to the others. The AVN-GMCS is designed to perform this role simply and accurately, enabling sub micro second synchronisation between all nodes.

RAVENNA (of which AES67 is a subset) allows for the distribution of audio across a network. For this to be possible, each of the nodes needs to be time synchronised with one another. RAVENNA uses PTP time stamping to achieve this, which distributes the network time but also works out the latency involved in the delivery and adjusts the time at each node accordingly.

Unit configuration is achieved easily either with the front panel controls or the webserver, including the setup of the PTP profiles.

The AVN-GMCS supports the Default (RAVENNA), Media (AES67) and AES-R16-2016 (SMPTE-ST 2059-2 & AES67 compatible) profiles and has a 'Custom' profile page for you to define your own.

In normal operation, the unit has PTPv2 time stamping resolution to 8nsec. It uses a combination of a GPS receiver, a PLL (phase lock loop) and a specialist on-board clock device to create the precise, low jitter clock signals required to drive the physical transceiver's time stamping circuitry, also providing holdover if the GPS signal is lost.

The specialist on board clock is available in three different types: TCXO, OXCO and CSAC (Chip Scale Atomic Clock, Caesium), which vary in both price and accuracy:

AVN-GMCS – TCXO Temperature Compensated Oscillator accurate to 1 part per million (worst case 1 sec gain/loss every 11.5 days). *

AVN-GMCOS – OCXO Oven Controlled Oscillator accurate to 0.01 parts per million (worst case 1 sec gain/loss every 3.1 years). *

AVN-GMCCS – SAC Quantum Atomic Clock accurate to 0.00050 parts per million (worst case 1 sec gain/loss every 63 years). *

GPS presence and the number of satellites received is shown on the front panel, together with status information on output sample rates, sync type and profile type. The unit also has a screen-saver option which shows the current time.

Although designed as a grandmaster clock, a separate clock input can act as an alternative reference source to GPS which the unit can 'slave' to. Clock outputs, driven from the physical transceiver, can be used to provide media clocks for external equipment local to the AVN-GMC when it is in both 'master' and 'slave' states. The clock outputs are available as a single AES-3id output and two outputs which can be selected as either word clock or variable PPS. The wordclock can operate at 32, 44.1, 48, 96, 176.4 and 192kHz. When set as a variable PPS output, the unit can act as a clock master to distribute a reference frequency to test and measurement equipment.

The unit shows UTC as standard, but can be set to show 'local time' on the front panel, by adding a time offset. Daylight saving time changes can be accommodated by entering Spring Forward and Fall Back dates. It has a real time clock so that accurate date and time is available even after the unit is repowered without GPS access.

The built-in webserver, or front panel OLED display, can be used to configure the unit. The webserver is a responsive design meaning that it can be used with small screens on smartphones and tablets.

Front panel LEDs show the synchronisation status, GPS lock and the status of the AC and DC power supply inputs.

The brightness of the OLED display and LED indicators can be adjusted for low or high lighting conditions

4 general purpose outputs indicate critical states for the unit using a 9 way D-type connector mounted on the rear panel. Pull down when active pins are supplied for GPS lock status, external sync present, AC power present and DC power present.

The unit has a front panel power button and dual power connectors - an IEC mains input and a 12V DC input, which allows the AVN-GMCS to be used for both studio and mobile installations. Moreover this allows for a secondary power source to reduce the effect of power down events. In any case, the unit monitors the status of both power sources and displays this on the front panel.

The unit can be put into a low-power sleep mode when not in use, with an instant start when power is re-applied. In power off situations, a super capacitor is used to keep the GPS receiver powered in a low power mode for more than 20 hours, enabling the receiver to regain lock immediately rather than having to 'cold' start.

