



# SUBMITTAL COVER SHEET

From: Tyler O'Neill Attn: Tim Brown  
 Company: Piazza, Inc. C&S Companies  
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 Project: Dutchess Stadium Syracuse, NY 13212  
 Project #: RFB-DCB-18-22 (315) 455-2000; Fax: 455-9577

Reference: CSI Code: 274116 Dwg No: \_\_\_\_\_  
 Paragraph: \_\_\_\_\_ Other: \_\_\_\_\_

Description: Integrated Audiovisual Systems Product data

Supplier: Simon Sound

Manufacturer: \_\_\_\_\_

Item Type:  Product Data \_\_\_\_\_ Manf. Cert/Warranty  
 Shop Drawings \_\_\_\_\_ Samples  
 Other: \_\_\_\_\_

**Contractor's Approval:**

\_\_\_\_\_ Reviewed for general compliance of specifications.  
 \_\_\_\_\_ This submittal is a **substitute** to the specified product.  
 \_\_\_\_\_ For Architects / Engineers Approval

This is our \_\_\_\_\_ submittal for this item.

We are submitting \_\_\_\_\_ copies.

**Contractor Submittal Review Stamp**  
 THE ATTACHED MATERIAL HAS BEEN REVIEWED BY THE UNDERSIGNED AND IS BELIEVED TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE UNDERSIGNED UNDERSTANDS VERIFICATION OF FIELD DIMENSIONS, AND COORDINATION WITH OTHER TRADES, REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

Submitted by: Piazza, Inc.  
 Date: 07/06/2023

Digitally signed by Piazza, Inc.  
 DN: C=US, E=tyler@piazza.com,  
 OU=Piazza, Inc., O=Piazza, Inc.,  
 CN=Piazza, Inc.  
 Date: 2023.03.15 15:04:38-04'00'

**C&S Companies Approval:**

(A) Approved  
 (A/N) Approved As Noted  
 (R) Reviewed for General Conformance  
 (RR) Revise and Resubmit  
 (REJ) Rejected  
 (SUB) Submit Specified Item

Checking is only for general compliance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the jobsite; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.

Reviewed by: \_\_\_\_\_  
 Date: \_\_\_\_\_

\*Note: Provide one cover sheet for each copy of the submittal.

# EDWARD SIMON & COMPANY

SOUND PRODUCTS

## Dutchess Stadium - New Left Field Clubhouse Seating Bowl and Restroom Building

### Product Submittal

#### INTEGRATED AUDIOVISUAL SYSTEMS AND EQUIPMENT

27 41 16

Piazza Inc.

DLR Architects



DLR Group

**Note: List inventory by room / space in future submittals.**

- REVIEWED
- REVIEWED – ADDITIONAL INFORMATION REQUIRED
- FURNISH AS CORRECTED
- REVISE AND RESUBMIT
- REJECTED
- NOT REVIEWED

This review is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute approval of safety precautions or construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The Architect's comments, notes or corrections are not an authorization to proceed with Work involving a change in the Contract Sum, the Contract Time or both. If any portion of this review requires a change to the Work, an appropriate change instrument must be executed in accordance with the Contract Documents.

DLR Group

Date: 07/15/2023

By: Bonnie J. Metro

**NOTE: See ASI 05 (not ASI 03 per RFI response) for scope clarification regarding quantities. Some items removed from scope are noted.**

Dutchess Stadium New Left Field Clubhouse, AV Systems Bill of Materials

W/ Club level Option B

Edward Simon & Co.

06/19/2032

MFG	Model	QTY	Description
Visionary	Duet (encoder)	TBD	IP video transport <b>SEE ASI 05</b>
Visionary	Duet (decoder)	TBD	IP video transport <b>SEE ASI 05</b>
QSC	Axon C-1	TBD	Volume/Source Select
QSC	AD-P6T	TBD	pendant speaker
<del>Fusion Research</del>	<del>CS-200</del>	<del>TBD</del>	<del>music server</del> <b>SEE ASI 05</b>
QSC	AD-P.SUB	TBD	pendant subwoofer
Blue Sound	CS1	TBD	ipod connection <b>SEE ASI 05</b>
K-Array	KP-102	TBD	Line array
Mersive	Solstice Pod G3	TBD	wireless interactive
Netgear	AC1200	TBD	wireless router
Visionary	Multiview	TBD	IP Video scaler
Shure	UA864 (white)	TBD	wireless antenna
Extron	60-1517-03	TBD	Dante wall plate
JBL	CBT 70J+E	TBD	outdoor speakers
JBL	CBT 70J	TBD	outdoor speakers
JBL	C67p/T	TBD	Club pendant speakers
LeGrand	XCSPP3G-BK	TBD	Outdoor charging setup
LeGrand	XSLOCK-BK	TBD	Outdoor charging setup
LeGrand	XANCHORKIT	TBD	Outdoor charging setup
LeGrand	CG37098	TBD	Outdoor charging setup
LeGrand	SS26	TBD	Outdoor charging setup
LeGrand	CG35201	TBD	Outdoor charging setup
LeGrand	CG03824	TBD	Outdoor charging setup
LeGrand	CG03820	TBD	Outdoor charging setup
LeGrand	2097TRWRGRY	TBD	Outdoor charging setup
AMX	DVX-3266-4K	TBD	Club Presentation Switcher
AMX	MT-1002	TBD	Club Touch screen Control
AMX	DXL-TX-4K60	TBD	Club Video transport <b>SEE ASI 05</b>
AMX	DXL-RX-4K60	TBD	Club Video Transport <b>SEE ASI 05</b>
AMX	DX-TX-DWP-4K	TBD	Video transport wall box
Middle Atlantic	BGR-4532-AV	TBD	45ru equipment racks for AV
Middle Atlantic	RCS-1824	TBD	18RU equipment rack to mount in credenza
Middle Atlantic	PD-8	TBD	8 port power distro
<del>Blonder Tongue Labs</del>	<del>AQT8-QAM/IP</del>	<del>TBD</del>	<del>IPTV dist.</del> <b>SEE ASI 05</b>
<del>Blonder Tongue Labs</del>	<del>Splitter 8</del>	<del>TBD</del>	<del>analog video/rf splitter</del>
Makertek	Custom Panel	TBD	Custom video panels
Cisco	550G	TBD	16 port 10G network switch <b>SEE ASI 05</b>
Blue Sound	B400S	TBD	media player

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<del>Marantz</del>	<del>M-CR612</del>	<del>TBD</del>	<del>media player</del> <b>SEE ASI 05</b>
K-Array	KA-84	TBD	amp for batting tunnel speakers
Crown	DCi 4 600	TBD	amps for JBL speakers
Atlas	IP-ZCM1RMK	TBD	IP -analogue gateway
Biamp	Tesierra Forte DA	TBD	Club Audio DSP
QSC	CXQ-8K4	TBD	Amps for pendant speakers/subs
QSC	SLDAN-128-P	TBD	Dante Liscence for 610i
QSC	Core610i	TBD	main DSP
QSC	QIO ML4i	TBD	audio input peripheral
QSC	QIO L4o	TBD	audio output peripheral
QSC	QIO IR1x4	TBD	IR control peripheral
QSC	QIO S4	TBD	RS232 control peripheral
Listentech	LT-800	TBD	ALS transmitter
Shure	ULXD4Q	TBD	Wireless mic receiver unit, 4ch
Listentech	LR-4200	TBD	ALS receiver
Listentech	LA-430	TBD	neck loop for ALS rx
Listentech	LA313	TBD	charging station for ALS rx units
Shure	ULXD2/SM58	TBD	handheld wireless mic
Shure	ULXD1-G50	TBD	belt pack w/ lav wireless mic

\*\* Quantities to be finalized after line diagrams are reviewed and accepted \*\*

# marantz®

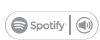


## M-CR612 NETWORK CD RECEIVER FEATURING HEOS, FM/AM, BLUETOOTH®, AIRPLAY 2 AND VOICE CONTROL COMPATIBILITY

The Marantz M-CR612 compact network CD receiver supports near limitless streaming platforms through AirPlay2, Bluetooth and HEOS connectivity. The built-in disc player is compatible with music CDs, CD-R/CD-RW recordable and erasable discs, and is equipped with an AM/FM tuner. Use your voice to control the M-CR612 with Amazon Alexa, Google Assistant or Apple Siri for seamless ease of use.

### Highlights

- Power and connectivity to suit your audio preference: 60W x 2ch (6 ohms), or 4x 30W for speaker A/B with individual volume setting
- Plays CD, WMA/MP3 (CD-R/RW) and features an AM/FM tuner: No matter how you listen, enjoy your music with elevated Marantz sound
- Stream music from your favorite sources: Play songs from TuneIn internet radio, Pandora, Spotify, SiriusXM, Amazon Prime Music, TIDAL and more via AirPlay 2, Bluetooth and the HEOS app (music streaming services may vary by region)
- Supports Amazon Alexa, Google Assistant and Apple Siri voice agents: Use your voice to control the M-CR612
- High-performance, high-resolution audio playback for every source: Supports WAV/FLAC/ALAC 192kHz/24bit, DSD 2.8/5.6MHz and Gapless playback (WAV/FLAC/ALAC, DSD)
- Built-in Bluetooth and Wi-Fi with 2.4GHz/5GHz dual band support: Improved network stability even in Wi-Fi-crowded homes
- Includes two digital Optical inputs for your TV or digital device: The M-CR612 automatically detects the signal input from your TV and outputs elevated sound
- Works with your TV remote: Program the M-CR612 to work with your TV remote and easily adjust volume up, volume down, mute and source selection



# because music matters

# marantz®

## M-CR612

NETWORK CD RECEIVER FEATURING HEOS, FM/AM, *BLUETOOTH*®, AIRPLAY 2 AND VOICE CONTROL COMPATIBILITY



Design and specifications are subject to change by Marantz without notice.

FEATURES	M-CR612
High quality power output	2 x 60W
CD compatibility: CD / CD-R/-RW / WMA / MP3	• / • / • / •
Tuner: AM / FM	• / •
HEOS Multiroom & Streaming	•
Online service (HEOS)	Spotify Connect, Amazon Prime, Deezer Premium+, iHeart Radio, Pandora, SiriusXM, Sound Cloud, Tidal
Streaming Audio from computer	•
AirPlay 2	•
Internet Radio	Tune In
Voice Control - Works with Amazon Alexa	•
Voice Control - Google Assist / Apple Siri	• / •
Voice Control - Microphone Built-in	-
Bluetooth	•
Ethernet / WiFi 2.4 GHz (11 b/g/n) / WiFi 5GHz (11 a/n)	• / • / •
WiFi setup: WPS / WiFi Sharing	• / •
Lossy formats MP3 / WMA / AAC	• / • / •
Lossless formats FLAC / ALAC / WAV / AIFF / DSD	• / • / • / • / •
DSD Audio	2.8 / 5.6 MHz
FLAC / WAV / ALAC	192kHz / 24bit
Gapless Playback - FLAC / WAV / DSD	• / • / •
Remote App: iDevice / Android	• HEOS App
Tone control: Bass / Treble / Balance	• / • / •
Low Noise OLED Display	3 line
Front illumination	Blue, White, Green, Orange
Alarm: Once / Daily / Programmable / Timer	• / • / • / •
IR Learning for TV Remote	•

INPUTS / OUTPUTS	
Analog in / Out	1 / 1
Digital optical In	2
USB input: type A	1 (rear)
Subwoofer PreOut	1
Headphone Out	•
Speaker A / B	•
Speaker binding Post	Screw type

SPECIFICATIONS	
AUDIO SECTION	
Power Output (6 ohm, 1kHz)	60W
Number of channels	2
Bi-Amping / Speaker A+B / Parallel BTL	• / • / •
Frequency Response	10Hz - 40kHz
Signal to noise ratio	90dB
Total Harmonic Distortion	0.1

FM SECTION	
Frequency range FM	87.5 - 108 MHz
Signal to Noise Ratio FM (Mono/Stereo)	70/70dB
Total Harmonic Distortion FM (Mono/Stereo)	0.4/0.4%

GENERAL	
Available color	Black
MENU languages	EN / FR / ES
Remote Control	RC014CR
Power Consumption	55W
Standby Consumption	0.3W
Dimensions: W x H x D (in)	11.02 x 11.93 x 4.37
Weight (lbs)	7.28

UPC		
M-CR612/U1B	Black	699927711658

Sound United LLC  
North America Regional Headquarters  
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Vista, CA 92081

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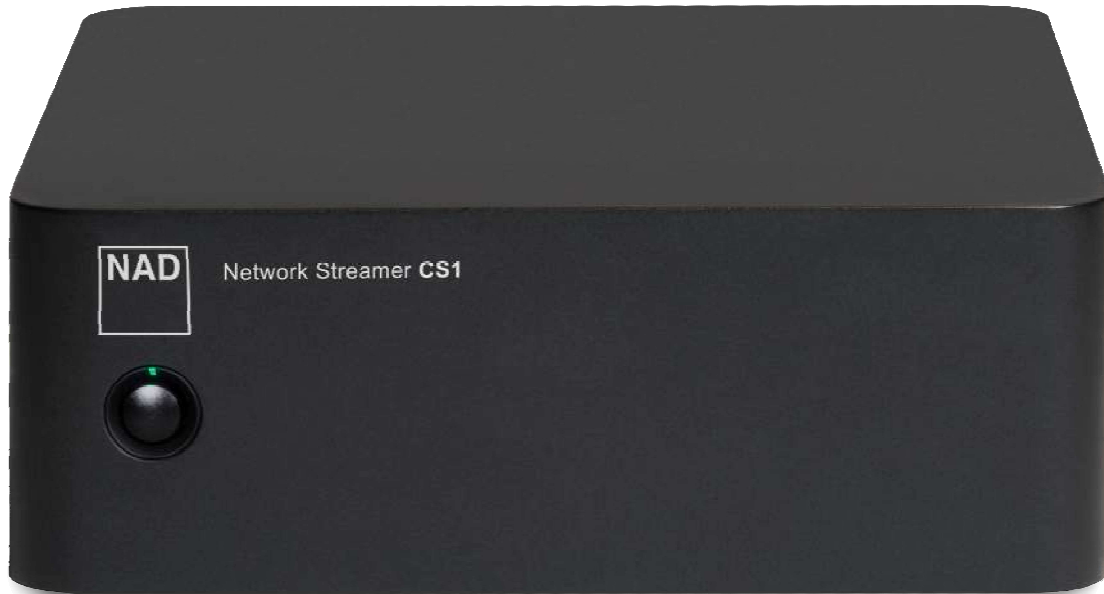
\* All specs can be subject to change.





# Bluesound Professional CS1 Endpoint Network Streamer

[PRELIMINARY]



## Bluesound Professional CS1 Endpoint Network Streamer

The CS1 Endpoint Network Streamer is an easy and affordable way to add audiophile-grade music streaming to any stereo setup. Or you can combine the CS1 with a pair of powered speakers to configure a modern, low-footprint music system. Featuring Bluetooth®, Ethernet, and Wi-Fi connectivity, the CS1 supports the most popular network streaming and casting protocols, including Apple AirPlay 2, Google Chromecast, DLNA, Spotify Connect, Tidal Connect, and Roon. The CS1 can play high-resolution audio, up to 24-bit/192kHz and decodes MQA recordings for master quality listening.

### Well Supported

There are a multitude of ways to play music through the CS1 Endpoint Network Streamer. You can use Bluetooth to pair the CS1 with a smartphone, tablet, or computer. The CS1 is compatible with the following Bluetooth Profiles - A2DP 1.2, AVRCP 1.3, SPP, HFP, HSP, HOGP.

You'll get even better sound via Wi-Fi or Ethernet, and the CS1 offers many options. You can use AirPlay 2 to stream CD-resolution audio from any app on an iPhone, iPad, or Mac, or from an iTunes library on a Windows PC. You can use Google Chromecast to cast music to the CS1 from any Cast-enabled app on a mobile device or personal computer, at up to 24-bit/96kHz resolution. Spotify and Tidal subscribers can cue up music in the apps for those services, then easily transfer playback to the CS1. Roon subscribers can play music from their digital libraries and from streaming services supported by Roon.

### Audiophile Grade

Regardless of how you stream or cast music to the CS1, you'll love what you hear. Employing premium components throughout, the CS1 features an advanced differential digital section based on Texas Instruments' PCM5141, a chip known for its extremely low noise, excellent dynamic performance, and immunity to clock jitter. The CS1 supports resolution up to 24-bit/192kHz.





## Well Connected

You can connect the CS1 to your network via Wi-Fi or hardwire its Ethernet port to your network router or an access point. The CS1 can be connected via its analogue output or digital output to the HUB or directly to a Bluesound Professional player.

A compact, minimalist design, the CS1 makes it simple to add streaming capability to any sound system—without the need for special apps. Choose the music you want to hear with apps you already know, then sit back and enjoy audiophile-grade sound.

- Compact, minimalist design.
- The CS1 is compatible with the following Bluetooth Profiles - A2DP 1.2, AVRCP 1.3, SPP, HFP, HSP, HOGP
- Dual-band Wi-Fi plus Ethernet port.
- Stereo analogue, optical digital, and coaxial digital outputs.
- Premium differential DAC design based on Texas Instruments PCM5141, with support for 24-bit/192kHz high-resolution audio.
- Apple AirPlay 2 support allows CD-resolution streaming from any audio app on an iPhone, iPad, or Mac.
- Google Chromecast support allows playback at up to 24-bit/96kHz resolution from any Cast-enabled app on a smartphone, tablet, or personal computer.
- Spotify Connect and Tidal Connect support lets users cue up music on a smart device, then transfer playback to the CS1.
- Roon subscribers can stream audio to the CS1 from their personal libraries and online services supported by Roon.
- DLNA support allows streaming at up to 24-bit/192kHz resolution from any DNLA-capable music app.\*

# B400S

## 4 ZONE BluOS® NETWORK MUSIC PLAYER

**BLUESOUND**  
PROFESSIONAL



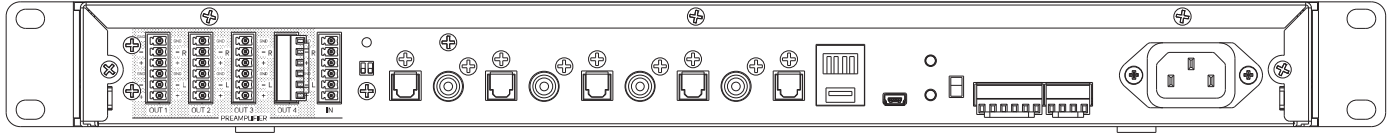
The Bluesound Professional B400S is a 4-zone network music player designed specifically for use in commercial installations. This 1U player is based on the established BluOS platform and is capable of playing and distributing content from local storage as well as from a large number of streaming services, including some specifically designed for commercial use, such as SoundMachine. These sources can be played to one or more of the four available stereo zones with the B400S effectively acting as four independent players with the capability of completely separate content and control, or grouping into user-definable groups of whatever size required with different zones within the BS400S and/or any other connected Bluesound Professional players on the network.

Control of the system can be accomplished by any Windows/Mac computer as well as any iOS/Android phone or tablet and the Bluesound Professional CP100W wall mount controller. Third party control is also possible with any of the leading systems. Security provisions including no front panel controls on the player prevent any unauthorized control of the system, either locally or remotely.

Balanced line channel outputs are designed specifically for commercial installations and these are supplemented by optical and coaxial digital outputs per channel. Analog balanced mic/line and digital inputs allow for the connection of a local stereo source. A USB input further adds to the capability of the system by providing replay of files stored on connected drives. Built-in DSP allows for equalization as well as other audio processing. Trigger inputs allow for local triggering of unit power and signal inputs allow for remote muting of the music.

### BENEFITS

- 4 stereo zones of network music replay
- Integration with local network content storage
- Integration with many streaming services including Spotify, Tidal, Qobuz etc.
- Integration with a wide variety of internet radio platforms
- PC/Mac, iOS/Android and third-party control
- Security preventing unauthorized control
- Specialist Bluesound Professional wall-mount control panels
- Support of hi-res audio up to 192kHz/24 bit
- Support of MQA content
- Replay from locally connected USB drives
- DSP providing for equalization and other audio processing
- Streaming via ethernet for increased reliability
- Flexible and unlimited grouping of zones within a BluOS system including within B400S
- Local analog mic/line and digital line inputs
- Analog balanced, digital optical and coaxial outputs
- Remote trigger and signal inputs



## ARCHITECTS & ENGINEERS SPECIFICATION

The network music player shall allow for the playing of material from network attached drives or a wide variety of streaming services including Spotify, Tidal, Qobuz and SoundMachine as well as internet radio platforms such as TuneIn and iHeart Radio.

Streaming shall be via wired ethernet for increased reliability. The player shall allow playing of separate or grouped sources to each of four separate stereo zones accessible via balanced barrier pluggable analog barrier strip outputs as well as optical or coaxial digital outputs per zone. The player shall support files up to 192kHz and 24-bit resolution as well as MQA encoded files. Control of the player shall be possible from PC or Mac computers, Android and iOS mobile devices and third-party control systems. In addition, there shall be the provision for the connection of dedicated wall mount remote control panels to allow for local control of zones. This player shall be based on the BluOS platform and shall be compatible with other BluOS devices to form a complete and integrated ecosystem including flexible grouping and control of zones.

Local balanced mic and line level analog and digital inputs shall also be provided to allow for the additional use of local sources. Trigger and signal inputs shall be provided. A USB input shall provide for replay of files stored on local connected drives. Built-in DSP shall allow for equalization and other audio processing. The player shall be 1U with no front panel controls to prevent unauthorized adjustments and control of the unit shall incorporate security to prevent unauthorized access via other devices.

The network music player shall be the Bluesound Professional B400S.

## SPECIFICATIONS

<b>SUPPORTED OPERATING SYSTEMS</b>	Plays music from network shares on the following desktop operating systems: Microsoft Windows XP, 2000, Vista 7-10, Apple Macintosh 7-10
<b>FREE INTERNET RADIO</b>	TuneIn Radio, iHeartRadio, Calm Radio, Radio Paradise, LiveX-Live
<b>SUPPORTED CLOUD SERVICES</b>	SoundMachine, Tunity, Custom Channels, SiriusXM for Business, Spotify, Tidal, Amazon, Deezer, Qobuz, TuneIn, Radio.com and many others
<b>INTEGRATION PARTNERS</b>	Control4, RTI, Crestron, URC, push, ELAN, Lutron
<b>ALBUM ART</b>	JPG
<b>AUDIO</b>	
<b>RATED DISTORTION</b>	≤0.005% (20hz-20khz at Rated Power)
<b>SIGNAL-TO-NOISE RATIO</b>	100dB (ref. 1W/8 Ohms)
<b>SAMPLE RATE</b>	32 - 192kHz
<b>BIT DEPTH</b>	16 - 24

## CONNECTIVITY

<b>INPUT</b>		<b>OUTPUT</b>	
<b>ANALOG</b>	Mic/Line Balanced Phoenix	<b>ANALOG</b>	Balanced Phoenix X 4
<b>SPDIF</b>	Optical (TOSLINK)	<b>SPDIF</b>	Optical x 4 (TOSLINK) Coaxial x 4
<b>USB</b>	Type A (for USB memory stick and supported peripherals - FAT 32 formatted)	<b>+12V TRIGGER OUT</b>	12V ±20%
	Type B (for computer audio interface)	<b>NETWORK</b>	
<b>+12V TRIGGER IN</b>	Phoenix 12V ±20%	<b>ETHERNET/LAN</b>	Ethernet RJ45, GigE
<b>IR INPUT</b>	Phoenix	<b>GENERAL</b>	
<b>SIGNAL INPUT</b>	Phoenix- Pin 1, 12V, Pin 2 Input 1, Pin 3 Input 2, Pin 4 GND	<b>AC POWER SUPPLY</b>	100-240V 50/60Hz
		<b>STANDBY POWER</b>	6W Idle (Network Standby Mode)
		<b>DIMENSIONS (W x H x D)</b>	480 x 46 x 234mm (18 7/8 x 1 13/16 x 9 1/4)"
		<b>NET WEIGHT</b>	2.7kg (5.9lb)
		<b>SHIPPING WEIGHT</b>	3.8kg (8.4lb)

# Bluesound Professional CS1 Endpoint Network Streamer SPECIFICATIONS

## AUDIO & OPERATING SYSTEM

### AUDIO

THD + N (20 Hz – 20 kHz)	<0.03% 20-20 kHz -1dBFS output
Signal-to-Noise ratio	-94dB (ref 2V)
Frequency response	20-20 kHz +/-0.3dB; 50 kHz -3dB
Native sampling rate	Up to 192 kHz
Bit depth	16-24
Supported audio file format	LPCM, MP3, AAC/AAC+, AC3, Ogg Vorbis, HE-AAC, WMA decode capability
Supported 3rd party service provider	Spotify Connect, Tidal Connect, Apple AirPlay 2, Google Chromecast, DLNA, Roon
DAC	TI PCM5254
Processor	ARM® Cortex™ -A53, Quad-Core, 1.5GHz per core

### CONNECTIONS

Power	AC adapter Input: 100-240V AC 0.3A Output: 5V DC 1A
Network connectivity	Ethernet RJ45 100 Mbps Wi-Fi 5 (802.11ac 2.4GHz/5 GHz)
Bluetooth	DLNA/UPnp* Bluetooth 5.0 BT Profiles: A2DP 1.2, AVRCP 1.3, SPP, HFP, HSP, HOGP
NFC	NFC for easy Bluetooth connection
12V Trigger Out	3.5mm Mini-jack x 1
Analog Out	RCA x 1
Coaxial Out	RCA 75 ohms
Optical Out	TOSLINK x 1
USB IN	USB C for AC adapter

### GENERAL

Status Indicator	Front Panel LED
Function Button	Front Panel Function Button
Power Consumption	0.5W Network Standby
Finish	Black

### DIMENSION AND WEIGHT

Gross dimensions (W x H x D) **	140 x 140 x 55 mm (5.5 x 5.5 x 2.16 in)
Net weight	1.5 kg / 3.3lbs
Shipping weight	1.7 kg/ 3.8lbs

\* Certification in progress as of publishing date

\*\* Gross dimension includes feet and other extended front and rear panel terminals.





## ADVANTAGES

**BREAKTHROUGH TECHNOLOGIES** UHX-D® Digital Wireless represents an incredible advancement in wireless performance. Shure innovation brings to market new features and technologies that dramatically increase spectrum efficiency, dependability, and signal routing convenience.

### SIGNAL STABILITY

The 24-bit / 48 kHz digital audio delivers incredibly clear and accurate capturing of source material. It offers a wide frequency range with flat response for superb low range and transient response.

### ADVANCED ENCRYPTION

The AES-256 encryption provides enhanced privacy – for installations where security is key. A new, unique, randomized encryption key is generated every time encryption is enabled.

### SCALABLE HARDWARE

UHX-D receivers are available in single, dual and quad channel configurations, along with a wide selection of Shure microphones to accommodate any size installation.

### VARIETY OF FORM FACTORS

UHX-D bodypack and handheld transmitters provide complete mobility for presenters, while boundary and gooseneck base transmitters accommodate meeting rooms with flexible seating layouts. Boundary and Gooseneck Base transmitters are available in black and white.

### AUDIO SUMMING

(Dual/Quad only)  
Combining of selected audio channels to be routed to all selected outputs and allows the receiver to function as a 2 or 4 channel mixer. All XLR outputs of the selected channels provide the summed audio.

### TRANSPARENT 24-BIT DIGITAL AUDIO

Signal stability with no audio artifacts extends over the entire 100 meter (300 feet) line-of-sight range using standard supplied dipole antennas.

### NETWORKED CONTROL

Ethernet networking enables streamlined setup across multiple receivers. Wireless Workbench Integration, frequency coordination via Alient Spectrum Manager, AMY® and Crestron Control® as well as Dante® digital networked audio with full Dante Domain Manager (DDM) compatibility.

### LITHIUM ION RECHARGEABILITY

Lithium Ion rechargeability provides up to 9 hours of use on a single charge, while displaying battery life in hours and minutes accurate to 15 minutes.

### HIGH DENSITY MODE

Optimizes the system by running at 1mW RF transmit power and reducing the modulation bandwidth. The result is nearly three times the number of useable frequencies, enabling up to 47 systems in an open 6MHz TV channel.

### BODYPACK FREQUENCY DIVERSITY

(Dual/Quad only)  
The signals from a common source via two bodypack transmitters with different frequencies are routed to receiver's audio outputs. In case of RF interference, switching between channels occurs in milliseconds, without interrupting the audio.

# GENERATIONS AHEAD

**SHURE**

Shure UHX-D Digital Wireless offers uncompromising 24-bit audio clarity and extremely efficient RF performance with single, dual, and quad channel receivers for any size professional and installed sound reinforcement application. Scalable, intelligent hardware delivers uncompromising digital wireless performance, with a wide selection of trusted Shure microphones to choose from. And with the latest additions, the UHX-D boundary and gooseneck transmitters, two additional form factors – ideal for large meetings at conference and convention centers, or for AV conferencing where DECT spectrum is not an option – complement the range.

Unmatched spectrum efficiency enables a dramatic increase in the number of simultaneous active transmitters on one TV channel, with rock-solid signal over the entire range. Optional rechargeable accessories eliminate the need for disposable batteries while offering extended run time and metering accuracy in hours and minutes. For secure transmission, all UHX-D components include AES-256 encryption. Generations ahead of any other available system in its class, UHX-D brings a new level of performance to professional and installed sound reinforcement.



## ADVANTAGES

# SOFTWARE

## SYSTEMON

### TOTAL COMMAND

### SYSTEM INTERACTION

Total Command  
of Shure Networked  
Audio Hardware

Shure SystemOn Audio Asset Management Software was developed for managing mission critical or large-scale deployments of Shure audio hardware, including UTX-D<sup>®</sup>, across corporate and higher education networks from one central platform. SystemOn tracks audio levels, battery life and RF/spectrum status in real time, enabling IT administrators and AV technicians to monitor and control Shure hardware devices remotely using a laptop, smartphone or tablet.

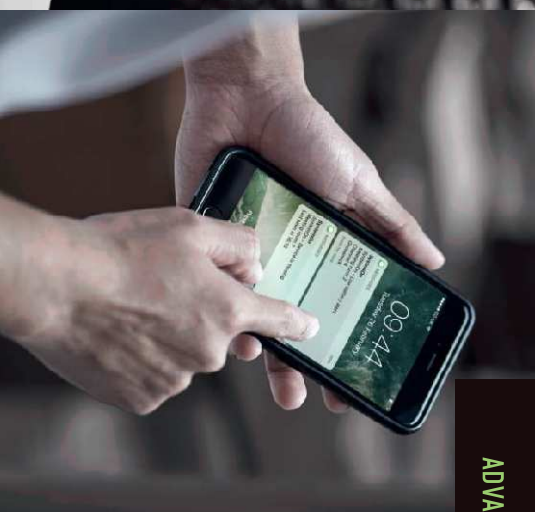
## CHANNELS

### SYSTEM INTERACTION

System Interaction  
over WiFi  
via iOS Devices

Command and control your wireless on the go and roam the performance space while monitoring key Shure wireless system parameters in real time from any iOS device.

- Real-time, precision monitoring of critical device parameters, including:
  - RF level metering
  - Audio level metering
  - Transmitter battery level
- Frequency Assignments with band, group and channel info
- RF interference indicator
- Encryption status
- Frequency diversity status



## ADVANTAGES

## WIRELESS WORKBENCH

### COMPREHENSIVE CONTROL

Comprehensive Control  
for Shure Networked  
Wireless Systems

Shure Wireless Workbench<sup>®</sup> 6 software offers comprehensive control for networked Shure wireless systems and provides a rich interface to manage every facet of a performance over the network.

- Perform real-time plotting of scan data from networked Shure scanning hardware in a rich graphical environment
- Monitor and make live remote adjustments to frequency, audio level, RF metering and other equipment settings
- Configurable interference and hardware alerts
- Assign compatible frequencies to networked Shure wireless devices
- Automatically calculate backup frequencies

# Dante™

Digital Audio Networking Over Ethernet



Dante is a total solution for transporting low latency, uncompressed audio over standard IP Ethernet networks with sample accurate synchronization, automatic device discovery, and easy to use signal routing.

Send multichannel audio from UTX-D receivers to Dante-equipped mixers over a single ethernet cable

Dante Domain Manager (DDM) compatible for managing enterprise-wide Dante audio network deployments

Auto-discovery and easy audio networking with Dante Controller

Compatible with UTXD10 & UTXD10 receivers



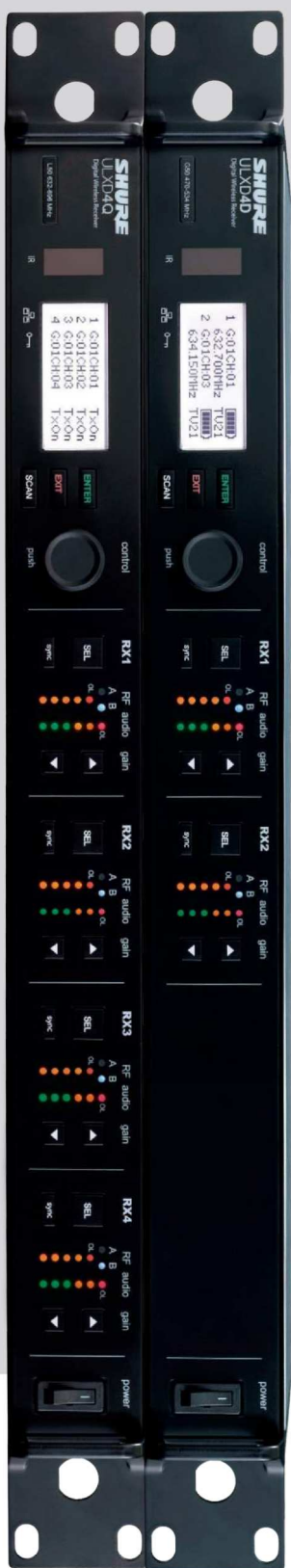


COMPONENTS

**+ UHXD4D DUAL & UHXD4Q QUAD CHANNEL DIGITAL WIRELESS RECEIVER**

Shure UHXD4D Dual Channel Digital Wireless Receiver offers two / four channels of uncompromising audio quality, RF signal stability and efficiency, and advanced setup features in a single rack unit. Rugged, yet lightweight and compact, the all-metal chassis houses two / four independent receivers, each with its own audio and RF meters, gain control, and receiver outputs that can be either direct or summed for flexible signal routing.

With RF cascade and two Ethernet ports, units easily can share RF signal and be networked together for simplified frequency coordination and deployment. For networked audio applications, Dante™ digital networking allows multiple channels of audio to be transmitted and received over a single Ethernet cable. When more compatible frequencies over shorter distances, High Density mode can be enabled to dramatically increase the number of available open frequencies.



COMPONENTS

**+ UHXD4 DIGITAL WIRELESS RECEIVER**

The Shure UHXD4 is a half-rack, networkable wireless receiver for use with UHX-D® Digital Wireless Systems. With an expansive set of professional features, including 24-bit / 48 KHz digital audio quality, efficient and intelligent RF performance, and AES 256-bit encryption, UHX Digital offers uncompromising wireless tailored for professional sound reinforcement.



With the suite of features and benefits UHX-D® Digital Wireless Systems offer, the UHXD4D and UHXD4Q are truly generations ahead of any other dual / quad digital receiver in its class, and brings a new level of performance to professional sound reinforcement.



## COMPONENTS

### + ULXD2 HANDHELD WIRELESS MICROPHONE TRANSMITTER

With an wide variety of interchangeable Shure microphone cartridges, the ULXD2 delivers uncompromising audio quality and RF performance, and AES 256-bit encryption for secure transmission. The ULXD2 handheld offers over 9 hours of continuous battery life with Shure rechargeable battery or 8 hours with alkaline battery.

#### Features:

- AES 256-bit encryption for applications for which secure transmission is needed
- Proprietary Shure Gain Ranging optimizes the system's dynamic range for any input source, eliminating the need for transmitter gain adjustments
- Optional Shure SB900A lithium-ion rechargeable battery pack provides over 9 hours of battery life, precision metering in hours and minutes, and zero memory effect
- External charging contacts for docked charging (with the SB6200 Dual Docking Charger)
- Transmitter Mute Mode repurposes the On/Off switch into a mute switch, enabling audio muting while preserving RF channel presence
- Backlit LCD with easy-to-navigate menu and controls
- Rugged metal construction
- Frequency and power lockout



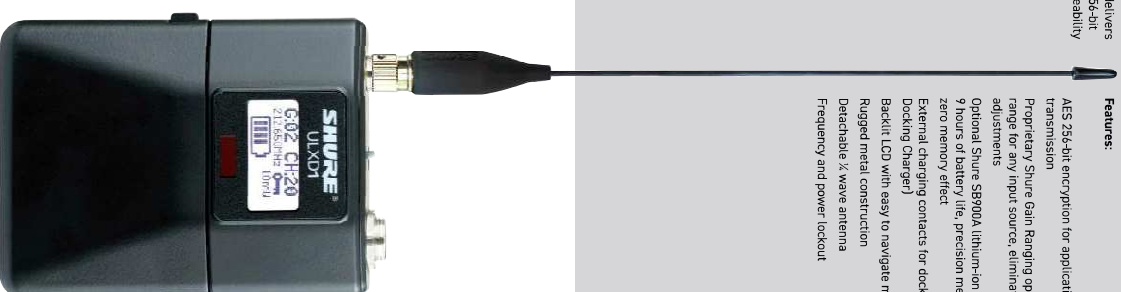
## COMPONENTS

### + ULXD1 BODYPACK WIRELESS MICROPHONE TRANSMITTER

With a rugged yet lightweight aluminum case, the ULXD1 delivers uncompromising audio quality and RF performance, AES 256-bit encryption for secure transmission, and advanced rechargeability options for professional sound reinforcement applications.

#### Features:

- AES 256-bit encryption for applications requiring secure data transmission
- Proprietary Shure Gain Ranging optimizes the system's dynamic range for any input source, eliminating the need for transmitter gain adjustments
- Optional Shure SB900A lithium-ion rechargeable battery provides over 9 hours of battery life, precision metering in hours and minutes, and zero memory effect
- External charging contacts for docked charging (with the SB6200 Dual Docking Charger)
- Backlit LCD with easy-to-navigate menu and controls
- Rugged metal construction
- Detachable 1/4 wave antenna
- Frequency and power lockout



## UA864 -- Wall-Mounted Active Directional Antenna

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### General Description

The UA864 antenna provides active directional RF coverage in an easy-to-install, low-profile enclosure that can be mounted on walls, ceilings, or metal surfaces with improved reception. The paintable, neutral white housing allows the antenna to blend into corporate or classroom settings. The 4-position selectable gain switch provides attenuation and boost settings to match the antenna to the environment. UHF variants provide wideband RF coverage.

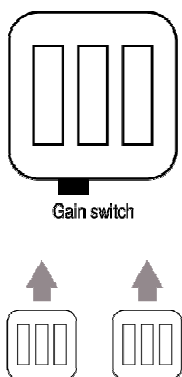
### Features

- Low-profile design
- Wall or ceiling mounting options
- Wideband performance (UHF models only)
- Four-position gain switch
- Metal surface mounting capability
- LED indicators for gain settings
- Neutral white, paintable housing

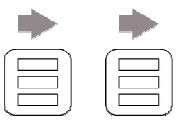
### Positioning Antennas for Diversity Reception

The UA864 is a polarized antenna and must be oriented correctly to optimize reception for each transmitter type. The gain switch indicates the antenna's orientation. Position the antennas using the following guidelines:

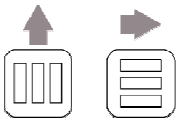
**Note:** The antenna's inner construction may differ for each model variation.



Handheld and Bodypack Transmitters (vertical)



Boundary Microphones (horizontal)



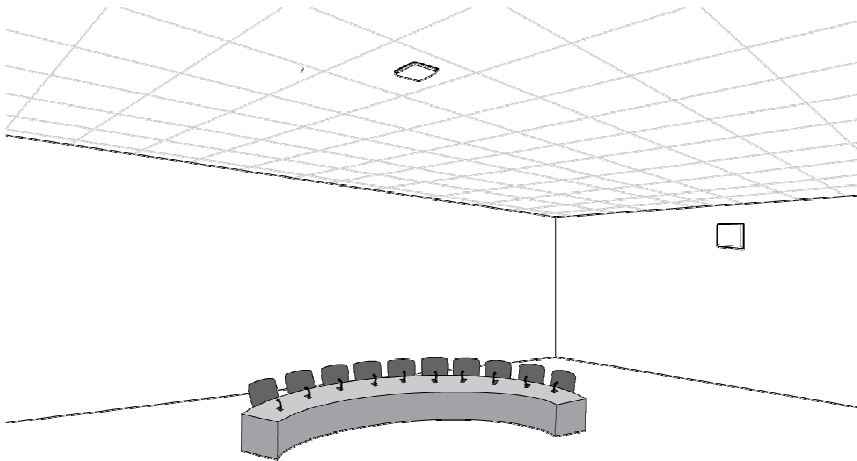
Mixed Transmitter Types (vertical and horizontal)

---

## Antenna Placement

Use the following guidelines when mounting antennas:

- Antennas and receivers must cover the same frequency range.
- Mount antennas *at least* four feet apart for optimal diversity.
- Position antennas so there is nothing obstructing a line of sight to the transmitter (including the audience).



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## Find More Information Online

For more information, visit <http://www.shure.com>

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## Installation

### Mounting on a Wall or Ceiling

The mounting plate installs directly to a wall, ceiling, or a standard junction box.

## Required Equipment

- #8 or #6 screws
- Flat washers
- Lock washers
- Drill
- Screwdriver

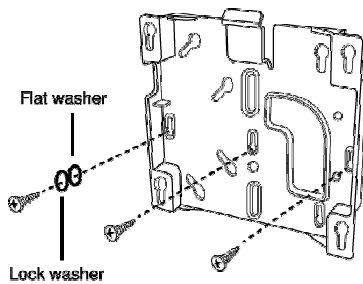
## Installation Steps

1. Align the mounting plate:

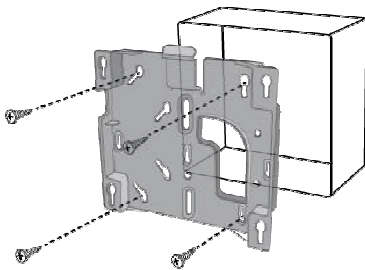
**Junction box mounting:** Align the mounting plate with the junction box so that at least two screws can be used.

**Wall mounting:** Use the mounting plate as a template to mark the location for the holes on the mounting surface. Drill the holes accordingly.

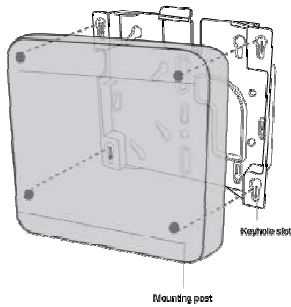
2. Secure the mounting plate to the surface with the washers as shown (CAUTION: Do not over-tighten screws).
3. If running RF cable from inside the wall, guide it through the opening in the mounting plate and connect the cable to the antenna output.
4. Position the antenna mounting posts over the keyhole slots in the mounting plate and slide it into the locked position.



### Mounting to a wall or ceiling



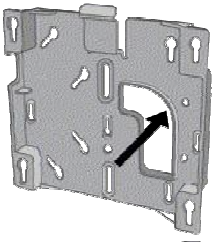
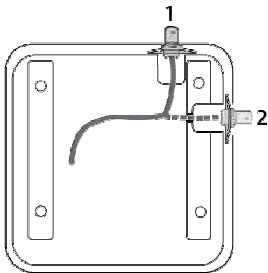
### Mounting to an electrical junction box



Securing the antenna to the mounting plate

## Routing the Cable

The output connector can be routed through ports **1** or **2** on the antenna. When connecting to an RF cable in the wall, run the cable through the opening in the mounting plate.



## Rotating the Cover

The cover can be detached and rotated in any direction for a matched appearance when using multiple antennas.

1. Remove the screws holding the cover in place from the back of the antenna
2. Remove the cover and rotate to the desired position
3. Replace the screws to secure the cover

## Painting the Antenna

The cover of the antenna can be painted to match the installation environment. Use the following guidelines when painting the antenna cover:

- Remove the antenna cover before painting
- Only use non-metallic paint, as any metallic content may interfere with RF reception
- Allow the paint to dry completely before reinstalling the cover

- Avoid painting in the screw holes

Warning: Do not touch the internal components of the antenna when the cover is removed.

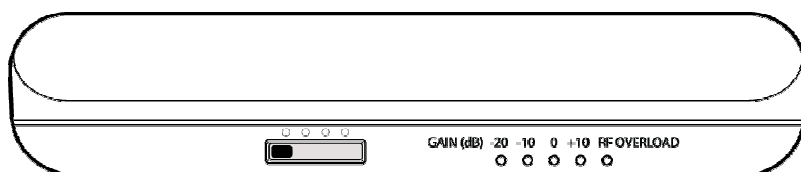
## Connecting to a Receiver

This antenna is compatible with any receivers, distribution systems, and splitters that operate within the antenna's frequency range. For receivers with multiple antenna ports, connect each antenna being used to a separate port.

**Note:** The antenna requires bias voltage from the receiver or distribution system to operate and for LED functionality. If these devices do not supply bias voltage, the Shure UABIAST inline power supply can be used.

## Setting the Gain Switch

Use the gain switch to optimize antenna performance for the RF characteristics of the room or location. Monitor the RF signal from the receiver to ensure optimal signal strength.



RF Gain Setting (dB)	Use Scenario
<b>Pad:</b> -10, -20	Provides increased isolation from other RF sources when the desired wireless microphone signal strength is strong. If the RF OVERLOAD LED illuminates when using a higher gain setting, the pad should be used to attenuate the signal, but only after verifying that the transmitter is an appropriate distance from the antenna.
0 (Default)	Suitable for typical room installations and provides enough RF gain in most cases when cable runs are between 10 and 50 feet.
<b>Boost:</b> +10	Provides an extra 10 dB of RF gain to compensate for signal loss if using long cable runs (50 feet or more).

**Note:** Bias power supplied by receiver antenna ports or an external power source is required for antenna to operate and for illuminating the LEDs.

## Selecting Antenna Cables

Use 50 ohm low-loss coaxial cable, such as RG-8U. Shure offers pre-terminated antenna cables ranging from 6 to 100 feet.

**NOTE:** When ordering cables from Shure, select the low-loss "Z" models (available for longer cables) when using frequency bands above 1000 MHz.

# Cable Maintenance

To maintain top performance for antenna cables:

- Avoid sharp bends or kinks in the cables.
- Do not deform cables with makeshift clamps, such as bending a nail over the cable.
- Do not use in permanent outdoor installations.
- Do not expose to extreme moisture.

## Specifications

### Connector Type

BNC, Female

### Impedance

50  $\Omega$

### Power Requirements

10 to 15 V DC bias from coaxial connection, 75 mA

### RF Frequency Range

UA864US	470–698 MHz
UA864LO	470–698 MHz
UA864HI	530–790 MHz
UA864A	650–952 MHz
UA864Z16	1240–1260 MHz
UA864Z17	1492–1525 MHz
UA864Z18	1785–1805 MHz

### Reception Pattern

3 dB Beam Width at center frequency

UA864US	100 degrees
UA864LO	100 degrees
UA864HI	95 degrees

UA864A	90 degrees
UA864Z16	70 degrees
UA864Z17	70 degrees
UA864Z18	70 degrees

**Third-order Overload Intercept Point (OIP3)**

&gt;30 dBm

**Antenna Gain**

On Axis, 0 dB Gain Setting at center frequency

UA864US	2.5 dBi
UA864LO	2.5 dBi
UA864HI	3.0 dBi
UA864A	5.5 dBi
UA864Z16	7.5 dBi
UA864Z17	6.5 dBi
UA864Z18	4.5 dBi

**Signal Gain**

±1 dB, Switchable

+10 dB 0 dB -10 dB -20 dB

**RF Overload LED Threshold**

-15 dBm

**Dimensions**

176 x 176 x 51 mm (H x W x D)

**Weight**

UA864	487 g (17.2 oz.)
UA864Z	454 g (16 oz.)



**Operating Temperature Range**

-7°C (20°F) to 49°C (120°F)

**Storage Temperature Range**

-29°C (-20°F) to 74°C (165°F)

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## Certifications

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from: [www.shure.com/europe/compliance](http://www.shure.com/europe/compliance)

Authorized European representative:

Shure Europe GmbH

Headquarters Europe, Middle East & Africa

Department: EMEA Approval

Jakob-Dieffenbacher-Str. 12

75031 Eppingen, Germany

Phone: +49-7262-92 49 0

Fax: +49-7262-92 49 11 4

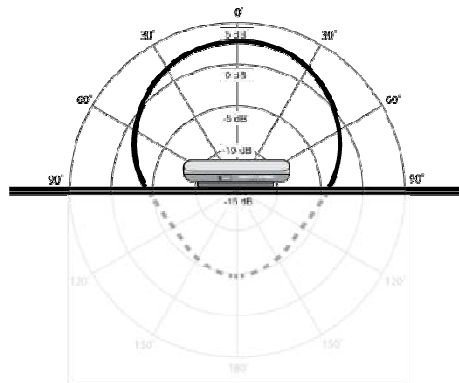
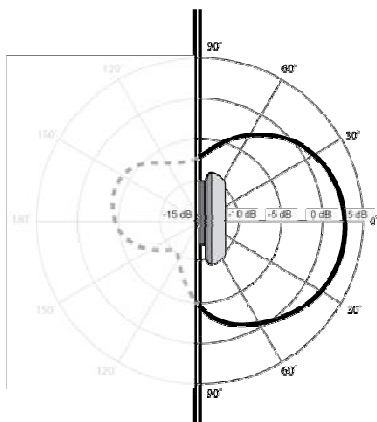
Email: [info@shure.de](mailto:info@shure.de)

# Polar Pattern

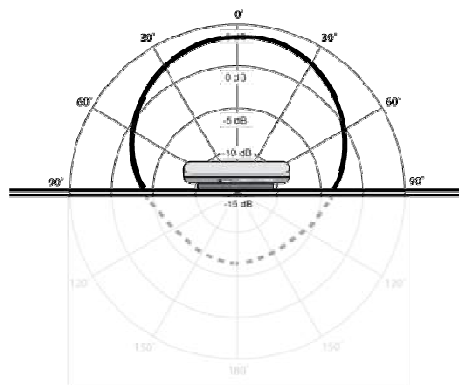
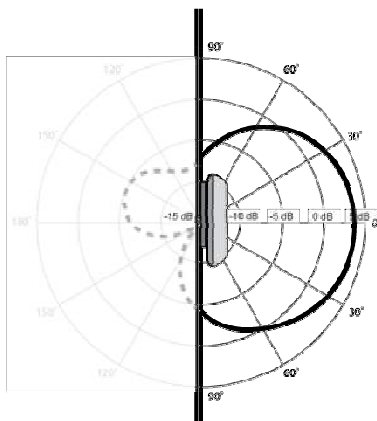
**Side View**

**Top View**

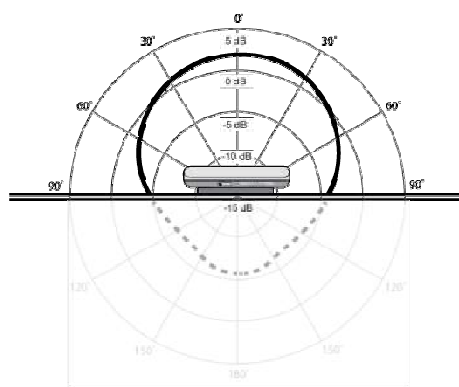
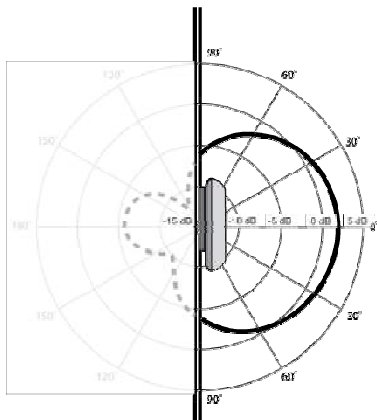
**UA864US/  
UA864LO**  
585 MHz



**UA864HI**  
700 MHz



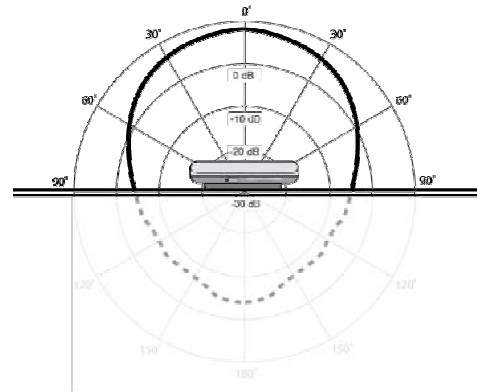
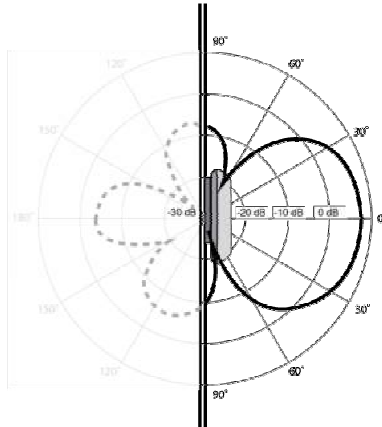
**UA864A**  
790 MHz



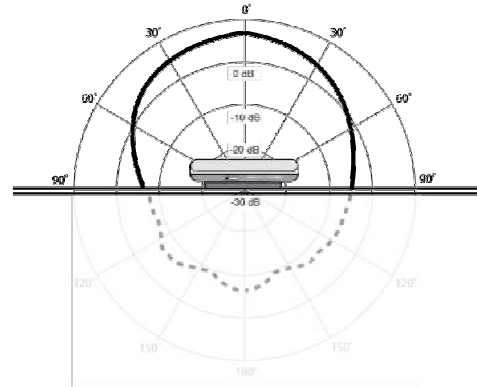
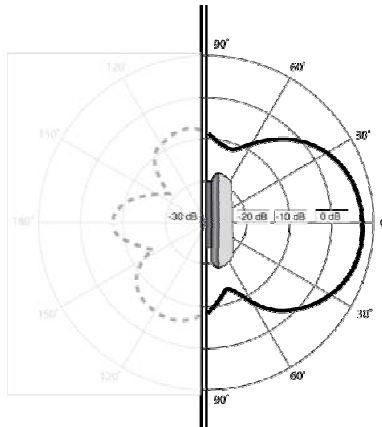
**Side View**

**Top View**

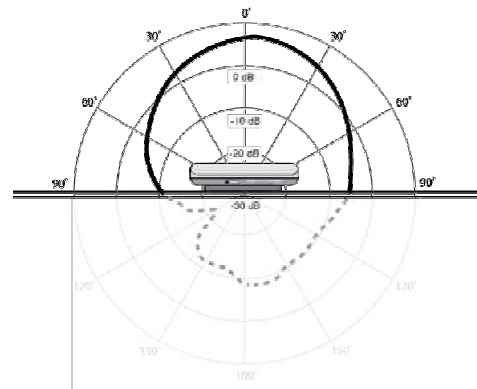
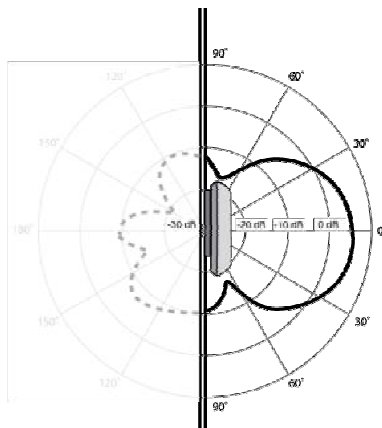
**UA864-Z16**  
1240–1260 MHz



**UA864-Z17**  
1492–1525 MHz



**UA864-Z18**  
1785–1805 MHz



### CS-200

2 source music server

#### Features

- **2 discrete music sources**
  - 2x analog RCA
- **Music sources:**
  - Streaming Services:
    - SiriusXM
    - SiruisXM (Commercial)
    - Pandora
    - Spotify
    - Tune-in
    - iHeartRadio
    - Sound Machine
    - Qobuz
  - Digital Music Files
  - AirPlay
- **High Resolution Output**
  - 192kHz/24-bit
- **Control Options:**
  - Free iOS & Android Apps
  - URC
  - QSC
  - Crestron
  - RTI
  - Key Digital/Compass Control
  - ELAN
  - Control4
  - NILES
- **Warranty:**
  - 2 years parts & service

#### Benefits

- **Expandable:**  
*Additional Fusion music servers can be added to grow the number of discrete outputs needed.*
- **Multiple Stream Support:**  
*Spotify, Pandora & SoundMachine can all play multiple streams at the same time.*
- **Commercial & Residential:**  
*Our products have been designed to work perfectly in both residential and commercial projects. The only music server with a Q-SYS plug-in!*
- **Spotify Navigation:**  
*Unlike many other servers, Fusion allows complete navigation and control of Spotify within the control system UI.*

The CS-200 delivers audiophile quality sound at an extremely affordable price point. Easily setup and controlled with a FREE iOS or Android app or with control from major automation systems, this server is a great option for both residential and commercial projects.