Specification For AVN-GMC

Timing Specification	
Profile Support:	Default (RAVENNA), Media (AES67), AES-R16-2016 (SMPTE-ST 2059-2 & AES67 compatible), Custom profile
Timing Protocol:	PTPv2, IEEE1588-2008
Timing Accuracy:	PTP time stamping resolution 8ns
Holdover Drift: TCXO: OCXO: CSAC: These figures are over 24 hours at constant temperature	 <90ms <900µs <45µs
GPS Performance: GPS Frequency:	50 channel GPS receiver 1575.42MHz, L1 band
Clock Specification	
Word Clock Sync Impedance:	50Ω
Word Clock Output Input Impedance:	<50Ω
AES-3id Output Impedance:	<75Ω
Antenna Impedance:	50Ω
Connections	
Clocking Input:	BNC female
Clocking Outputs:	3 x BNC female AES-3id @ 32, 44.1, 48, 96, 176.4 & 192kHz. 2 x Wordclock or Variable PPS (1, 10, 100, 1000) TTL
GPS Input:	SMA socket
GPIO:	D-type female 9 way
Ethernet Port:	RJ45 socket, 100BASE-T
Mains AC Input:	Universal filtered IEC socket, continuously rated 85-264 VAC @47-63Hz, max 10W
DC Input: Maximum Operating Range (DC):	1 x 12V, KPJX-45 socket, positive pins 1 and 3 10.3V to 13.2V DC
Equipment Type	
AVN-GMCS:	Grandmaster clock for PTP systems, GPS, IP, TCXO, 1ppm, rackmount
AVN-GMCOS:	Grandmaster clock for PTP systems, GPS, IP, OCXO, 0.01ppm, rackmount
AVN-GMCCS:	Grandmaster clock for PTP systems, GPS, IP, CSAC, 0.0005ppm rackmount
Physical Specification	
Dimensions: (Raw)	48.3cm (W) x 17.8cm (D) x 4.4cm (H) (1U) 19" (W) x 7" (D) x 1.8" (H) (1U)
Dimensions (Boxed):	58.8cm (W) x 27cm (D) x 6.8cm (H) 23" (W) x 10.6" (D) x 2.7" (H)
Weight:	Nett: 1.5kg Gross: 2.2kg Nett: 3.2lbs Gross: 4.8lbs
Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug

* This figure represents the holdover accuracy should the GPS signal be lost - this is an approximation based on 1st year stability figures.

Talkback Intercoms Using Audio Over IP, RAVENNA/AES 67

Our new range of AVN (Audio/Video/Network) talkback/listening/paging intercoms aid communication between studios, stages, theatres, offices and different areas in a facility or building complex. They have both 4-wire and AoIP sources and destinations, and use RAVENNA/AES67 as the audio transport mechanism, allowing simple CAT 5 cabling and expansion.

AVN-TB10AR 10 Button Advanced Talkback Intercom, AoIP Portal

AVN-TB10AR Front View.

AVN-TB10AR Rear View.

Category: Audio Over IP Products.
Product Function: An advanced talkback/listening/paging intercom unit to enable voice/audio communication between different areas in a facility or building complex.
Typical Applications: OB truck comms, theatre comms, inter-studio comms in a TV or radio station.
Features: -

- 10 illuminated key-cap Talk buttons plus Listen & Page buttons.
- Mic & headset inputs, headphone & speaker outputs with volume control.
- Sources from AoIP, balanced, 2 x unbalanced or S/PDIF digital inputs.
- Destinations to AoIP or rear panel balanced & unbalanced outputs.
- Advanced echo cancellation & mic AGC to prevent acoustic feedback.
- Dual 1Gb lan ports & 1Gb SFP fibre port.
- 10 user assignable GPIO ports.
- Dual AC & DC power supply inputs.
- Front panel display providing source & destination information.
- Ethernet webserver and front panel control & configuration.
- Speaker & microphone mute buttons.
- Callback button with source display.

The AVN-TB products are IP audio based talkback intercom units with an advanced feature set, allowing them to be used in multiple applications. With both 4-wire analogue inputs and outputs, as well as AoIP network audio connectivity, the AVN-TB units can be used with existing legacy 4-wire systems and with new AES67 AoIP networked audio infrastructure. Additionally, all audio is at 48kHz sample rate, meaning that it's broadcast quality audio as standard.

RAVENNA (of which AES67 is a subset) allows for the distribution of audio across a network. The AVN range use RAVENNA as the communication method providing compatibility with other AES67 systems.

The AVN-TB10AR is a 10 button intercom meaning that 10 other 'stations' can be defined, one per button, for communication. Comms can be made as a Talk action, a Listen action or a duplex Talk/Listen action to/from each station. Coloured LEDs in the buttons help to show which action is being used and there is also a Callback button for when you're unavailable to receive a call.

The stations can be from anywhere on the AoIP network and the use of Bonjour Device Discovery means that other stations can be found quickly and sometimes automatically.

The Page button is used to speak to all stations (or a defined list of stations) and Group Talk functions can be enabled to page particular groups of stations.

Two monitor buttons allow for routing audio directly to the speaker e.g. to take an

IFB feed or an off-air transmission signal. Signals can be ducked or mixed when a talkback input is received to the speakers or headphones.

Three user defined buttons can be programmed for different functions, such as for Group Talk.

The speaker mutes automatically when headphones are inserted and the volume level of headphones, speaker and incoming sources can all be controlled with one front panel rotary encoder volume control knob.

Advanced acoustic echo cancellation & built-in microphone AGC (automatic gain control) ensure that there's no acoustic feedback between microphone and speaker.

Buttons are available for microphone mute (cough) and speaker mute actions and these can be controlled remotely by GPI or network commands.

Each unit has a built-in webserver which is where the majority of settings and configurations are made. The front panel OLED display can also be used to configure the unit, although more functionality is available by using the webserver. The webserver is a responsive design meaning that it can be used with small screens on smartphones and tablets.

The unit can act as a PTP masterclock or slave clock and supports IEEE1588-2008 PTPv2 default, AES media, SMPTE, AES-SMPTE and custom profiles.

Front panel LEDs show the AoIP network status, synchronisation status, whether AGC is being used and the status of the AC and DC power supply inputs. The brightness of the OLED display and LED indicators can be adjusted for low or high lighting conditions. The unit has a front panel power button and dual power connectors - an IEC mains input and a 12V DC input, which allows the AVN-TB10AR to be used for both studio and mobile installations. Also, a secondary power source reduces the effect of power down events. In any case, the unit monitors the status of both power sources and displays this on the front panel.

10 GPIOs (general purpose inputs/outputs) and a programmable relay output can be configured to indicate critical states for the unit, via the 15 way D-type connector, for example, to show loss of DC power, or to show a button press action.

10 virtual GPIOs can be used to remotely control functions on other units, such as mute the speaker or activate a user button.

Specification For AVN-TB10AR

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD)
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Ember+/webserver
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	2
Frames Per Packet:	48
Maximum Streams:	RX 6, TX 5 (fixed)
Sample Rate:	48 kHz
Timing Synchronisation	
Profile Support:	Default, AES media, SMPTE, AES-SMPTE & custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Technical Specification	
Microphone and Headset Input	
Input Impedance:	>2.5kΩ balanced
Gain Range:	0dB to +60dB
0dBFS Line-Up:	Adjustable in steps of 3dB from -58dBu to +2dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
Noise:	-127dBu, 20kHz BW, Rs=200Ω ref. 76dB gain
Unbalanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-97dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-97dB
Balanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-100dB
Common Mode Rejection:	>70dB @ 1kHz
Headphone Output	
Output Impedance:	Drives 150mW into 32Ω to 600Ω headphones
0dBFS Line-Up:	+20dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-108dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-110dBFS, 20kHz BW
Unbalanced Line Outputs	
Output Impedance:	<50Ω
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-95dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW
Balanced Line Outputs	
Output Impedance:	<50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Loudspeaker	
Power Output:	4W
Volume:	Mute to full volume via front panel control