Two discrete sources: 2x sets of RCA L/R outputs. Full 24 bit music output, high resolution music files support as well as streaming services including the ability to use both Spotify and Pandora Family (multiple account support), radio station apps Tune-in and iHeartRadio and the commercially licensed music service SoundMachine. Also plays digital music files from a connected network and AirPlay is also available.

Commercially licensed music: The SoundMachine service is ASCAP, BMI, SESAC licensed music for use in public spaces. When combined with a Fusion music server, it offers several advantages over other commercial solutions. These include the ability to run multiple discrete music streams within the space for the same monthly service fee. We also support the SiriusXM commercial service.



#### AUDIO/VIDEO SPECIFICATIONS:

- ♦ **Audio Formats Supported:**  
FLAC, MP3, AAC (*Apple Lossy*), ALAC (*Apple Lossless*), OGG Vorbis, WMA, MP4
- ♦ **Video Connections:**  
This is a headless device there is no video output. You can connect via the iOS/Android app or with the PC utility.
- ♦ **Audio Connections:**  
2 x Analog RCA High Resolution 192kHz/24-bit output)
- ♦ **Physical Storage Options:**  
Network Attached Storage

#### PHYSICAL SPECIFICATIONS:

- ♦ **Electrical Input Voltage and Current:** 100-240V ~ 5v DC, 1 amp
- ♦ **Physical HxWxD:** 9" x 4.5" x 1.4"
- ♦ **Weight:** 1 lb (0.45 kg)
- ♦ **Environment Operating Temperature:**  
0°C to 40°C (32°F to 104°F)
- ♦ **Internal Storage Capacity:** N/A
- ♦ **Ethernet:** RJ-45, internet connection required

# AXI 22 AT D

2 INPUT, 2 OUTPUT AUDIO  
EXPANSION INTERFACE WITH DANTE  
DECORATOR-STYLE WALLPLATE



- ▶ Two mic/line inputs on XLR connectors for transmitting audio to a Dante™ network
- ▶ Two line outputs on a rear panel captive screw connector receive audio from a Dante network
- ▶ Power over Ethernet - PoE
- ▶ Input gain and phantom power controls located behind cover plate
- ▶ Optional output wallplates for XLR or RCA connectivity
- ▶ Mounts in an included single-gang decorator-style wallplate
- ▶ Dante audio networking provides a wide range of expansion capabilities
- ▶ Studio grade 24-bit analog-to-digital and digital-to-analog converters selectable up to 96 kHz



The Extron AXI 22 AT D is a single-gang decorator-style audio interface for integrating two mic/line sources onto a Dante™-enabled audio system. It also includes two line outputs on the back for routing Dante channels to an amplifier, or an optional wallplate with XLR or RCA outputs. The AXI 22 AT D interfaces with Extron and other Dante-equipped audio processors over a standard local area network, and can be powered through PoE.



**Extron Electronics**  
INTERFACING, SWITCHING AND CONTROL

## DESCRIPTION

The Extron **AXI 22 AT D** is a single-gang decorator-style audio interface for integrating two mic/line sources onto a Dante™-enabled audio system. It features two XLR audio inputs and switchable 48 volt phantom power for connecting and powering condenser microphones, plus gain controls for each input. The AXI 22 AT D also features two line outputs on the back for routing any two channels from the Dante network to an amplifier, or connecting to an optional secondary wallplate with two XLR or RCA outputs. The AXI 22 AT D interfaces with any Dante-equipped audio processor, such as an Extron DMP 128 AT, over a standard local area network, and can be powered through PoE. This allows a single network cable connection for bidirectional audio and power from a central equipment rack.

## KEY FEATURES

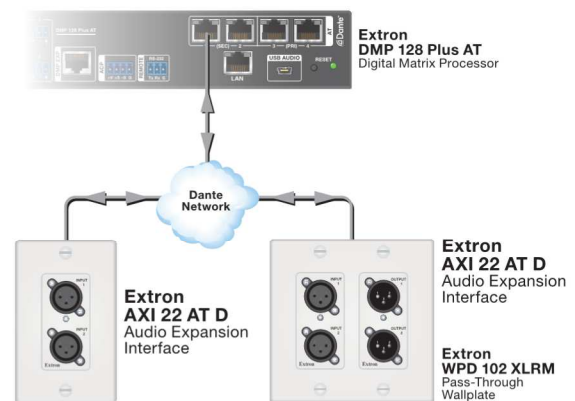
- ▶ **Two mic/line inputs on XLR connectors for transmitting audio to a Dante network** – Each input includes selectable 48 volt phantom power and a rotary, detented gain control.
- ▶ **Two line outputs on rear panel captive screw connectors receive audio from a Dante network** – The line outputs can be used for routing any two audio channels from the Dante network to an amplifier, an ALS - assistive listening system, or connecting into an optional secondary wallplate with two XLR or RCA outputs.
- ▶ **Power over Ethernet - PoE** – Allows the AXI 22 AT D to receive power over the Ethernet cable.
- ▶ **Input gain and phantom power controls located behind cover plate** – A removable cover plate on the front panel conceals all controls to prevent tampering.
- ▶ **Optional output wallplates for XLR or RCA connectivity** – Extron WPD 102 XLRM and WPD 102 RCA wallplates can be connected to the line outputs of the AXI 22 AT D, to provide a two-gang wall installation with XLR audio inputs and XLR or RCA outputs.
- ▶ **Mounts in an included single-gang decorator-style wallplate** – The single-gang decorator-style wallplate is available in black or white to blend with a wide range of environments.
- ▶ **Dante audio networking provides a wide range of expansion capabilities** – Dante-equipped audio products, including the AXI 22 AT D, provide scalability for creating larger audio systems over a local area network using standard Internet protocols.
- ▶ **Studio grade 24-bit analog-to-digital and digital-to-analog converters selectable up to 96 kHz** – Professional converters fully preserve the integrity of the original audio signal, with selectable sampling rates via Dante Controller.

## SPECIFICATIONS

AUDIO		
Frequency response	20 Hz to 20 kHz, ±0.3 dB	
THD + Noise	<0.01% @ 1 kHz, at maximum level	
S/N	Analog to digital >95 dB, 20 Hz to 20 kHz, at full-scale output, unweighted Digital to analog >95 dB, 20 Hz to 20 kHz, at maximum balanced output, unweighted	
Crosstalk	<-90 dB @ 1 kHz, fully loaded	
AUDIO INPUT		
Number/signal type	2 mono, mic/line, balanced/unbalanced	
Impedance	>10k ohms unbalanced/balanced	
Nominal level	+4 dBu when level is set to 0 dB gain; adjustable from -60 dBu to +4 dBu	
Maximum level	>+21 dBu at rated THD+N when input gain is set to 0 dB	
Noise level	<-120 dBV (1 µ Vrms) at 45 dB gain	
Input gain adjustment (mic)	0 dB to +45 dB, adjustable per input in 5 dB steps	
Mic phantom power	+48 VDC ±10%. Can be switched on or off.	
AUDIO OUTPUT		
Number/signal type	2 mono (or 1 stereo), balanced/unbalanced	
Maximum level (Hi-Z)	>+15 dBu balanced or >+9 dBu unbalanced	
AT PORTS – AUDIO TRANSPORT		
Transmission type	Dante	
Audio format	24 bit uncompressed, selectable at 44.1, 48, 88.2, and 96 kHz sampling rate	
Latency	Deterministic, based on user selections: 1.0 ms (default), 2.0 ms, 5.0 ms	
GENERAL		
Power input requirements	12 VDC or Power over Ethernet (PoE 802.3at)	
Power supply (optional)	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts	
Furniture or wall mount	Yes, with 1-gang wall box or mud ring	
Warranty	3 years parts and labor	
Model	Version Description	Part number
AXI 22 AT D	2 In, 2 Out Expansion Interface - Decorator - Blk	60-1517-02
AXI 22 AT D	2 In, 2 Out Expansion Interface - Decorator - Wht	60-1517-03

For complete specifications, please go to [www.extron.com](http://www.extron.com)  
Specifications are subject to change without notice.

## APPLICATION DIAGRAM



### WORLDWIDE SALES OFFICES

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[www.extron.com](http://www.extron.com)

# IP-ZCM

## PoE+ IP to Analog Gateway (Zone Controller)



IP-ZCM Front



IP-ZCM Back



IP-ZCM1RMK

Model Includes (1) IP-ZCM and PA702-RMK Rack Mount Kit



IP-ZCM2RMK

Model Includes (2) IP-ZCM and PA702-RMK Rack Mount Kit

### Features

#### Network Features

- Dynamic or Static IP Address
- IEEE 802.3 10/100Base-T Ethernet
- IEEE 802.1q Tagging
- IEEE 802.3af and 802.3at Compliant

#### Audio Codec Support

- G.711 u-law / a-law (16 kbit/s)
- G.729 Wideband Audio (64 kbit/s)

#### Auto Provisioning

- DHCP Option 66, 150, or TFTP Server
- DHCP Option 72 for HTTP Server

#### Auto Registration

- SLP for InformaCast
- DHCP Option 72 for Syn-Apps' Revolution or GCK

#### Static Configuration

- HTTP GUI for Static Configuration
- Cisco SRST

#### Audio Features

- Integrated 15-Watt Amplifier (802.3af) 8Ω
- Selectable 8Ω or 70.7V Speaker Output
- Audio Line-In Balanced (1V 10kΩ)
- Audio Line-Out Balanced (1V 10kΩ)
- Mic Input Unbalanced (<2.2kΩ)

#### Additional Features

- 2 General Purpose Inputs
- 1 General Purpose Relay Output (2A @ 30 VDC)
- External Power Supply Option

### General Description

AtlasIED IP-to-analog gateways are perfect for connecting your unified communication platform to off network analog third party systems, including, but not limited to, sending notifications to analog overhead paging, trigger or be triggered by access-control systems, assist to fire alarm, and two-way audio support for video-surveillance, simply plug and play.

### Applications

AtlasIED IP-ZCM registers as a communication endpoint directly within InformaCast, GCK, and Syn-Apps' Revolution advanced notification applications, supporting audio broadcast to enhance physical security while improving day-to-day communications through advanced alerting, bell schedules, pre-recorded, & scheduled announcements, while leveraging the WAN or LAN network architecture.

The IP-ZCM bridges the network to analog world utilizing CAT5e cable to transmit audio broadcasts from the advanced notification applications to analog loudspeakers or amplifiers. The integrated amplifier can deliver up to 25-watts of total power to loudspeakers at either 70.7V or 8Ω. The line output can be used to connect a commercial power amplifier that can power larger numbers of loudspeakers allowing the system to cover large areas like quads, athletic fields, parking lots, or other common areas that are too large to be handled by a standard IP loudspeakers.

When used within a Cisco environment, this IP-to-Analog gateway from AtlasIED can join Cisco's Unified Survivable Remote Site Telephony (SRST) as a supported device within SRST endpoint Architecture. Cisco's SRST provides remote location call-processing redundancy when access to the centralized Cisco Unified Communications Manager is interrupted because of a WAN outage. The ability of LAN communication between any combination of phones and speakers is particularly critical during an emergency (which may be the actual cause of the WAN outage).

Where 3rd party notification applications are not required, the IP-ZCM IP-to-Analog gateways can register as SIP devices directly to a SIP server or VoIP Communications Manager for critical alerts /public address applications.

<b>System</b>	
Type	PoE+ IP to Analog Gateway (Zone Controller)
Operation Mode	Self Powered
Indicators	Network Activity
General Purpose Interface	Two Trigger Inputs / One Relay Output (2A @ 30 VDC)
<b>Amplification</b>	
Type	Single-Channel Class D Topology
AC Power Input	PoE or PoE+ and External 24VDC
Power Rating (RMS)	12 Watts Max (802.3AF) / 25 Watts Max (802.3AT)
THD	<.2%
Cooling	Passive / Convection
<b>Microphone (Optional)</b>	
Sensitivity	Minus 35 ( $\pm 4$ dB) / (0db = 1V/pa, 1 kHz)
Impedance	Less than 2.2k $\Omega$
Directivity	Omnidirectional
Frequency Range	20Hz – 20kHz
Standard Operation Voltage	2V
Max. Operation Voltage	10V
Current Consumption Max.	0.5 mA
Sensitivity Reduction Within	Minus 3dB @ 1.5V
S/N Ratio	More than 62dB
<b>Audio Inputs and Outputs</b>	
Input: Analog Audio Type(s)	One Balanced Analog
Input: Analog Connectivity	Secured Screw Terminal Block
Input: Network Audio Type(s)	G.711 U-Law / A-Law and G.722 Capable
Input: Network Connectivity	RJ-45 Female
Output: Analog Audio Type(s)	Two Balanced Line Level, 1 Transformer Isolated
Output: Analog Connectivity	Secured Screw Terminal Block
Output: Digital Audio Type(s)	G.711 U-Law / A-Law and G.722 Capable (Multicast)
Output: Digital Connectivity	N/A
Output: Loudspeaker Level	8 $\Omega$ , 12W (802.3AF), 25W (802.3AT)
Output: Loudspeaker Connectivity	Secured Screw Terminal Block
<b>Software</b>	
SA-Announce Compatible Versions	9.0.18+
InformaCast Compatible Version	8.0+
GCK Compatible Version	3.0+
<b>Network</b>	
Ethernet	IEEE 802.3 10/100Base-T
PoE	IEEE 802.3 AF/AT Compliant
VLAN	IEEE 802.1q Tagging
<b>Protocols</b>	
IP Addressing	DHCP / Static
Auto-Provisioning	HTTP / TFTP
Auto-Registration	HTTP / Service Location Protocol / IEDNet
Time	NTP
Telephony	SIP



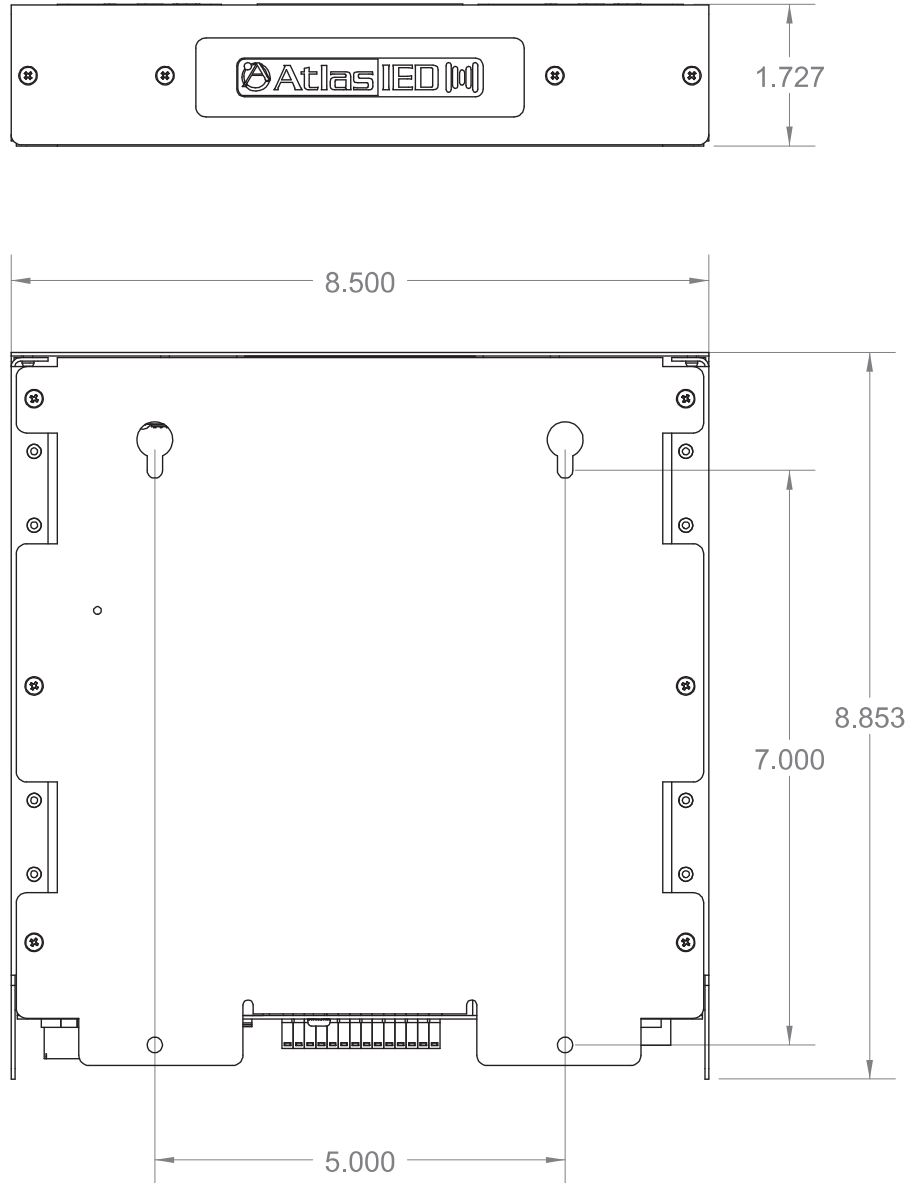
Enclosure	
Color	Black
Grille Material	N/A
Baffle Material	N/A
Mounting / Rigging Provisions	Wall Mount Via Key Hole Slots / Rack Mount 1RU Half Width
Safety Agency Ratings	ETL Listed to Comply with 62368-1, CSA C22.2 #62368-1, IEC 62368-1 CB Scheme and FCC
Ingress Protection	IP-30
Logo	Silver and Black
Product Dimensions (HxWxD)	1.72" x 8.5" x 8.85" (44mm x 216mm x 225mm)
Shipping Dimensions (HxWxD)	4.8" x 11.75" x 10.31" (122mm x 299mm x 262mm)
Net Weight - lbs	4.1lb (1.86kg)
Shipping Weight - lbs	4.76lb (2.16kg)
Warranty Coverage	
Warranty Period	1 Year

**NOTES:**

1. Sensitivity: Half space pink noise measurement at 6 ft (1.8 m) at 20% power; extrapolated to 1 meter and an input of 2.83 volts RMS.
2. Watts: All wattage figures are calculated using the rated nominal impedance.
3. Frequency response and sensitivity are half-space measurements.

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## Dimensional Drawings



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## Architect and Engineer Specifications

The unit shall be AtlasIED model IP-ZCM. The PoE+ zone controller shall be an IP-to-Analog network gateway with Balanced line level outputs for connection to power amplifiers or 3rd party audio systems. The unit shall incorporate an 8 $\Omega$ , 70.7V amplified output to drive analog loudspeaker zones. It shall include two general purpose inputs and one relay output. The unit shall incorporate a line level and microphone input.

The amplifier / control board shall receive announcements and messages using dynamically routed data on a standard Ethernet Network. It shall include a Single-Channel Class D Topology amplifier with an Primary Output capable of producing 25-watts RMS when using an IEEE 802.3at compatible PoE+ switch or 24VDC local power supply and 12-watts RMS when used with an IEEE 802.3af compliant PoE switch. Interconnect shall be via female RJ-45 connector mounted to the PCB.

The amplifier / control board shall include (2) logic inputs, (1) relay output, (1) Auxiliary Mic audio input, (1) Auxiliary Balanced line level audio input, (1) Balanced line level audio output and (1) Transformer isolated balanced line level audio output. The Auxiliary Line Level input shall include an auto mute function that is activated when a broadcast is sensed from the control application.

The amplifier / control board shall include a Graphical User Interface (GUI) for SIP configuration. The SIP implementation shall support standards G.711, G.722 and RTP protocols. The Graphical User Interface (GUI) shall configure and manage logic inputs, relay outputs, and Auxiliary audio input.

All control functionality shall be determined via software. It shall be compatible with AtlasIED's GCK, Syn-Apps' Revolution, Singlewire's InformaCast software platforms and SIP standalone operation. The I P-to-Analog network gateway overall dimensions (HxVxD) shall be 1.72" (44mm) x 8.5" (216mm) x 8.85" (224.8mm). Finish shall be neutral black electrostatic powder coat.

# DATA SHEET

## TESIRAFORTÉ® DAN VT

### FIXED I/O DSP



TesiraFORTÉ® DAN VT is a fixed I/O DSP with 32 bi-directional channels of Dante™ digital audio, 12 analog inputs with Acoustic Echo Cancellation (AEC) technology, and 8 analog outputs. It also includes up to 8 channels of configurable USB audio, a 2-channel VoIP interface, and a standard FXO telephone interface. USB audio allows TesiraFORTÉ to interface directly with USB audio hosts, as well as to take full advantage of today's most sophisticated conferencing solutions. TesiraFORTÉ DAN VT also provides extensive audio processing, including but not limited to: AEC technology, signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools; all configured through the Tesira configuration software. TesiraFORTÉ DAN VT is best-suited for rooms that require high-quality audio solutions using VoIP, voice lift, mix-minus, and AEC, such as conference rooms or distance learning environments.

#### FEATURES

- 32 x 32 channels of digital audio networking via the Dante protocol
- AES67-enabled Dante endpoint
- 12 mic/line level inputs with AEC, 8 mic/line level outputs
- Gigabit Ethernet port
- Up to 8 channels of configurable USB audio
- RS-232 serial port
- 4-pin GPIO
- Rack mountable (1RU)
- Internal universal power supply
- Supports port authentication via IEEE 802.1X
- SIP VoIP interface via a RJ-45 connector
- Standard FXO telephone interface via RJ-11 connector
- Signal processing via intuitive software allows configuration and control for signal routing, mixing, equalization, filtering, delay and much more
- CE marked, UL listed, and RoHS compliant
- Covered by Biamp Systems' 5-year warranty

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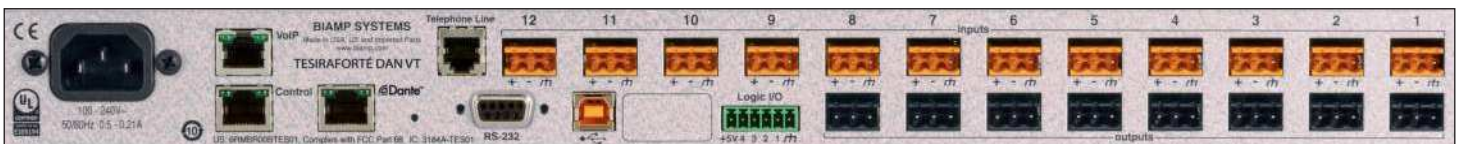
## ARCHITECTS & ENGINEERS SPECIFICATION

The fixed I/O DSP shall be designed exclusively for use with Tesira® systems. The fixed I/O DSP shall support Dante™ digital audio networking that shall allow up to 32 x 32 channels. The Dante networking connection shall be implemented on a RJ-45 connector. The fixed I/O DSP shall be interoperable in accordance with the AES67 standard. The fixed I/O DSP shall support Ethernet connection for programming and control on a RJ-45 connector. The fixed I/O DSP shall have internal DSP processing. The fixed I/O DSP shall include 4 channels of General Purpose Input and Output connection (GPIO) for sending or receiving logic signals. The programming of the GPIO ports shall be software configurable. The fixed I/O DSP shall include a RS-232 connection for control data transmission into or out of the fixed I/O DSP and such operation shall be software programmable. The fixed I/O DSP shall include a Universal Serial Bus (USB) connection on a standard USB-B type connector. The fixed I/O DSP shall be software configurable to stream up to 8 channels of digital USB Class 1 Audio transmission either into or out of the fixed I/O DSP or simultaneous input and output. The fixed I/O DSP shall support port authentication via IEEE 802.1X. The fixed I/O DSP shall provide 12 balanced input connections for receiving of microphone or line level analog audio signals on screw-down, removable connectors. The input connections shall include Acoustic Echo Cancellation (AEC) hardware and firmware, the parameters, routing and operation of which shall be software programmable. The fixed I/O DSP shall provide 8 balanced output channels for the transmission of microphone or line level analog audio signals on screw-down, removable connectors. Each individual channel shall have its own dedicated connection. The fixed I/O DSP shall integrate to Voice Over Internet Protocol (VoIP) systems on a RJ-45 connector for two lines of VoIP communication and shall support Session Initiation Protocol (SIP) v2.0 or later. The fixed I/O DSP shall integrate to standard telephony communications on a RJ-11 connector for a single line of telephone communication. The fixed I/O DSP shall provide front panel OLED identification of device power, status, alarm, and activity as well as system-wide alarm. The fixed I/O DSP shall be rack mountable (1RU) and feature software-configurable signal processing, including but not limited to: signal routing and mixing, equalization, filtering, dynamics, and delay, as well as control, monitoring, and diagnostic tools. The fixed I/O DSP shall be CE marked, UL listed, and shall be compliant with the RoHS directive. Warranty shall be five years. The fixed I/O DSP shall be TesiraFORTE® DAN VT.

## TESIRAFORTÉ DAN VT SPECIFICATIONS

<p><b>Frequency Response:</b> 20Hz to 20kHz, +4dBu output: +0.25 dB/-0.5 dB</p> <p><b>THD+N (22Hz to 22kHz):</b> 0dB gain, +4dBu input: &lt; 0.006% 54dB gain, -50dBu input: &lt; 0.040%</p> <p><b>EIN (no weighting, 22Hz to 22kHz):</b> &lt; -125dBu</p> <p><b>Dynamic Range (in presence of signal)</b> 22Hz to 22kHz, 0dB gain: &gt; 108dB</p> <p><b>Input Impedance (balanced):</b> 8kΩ</p> <p><b>Output Impedance (balanced):</b> 207Ω</p> <p><b>Maximum Input:</b> +24dBu</p> <p><b>Maximum Output (selectable):</b> +24dBu, +18dBu, +12dBu, +6dBu, 0dBu, -31dBu</p> <p><b>Input Gain Range (6dB steps):</b> 0-66dB</p> <p><b>Overall Dimensions:</b> Height: 1.75 inches (44 mm) Width: 19.0 inches (483 mm) Depth: 10.5 inches (267 mm) Weight: 8 lbs (3.63 kg)</p> <p><b>Phantom Power:</b> +48VDC (7mA/input)</p>	<p><b>Crosstalk, channel to channel, 1 kHz:</b> 0dB gain, +4dBu input: &lt; -85dB 54dB gain, -50dBu input: &lt; -75dB</p> <p><b>Sampling Rate:</b> 48kHz</p> <p><b>A/D - D/A Converters:</b> 24-bit</p> <p><b>Power Consumption:</b> 100-240VAC 50/60Hz: &lt; 35W</p> <p><b>USB:</b> Bit Depth: 16- or 24-bit Number of Channels: up to 8 Sample Rate: 48kHz</p> <p><b>Environment:</b> Ambient Operating Temperature Range: 32-104° F (0-40° C) Humidity: 0-98%, non-condensing Altitude: 0-6,600 feet (0-2000 Meters) MSL</p> <p><b>Compliance:</b> FCC Part 15B (USA) FCC Part 68 (USA) Industry Canada CS-03 (Canada) CE marked (Europe) UL und C-UL listed (USA and Canada) RCM (Australia) RoHS Directive (Europe)</p>
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## TESIRAFORTÉ DAN VT BACK PANEL





# Attero Tech by QSC Axon C1

Single-Gang Networked Audio  
Controller

### Features

- Ethernet-based control solution for the Q-SYS Ecosystem and other third-party AV products supporting UDP, TCP/IP control
- Available Q-SYS control plugin - no programming required
- Menu customization with unIFY Control Panel and control mapping with Q-SYS Designer plugin
- High-Contrast OLED display provides easy-to-read menus and status
- Simple controls facilitate simple user experience over assigned AV system functions
- Assignable LED light bar, provides optional feedback for zone level and system state
- In-wall, single gang design allows simple and unobtrusive installation
- Minimalist design includes both black and white Decora faceplates to provide aesthetic appeal to a variety of venues
- PoE powered - simple, single CAT-5e/CAT-6 cable installation



### Applications: Hospitality AV • Retail AV • Education • Corporate AV

The Axon C1 is an assignable control solution for networked AV systems. The C1 features small form factor, single gang Decora in-wall design with an OLED display and rotary encoder for simple AV system control of volume, mute and preset recall. The C1 integrates seamlessly into the Q-SYS Ecosystem and features a control plugin that removes the need for custom programming during integration. Given its flexible nature, the C1 is capable of controlling virtually any Ethernet-based, third-party audio DSP or AV equipment.

### Overview:



# Axon C1 Details

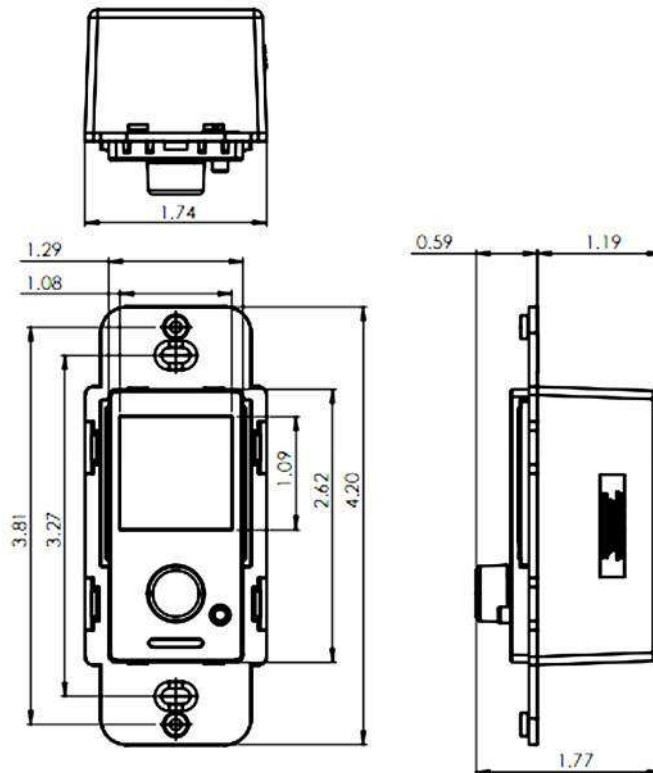
## Control & Display

System Details	Axon C1
User interface	One rotary / pushbutton encoder knob; one pushbutton toggle selector
Display type	1.5 in (38.1 mm) diagonal high-contrast OLED display
Status indicator	RGB LED bar, adjustable brightness

## Specifications

System Details	Axon C1
Network physical layer	Ethernet
Network connector(s)	RJ-45
Network transmission speed	100 Mbps
PoE power	802.3af Class 0
Power consumption	< 2 W Max
Device width	1.74 in (44.19 mm)
Device height	4.2 in (106.68 mm)
Device depth	1.77 in (44.96 mm) In-wall: 1.19 in (30.23 mm)
Device weight	0.25 lbs (0.113 kg)
Certifications	FCC Part 15, Subpart B, Class A EMC CE (EN55032 EMC / EN55035 ESD) WEEE RoHS REACH
Operating temperature	0° C to 40° C

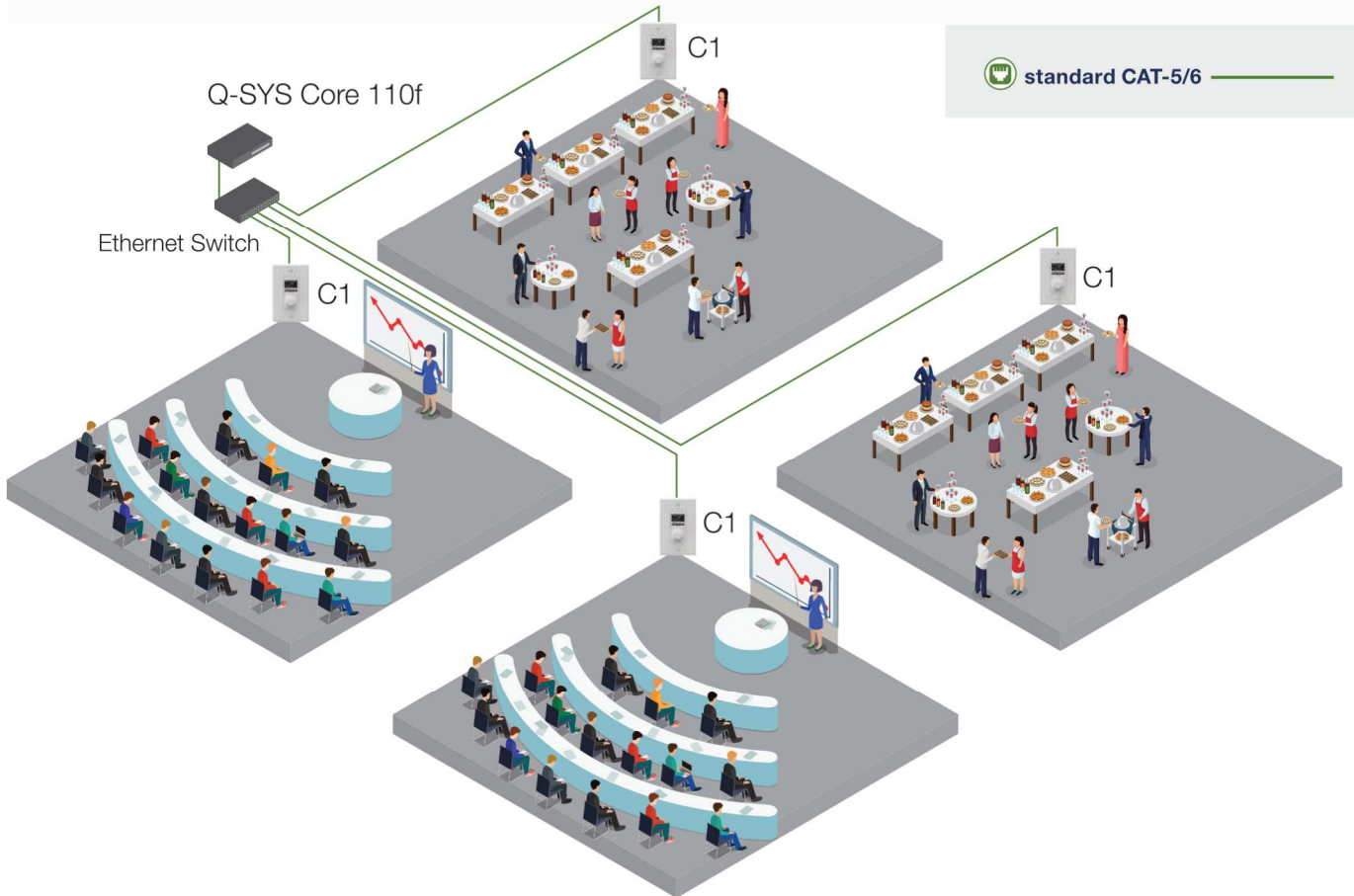
## Dimensions:



# Axon C1 Details

## Application Example: hotel conference rooms/banquet halls

The Axon C1 wall controllers provide simple zone control in commercial venues, such as hotel meeting and event centers, where the audio is often managed by a network AV system. Ethernet connectivity, and the ability to tailor the menu content for the venue provides a cost effective control solution with powerful simplicity.





## Q-SYS Core 610

### KEY FEATURES

- Q-SYS OS paired with enterprise-grade Dell server hardware
- 256 x 256 networked audio channels (Q-LAN / AES67); up to 384 x 384 with optional feature license
- 64 x AEC processors (up to 96 with optional feature license)
- 8 x 8 Dante audio channels (up to 128 x 128 with optional feature license; 256 x 256 license tier coming soon with Q-SYS Designer Software v9.8)
- Supports 14 Q-SYS NM-T1 network microphones (up to 21 with optional feature license)
- Up to 64 VoIP softphone instances
- 64 x 64 Media/WAN streaming capacity
- 16 multitrack playback channels (up to 128 with optional feature license)
- 4 multitrack record channels
- Q-SYS Core 610 scaling license enables increased processing power and expanded network audio I/O, Media/WAN streaming, AEC capacity, and Q-SYS microphone capacity (coming soon with the release of Q-SYS Designer Software v9.7)
- Deterministic and fixed analog audio input to output system latency of 3.167 ms
- Dual gigabit Ethernet ports for redundant networked audio
- Two (2) independent, gigabit auxiliary Ethernet ports for segregation of network services such as VoIP, SNMP, LLDP, LDAP and WAN Media streaming
- Onboard 480 GB media drive
- iDRAC monitoring for integration with IT monitoring systems
- 1RU form factor



### Q-SYS Core 610

COTS Network I/O Processor

The Q-SYS Core 610 represents the next-generation of Q-SYS processing, pairing the Q-SYS OS with an enterprise-grade Dell COTS server to deliver a flexible and scalable audio, video and control solution for a vast range of larger scale applications. It is a fully networked AV&C processor, letting you centralize processing for multiple spaces or zones while distributing network I/O where it's most convenient.

#### Q-SYS + DELL

Through its partnership with Dell, Q-SYS deployed the full-featured, software-based foundation of the Q-SYS OS on an industry-tested Dell server to deliver a uniquely flexible and scalable audio, video, and control solution. Like the rest of the Q-SYS processing portfolio, the Core 610 offers a configurable audio DSP, full-featured control engine and network-based video switching in a single processor, greatly simplifying system design and deployment.

#### NETWORK-BASED AV&C SOLUTION

The Core 610 is a fully-networked AV&C processor, providing the flexibility to centralize the location of the processor and use it across multiple rooms, and then position your desired I/O (either native Q-SYS Products or third-party devices) closer to the endpoints, resulting in a more streamlined system topology. Additionally, leveraging the network makes deploying the same room type across a building or campus simpler and more cost-effective.

#### RIGHTSIZE FEATURE SETS AT THE SOFTWARE LEVEL

Q-SYS Scaling and Feature licenses let you tailor system capabilities to your specific application through simple firmware updates.

The Q-SYS Core 610 Scaling license increases the overall power of the processor, increasing capacity for total network channels, Media/WAN streaming channels, AEC channels and Q-SYS NM Series microphone capacity – all without the need for additional hardware. This license will be available with the release of Q-SYS Designer Software v9.8 in mid-2023.

The Q-SYS Scripting Engine feature license provides the tools for simple third-party device integration while the Q-SYS UCI Deployment feature license enables robust user control interfaces without complex programming.

#### DESIGNED FOR Q-SYS

The Q-SYS Core 610 is part of Q-SYS, a cloud-manageable audio, video, and control platform built to deliver flexible, scalable AV solutions into the future.

## Q-SYS Core 610

### Hardware

Platform	Dell PowerEdge R250
Power	1x universal input, 450 W PSU module
LAN	4x 1000 Mbps ports (2x Q-SYS Multimedia, 2x Q-SYS Aux)
iDRAC	1x dedicated 1000 Mbps iDRAC v9, basic license
RS232	1x DB-9 RS-232 port (rear panel), 16550-compliant
Ventilation	Forced air – front intake, rear exhaust
Additional info	Refer to Dell <a href="#">Specification Sheet</a> and <a href="#">Technical Guide</a>

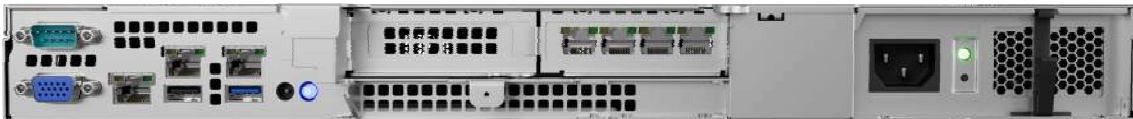
### Controls and Indicators

Front	Power button ID button and indicator (blinks when enabled from Q-SYS Designer Software) LCD display with navigation buttons (displays Q-SYS Core hostname or Core IP address)
Rear	ID button and indicator (blinks when enabled from Q-SYS Designer Software)

Q-SYS Capacities	Base features	with optional Q-SYS Core 610 Scaling license
DSP processing power (relative to Q-SYS Core Nano)	16x	24x
Network audio I/O (Q-LAN / AES67)	256 x 256	384 x 384
AEC channels (at 200 ms tail length)	64	96
WAN / media streaming channels	64 x 64	96 x 96
Q-SYS NM-T1 capacity	14	21
Dante network I/O	8 x 8 included (up to 128 x 128 with Software-based Dante feature license; 256 x 256 license tier coming soon with Q-SYS Designer Software v9.8); Dante utilization subtracts from Q-LAN capacity	
VoIP softphones	64	
Audio recording / playback	4 channels recording / 16 channels playback, expandable up to 128 channels playback with optional license	
Media drive	480 GB (approximately 440 GB available for user media)	

### Packaging and Accessories

Product dimensions (L x W x H)	23.56 x 18.98 x 1.69 in (598.4 x 482.1 x 42.9 mm)
Product weight	27.51 lb (12.48 kg)
Shipping carton dimensions (L x W x H)	36.31 x 23.38 x 9.5 in (922.3 x 593.9 x 241.3 mm)
Shipping weight	35 lbs (15.88 kg)
Included Accessories	Static rail kit for square hole racks, EIA-310-E compliant Dell standard OEM bezel Regulatory statements pamphlet 1x AC mains power cord Q-SYS Quick Start Guide



## Q-SYS QIO-ML4i

## Q-SYS QIO-L4o

## Q-SYS QIO-ML2x2

### KEY FEATURES

- Native audio I/O expanders for Q-SYS
- **QIO-ML4i:** Four (4) mic/line inputs
- **QIO-L4o:** Four (4) line outputs
- **QIO-ML2x2:** Two (2) mic/line inputs and two (2) line outputs
- Professional mic/line level inputs with +48 VDC phantom power and/or line outputs
- Microphone detection on inputs enables monitoring, usage statistics, and failure notifications
- Power-over-Ethernet capable
- Daisy-chain up to four QIO network I/O expanders on a single network run (with local daisy-chained DC power)
- Simple drag-and-drop integration and comprehensive management via Q-SYS Designer Software and Q-SYS Reflect Enterprise Manager
- Surface- or rack-mountable
- Includes surface mounting hardware
- QIO-RMK rack mounting kit sold separately
- QIO-PSU DC power supply sold separately



### Q-SYS QIO Series

Network audio I/O expanders for Q-SYS

The Q-SYS QIO Series network audio I/O expanders extend your Q-SYS system's capabilities and enable streamlined interoperability with non-networked audio devices. By separating local I/O from processing hardware, the QIO Series offer modular and easily scalable network I/O to support your desired topology.

### BENEFITS

**The right I/O where you need it:** QIO Series network I/O allows you to provide your Q-SYS system with greater flexibility to deploy mic/line audio connectivity where it's most convenient. Each of the three models features a compact form factor that can be rack- or surface-mounted.

**Audio I/O models:** feature professional mic/line level inputs with +48 VDC phantom power and/or line outputs to ensure high-performance and compatibility, along with microphone detection on inputs to enable monitoring, usage statistics and failure notifications.

- QIO-ML4i: Four (4) mic/line inputs
- QIO-L4o: Four (4) line outputs
- QIO-ML2x2: Two (2) mic/line inputs and two (2) line outputs

**Expanded I/O customization:** QIO Series is intended to present a simpler way to add network I/O connectivity to Q-SYS systems, decoupling the physical location of the I/O from processing hardware to support distributed or centralized processing architectures. Additionally, QIO Series lets you customize your I/O configuration, and complements the strengths of newer Q-SYS Core models that were designed with fewer onboard I/O options (Core Nano, Core 8 Flex, or NV-32-H (Core Capable)).

**Simplicity & scalability:** Daisy-chain up to four of the QIO Series devices on a single network run (with local daisy-chained DC power) to consume fewer network ports, avoid rack clutter, and allow for quicker future expansion without pulling additional network cables. Alternatively, QIO Series are also PoE-capable, providing simple single cable connectivity (when devices aren't daisy-chained).

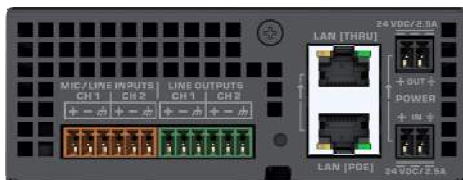
**Designed for Q-SYS:** QIO Series network I/O are native to Q-SYS, a cloud-manageable audio, video and control platform, built to deliver scalable, flexible AV solutions well into the future. At its foundation, the **Q-SYS OS** serves as the software foundation that manages your QIO Series devices along with a multitude of other native **Q-SYS Products** in the platform. Additionally, the modern IT architecture and development tools of the Q-SYS Platform enable an entire Ecosystem of third-party devices developed by approved **Q-SYS Partners**, as well as a worldwide community of Q-SYS developers using the available tools found in **Q-SYS Open**.

## Q-SYS QIO Series

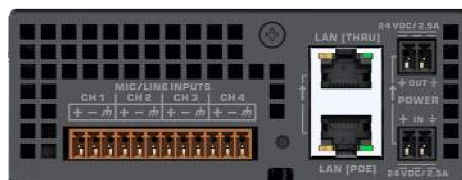
	QIO-ML4i	QIO-ML2x2	QIO-L4o
<b>Connectivity</b>	Four (4) mic/line inputs	Two (2) mic/line inputs and two (2) line outputs	Four (4) line outputs
<b>Mic/Line Inputs</b>			
Maximum input level		+24 dBu	-
Preamplifier gain range		0 dB to 60 dB	-
Input sensitivity range		-36 dBu TO +24 dBu	-
Phantom power		+48 VDC	-
<b>Input Frequency Response</b>			
20 Hz to 20 kHz		+/- 1.0 dB	-
<b>Input THD+N @ 1 KHz</b>			
@ +24 dBu sensitivity & +24 dBu input		< 0.1%	-
@ +24 dBu sensitivity & +10 dBu input		< 0.05%	-
@ +10 dBu sensitivity & +8 dBu input		< 0.015%	-
@ -10 dBu sensitivity & -10.5 dBu input		< 0.015%	-
@ -36 dBu sensitivity & -36.5 dBu input		< 0.015%	-
Equivalent Input Noise		< -120 dBu, no weighting @ 20 Hz to 20 kHz	-
Input to input crosstalk @ 1 kHz		> 85 dB	-
<b>Input Dynamic Range</b>			
@ +24 dBu sensitivity		> 105 dB	-
@ +10 dBu sensitivity		> 100 dB	-
@ -10 dBu sensitivity		> 95 dB	-
@ -36 dBu sensitivity		> 80 dB	-
Input impedance		5 k $\Omega$ single-ended, 10 k $\Omega$ balanced	-
<b>Line Outputs</b>			
Output audio range level		-	-36 dBu to +24 dBu
<b>Input Frequency Response</b>			
20 Hz - 20 kHz		-	+/- 0.5 dB
<b>Output THD+N @ 1 KHz</b>			
+10 dBu output level		-	< 0.01%
Output dynamic range		-	108 dB
Output to output crosstalk @ 1 kHz		-	> 85 dB
Output Impedance		-	150 $\Omega$ to 300 $\Omega$
Sample rate		48 kHz	
Bit depth		24 bit	

## Q-SYS QIO Series

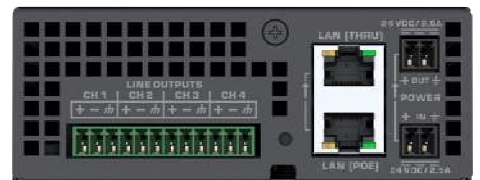
	QIO-ML4i	QIO-ML2x2	QIO-L4o
<b>Other Connectors</b>			
External power supply	24 VDC nominal, 2.5 A on Euro connector with second connector for daisy-chaining (QIO-PSU power supply sold separately)		
LAN (PoE)	Gigabit LAN connection for Q-LAN, PoE		
PoE specification	Conforms to IEEE 802.3af Type 1		
LAN (Thru)	Ethernet daisy-chaining		
<b>General</b>			
Dimensions	8.5 x 4.25 x 1.59 in (215.9 x 108 x 40.4 mm)		
Weight	1.72 lb (0.78 kg)		
Mounting options	Surface- and wall-mountable (hardware included) Rack-mountable; 1RU, quarter-rack width (QIO-RMK rack kit sold separately)		
<b>Environmental</b>			
Ambient operating temperature range	0°C to +50°C		
Humidity	0% - 85% through 30°C, non-condensing		
Storage temperature	-20° to 70°C		
Compliance	FCC 47 CFR Part 15, IC ICES-003, CE (EN55032, EN55035), EU RoHS directive 2011/65/EU, WEEE directive 2012/19/EU, China RoHS directive GB/T26572, EAC, UL, C-UL, NOM-019		



QIO-ML2x2



QIO-ML4i



QIO-L4o

## Q-SYS QIO-IR1x4

### KEY FEATURES

- Native control I/O expander for Q-SYS
- First native IR connectivity solution for Q-SYS
- One (1) IR receiver input and four (4) IR emitter outputs
- Power-over-Ethernet capable
- Daisy-chain up to four QIO network I/O expanders on a single network run (with local daisy-chained DC power)
- Simple drag-and-drop integration and comprehensive management via Q-SYS Designer Software and Q-SYS Reflect Enterprise Manager
- Surface- or rack-mountable
- Includes surface mounting hardware
- QIO-RMK rack mounting kit sold separately
- QIO-PSU DC power supply sold separately



### Q-SYS QIO-IR1x4

Network IR I/O expander for Q-SYS

The Q-SYS QIO-IR1x4 expands your Q-SYS system's capabilities to enable streamlined interoperability with non-networked control devices via IR connectivity. By separating local I/O from processing hardware, the QIO Series network I/O expanders offer modular and easily scalable network I/O to support your desired topology.

### BENEFITS

**The Right I/O Where You Need IT:** The QIO-IR1x4 allows you to provide your Q-SYS system with greater flexibility to deploy Serial control connectivity where it's most convenient. Each of the QIO Series I/O expanders features a compact form factor that can be rack- or surface-mounted:

**QIO-IR1x4:** For the first time on a native Q-SYS product, add IR control connectivity to your system. The QIO-IR1x4 includes one (1) IR receiver input and four (4) IR emitter outputs, enabling Q-SYS control for any number of professional/consumer devices including video displays, media players and more.

**Expanded I/O Customization:** QIO Series is intended to present a simpler way to add network I/O connectivity to Q-SYS systems, decoupling the physical location of the I/O from processing hardware to support distributed or centralized processing architectures. Additionally, QIO Series lets you customize your I/O configuration, and complements the strengths of newer Q-SYS Core models that were designed with fewer onboard I/O options (Core Nano, Core 8 Flex, or NV-32-H (Core Capable).

**Simplicity & Scalability:** Daisy-chain up to four of the QIO Series devices on a single network run (with local daisy-chained DC power) to consume fewer network ports, avoid rack clutter, and allow for quicker future expansion without pulling additional network cables. Alternatively, QIO Series are also PoE-capable, providing simple single cable connectivity (when devices aren't daisy-chained).

**Designed for Q-SYS:** QIO Series network I/O are native to Q-SYS, a cloud-manageable audio, video and control platform, built to deliver scalable, flexible AV solutions well into the future. At its foundation, the Q-SYS OS serves as the software foundation that manages your QIO Series devices along with a multitude of other native Q-SYS Products in the platform. Additionally, the modern IT architecture and development tools of the Q-SYS Platform enable an entire Ecosystem of third-party devices developed by approved Q-SYS Partners, as well as a worldwide community of Q-SYS developers using the available tools found in Q-SYS Open.

## Q-SYS QIO-IR 1x4

### IR/Serial Output Ports

IR output or RS-232 (transmit only)	Four (4) configurable ports
IR	Configurable carrier frequency and drive strength
RS232	Configurable baud rate
LED indicators	IR transmit activity

### IR Input Ports

IR Input Ports	One (1) port, bandwidth TBD
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### Other Connectors

External power supply	24 VDC nominal, 2.5 A on Euro connector with second connector for daisy-chaining (QIO-PSU power supply sold separately)
LAN (PoE)	Gigabit LAN connection for Q-LAN, PoE
PoE specification	Conforms to IEEE 802.3af Type 1
LAN (Thru)	Ethernet daisy-chaining

### General

Dimensions	5.5 x 4.25 x 1.59 in (139.7 x 108 x 40.4 mm)
Weight	1.18 lb (0.54 kg)
Mounting options	Surface- and wall-mountable (hardware included) Rack-mountable; 1RU, quarter-rack width (QIO-RMK rack kit sold separately)

### Environmental

Ambient operating temperature range	0° to 50°C
Humidity	0%-85% through 30°C non-condensing
Storage temperature	-20° to 70°C
Compliance	FCC 47 CFR Part 15, IC ICES-003, CE (EN55032, EN55035), EU RoHS directive 2011/65/EU, WEEE directive 2012/19/EU, China RoHS directive GB/T26572, EAC, UL, C-UL, NOM-019



## Q-SYS QIO-S4

### KEY FEATURES

- Native control I/O expander for Q-SYS
- Four (4) bi-directional RS232 serial ports
- One port includes RS422 and RS485 compatibility
- Power-over-Ethernet capable
- Daisy-chain up to four QIO network I/O expanders on a single network run (with local daisy-chained DC power)
- Simple drag-and-drop integration and comprehensive management via Q-SYS Designer Software and Q-SYS Reflect Enterprise Manager
- Surface- or rack-mountable
- Includes surface mounting hardware
- QIO-RMK rack mounting kit sold separately
- QIO-PSU DC power supply sold separately



### Q-SYS QIO-S4

Network serial I/O expander for Q-SYS

The Q-SYS QIO-S4 expands your Q-SYS system's capabilities to enable streamlined interoperability with non-networked control devices via Serial connectivity. By separating local I/O from processing hardware, the QIO Series network I/O expanders offer modular and easily scalable network I/O to support your desired topology.