Connections	
Microphone:	XLR-3 pin female (electronically balanced)
Headphone:	¼ inch (6.35mm) stereo jack socket
Headset:	2 x XLR-5 pin female (front/rear electronically balanced input)
Audio Inputs:	2 x unbalanced stereo, RCA phono
	1 x S/PDIF, RCA phono
Audio Outputs:	1 x balanced stereo, RJ45
	1 x unbalanced stereo, 2 x RCA phono
	1 x loudspeaker output
Audio Input/Output:	1 x balanced stereo input or mono input/output, RJ45
GPIO:	15-way 'D'-type socket
Network:	2 x gigabit Ethernet, RJ45
	1 x SFP fibre
Mains AC Input:	Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W
DC Input:	4 pin 7.5A power jack socket, 9.5-14VDC
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm

Equipment Type	
AVN-TB10AR:	10 channel rackmount talkback intercom control unit with RAVENNA AoIP

Physical Specification	
Dimensions:	48.3cm (W) x 17.5cm (D) x 4.4cm (H) (1U)
(Raw)	19" (W) x 6.9" (D) x 1.8" (H) (1U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 11cm (H) 23" (W) x 11" (D) x 4.3" (H)
Weight:	Nett: 2.4kg Gross: 3.1kg Nett: 5.3lbs Gross: 6.8lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug

The AVN-TB20AR is a 2U rackmount 20 button version of the AVN-TB10AR with the same specification, but more station buttons allowing greater communication for larger facilities. It also has 'GPI/O' and 'Phone' buttons for remote control of external equipment and Sonifex DHY-04 telephone hybrids, useful in an OB truck or production gallery.

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AVN-TB20AR 20 Button Advanced Talkback Intercom, AoIP Portal

Web

AVN-TB20AR Front View.

AVN-TB20AR Rear View.

Category: Audio Over IP Products.
Product Function: An advanced talkback/listening/paging intercom unit to enable voice/audio communication between different areas in a facility or building complex.
Typical Applications: OB truck comms, theatre comms, inter-studio comms in a TV or radio station.

Features: -

- 20 illuminated key-cap Talk buttons plus Listen & Page buttons.
- Phone button for remote dialling and control of an external telephone hybrid.
- Page button and Group Talk facilities.
- Callback button with callback source display.
- Three user definable buttons.
- Speaker & microphone mute buttons.
- Mic & headset inputs (front & rear panel headset connection), headphone & speaker outputs.
- Front panel volume control which operates on speaker/headphone outputs and incoming source levels.
- +48V phantom power for the mic inputs.

- Ethernet webserver and front panel control & configuration.
- Front panel display providing source & destination information.
- Sources from AoIP, 1 x balanced, 2 x unbalanced or S/PDIF digital inputs.
- Destinations to AoIP or rear panel balanced & unbalanced outputs.
- Advanced echo cancellation & mic AGC to prevent acoustic feedback.
- Dual 1Gb lan ports & 1Gb SFP fibre port.
- 10 user assignable GPIO ports.
- GPI/O button for triggering external events, via physical GPIO or network commands.
- Front panel LEDs for network audio presence, Talk activity, AGC activity, clock sync and power supply activity.
- Two front panel monitor buttons for routing audio directly to the speaker e.g. to take an IFB feed or off-air transmission signal.
- Ducking or mixing of inputs to speaker/headphones.
- Dual AC & DC power supply inputs.

Specification For AVN-TB20AR

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD)
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Ember+/webserver
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	2
Frames Per Packet:	48
Maximum Streams:	RX 6, TX 5 (fixed)
Sample Rate:	48 kHz
Timing Synchronisation	
Profile Support:	Default, AES media, SMPTE, AES-SMPTE & custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Technical Specification	
Microphone and Headset Input	
Input Impedance:	>2.5kΩ balanced
Gain Range:	0dB to +60dB
0dBFS Line-Up:	Adjustable in steps of 3dB from -58dBu to +2dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
Noise:	-127dBu, 20kHz BW, Rs=200Ω ref. 76dB gain
Unbalanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-97dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-97dB

Balanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-100dB
Common Mode Rejection:	>70dB @ 1kHz
Headphone Output	
Output Impedance:	Drives 150mW into 32Ω to 600Ω headphones
0dBFS Line-Up:	+20dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-108dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-110dBFS, 20kHz BW
Unbalanced Line Outputs	
Output Impedance:	<50Ω
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-95dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW
Balanced Line Outputs	
Output Impedance:	<50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Loudspeaker	
Power Output:	4W
Volume:	Mute to full volume via front panel control

Connections	
Microphone:	XLR-3 pin female (electronically balanced)
Headphone:	¼ inch (6.35mm) stereo jack socket
Headset:	2 x XLR-5 pin female (front/rear electronically balanced input)
Audio Inputs:	2 x unbalanced stereo, RCA phono
	1 x S/PDIF, RCA phono
Audio Outputs:	1 x balanced stereo, RJ45
	1 x unbalanced stereo, 2 x RCA phono
	1 x loudspeaker output
Audio Input/Output:	1 x balanced stereo input or mono input/output, RJ45
GPIO:	15-way 'D'-type socket
Network:	2 x gigabit Ethernet, RJ45
	1 x SFP fibre
Mains AC Input:	Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W
DC Input:	4 pin 7.5A power jack socket, 9.5-14VDC
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm

Equipment Type	
AVN-TB20AR:	20 channel rackmount talkback intercom control unit with RAVENNA AoIP

Physical Specification	
Dimensions:	48.3cm (W) x 17.5cm (D) x 8.8cm (H) (2U)
(Raw)	19" (W) x 6.9" (D) x 3.6" (H) (2U)
Dimensions (Boxed):	59cm (W) x 28cm (D) x 15cm (H) 23" (W) x 11" (D) x 5.9" (H)
Weight:	Nett: 3.7kg Gross: 4.4kg Nett: 8.1lbs Gross: 9.7lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug

The AVN-TB20AD is a desktop version of the rackmount AVN-TB20AR intercom with a smaller form factor and an elegant sloped front. It has the same feature set and connectivity *.

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AVN-TB20AD 20 Button Advanced Talkback Intercom, AoIP Desktop Portal

AVN-TB20AD Top View.

AVN-TB20AD Rear View.

Category: Audio Over IP Products.
Product Function: An advanced talkback/listening/paging intercom unit to enable voice/audio communication between different areas in a facility or building complex.
Typical Applications: OB truck comms, theatre comms, inter-studio comms in a TV or radio station.
Features: -

- 20 illuminated key-cap Talk buttons plus Listen & Page buttons.
- Phone button for remote dialling and control of an external telephone hybrid.
- Page button and Group Talk facilities.
- Callback button with callback source display.
- Three user definable buttons.
- Speaker & microphone mute buttons.
- Mic & headset inputs, headphone & speaker outputs.
- Front panel volume control which operates on speaker/headphone outputs and incoming source levels.

- +48V phantom power for the mic inputs.
- Ethernet webserver and front panel control & configuration.
- Front panel display providing source & destination information.
- Sources from AoIP, 1 x balanced, 2 x unbalanced or S/PDIF digital inputs.
- Destinations to AoIP or rear panel balanced & unbalanced outputs.
- Advanced echo cancellation & mic AGC to prevent acoustic feedback.
- Dual 1Gb lan ports & 1Gb SFP fibre port.
- 10 user assignable GPIO ports.
- GPIO button for triggering external events, via physical GPIO or network commands.
- Front panel LEDs for network audio presence, Talk activity, AGC activity, clock sync and power supply activity.
- Two front panel monitor buttons for routing audio directly to the speaker e.g. to take an IFB feed or off-air transmission signal.
- Ducking or mixing of inputs to speaker/headphones.
- Dual AC & DC power supply inputs.