### BENEFITS

**The Right I/O Where You Need It:** The QIO-S4 allows you to provide your Q-SYS system with greater flexibility to deploy Serial control connectivity where it's most convenient. Each of the QIO Series I/O expanders features a compact form factor that can be rack- or surface-mounted:

**QIO-S4:** Featuring four (4) bi-directional RS232 serial ports (including one port with RS422 and RS485 compatibility), the QIO-S4 enables Q-SYS control over lighting systems, video displays, conference systems, broadcast devices and more.

**Expanded I/O Customization:** QIO Series is intended to present a simpler way to add network I/O connectivity to Q-SYS systems, decoupling the physical location of the I/O from processing hardware to support distributed or centralized processing architectures. Additionally, QIO Series lets you customize your I/O configuration, and compliments the strengths of newer Q-SYS Core models that were designed with fewer onboard I/O options (Core Nano, Core 8 Flex, or NV-32-H (Core Capable)).

**Simplicity & Scalability:** Daisy-chain up to four of the QIO Series devices on a single network run (with local daisy-chained DC power) to consume fewer network ports, avoid rack clutter, and allow for quicker future expansion without pulling additional network cables. Alternatively, QIO Series are also PoE-capable, providing simple single cable connectivity (when devices aren't daisy-chained).

**Designed for Q-SYS:** QIO Series network I/O are native to Q-SYS, a cloud-manageable audio, video and control platform, built to deliver scalable, flexible AV solutions well into the future. At its foundation, the Q-SYS OS serves as the software foundation that manages your QIO Series devices along with a multitude of other native Q-SYS Products in the platform. Additionally, the modern IT architecture and development tools of the Q-SYS Platform enable an entire Ecosystem of third-party devices developed by approved Q-SYS Partners, as well as a worldwide community of Q-SYS developers using the available tools found in Q-SYS Open.



## QIO-S4

### Serial Ports

RS-232 / RS-485 / RS-422	One (1) port, configurable protocol, baud rate, and flow control
RS-232	Three (3) port, configurable protocol, baud rate, and flow control

### Other Connectors

External power supply	24 VDC nominal, 2.5 A on Euro connector with second connector for daisy-chaining (QIO-PSU power supply sold separately)
LAN (PoE)	Gigabit LAN connection for Q-LAN, PoE
PoE specification	Conforms to IEEE 802.3af Type 1
LAN (Thru)	Ethernet daisy-chaining

### General

Dimensions	5.5 x 4.25 x 1.59 in (139.7 x 108 x 40.4 mm)
Weight	1.18 lb (0.54 kg)
Mounting options	Surface- and wall-mountable (hardware included) Rack-mountable; 1RU, quarter-rack width (QIO-RMK rack kit sold separately)

### Environmental

Ambient operating temperature range	0° to 50°C
Humidity	0%-85% through 30°C non-condensing
Storage temperature	-20° to 70°C
Compliance	FCC 47 CFR Part 15, IC ICES-003, CE (EN55032, EN55035), EU RoHS directive 2011/65/EU, WEEE directive 2012/19/EU, China RoHS directive GB/T26572, EAC, UL, C-UL, NOM-019



## CX-Q 8K8 | CX-Q 4K8

### KEY FEATURES

- Seamless Q-SYS integration with audio transport and control via standard gigabit Ethernet protocols and hardware
- Capable of providing up to 8,000 W of power
- Low-Z, 70 V and 100 V direct drive available on all channels
- Hybrid circuit topology mixing the robustness of the PL380 PowerLight™ amplifier platform with new high-voltage, high-current output devices
- FlexAmp™ allows for asymmetric power distribution across amplifier channels
- Flexible Amplifier Summing Technology™ optimizes for either higher voltage loads (up to 200 Vrms output) or high current loads (up to 35 A)
- PowerLight universal switchmode power supply with PFC for highest efficiency; improved audio performance, and low weight
- Routable mic/line inputs provide additional on-ramps into Q-SYS
- Touch-proof Euroblock loudspeaker connections
- Eight configurable, bi-directional GPIO connections
- Automatic energy saving modes ensure that the amplifier will draw the minimum amount of AC power while still providing outstanding audio quality



### CX-Q Series (8 channel)

Eight-channel network processing amplifiers for Q-SYS

CX-Q Series network amplifiers combine a legacy of robust power amplifiers, advancements in high-efficiency output devices and native network transport, control and monitoring capabilities of Q-SYS.

#### NATIVE Q-SYS INTEGRATION

CX-Q Series amplifiers are fully native components of Q-SYS, offering simple drag-and-drop integration into your Q-SYS design, enabling network routing, advanced processing (including Intrinsic Correction™ custom loudspeaker voicings) and control. This expedites the installation process and provides superior system performance far beyond that of third-party amplifier solutions.

It also means that Q-SYS can manage the fault protection and notification for these amplifiers. If for any reason an amplifier goes offline or has a fault, the Q-SYS system can alert the operator and ensure the system retains its integrity.

#### LEGACY OF POWER REDEFINED

CX-Q Series network amplifiers use a 5<sup>th</sup> generation high-efficiency, Class-D hybrid powertrain design built upon the dependable PL380 PowerLight™ amplifier platform. The new design offers both high voltage and high current operation with excellent audio quality and thermal performance.

#### CHANNEL POWER FLEXIBILITY

CX-Q Series network amplifiers combine two technologies that provide extreme flexibility in output deployment. FlexAmp™ allows for asymmetric output channel loading by drawing from large power reserves and distributing customized output power levels per channel. FAST (Flexible Summing Amplifier Technology™) allows channels to be combined in bridge mode, parallel mode or bridge/parallel mode to deliver either higher voltage loads (up to 200 Vrms output) or higher current loads (up to 35 A).

Collectively, these technologies decrease system cost by reducing wasted power and channels, while ultimately removing the need to specify multiple amplifiers with different power ratings in a multi-zone installation.

Each model supports a wide variety of loudspeaker systems by featuring Low-Z, 70 V and 100 V direct drive on all channels.

#### I/O FEATURES

Each amplifier also offers eight channels of mic/line inputs (with +12 V phantom power) directly on the back of the amplifier that act as Q-SYS on-ramps in addition to its amplification duties. Additionally, eight bi-directional GPIO ports allow for further control and integration of other third-party peripherals within Q-SYS.

#### POWER & SPACE EFFICIENCY

CX-Q Series also features fully active Power Factor Correction (PFC) which aligns the supply current waveform with the AC mains voltage waveform. PFC enables these amplifiers to draw current from the wall in a more efficient and controlled manner.

This series also incorporates several energy conservation and efficiency strategies, including a unique multi-stage sleep mode that saves energy when possible without sacrificing performance.

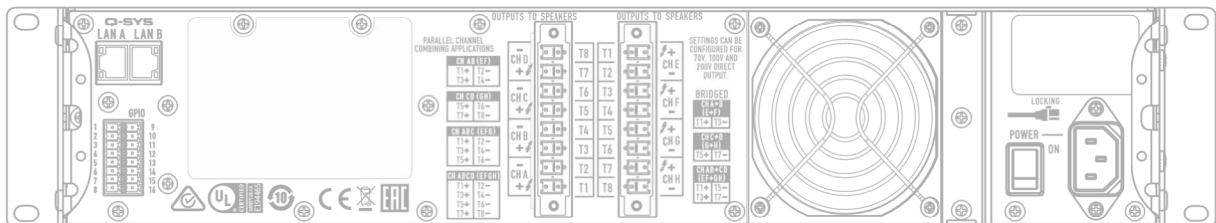
With four channels of amplification addressable from the network in just 2RU and four channels of mic/line inputs, the CX-Q Series network amplifiers replace equipment taking up as much as four times the rack space.

# CX-Q Series (8-channel Specifications)

	CX-Q 4K8		CX-Q 8K8	
	Max Power	Continuous Power	Max Power	Continuous Power
<b>8 independent channels</b> A, B, C, D, E, F, G, H	70 V	1000 W	300 W	1250 W
	100 V	1000 W	300 W	1250 W
	16 Ω	500 W	150 W	625 W
	8 Ω	1000 W	300 W	1250 W
	4 Ω	1000 W	300 W	1500 W
	2 Ω	800 W	300 W	1000 W
<b>2 CH combined in BTL bridge</b> A+B or C+D or E+F or G+H <b>Doubles voltage</b> <small>(Do not use for 70 Vrms / 100 Vrms systems; can be used for 140 Vrms / 200 Vrms systems)</small>	140 V	1500 W	600 W	2000 W
	200 V	1500 W	600 W	2000 W
	8 Ω	1500 W	600 W	3000 W
	4 Ω	1400 W	400 W	1700 W
	2 Ω	NR	NR	NR
	70 V	1500 W	600 W	2000 W
<b>2 CH combined in parallel</b> AB or CD or EF or GH <b>Doubles current</b> <small>(Best for 70 Vrms / 100 Vrms systems)</small>	100 V	1500 W	600 W	2000 W
	8 Ω	1000 W	600 W	1250 W
	4 Ω	1250 W	600 W	2400 W
	2 Ω	1500 W	600 W	2500 W
	8 Ω	1000 W	900 W	1250 W
	4 Ω	1500 W	900 W	2000 W
<b>3 CH combined in parallel</b> ABC or EFG <b>Triples current</b>	2 Ω	1500 W	900 W	2500 W
	8 Ω	2500 W	1200 W	4000 W
	4 Ω	3000 W	1200 W	5000 W
	2 Ω	NR	NR	NR
<b>4 CH combined in bridged/parallel</b> AB+CD, EF+GH <b>Doubles current and voltage</b>	8 Ω	1000 W	1000 W	1200 W
	4 Ω	2000 W	1200 W	2400 W
	2 Ω	2500 W	1200 W	4000 W
	1 Ω	3000 W	1200 W	4000 W

NR\* = Not Recommended due to excessive current draw.  
 Max Power - 20 ms, 1 kHz sine wave burst, single channel driven; this data is most useful for asymmetrical loading of amplifier channel and maximizing power utilization of the amplifier. When utilizing FlexAmp™, the power capabilities of the channel AND the power supply must be considered.  
 Continuous power = 20 Hz - 20 kHz bandwidth; all channels driven with same load.

## CX-Q 4K8 | CX-Q 8K8



## CX-Q Series ( 8-channel Specifications)

	CX-Q 4K8	CX-Q 8K8
<b>Power Supply - Maximum Power Output</b>	4,000 W	8,000 W
<b>Typical Distortion</b>		
8 $\Omega$	0.02 - 0.05%	0.02 - 0.05%
4 $\Omega$	0.04 - 0.1%	0.04 - 0.1%
<b>Maximum Distortion</b>		
4 $\Omega$ - 8 $\Omega$	1.0%	1.0%
<b>Frequency Response (8 <math>\Omega</math>)</b>	20 Hz - 20 kHz +0.2 dB / -0.7 dB	20 Hz - 20 kHz +0.2 dB / -0.7 dB
<b>Noise</b>		
Unweighted output unmuted	>102 dB	>101 dB
Weighted output muted	>104 dB	>104 dB
<b>Gain (1.2 V setting)</b>	35 dB	38 dB
<b>Damping factor</b>	>100	>100
<b>Input impedance</b>	>8k balanced and >4k unbalanced	>8k balanced and >4k unbalanced
<b>Input Sensitivity</b>		
Continuously variable:	Vrms 1.23 mV to 17.35 V dBu -56 to 27 dBv -58.2 to 24.8	Vrms 1.23 mV to 17.35 V dBu -56 to 27 dBv -58.2 to 24.8
<b>Controls and indicators (front)</b>	Power • Channel MUTE buttons • Channel SELECT buttons • Channel Input Signal and CLIP LED Indicators Channel Output and LIMIT LED meters • NEXT, PREV, ID buttons • Control knob	
<b>Controls and indicators (rear)</b>	AC Power Disconnect (IEC C-14)	
<b>Input connectors</b>	CX-Q 4K8, CX-Q 8K8	
	3-pin Euro (green) and Q-LAN Network connectivity	
<b>Output connectors</b>	8-pin Euro (green)	
<b>Amplifier and load protection</b>	Short circuit, open circuit, over current, over voltage, thermal, RF, DC fault shutdown, active inrush limiting, on/off muting	
<b>AC power input</b>	Universal power supply 100 - 240 VAC, 50 - 60 Hz with active PFC	
<b>Dimensions (HWD)</b>	3.5 x 19 x 16 in (89 x 482 x 406 mm)	3.5 x 19 x 16 in (89 x 482 x 406 mm)
<b>Weight, Net / Shipping</b>	25 lb (11.3 kg) / 29 lb (13.2 kg)	26 lb (11.8 kg) / 30 lb (13.2 kg)
<b>Agency approvals</b>	UL, CE, RoHS/WEEE compliant, FCC Class B (conducted and radiated emissions)	
<b>Carton contents</b>	IEC power cord (locking), Euro (green) connectors, quick start guide	



## Features

- The latest technology based on Crown's proprietary and patented DriveCore™ technology, these amplifiers are the next generation of PWM technology using cutting edge Class D amplifier topologies
- True Rack Density – power points of 300W, 600W, or 1250W in 4/8 channel configurations; includes bridgable outputs of 300-2500W, all in a 2U form factor, providing flexibility in designs
- Minimum Guaranteed Power Ratings – DCi amplifiers are guaranteed to deliver at least the rated power in the specifications over a longer period of time than any other competing amplifier
- Direct Drive "Constant Voltage" capabilities on a channel by channel basis for 70Vrms or 100Vrms amplification without the use of a step up frequency limiting transformer for higher audio quality

- HiQnet Audio Architect™ supported amplifier
- Advanced PFC universal power supply provides market-leading efficiency, and is designed to deliver maximum power no matter where the amplifier is located; Universal AC input accepts 100 – 240VAC, 50/60Hz (±10%)
- DriveCore includes five patents that are also included in Crown's flagship touring amplifier I-Tech HD4, providing best-in-class versatility and durability
- TCP/IP based protocol in HiQnet™ for network monitoring and control
- Revolutionary cooling system focuses airflow on parts that need it most, maximizing efficiency while minimizing heat and noise
- Integrated Dante™ / AES67 networked audio – simplifies installation by enabling Dante / AES67 networked audio signals to be sent directly to the amplifier.

### Network Monitoring and Control features include:

- Continuous Load Monitoring
- Comprehensive Error Reporting
- Pilot Tone Monitoring
- Programmable General Purpose Input/Output (GPIO) Ports

### Digital Signal Processing (DSP) features include:

- LevelMAX™ Limiters for Inputs and Outputs with Thermal Limiting
- Input Compressor
- Input and Output Delay
- Input and Output EQ
- Signal Generator
- Crossover

INSTALLS ANYWHERE. OUTPERFORMS EVERYTHING.

# DriveCore™ Install DA Series



4|300DA, 4|600DA models shown



8|300DA model shown



4|1250DA model shown

## Power Matrix

Model	Channels	2Ω	4Ω	8Ω	70Vrms	100Vrms
4 600DA	4	300W	600W	600W	600W	600W
8 600DA	8	300W	600W	600W	600W	600W
4 1250DA	4	1250W	1250W	1250W	1250W	1250W

## Performance Specifications

	4 300DA	4 600DA	8 300DA	8 600DA	4 1250DA
Frequency Response (8Ω, 20Hz - 20kHz)					±0.25dB
Dance Input Signal to Noise Ratio (ref. rated power, 8ohm, 20Hz-20kHz)					>108dB
Total Harmonic Distortion (at full rated power, 20Hz - 20kHz)					0.35%

## Voltaga Gain (at Maximum Level Setting)

			34dB		
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## Damping Factor (20Hz to 100Hz)

	>1000	>1000	>1000	>1000	>1500
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## Input Impedance (nominal balanced, unbalanced)

			10kΩ, 5kΩ		
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## Maximum Input Level before Compression (Low Gain Model)

			+20dBu		
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## Load Impedance Stereo/Dual Mode

		2Ω - 16Ω; 70Vrms and 100Vrms			
--	--	------------------------------	--	--	--

## Load Impedance Bridge Mono

		4Ω - 16Ω; 140Vrms and 200Vrms			
--	--	-------------------------------	--	--	--

## Cooling

	Continuously variable speed forced air, front to back airflow				
--	---	--	--	--	--

## Maximum Fan Noise (re dBA SPL @ 1M)

	45	45	47	47	47
--	----	----	----	----	----

## Required AC Mains (±10%)

	15A IEC	15A IEC	15A IEC	20A IEC	20A IEC
--	---------	---------	---------	---------	---------

## Power Connector

	15A IEC	15A IEC	15A IEC	20A IEC	20A IEC
--	---------	---------	---------	---------	---------

## Physical Specifications

Width	19 in. (48.3 cm)				
Height	3.5 in. (8.9 cm)				
Depth	14.25 in. (35.63 cm)	14.25 in. (35.63 cm)	14.25 in. (35.63 cm)	17 in. (42.5 cm)	17 in. (42.5 cm)
Weight	20.1 lbs (9.12 kg)	20.1 lbs (9.12 kg)	23.5 lbs (10.66 kg)	30 lbs (13.60 kg)	30 lbs (13.60 kg)

Specifications subject to change without prior notice. Latest information available at [www.crownaudio.com](http://www.crownaudio.com). Crown offers a three-year, no-fault, fully transferable warranty for every new Crown amplifier — on unsurpassed industry standard. With this unprecedented no-fault protection, your new Crown amplifier is warranted to meet or exceed original specifications for the first three years of ownership. During this time, if your amplifier fails, or does not perform to original specifications, it will be repaired or replaced at our expense. In most cases, the only things not covered by this warranty are those losses normally covered by insurance and those caused by intentional abuse. Plus, the coverage is transferable, should you sell your amplifier. See your authorized Crown dealer for full warranty disclosure and details. For customers outside of the USA, please contact your authorized Crown distributors for warranty information or call 574-294-8200. © 2018 Crown Audio®, Inc.



## Description

The Kommander-KA84 is a powerful 4-channel Class D, 8000 W at 4 Ω rack amplifier and signal processing unit suitable for demanding applications.

The integrated DSP features fully parametric input and output equalizer, signal routing matrix, I/O levels adjustment, delay up to 330 ms and limiter functions on every channel, to avoid the need of external additional processors.

The front panel has an easy-to-use touchscreen that provides access to all the basic functions for quick setup and adjustments.


The onboard preset library offers easy and optimal configuration for endless combinations of K-array loudspeakers and subwoofers.

All DSP functions are remote controlled via the K-framework software over RS485 or integrated USB connector.

The GPIO ports give easy external analog controls using K-array accessories.

The amplifier is built into a 2U lightweight, sturdy chassis and comes with a kit of removable rack adapters and four rubber pads for flat surfaces.

Ideal for either high SPL events or in multi-zone applications in medium to large-scale installations, the Kommander-KA84 is ideal for theaters, houses of worship, nightclub & lounges, auditoriums, concert halls and any demanding applications.

Colors		Features		Frequent Applications	
Black		Plug & Play	Integrated DSP	Theme parks	Theaters
		Lightweight	Dante compatible	Auditoriums & Concert Halls	Stadiums & Sports Venues
		Onboard Touch Screen		Restaurants, Cafes & Bistros	Fitness & Wellness

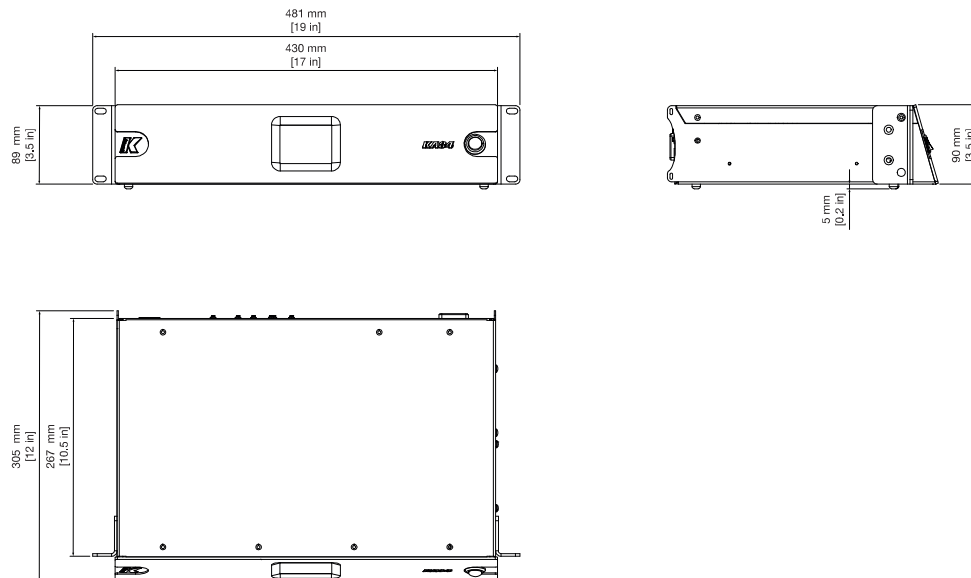
Accessories					
K-USB	K-DANTE	KA-POT1			

## Technical Specifications

General	
Type	4ch switching mode, Class D Amplifier
Output Power <sup>1</sup>	4x 2000 W @ 4 Ω
Impedance	minimum 4 Ω
Frequency Response	20 Hz – 20 kHz (±1 dB)
Connections	4x XLR (bal) Mic/Line input 4x XLR (bal) parallel line output XLR AES3 input & output KA-POT1 remote volume control inlet 2x NL4 speakOn loudspeaker output USB-B / RS485 for remote control
Built-in DSP	Input gain, routing matrix, delay up to 330 ms, 3x input ch. + 6x output ch. full parametric IIR filters (Peaking, Shelving, Hi/Lo pass, Hi/Lo Butterworth), Onboard preset, Remote monitoring
Remote control	K-Framework software via USB or RS485
Protections	Primary AC mains overcurrent/overvoltage, thermal protection, output short circuit, RMS output current protection, high frequency protection, power limiter, clip limiter.
MAINS Operating Range	100-240V AC, 50-60 Hz with PFC
Power Consumption	600 W @ 4 Ω load, Pink noise, 1/8 rated power
Handling & Finishes	
IP Rating	IP20
Dimensions (WxHxD) <sup>2</sup>	430 x 89 x 305 mm (17 x 3.5 x 12 in)
Weight	6.4 kg (14.1 lb)
Material	Stainless Steel
Accessories	
Serial-to-USB converter	K-USB, K-DANTE, KA-POT1

<sup>1</sup> EIAJ 8/32 test standard

<sup>2</sup> Removable feet and mounting brackets excluded.



### Notes:

Passive loudspeakers require dedicated presets loaded onboard K-array amplifiers.  
New materials and designs are introduced into existing products without previous notice.  
Present systems may differ in some respects from those presented in this catalog.



# CBT 70JE-1

Purpose-Designed Extension  
for CBT 70J-1 Line Array  
Column Speaker

## CBT SERIES

CONSTANT BEAMWIDTH TECHNOLOGY™

### Key Features:

#### CBT 70JE-1:

- ▶ Components: Four 125 mm (5 in) high-power LF drivers
- ▶ 500 Watt power handling
- ▶ Built-in purpose-designed crossover network, for combining with CBT 70J-1
- ▶ Coupler plate included

#### CBT 70J-1 + 70JE-1 ARRAY SYSTEM:

- ▶ Extended pattern control (to 400 Hz for  $\pm 20^\circ$  control, to 200 Hz for substantial off-axis cancellation)
- ▶ Extended bass response to 45 Hz.
- ▶ Components: Sixteen 25 mm (1 in) soft dome tweeters and eight 125 mm (5 in) high-power LF drivers.
- ▶ Patent-pending Constant Beamwidth Technology™ provides constant directivity up to the highest frequencies and reduces out-of-coverage lobing.
- ▶ Vertical pattern coverage switchable between  $45^\circ$  for medium-throw coverage and  $25^\circ$  for long-throw applications.
- ▶ Switchable voicing provides flat response in music mode or mid-range presence peak in speech mode.
- ▶ Coupler plate and wall swivel (pan)/tilt bracket included (rear insert-point pattern fits standard third-party brackets)

### Overview:

#### CBT 70JE-1

The CBT 70JE-1 cabinet contains four low frequency drivers and a crossover network purposely designed for use in the CBT 70J-1 + 70JE-1 System, in a tough fiberglass-reinforced ABS enclosure. The 500W power handling and high sensitivity delivers powerful low frequency output.

The drivers have lightweight dual magnet neodymium motors with 38 mm (1.5 in) diameter voice coils. The dual-magnet system provides maximum flux in a compact package. The magnet structure is magnetically shielded and the pole tips are magnetically saturated for lower flux modulation and minimum distortion. The 16 mm (0.63 in) long coils provides high linear drive and high power handling in a compact driver. The drivers feature damped blended surrounds and coated sealed paper cones found in high performance large format drivers. Drivers feature coated diaphragm materials to provide moisture, UV and salt resistance for outdoor capability. The thick, heavy-duty aluminum grille stands up to portable/event applications while allowing for rust-free installation outdoors.

#### CBT 70J-1 + 70JE-1 ARRAY SYSTEM

When connected to a CBT 70J-1 line array column speaker, the CBT 70JE-1 Extension provides extended bass response, extended pattern control, and increased sound output levels. The combined array system provides Constant Beamwidth Technology™, which represents a breakthrough in pattern control consistency, utilizing complex analog beam-forming and amplitude tapering to accomplish



superior, consistent vertical coverage without the narrow vertical beaming and out-of-coverage lobing that are typical of passive column speakers.

The CBT 70JE-1 attaches to the top of the CBT 70J-1, utilizing the included coupler plate, resulting in a very well controlled progressive line array with asymmetrical vertical coverage. This coverage produces a higher concentration of sound with a tighter pattern projecting to the far areas of the listening space, and a lower concentration with a broader vertical pattern projecting toward the near area of the space. This results in more even front-to-back SPL levels than would be the case from a traditional speaker or column that projects symmetrically.

The CBT 70J-1 + 70JE-1 System provides a wide 45 Hz – 20 kHz bandwidth, and the slim footprint fits well into virtually any architectural décor. The 140 cm (55.2 in) tall line array height provides consistent pattern control throughout the intelligibility band, making the System work well in difficult acoustic environments.

### Applications

The superior sound quality, excellent pattern control, asymmetrical vertical coverage and compact design makes the CBT 70J-1 + 70JE-1 System ideal for applications such as performance spaces, lecture halls, classrooms, A/V, transit centers, school stadiums, multipurpose spaces, racetracks, theme parks, and fill applications, among many others.

### Adjustable Coverage to Fit the Application

The innovative coverage adjustability of the CBT 70J-1 + 70JE-1 System allows switching between broad and narrow vertical coverage settings to allow matching the coverage and throw requirements of the application. Coverage can be easily switched in-venue with the speaker already installed. This innovation allows a single loudspeaker system to excel in a wide range of project types.

### User Variable Voicing

The voicing of the CBT 70J-1 + 70JE-1 System can be set to match the application through a Music/Speech switch. The Music setting provides flat frequency response, while the Speech setting produces a mid-range presence boost to provide clear, intelligible speech, along with increased midrange sensitivity for higher midrange maximum output capability.

### SonicGuard™

Dynamic SonicGuard protection of the CBT 70J-1 + 70JE-1 System (built into the CBT 70J-1) protects the high frequency section, minimizing distortion at high drive levels by limiting driver excursion dynamically. This maximizes music clarity and speech intelligibility at high drive levels while protecting the drivers from damage due to occasional overpowering.

### Bracketry

A thick coupler plate for connecting the CBT 70J-1 + 70JE-1 end-to-end is included with the 70JE-1. The CBT 70J-1 + 70JE-1 System can utilize the swivel (pan) / tilt wall bracket that is included with the 70J-1, or can utilize industry-standard mounting points on the coupler plate (OmniMount™ 60.0 and 120.0 patterns) for attaching to a wall. Alternatively, the M6 inserts on the back panel can be utilized to suspend the speaker using forged shoulder steel eyebolts or swivel mounting rings, providing installation versatility.

The CBT 70J-1 + 70JE-1 System can be installed either indoors or outdoors. The drivers are weather-treated, the fiberglass reinforced ABS cabinet is excellent for outdoor applications, external screws are stainless steel, and the painted aluminum grille resists rusting. Available in black or white (-WH)

# CBT 70JE-1 Purpose-Designed Extension for CBT 70J-1 Line Array Column Speaker

## Specifications:

### CBT 70JE-1 EXTENSION LOUDSPEAKER

Components:	Four (4) 130 mm (5 in) LF drivers
Frequency Range (-10 dB) <sup>1</sup> :	45 Hz – 700 Hz
Sensitivity (2.83V @ 1m):	90 dB full space, 96 dB half-space (65 Hz - 300 Hz)
Nominal Impedance:	8 ohms
Power Capacity <sup>2</sup> :	500 W (2000 W peak), 2 hrs 350 W (1400 W peak), 100 hrs
Max SPL <sup>3</sup> :	117 dB
Net Weight:	8.2 kg (18 lb)

### CBT 70J-1 + 70JE-1 SYSTEM (connected end-to-end, driven in parallel)

Components:	Eight (8) 130 mm (5 in) LF drivers Sixteen (16) 25 mm (1 in) HF drivers
Frequency Range (-10 dB) <sup>1</sup> :	45 Hz – 20 kHz
Coverage:	Vertical (selectable via switch) Narrow Mode: 25° (2 kHz – 16 kHz) (±10°) Broad Mode: 45° (350 Hz – 16 kHz) (±10°) Horizontal 150° (500 Hz – 18 kHz, ±20°)
Sensitivity (@1m):	Narrow: (speech mode) 98 dB @ 2.83V, 95 dB @ 2.0V (150 Hz – 8 kHz) (music mode) 94 dB @ 2.83V, 91 dB @ 2.0V (80 Hz – 18 kHz) Broad: (speech mode) 97 dB @ 2.83V, 94 dB @ 2.0V (100 – 8 kHz) (music mode) 93 dB @ 2.83V, 90 dB @ 2.0V (70 Hz – 18 kHz)
Nominal Impedance:	4 ohms
Power Capacity <sup>2</sup> :	1000 W (4000 W peak), 2 hrs 700 W (2800 W peak), 100 hrs
Max SPL <sup>3</sup> :	Narrow: (speech mode) 125 dB cont ave (131 peak) (music mode) 121 dB cont ave (127 peak) Broad: (speech mode) 124 dB cont ave (130 peak) (music mode) 120 dB cont ave (126 peak)

### Transducers:

Low Frequency Drivers:	8 pcs, 130 mm (5 in) drivers, dual magnet neodymium, 38 mm (1.5 in) voice coil, damped blended textile surround, coated diaphragm for moisture, UV and salt resistance, shielded.
High Frequency Drivers:	16 pcs, 25 mm (1 in) drivers, dual magnet neodymium, encased magnet and coated diaphragm for moisture, UV and salt resistance, shielded.

### Enclosure:

Enclosure:	Fiberglass-reinforced ABS cabinet, painted aluminum grille.
Outdoor Capability:	IP-55 rated, per IEC529, when installed with optional MTC-PC2 panel cover. UV, moisture and 200-hr ASTM G85 acid-air/salt-spray resistant.
Colors:	Black or white (-WH)
Insert Points:	20 insert points total, 8 utilized for coupler plate, M6 (16 mm deep) on back panel
Mounting:	Coupler plate joins the CBT70J-1 and 70JE-1 end-to-end. Threaded points on coupler plate accepts OmniMount™ 60.0 Series and 120.0 Series compatible wall-mount brackets, as well as points for the swivel (pan)/tilt wall bracket that is included with CBT 70J-1. Twelve (12) additional M6 mounting points accept forged shoulder steel eyebolts or swivel clips for suspension.
Dimensions (H x W x D):	1388 x 170 x 237 mm (54.8 x 6.7 x 9.3 in)
Net Weight:	20.4 kg (45 lb)
Included Accessories:	Coupler plate (included with 70JE-1) Swivel (pan) / tilt wall bracket (included with 70J-1)
Optional Accessories:	MTC-PC2 terminal panel cover MTC-CBT-SMB1 Stand-Mount Bracket for use with 35 mm heavy duty speaker stand (must be heavy-duty stand for stability with this array) MTC-CBT-FM2 flush-mount low-profile wall-mount bracket

<sup>1</sup>Full space

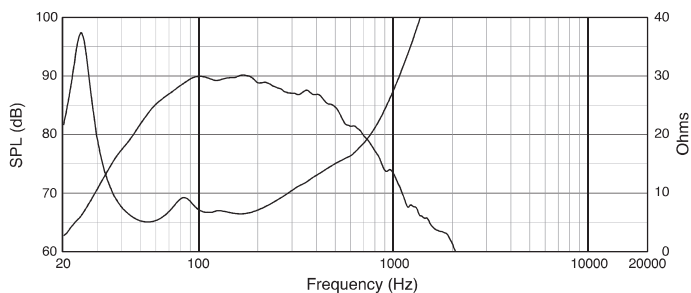
<sup>2</sup>IEC standard, full bandwidth pink noise with 6 dB crest factor.

<sup>3</sup>Calculated based on power rating and measured sensitivity, exclusive of power compression.

JBL continually engages in research related to product improvement. Some materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description, but will always equal or exceed the original design specifications unless otherwise stated.

## CBT70JE-1

### Frequency Response (full-space, 4π) and Impedance



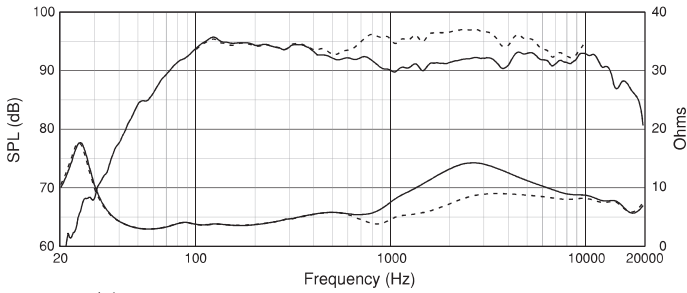
# CBT 70JE-1 Purpose-Designed Extension for CBT 70J-1 Line Array Column Speaker

## CBT 70J-1 + 70JE-1 Array System

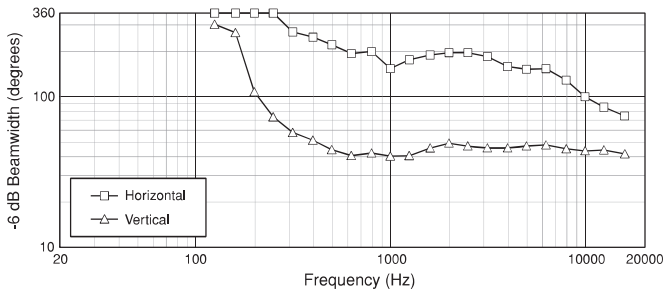
### Broad Setting

#### Frequency Response:

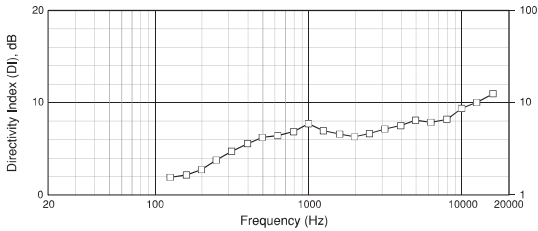
“Music” Mode (solid); “Speech” Mode (dotted), 1W (2.83V, full-space,  $4\pi$ ), 1m, and Impedance



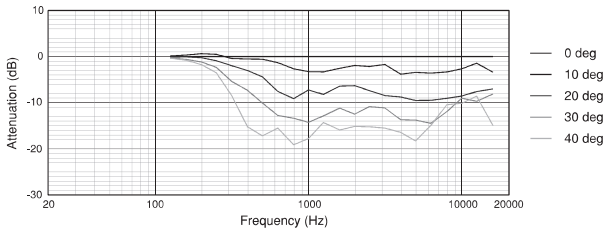
#### Beamwidth:



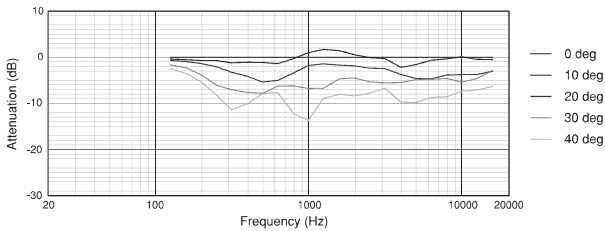
#### Directivity, Q



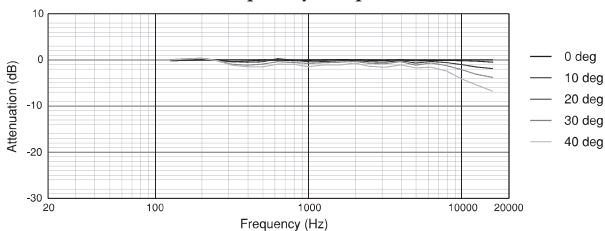
#### Vertical Off-Axis Frequency Response, Up



#### Vertical Off-Axis Frequency Response, Down



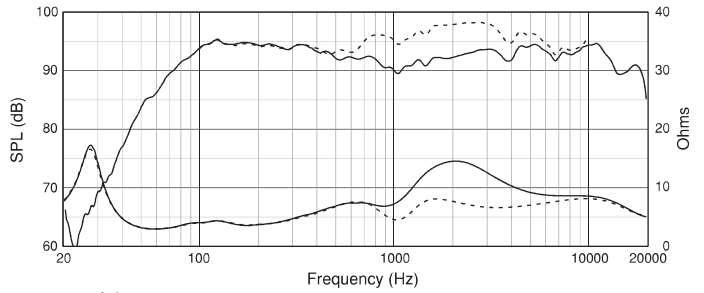
#### Horizontal Off-Axis Frequency Response



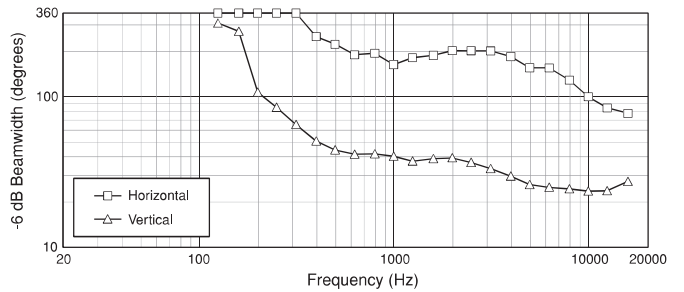
### Narrow Setting

#### Frequency Response:

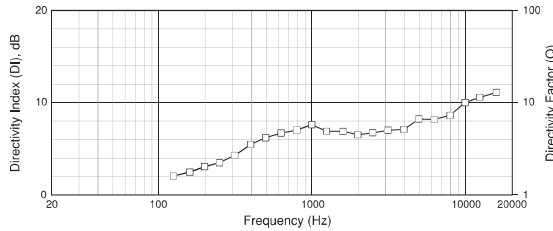
“Music” Mode (solid); “Speech” Mode (dotted), 1W (2.83V, full-space,  $4\pi$ ), 1m, and Impedance



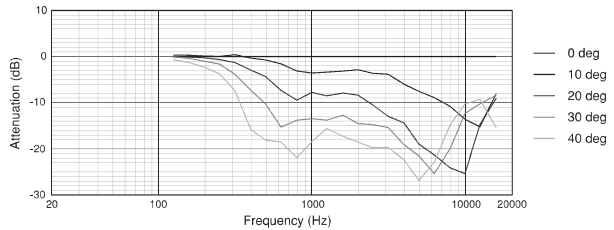
#### Beamwidth:



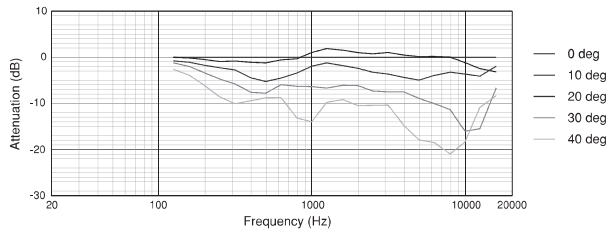
#### Directivity, Q



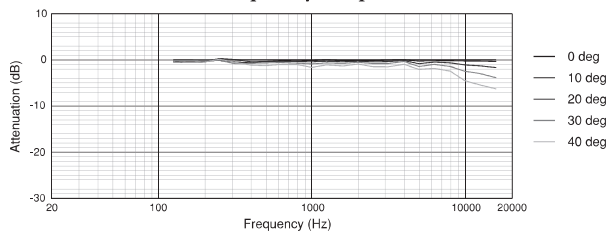
#### Vertical Off-Axis Frequency Response, Up



#### Vertical Off-Axis Frequency Response, Down



#### Horizontal Off-Axis Frequency Response



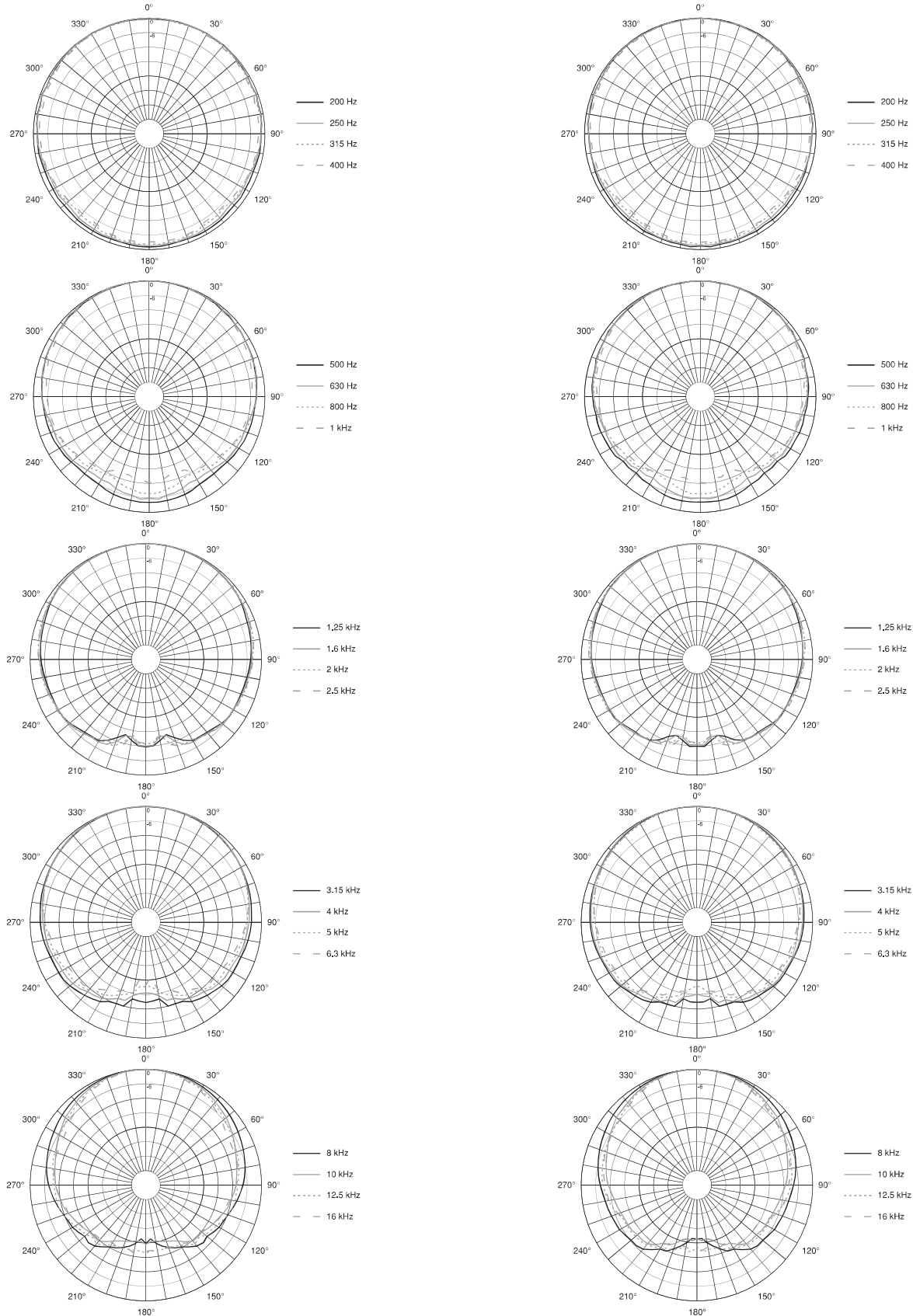
# CBT 70JE-1 Purpose-Designed Extension for CBT 70J-1 Line Array Column Speaker

## CBT 70J-1 + 70JE-1 Array System

Broad Setting

Narrow Setting

Horizontal 1/3 Octave Polars



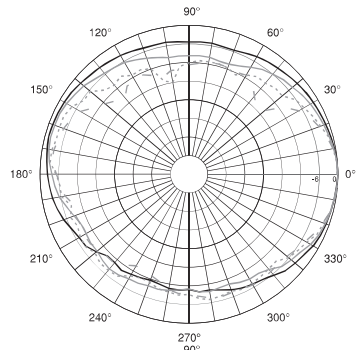
# CBT 70JE-1 Purpose-Designed Extension for CBT 70J-1 Line Array Column Speaker

## CBT 70J-1 + 70JE-1 Array System

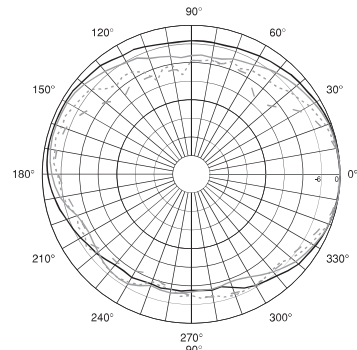
### Broad Setting

### Narrow Setting

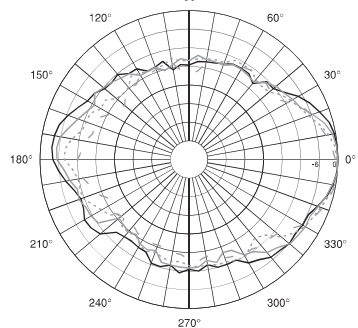
### Vertical 1/3 Octave Polars



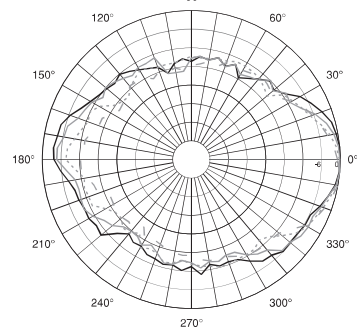
- 200 Hz
- 250 Hz
- 315 Hz
- - - 400 Hz



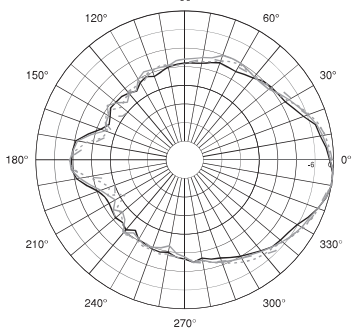
- 200 Hz
- 250 Hz
- 315 Hz
- - - 400 Hz



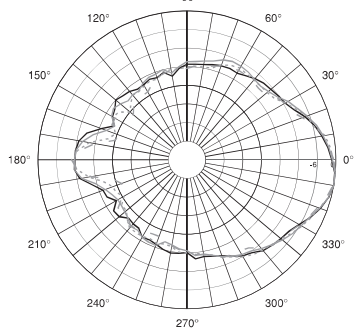
- 500 Hz
- 630 Hz
- 800 Hz
- - - 1 kHz



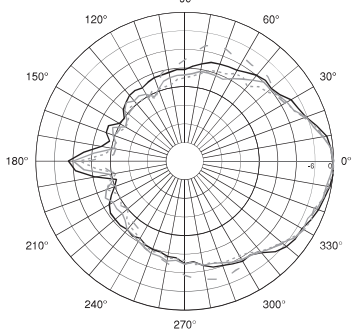
- 500 Hz
- 630 Hz
- 800 Hz
- - - 1 kHz



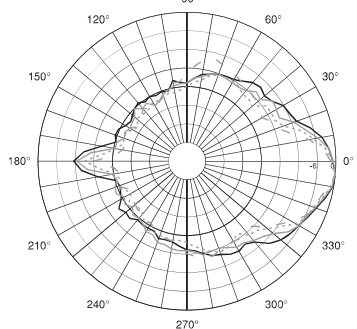
- 1,25 kHz
- 1,6 kHz
- 2 kHz
- - - 2,5 kHz



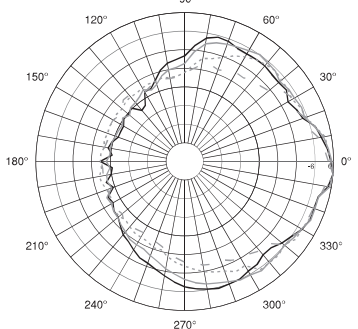
- 1,25 kHz
- 1,6 kHz
- 2 kHz
- - - 2,5 kHz



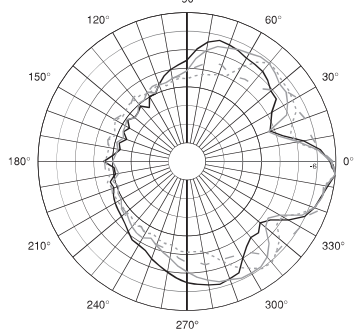
- 3,15 kHz
- 4 kHz
- 5 kHz
- - - 6,3 kHz



- 3,15 kHz
- 4 kHz
- 5 kHz
- - - 6,3 kHz



- 8 kHz
- 10 kHz
- 12,5 kHz
- - - 16 kHz



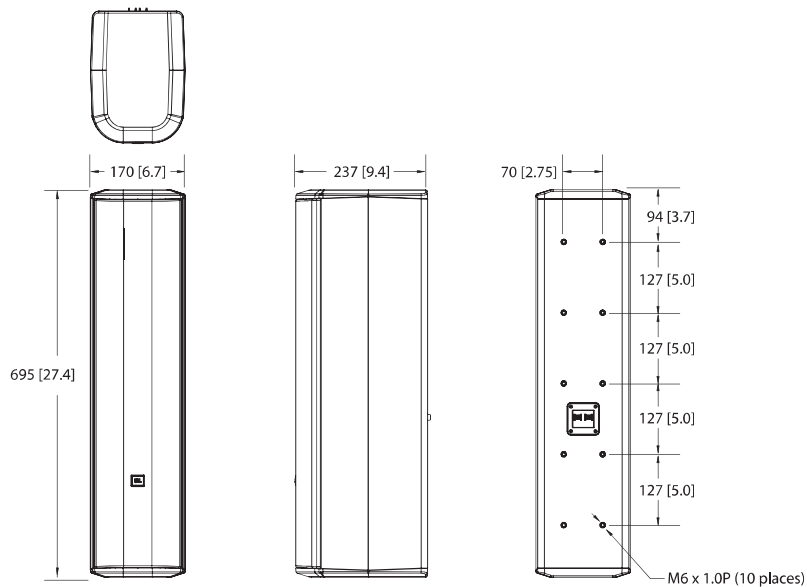
- 8 kHz
- 10 kHz
- 12,5 kHz
- - - 16 kHz

# CBT 70 JE-1 Purpose-Designed Extension for CBT 70J-1 Line Array Column Speaker

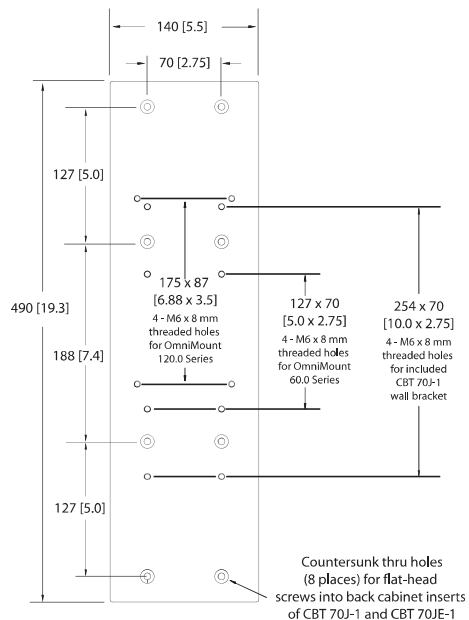
## Dimensions:

Dimensions in mm [in]

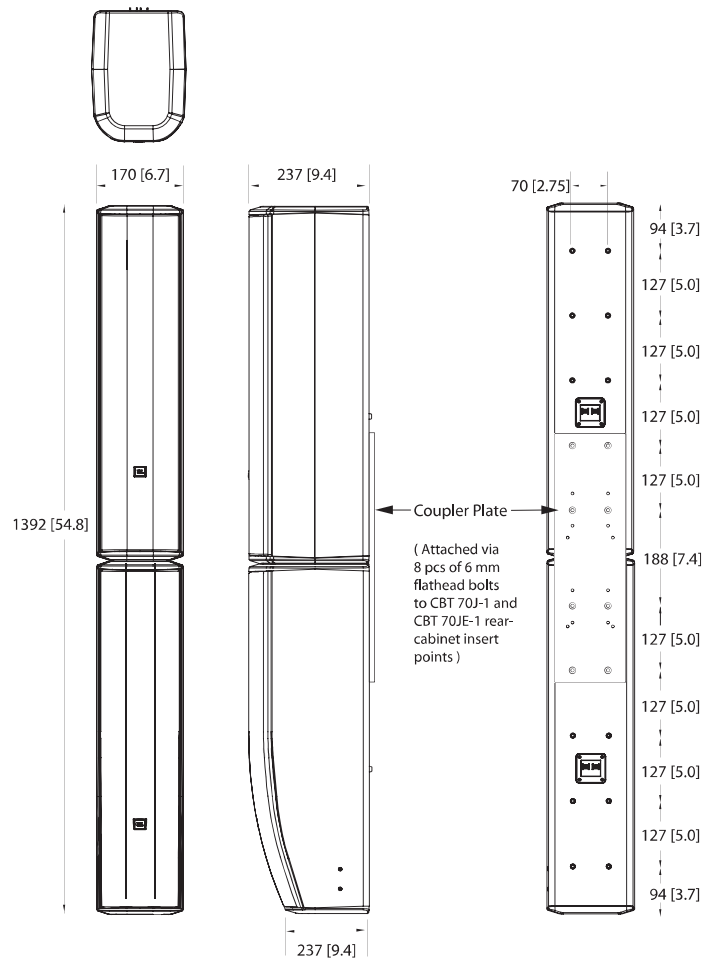
### CBT 70JE-1



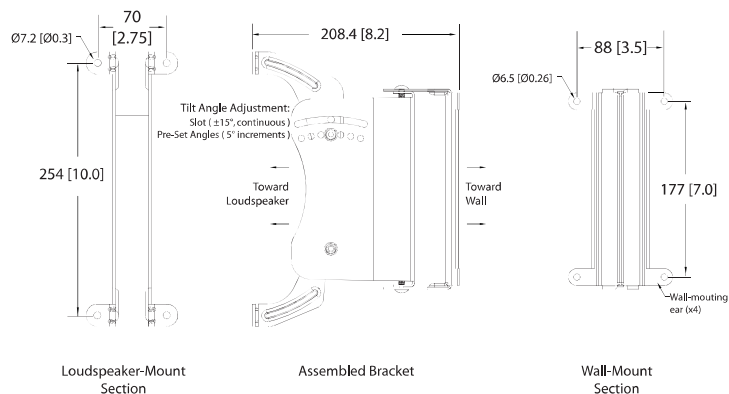
### Coupler Plate



### CBT 70J-1 + 70JE-1 System



### Wall Bracket



JBL Professional  
8500 Balboa Boulevard, P.O. Box 2200  
Northridge, California 91329 U.S.A.