Specification For AVN-TB20AD

Audio-Over-IP Specification	
Open Standards:	RAVENNA, AES67
Device Discovery:	Bonjour (mDNS / DNS-SD)
Audio Delivery:	RTP/UDP over IPv4 multicast
QoS:	DiffServ
Stream Management:	RTSP/SDP
Control:	Ember+/webserver
Format:	Linear PCM 24-bit (L24)
Channels Per Stream:	2
Frames Per Packet:	48
Maximum Streams:	RX 6, TX 5 (fixed)
Sample Rate:	48 kHz
Timing Synchronisation	
Profile Support:	Default, AES media, SMPTE, AES-SMPTE & custom profiles
Timing Protocol:	PTPv2, IEEE1588-2008

Technical Specification	
Microphone and Headset Input	
Input Impedance:	>2.5kΩ balanced
Gain Range:	0dB to +60dB
0dBFS Line-Up:	Adjustable in steps of 3dB from -58dBu to +2dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
Noise:	-127dBu, 20kHz BW, Rs=200Ω ref. 76dB gain
Unbalanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-97dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-97dB

Balanced Line Inputs	
Input Impedance:	>20kΩ unbalanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Crosstalk:	<-100dB
Common Mode Rejection:	>70dB @ 1kHz
Headphone Output	
Output Impedance:	Drives 150mW into 32Ω to 600Ω headphones
0dBFS Line-Up:	+20dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-108dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-110dBFS, 20kHz BW
Unbalanced Line Outputs	
Output Impedance:	<50Ω
0dBFS Line-Up:	+12dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-95dBFS, -30dBFS, 20Hz to 20kHz, unity gain, 20kHz BW
Noise:	-100dBFS, 20kHz BW
Balanced Line Outputs	
Output Impedance:	<50Ω balanced
0dBFS Line-Up:	Adjustable +15/+18/+20/+22/ +24dBu
Frequency Response:	20Hz to 20kHz, +0/-0.2dB
THD+N:	<-110dBFS, -30dBFS, 20Hz to 20kHz, 20kHz BW
Noise:	-110dBFS, 20kHz BW, Rs=200Ω
Loudspeaker	
Power Output:	4W
Volume:	Mute to full volume via front panel control

Connections	
Microphone:	XLR-3 pin female (electronically balanced)
Headphone:	¼ inch (6.35mm) stereo jack socket
Headset:	1 x XLR-5 pin female (front electronically balanced input)
Audio Inputs:	2 x unbalanced stereo, RCA phono
	1 x S/PDIF, RCA phono
Audio Outputs:	1 x balanced stereo, RJ45
	1 x unbalanced stereo, 2 x RCA phono
	1 x loudspeaker output
Audio Input/Output:	1 x balanced stereo input or mono input/output, RJ45
GPIO:	15-way 'D'-type socket
Network:	2 x gigabit Ethernet, RJ45
	1 x SFP fibre
Mains AC Input:	Universal filtered IEC, continuously rated 85-264VAC, 47-63Hz, 20W
DC Input:	4 pin 7.5A power jack socket, 9.5-14VDC
Fuse Rating:	Anti-surge fuse 2A 20mm x 5mm

Equipment Type	
AVN-TB20AD:	20 channel desktop talkback intercom control unit with RAVENNA AoIP

Physical Specification	
Dimensions: (Raw)	29.4cm (W) x 16.5cm (D) x 8.5cm (H) 11.6" (W) x 6.5" (D) x 3.3" (H)
Dimensions (Boxed):	40cm (W) x 28cm (D) x 15cm (H) 16" (W) x 11" (D) x 5.9" (H)
Weight:	Nett: 2.5kg Gross: 3.2kg Nett: 5.5lbs Gross: 7.0lbs

Accessories	
AVN-DC150:	150W DC power supply with KPJX-4S plug

* Except for an additional headset connector on the rear of the AVN-TB20AR.

Webserver Software

Each AVN-TB talkback unit has a built-in webserver for setup and configuration. The webserver is responsive, and resizes depending on the size of your screen, meaning that it can be used on large monitors or small handheld devices such as smart-phones. Help information is shown on the right hand side of the screen so it's a good place to go to find out how the unit operates.

Talkback Intercoms Using Audio Over IP RAVENNA/AES 67

The AVN-TB range is an advanced talkback/listening/paging intercom system for use in broadcast environments

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