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02/13



# CBT 70J-1

Constant Beamwidth Technology™  
Two-Way Line Array Column with  
Asymmetrical Vertical Coverage

## CBT SERIES

CONSTANT BEAMWIDTH TECHNOLOGY™

### Key Features:

- ▶ Asymmetrical vertical coverage sends more sound toward far area of room to make front-to-back sound levels more consistent.
- ▶ Components: Sixteen 25 mm (1 in) soft dome tweeters and four 125 mm (5 in) high-power LF drivers, arranged coaxially.
- ▶ Patent-pending Constant Beamwidth Technology™ provides constant directivity up to the highest frequencies and reduces out-of-coverage lobing.
- ▶ Vertical pattern coverage switchable between 45° for medium-throw coverage and 25° for long-throw applications.
- ▶ Switchable voicing provides flat response in music mode or mid-range presence peak in speech mode.
- ▶ Dynamic SonicGuard™ overload protection of HF devices
- ▶ Swivel (pan) / tilt wall bracket included.

### Overview:

The CBT 70J-1, with Constant Beamwidth Technology™, represents a breakthrough in pattern control consistency, utilizing complex analog delay beam-forming and amplitude tapering to accomplish superior, consistent vertical coverage without the narrow vertical beaming and out-of-coverage lobing that are typical of straight form-factor column speakers.

The CBT 70J-1 combines Constant Beamwidth Technology with a physical J-shaped curving, resulting in a very well controlled progressive line array with asymmetrical vertical coverage. The asymmetrical coverage produces a higher concentration of sound with a tighter pattern from the upper half of the array and a lower concentration of sound with a broader vertical pattern from the lower half of the array. This sends more sound toward the far area of the room than to the near area of the room, resulting in more even front-to-back SPL levels than would be the case from a traditional speaker or column that projects symmetrically in the vertical plane.

The two-way coaxial design provides a wide 60 Hz – 20 kHz bandwidth. The low-diffraction baffle eliminates frequency response irregularities that could otherwise occur due to baffle discontinuities. The thick, heavy-duty aluminum grille stands up to portable/event applications while allowing for rust-free installation outdoors.

The slim, compact design fits well into virtually any architectural decor. The 70 cm (27.6 in) tall line array height provides consistent pattern control throughout the intelligibility band, making the CBT 70J-1 work well in difficult acoustic environments.

### Applications

The combination of superior sound quality, excellent pattern control, asymmetrical vertical coverage and compact design makes CBT 70J-1 extremely versatile. It is ideal for applications such as performance auditoriums, lecture halls, classrooms, A/V, transit centers, school stadiums,



multipurpose spaces, racetracks, theme parks, and fill applications, among many others.

### Adjustable Coverage to Fit the Application

The innovative coverage adjustability allows switching between broad and narrow vertical coverage settings to allow matching the coverage and throw requirements of the application. Coverage can be easily switched in-venue with the speaker already installed. This innovation allows a single loudspeaker model to excel in an extremely wide variety of project types.

### User Variable Voicing

The voicing can be set to match the application through a Music/Speech switch. The Music setting provides flat frequency response, while the Speech setting produces a mid-range presence boost to provide clear, intelligible speech even at the longest throw distances, along with increased midrange sensitivity for higher midrange maximum output capability.

### Drivers

The low frequency drivers are lightweight dual magnet neodymium motors with 38 mm (1.5 in) diameter voice coils. The dual magnet system provides maximum flux in a compact package. The magnet structure is magnetically shielded and the pole tips are magnetically saturated for lower flux modulation and minimum distortion. The 16 mm (0.63 in) long coil provides high linear drive and high power handling in a compact driver. The LF drivers feature damped blended textile surrounds and coated sealed paper cones found in high performance large format drivers.

The high frequency driver features a dual magnet neodymium structure for maximum sensitivity. The tweeter is encased for weather resistance. The drivers are magnetically shielded to allow close placement CRT monitors.

Both drivers feature coated diaphragm materials to provide moisture, UV and salt resistance for outdoor capability.

### SonicGuard™

Dynamic SonicGuard™ protection on the high frequency section minimizes distortion at high drive levels by limiting driver excursion dynamically. This maximizes music clarity and speech intelligibility at high drive levels while protecting the drivers from damage due to occasional overpowering.

### Bracketry

A swivel (pan) / tilt wall-mount bracket is included, plus ten M6 inserts on the back panel fit the spacing of common third-party mounting brackets, or can be utilized to suspend the speaker using forged shoulder steel eyebolts or swivel mounting rings, providing installation versatility.

CBT 70J-1 can be installed either indoors or outdoors. The drivers are weather-treated, the fiberglass reinforced ABS cabinet is excellent for outdoor applications, external screws are stainless steel and the painted aluminum grille resists rusting in the harshest conditions. Available in black or white (-WH).

# CBT 70J-1 Two-Way Line Array Column with Asymmetrical Vertical Coverage

## Specifications:

### System:

Components:	Four 130 mm (5 in) LF drivers Sixteen 25 mm (1 in) HF drivers
Frequency Range (-10 dB) <sup>1</sup> :	60 Hz – 20 kHz
Coverage:	Vertical (selectable via switch) Narrow Mode: 25° (2 kHz - 16 kHz) (±10°) Broad Mode: 45° (750 Hz - 16 kHz) (±10°) Horizontal 150° (500 Hz – 8 kHz, ±20°)
Sensitivity (2.83V@ 1m) <sup>1</sup> :	Narrow: (speech mode) 98 dB (1 kHz - 8 kHz) (music mode) 93 dB (300 Hz - 18 kHz) Broad: (speech mode) 96 dB (1 kHz - 8 kHz) (music mode) 92 dB (300 Hz - 18 kHz)
Nominal Impedance:	8 ohms
Power Capacity <sup>2</sup> :	500 W (2000 W peak), 2 hrs 350 W (1400 W peak), 100 hrs
Max SPL <sup>3</sup> :	Narrow: (speech mode) 125 dB cont ave (131 peak) (music mode) 120 dB cont ave (126 peak) Broad: (speech mode) 123 dB cont ave (129 peak) (music mode) 119 dB cont ave (125 peak)

### Transducers:

Low Frequency Drivers:	4 pcs, 130 mm (5 in) drivers, dual magnet neodymium, 38 mm (1.5 in) voice coil, damped blended textile surround, coated diaphragm for moisture, UV, and salt resistance, shielded.
High Frequency Drivers:	16 pcs, 25 mm (1 in) drivers, dual magnet neodymium, encased magnet and coated diaphragm for moisture, UV and salt resistance, shielded.

### Enclosure:

Enclosure:	Fiberglass reinforced ABS cabinet, painted aluminum grille
Outdoor Capability:	IP-55 rated, per IEC529, when installed with optional MTC-PC2 panel cover. UV, moisture and 200-hr ASTM G85 acid-air/salt-spray resistant.
Colors:	Black or white (-WH)
Insert Points:	10 M6 swivel (pan)/tilt (16 mm deep) insert points on back panel.
Mounting:	Included swivel (pan)/tilt wall bracket provides continuously variable +/-80 degree left-right swivel aiming (at no up/down tilt – see Bracket Guide for maximum swivel range at various up/down tilt angles), continuously variable +/-15 degree tilt, as well as 5 degree fixed increment points. Ten threaded mounting points located on back panel of cabinet conform to industry standard rectangular 127 x 70 mm (5.0 x 2.75 in) pattern for OmniMount® 60.0 and other compatible third-party brackets. Threaded mounting points can be utilized for suspension.
Dimensions (H x W x D):	694 x 170 x 237 mm (27.4 x 6.7 x 9.3 in)
Net Weight:	9.5 kg (21 lb)
Included Accessories:	Swivel (pan) / tilt wall bracket
Optional Accessories:	MTC-PC2 terminal panel cover MTC-CBT-SMB1 Stand-Mount Bracket for use with 35 mm heavy duty speaker stand MTC-CBT-FM2 flush-mount low-profile wall-mount bracket

<sup>1</sup>Full space

<sup>2</sup>IEC standard, full bandwidth pink noise with 6 dB crest factor.

<sup>3</sup>Calculated based on power rating and measured sensitivity, exclusive of power compression.

JBL continually engages in research related to product improvement.

Changes introduced into existing products without notice are an expression of that philosophy.

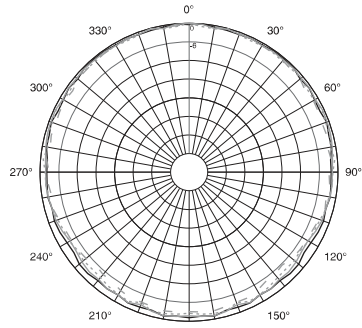


# CBT 70J-1 Two-Way Line Array Column with Asymmetrical Vertical Coverage

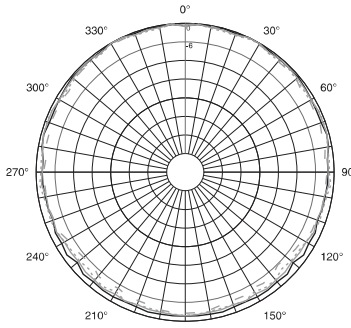
## Broad Setting

## Narrow Setting

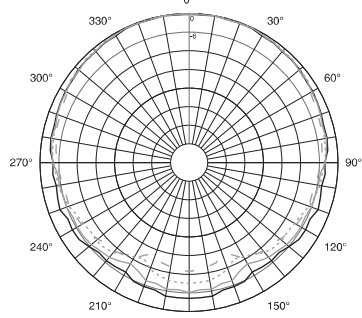
Horizontal 1/3 Octave Polars



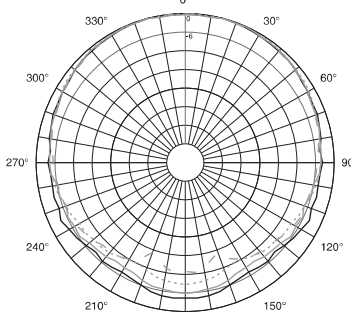
- 200 Hz
- 250 Hz
- 315 Hz
- - - 400 Hz



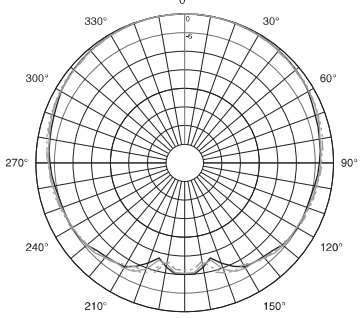
- 200 Hz
- 250 Hz
- 315 Hz
- - - 400 Hz



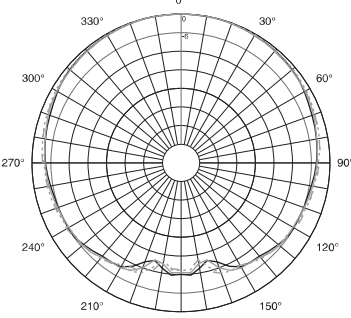
- 500 Hz
- 630 Hz
- 800 Hz
- - - 1 kHz



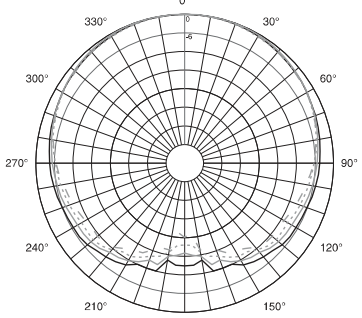
- 500 Hz
- 630 Hz
- 800 Hz
- - - 1 kHz



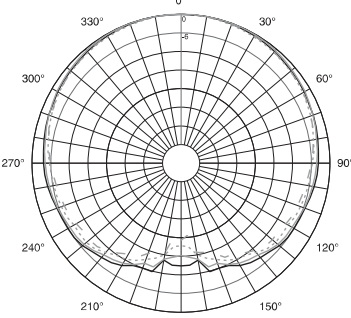
- 1.25 kHz
- 1.6 kHz
- 2 kHz
- - - 2.5 kHz



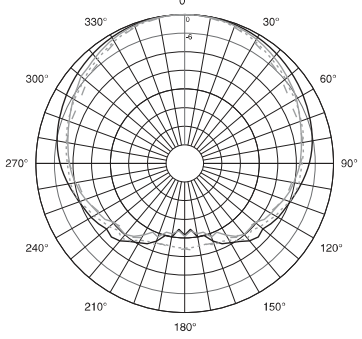
- 1.25 kHz
- 1.6 kHz
- 2 kHz
- - - 2.5 kHz



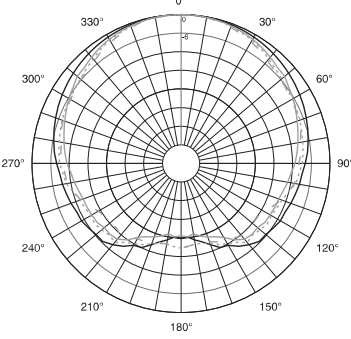
- 3.15 kHz
- 4 kHz
- 5 kHz
- - - 6.3 kHz



- 3.15 kHz
- 4 kHz
- 5 kHz
- - - 6.3 kHz



- 8 kHz
- 10 kHz
- 12.5 kHz
- - - 16 kHz

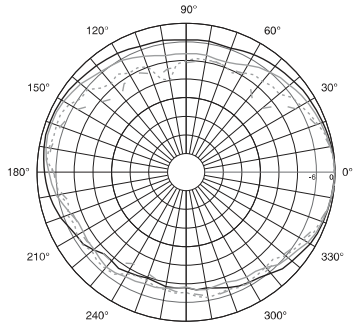


- 8 kHz
- 10 kHz
- 12.5 kHz
- - - 16 kHz

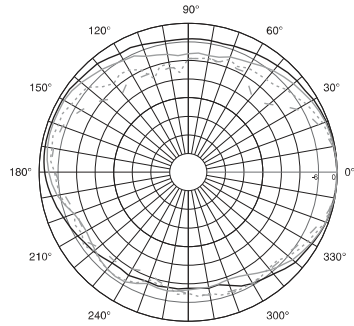
# Broad Setting

# Narrow Setting

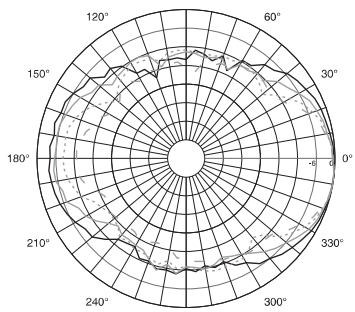
## Vertical 1/3 Octave Polars



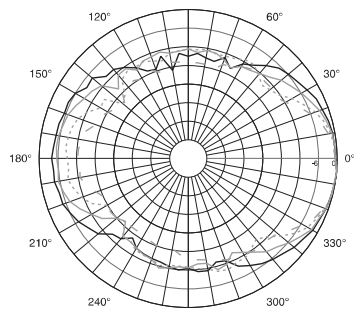
- 200 Hz
- 250 Hz
- 315 Hz
- - 400 Hz



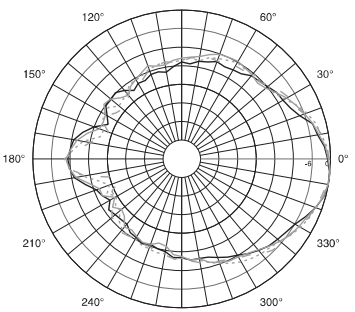
- 200 Hz
- 250 Hz
- 315 Hz
- - 400 Hz



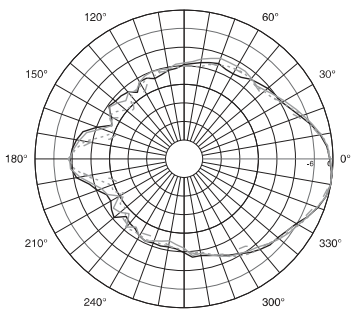
- 500 Hz
- 630 Hz
- 800 Hz
- - 1 kHz



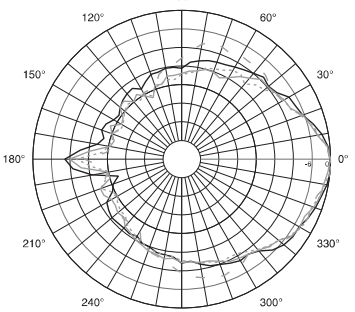
- 500 Hz
- 630 Hz
- 800 Hz
- - 1 kHz



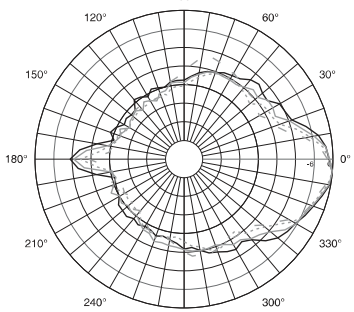
- 1,25 kHz
- 1,6 kHz
- 2 kHz
- - 2,5 kHz



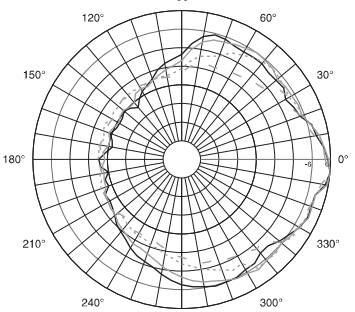
- 1,25 kHz
- 1,6 kHz
- 2 kHz
- - 2,5 kHz



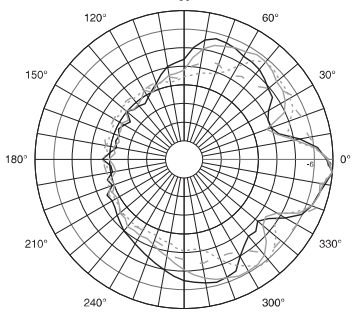
- 3,15 kHz
- 4 kHz
- 5 kHz
- - 6,3 kHz



- 3,15 kHz
- 4 kHz
- 5 kHz
- - 6,3 kHz



- 8 kHz
- 10 kHz
- 12,5 kHz
- - 16 kHz



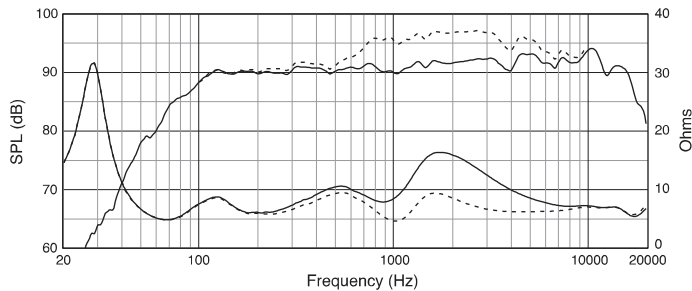
- 8 kHz
- 10 kHz
- 12,5 kHz
- - 16 kHz

# CBT 70J-1 Two-Way Line Array Column with Asymmetrical Vertical Coverage

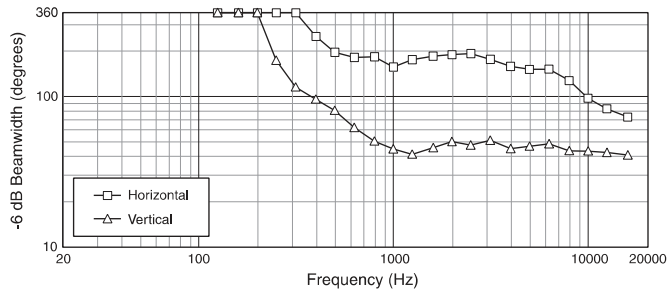
## Broad Setting

### Frequency Response:

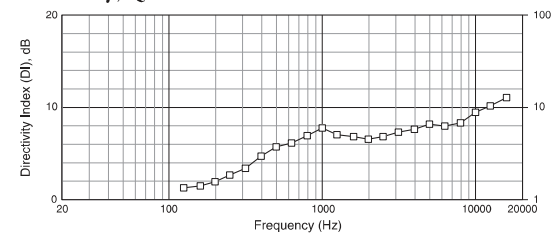
“Music” Mode (solid); “Speech” Mode (dotted), 1W (2.83V), 1m, and Impedance



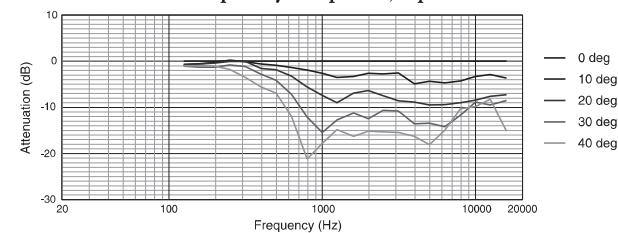
### Beamwidth:



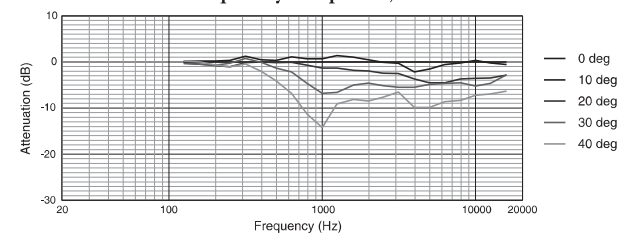
### Directivity, Q



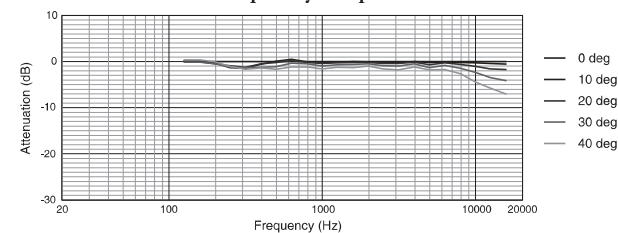
### Vertical Off-Axis Frequency Response, Up



### Vertical Off-Axis Frequency Response, Down



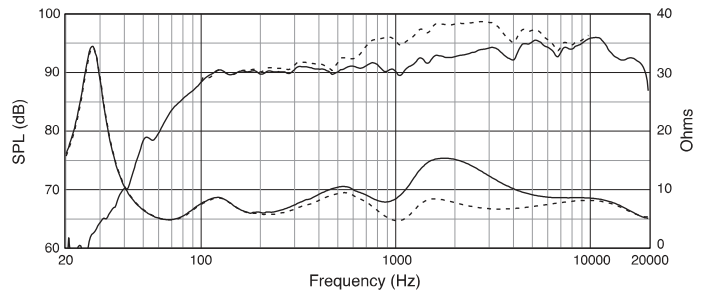
### Horizontal Off-Axis Frequency Response



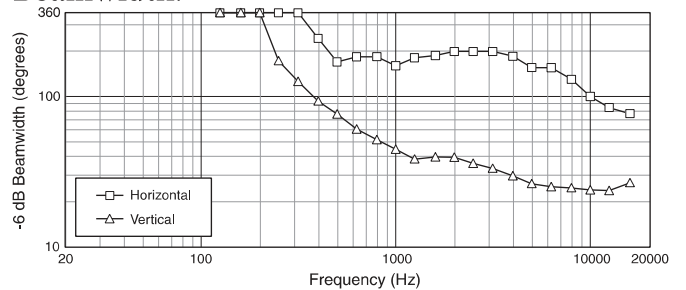
## Narrow Setting

### Frequency Response:

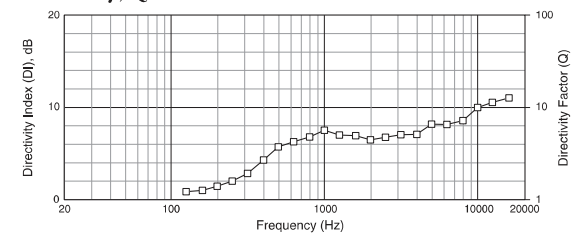
“Music” Mode (solid); “Speech” Mode (dotted), 1W (2.83V), 1m, and Impedance



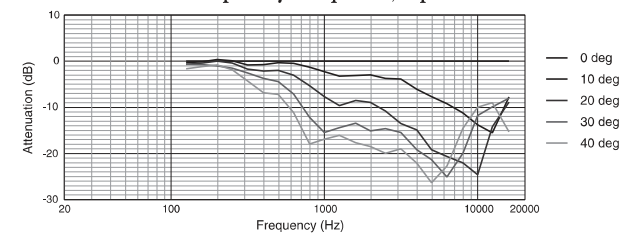
### Beamwidth:



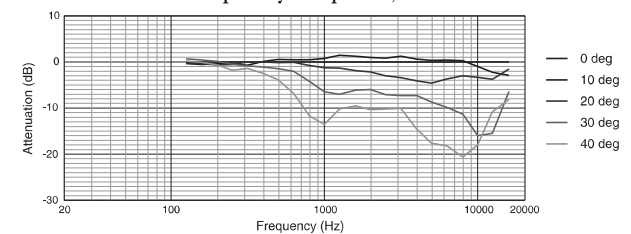
### Directivity, Q



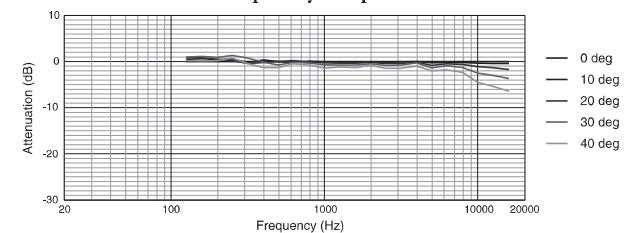
### Vertical Off-Axis Frequency Response, Up



### Vertical Off-Axis Frequency Response, Down



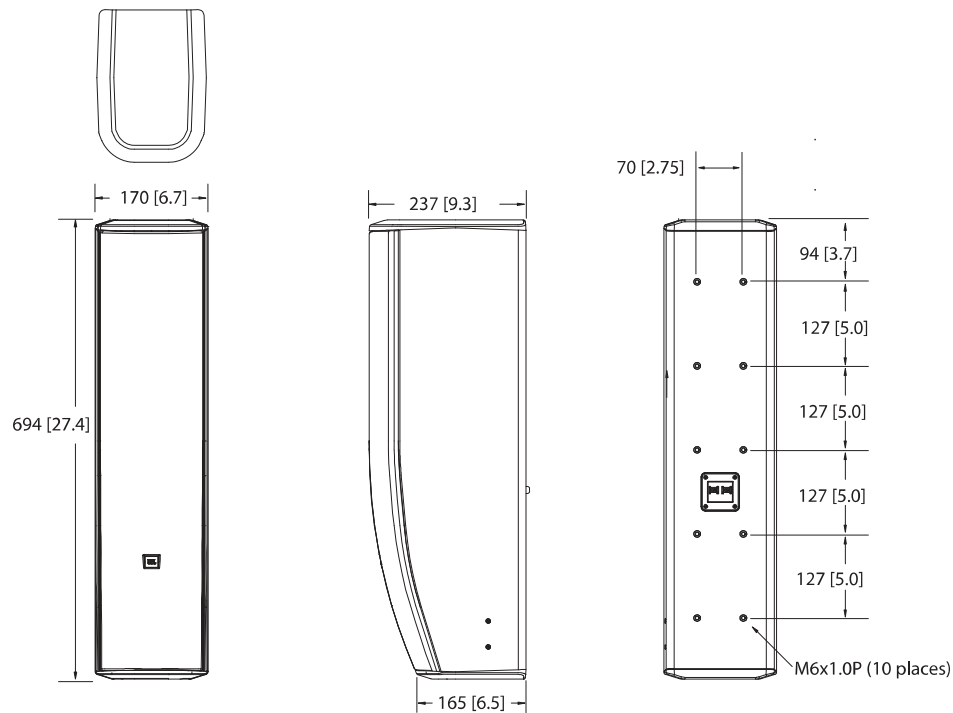
### Horizontal Off-Axis Frequency Response



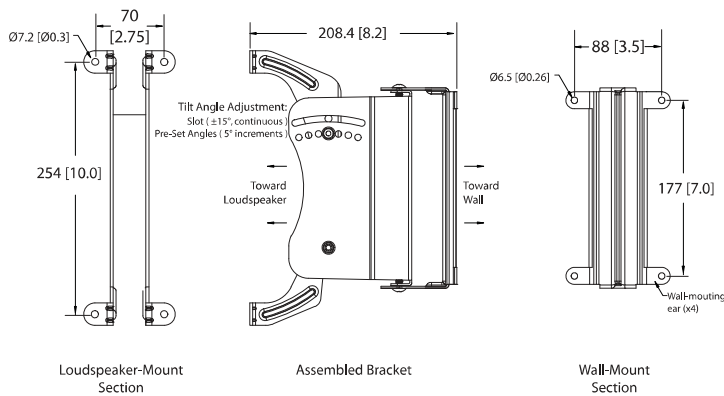
# CBT 70J-1 Two-Way Line Array Column with Asymmetrical Vertical Coverage

## Dimensions:

Dimensions in mm [in]



## Wall Bracket



JBL Professional  
8500 Balboa Boulevard, P.O. Box 2200  
Northridge, California 91329 U.S.A.

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# Control<sup>®</sup> 67P/T Full-Range Pendant Loudspeaker with RBI

## Professional Series

### Key Features:

- ▶ JBL's exclusive conical Radiation Boundary Integrator<sup>®</sup> (RBI) technology provides consistent and wide 120° coverage of the listening area.
- ▶ Coaxial design featuring 165 mm (6½ in) woofer and 25 mm (1 in) soft-dome tweeter.
- ▶ Hanging hardware with 4.5 m (15 foot) galvanized steel cable and easy to adjust clamp.
- ▶ Stylish design, available in black or white (-WH).
- ▶ UL listed (speaker and hanging cable system).
- ▶ 8 ohm and 70V/100V operation.

### Applications:

The Control 67P/T is a high output, full-range, two-way pendant-type loudspeaker that provides superb sound reproduction and very consistent, wide coverage for rooms with open architecture ceilings and other locations where a pendant form factor is desired.

JBL's patent-pending Radiation Boundary Integrator<sup>®</sup> (RBI) technology, adapted from the groundbreaking VERTEC<sup>™</sup> Series of line array loudspeakers, delivers consistent coverage of the listening area. Combining an extra-large 280 mm (11 in) diameter waveguide with low-frequency projection apertures, the two coaxially-mounted drivers provide a seamless integration of coverage, resulting in extremely even pattern control and coverage where all listeners hear a consistent, high-fidelity sound quality. The wide 120° coverage pattern allows for the use of fewer speakers, reducing the cost of the installed system without sacrificing performance.

Excellent sound quality coupled with stylish design and easy installation makes the Control 67P/T ideal for a wide variety of applications including retail, restaurants, hotels, casinos, fitness centers, convention centers, exhibit spaces, conference rooms, atriums, museums, transit centers and other open-ceiling applications.

The Control 67P/T includes a single-point mounting system for easy and secure suspension in open-ceiling applications. Two complete hanging cable systems are included, providing both main and safety suspension cables. Include are extra-long 4.5 m (15 foot) high tensile galvanized steel wire rope having spring clips for the loudspeaker end of the cable and UL listed cable fasteners for infinitely adjustable suspension height.

The system's 165 mm (6½ in) low-frequency driver features a polypropylene-coated cone and 25 mm (1 in) copper voice coil with vented fiberglass resin coil-former for high power handling and improved long-term reliability. The coaxially-mounted 25 mm (1 in) textile soft-dome high frequency driver features internal damping for smooth extended response, along with an aluminum voice coil former and neodymium magnet assembly with ferro-fluid cooling, for high-fidelity sound quality with enhanced long-term sound level capability.

The Control 67P/T contains a high-quality 60 Watt multi-tap transformer for use on 70V/100V distributed loudspeaker lines, and is switchable for 8-ohm voice-coil direct operation.

Euro-style clip-in connectors allow for easy wiring. For protected outdoor applications, rubber boots are included to cover the input connectors, and an optional terminal cover is available for harsher locations.



Shown with included grille removed

### Specifications:

<b>System:</b>	
Frequency Response (-10 dB):	58 Hz – 18 kHz
Frequency Range (±3 dB):	78 Hz – 16 kHz
Power Capacity <sup>2</sup> :	75 Watts Continuous Pink Noise Power (with 300 Watts peaks) 150 Watts Continuous Program Power
Nominal Sensitivity:	90 dB
Nominal Coverage Angle <sup>3</sup> :	120° (+20°/-15°)
Directivity (Q):	5.7
Directivity Index (DI):	7.5 dB
Rated Maximum SPL @ 1m:	109 dB continuous pink noise, 115 dB peak
Rated Impedance:	8 ohms
Transformer Taps:	70V: 60W, 30W, 15W & 7.5W 100V: 60W, 30W, 15W
Transformer Insertion Loss:	0.5 dB @ 7.5 W, 0.5 dB @ 15 W, 0.6 dB @ 30 W, 0.7 dB @ 60 W
<b>Transducer:</b>	
LF Driver:	165 mm (6.5 in) polypropylene-coated paper with pure butyl rubber surround, 25 mm (1 in) copper voice coil, vented fiberglass resin voice coil-former
HF Driver:	25 mm (1.0 in) textile soft-dome, neodymium magnet assembly, ferro-fluid cooling, aluminum voice coil former
<b>Enclosure:</b>	
Enclosure Material:	High impact polystyrene
Grille:	Zinc-plated steel grille with powder-coat finish, foam backing (removable for painting)
Environmental:	Exceeds Mil Spec 810 for humidity, salt spray, temperature & UV. IP44 capability per IEC 529 – splashproof rating.
Termination:	Two removable locking euro-block 2-pin connectors with screw-down terminals for bare wire. Connectors paralleled for input and loop-thru. Max. wire 12 AWG (2.5 mm <sup>2</sup> ). Rubber terminal covers included.
Suspension:	Two identical suspension systems (one as main suspension cable and the other as safety cable), each consisting of 4.5 m (15 ft) long 2 mm (0.077 in) high-tensile galvanized-steel wire rope suspension cable with spring-clips for clipping onto the loudspeaker bracket and Gripple <sup>™</sup> brand adjustable-height cable fasteners for infinitely adjustable height. Cables have SWL rating of 45 kg (99 lb).
Safety Agency Ratings:	Speaker listed per UL1480, transformer registered per UL1876. In accordance with IEC60849/EN60849. Suspension system and Gripple <sup>®</sup> -brand cable fastener listed per UL1598 and UL2239, TUV, and CSA Class 3426-01 & Class 3426-81.
Dimensions:	312 mm (12.3 in) diameter x 330 mm (13.0 in) height to top of cabinet. 350 mm (13.8 in) to top of suspension bracket.
Net Weight (ea):	5.2 kg (11.5 lbs)
Shipping Weight (pair):	12.3 kg (27 lbs)
Included Accessories:	Two suspension cable systems (see "Suspension", above), two 2-pin removable locking euro-block connectors, two rubber covers for euro-block connectors.
Optional Accessories:	MTC-PC60 top panel / terminal cover
Colors:	Available in black or white (-WH). Paintable.

<sup>1</sup> Full-space (suspended)

<sup>2</sup> Continuous Pink Noise rating is IEC-shaped pink noise with a 6 dB peak-to-average crest factor for 100 hours continuously. Continuous Program power is a conservative expression of the system's ability to handle normal speech and music program material and is defined as 3 dB above the Continuous Pink Noise rating.

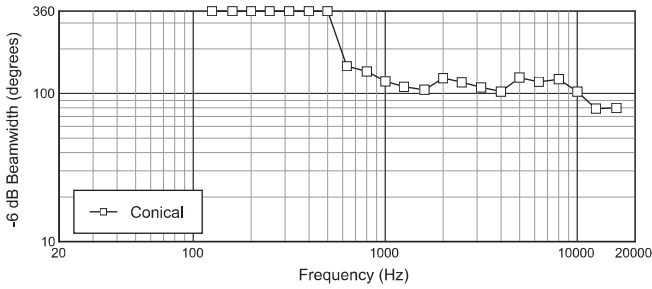
<sup>3</sup> Full-space (suspend in free air), average 1 kHz to 10 kHz.

JBL continually engages in research related to product improvement. Changes introduced into existing products without notice are an expression of that philosophy.

# ► Control 67P/T Full-Range Pendant Loudspeaker with RBI

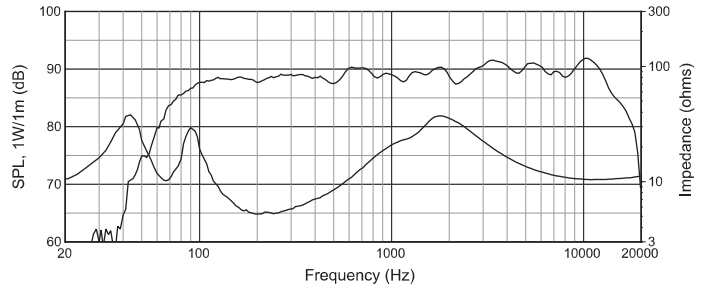
## Beamwidth:

-6 dB coverage by frequency

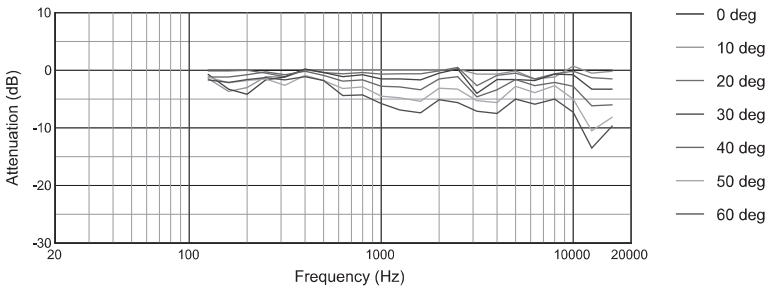


## Frequency Response:

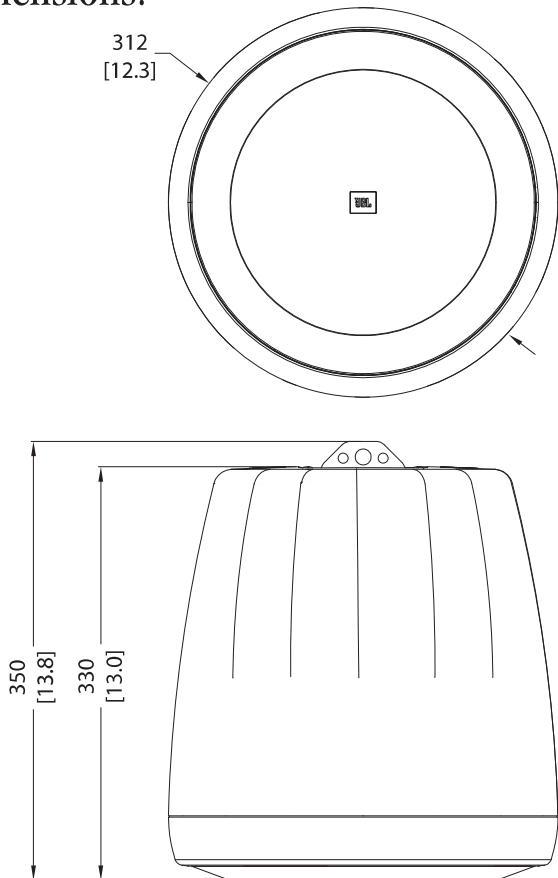
Full-space, 8 ohm, 10° off-axis (typical for coverage area)



## Off-Axis Frequency Response:



## Dimensions:



Dimensions in mm (in)



JBL Professional  
8500 Balboa Boulevard, P.O. Box 2200  
Northridge, California 91329 U.S.A.

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SS C67  
CRP  
08/10



## Description

The K-array Python-KP102 I is a passive speaker system comprised of twelve 3.15" neodymium magnet transducers housed in an elegant and sturdy stainless steel chassis. The vertical dispersion pattern can be switched for wide or narrow coverage, allowing for a great variety of applications. The twelve closely spaced cone drivers provide true line array characteristics - phase coherence, low distortion and focused listening in both the near field, and at a distance from the speaker. A variety of rigging accessories provides many linking and hanging options for the KP52 I (0.5 meter) and the larger (1 meter) KP102 I to be combined in vertical and horizontal line array configurations to satisfy many different venue requirements during temporary events and for permanent installations.

For easier use and integration with other speakers or amplifiers, the KP102 I allows the user to select two different values of impedance (4Ω – 16Ω). At 16Ω as many as 4 KP102 I speakers can be powered off a single amplifier channel at 4 Ω. The KP102 I is able to reproduce the whole vocal frequency range with high intelligibility, starting from 120 Hz. Integrating one of the K-array powered subwoofers (KMT12, KMT18, KMT21, KMT218), configured with specific presets for the KP102 I assures excellent coverage of the entire musical frequency range. The K-array KA amplifier series have presets optimized for KP102 I.

All KP102 I components are designed by the K-array R&D department and custom-made under the K-array quality control system.

Colors		Premium Finishes		Features		Frequent Applications	
Black		Gold		Pure Array Technology (PAT)	Modular Capabilities	Auditoriums, Education & Government	Stadiums & Sport Venues
White		Polished		Weather Resistant	Selectable Coverage	Fitness & Wellness	Houses Of Worship
RAL		Brushed		Selectable Impedance	EN54-24 Certified	Theaters & Concert Halls	Event Productions

Accessories						
K-BASE2	K-FLY2	K-FOOT2	K-JOINT2	K-WALL2	K-WALL2L	KP-STAGE
K-IP65KITA	K-IP65KITB	K-KCLAMP	K-KCLAMP/S	K-PMOUNT	KP-CLUSTER	

## Technical Specifications

General	
Type	Line array
Transducers	12 x 3.15° neodymium magnet woofers
Frequency Response <sup>1</sup>	120 Hz – 18 kHz (-6 dB)
Max SPL <sup>2</sup>	134 dB (peak)
Rated Power	720 W
Coverage	V. 7° - 30°   H. 90°
Connectors	SpeakOn NL4: 1+ 1- (signal); 2+ 2- (through)
Nominal Impedance	4 Ω / 16Ω selectable

Handling & Finishes	
Dimensions (WxHxD)	89 x 1000 x 118 mm (3.5 x 39.4 x 4.7)
Weight	12,0 kg (26.5 lb)
Material	Stainless Steel
Colors	Black, White, Custom RAL
Finishes	Gold, Polished, Brushed

Regulations	
IP Rating	IP64 <sup>3</sup>
EN54-24	EN 54-24:2008 compliant <sup>4</sup>

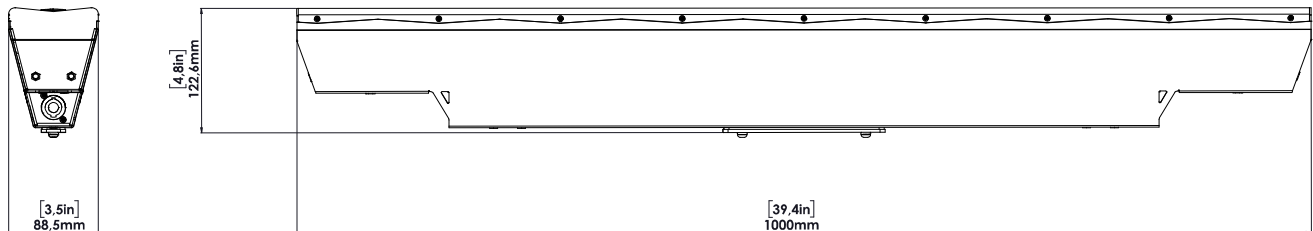
Accessories	
Recommended Amplifier	Kommander-KA24, Kommander-KA84, Thunder-KMT12, Thunder-KMT18, Thunder-KMT21
Accessories	K-BASE2, K-FLY2, K-FOOT2, K-IP65KITA, K-IP65KITB, K-JOINT2, K-KCLAMP, K-KCLAMP/S, K-WALL2, K-WALL2L, KP-CLUSTER, K-PMOUNT, KP-STAGE

<sup>1</sup> With dedicated preset

<sup>2</sup> Maximum SPL is calculated using a signal with crest factor 4 (12dB) measured at 8 m then scaled at 1 m

<sup>3</sup> More complete water protection with K-IP65KITA and K-IP65KITB accessories (IP65 compliant)

<sup>4</sup> See specification for EN 54-24 applications in products user's guide



Notes for data:

Passive loudspeakers require dedicated presets loaded onboard K-array amplifiers.  
 New materials and designs are introduced into existing products without previous notice.  
 Present systems may differ in some respects from those presented in this catalog.







## AcousticDesign™ Series

### AD-P6T-WH

### AD-P6T-BK

6.5" small format, pendant-mount  
loudspeaker

#### Features

- Consistent tonal characteristics across the entire AcousticDesign family in surface, ceiling, and pendant applications
- DMT (Directivity Matched Transition™) waveguide ensures smooth, uniform frequency response over the coverage area
- Snap-fit magnetic grille
- 2x quick-link suspension cables and slip-lock fasteners provided
- Intrinsic Correction™ voicings available via Q-SYS Platform and CXD Series amplifiers
- Low-saturation and low-loss 70/100V transformers with 16Ω bypass
- Blemish-free removable logo
- Sealable input cover to prevent moisture from entering the input terminal block
- UL1480 certified
- Available in black (RAL 9011) or white (RAL 9010)
- Complete EASE, CF2, CAD, & BIM information available online



#### Restaurant · Retail · Audio Visual · Education · Concourses · Casinos · Transportation Terminals · Worship Facilities · Large System Ancillary Support

The QSC AcousticDesign™ AD-P6T is a 6.5" two-way pendant-mount loudspeaker ideally suited for a wide variety of foreground and background sound reinforcement applications which utilize 70/100V or 16Ω bypass configurations.

The AcousticDesign™ Series offers integrators a premium quality installed sound solution where performance, consistent coverage, and aesthetics are paramount. Specifically designed to maintain a consistent tonal characteristic across the entire family in ceiling, surface, and pendant applications, the AcousticDesign Series allows integrators seamless transitions within blended installations.

DMT (Directivity Matched Transition™) is QSC's design philosophy where the high frequency waveguide is matched to the natural conical behavior of the woofer at the crossover point. The result is a coherent transition between transducers with improved off-axis power response for consistent 135° conical DMT coverage.

The AD-P6T features a high quality 6.5" weather treated paper cone woofer with a 1" voice coil and a 0.75" aluminum dome tweeter positioned on a DMT waveguide.

The accurate frequency response of the AD-P4T is maintained even in 70/100V applications by use of a low-loss, low-saturation 60-watt transformer with selectable taps, including 16Ω bypass, using a rotary selector located under the

snap-fit magnetically attached powder coat steel grille.

To retain lasting good looks, the rugged ABS enclosure is further protected by using UV inhibitors that prevent discoloration. The magnetic grille features a stick-on logo that can be removed blemish-free for installations where branding is not permitted.

Installers will appreciate the two quick-link cable assemblies and slip-lock fasteners to speed the installation. Located under a sealable input cover to prevent moisture at the terminals, a locking 4-pole Euro-block connector that can accept four 18AWG pairs eliminates the termination hassles of star topology wiring designs.

To further speed the install process while obtaining optimal results, Intrinsic Correction™ voicings are easily deployed via Q-SYS Platform and CXD Series amplifiers, as part of a complete QSC Systems solution.

The AD-P6T is available in QSC standard black (RAL 9011) or white (RAL 9010) and may be painted to match any decor.

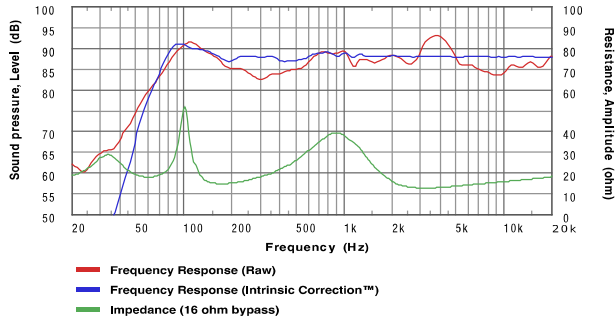
For your system integration needs, complete EASE, CF2, CAD, and BIM files are available for download at QSC.com.

Certified for

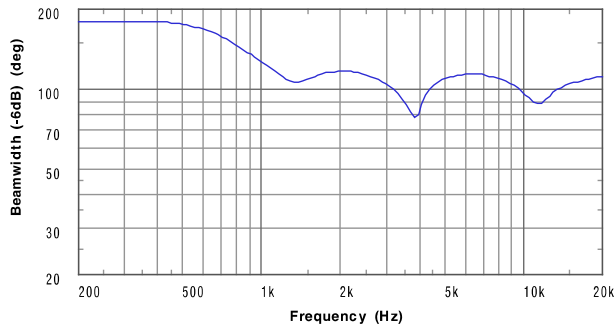
**Microsoft Teams**

# AD-P6T Details

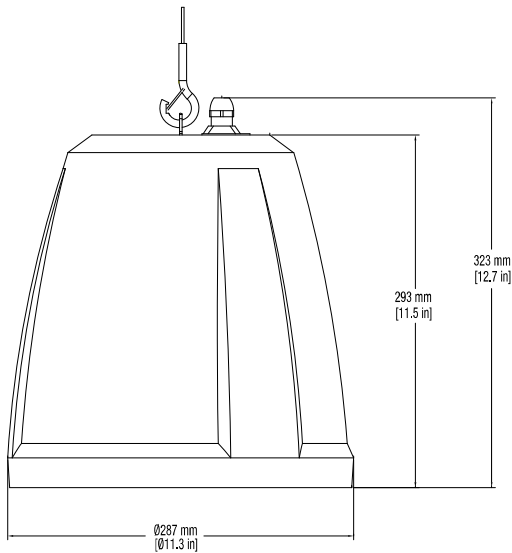
## Impedance / Frequency



## Beamwidth:



## Dimensions:



As part of QSC's ongoing commitment to product development, specifications are subject to change without notice.

## Specifications

System Details	AD-P6T
LF transducer	165 mm [6.5 in] weather treated paper cone woofer
HF transducer	19 mm [0.75" in] aluminum dome tweeter
Effective frequency range <sup>1</sup>	56 Hz – 20 kHz
Rated noise power / voltage <sup>2</sup>	60 watts / 31 volts (rms)
Sensitivity [dB] <sup>4</sup>	88
Sensitivity at 4m, 100V maximum tap	TBD
Rated coverage (-6 dB) <sup>3</sup>	135° conical DMT™
Directivity factor <sup>3</sup>	6.5
Directivity index [dB] <sup>3</sup>	8
Maximum continuous SPL [dB] <sup>5</sup>	106
Maximum peak SPL [dB] <sup>5</sup>	112
Nominal impedance [ohms]	16
Recommended amplifier	120 watts
Transformer taps / impedance	16Ω (in bypass setting) 7.5W (70V); 15W (100V) Tap: 667Ω 15W (70V); 30W (100V) Tap: 333Ω 30W (70V); 60W (100V) Tap: 167Ω 60W (70V); N/A (100V) Tap: 83Ω
Input connector type	Euroblock connector with parallel output
Enclosure material	Flame retardant ABS 765A VO baffle and back can
Grille material	Powder coated steel
Ingress protection	IP-34
Operating environment	Designed for indoor use
Operating temperature range	-20 to 50° C [-4 to 122° F]
Net weight	4.1 kg [9 lb]
Product dimensions (Diameter x Height)	Ø 287 x 323 mm [Ø 11.3 x 12.7 in.]
Shipping weight	5.4 kg [11.8 lb]
Shipping dimensions (H x W x D)	343 x 406 x 356 mm [13.5 x 16 x 14 in]
Included Mounting Hardware	Two quick-link cable assemblies length (3.25m/128in 2mm thickness), two slip-lock fasteners, locking euro-block connector, sealable input cover and screws, snap-fit magnetic grille.
Safety Agency	UL1480, Transformer UL registered per UL1876, ROHS, CE compliant. Baffle meets UL94-V0 and UL94-5VB flammability rating; in accordance with IEC60849 / EN60849 systems.

<sup>1</sup> IES60268-5 50 Hz high passed noise signal for 2 hr, 16 ohm

<sup>2</sup> -10dB from rated sensitivity

<sup>4</sup> 500 Hz–5 kHz average

<sup>3</sup> -6db from on-axis, 500Hz - 5kHz

<sup>5</sup> Calculated from rated noise voltage and





## AcousticDesign™ Series AD-P.SUB

6.5-inch dual voice coil, small format  
pendant subwoofer

### Features

- Consistent tonal characteristics across the entire AcousticDesign Series for surface, ceiling, and pendant applications
- Refined depth and clarity even at low volume settings
- Mix-and-match match capable, any subwoofer with any satellite in the AD Series SUB/SAT line
- Dual voice coil for improved thermal dissipation and higher output
- Low-saturation and low-loss 70 / 100 V transformers with 4 Ω bypass
- Snap-fit magnetic grill
- 4x built-in high-pass filtered outputs
- Locking 4-pole Euroblock connectors
- 2x quick link cable assemblies and slip-lock fasteners supplied
- Removable logo
- Intrinsic Correction™ voicings available via MP-M Series mixers and the Q-SYS Platform, including CXD-Q Series amplifiers
- Available in black (RAL 9011) or white (RAL 9010)
- Complete EASE, CF2, CAD, & BIM information available online
- UL1480 certified

Certified for

**Microsoft Teams**

AD-P.SUB



### Background Music Applications · Retail · Restaurants · Coffee Shops · Fine Dining · Hospitality · Commercial Spaces

The QSC AD-P.SUB is part of the AcousticDesign™ Series SUB/SAT loudspeaker line which are ideally suited for background music applications that require refined depth and clarity even at lower volume settings.

The AcousticDesign Series offers integrators a premium quality installed sound solution where performance, consistent coverage, and aesthetics are paramount. Specifically designed to maintain a consistent tonal characteristic across the entire family in ceiling, surface, and pendant enclosures, the AcousticDesign Series allows integrators seamless transitions within blended installations.

The AcousticDesign Series SUB/SAT loudspeakers have been specifically designed to be mix-and-match capable. Any combination of satellites may be paired with any subwoofer in the SUB/SAT line.

The AD-P.SUB features a high quality 6.5-inch weather treated paper cone woofer on a dual voice-coil for improved thermal dissipation and higher output within a small form factor.

The accurate frequency response of the AD-P.SUB is maintained even in 70 / 100 V applications by use of a low-loss, low-saturation 100 W transformer with selectable taps, including 4 Ω bypass, using a rotary selector located under the snap-fit magnetically attached powder coat steel grill.

The AD-P.SUB includes built-in high-pass filtered outputs for connecting up to four AcousticDesign Series satellite loudspeakers. This feature greatly reduces system setup, amplifier channel count, and allows for ease of wiring.

The inputs and outputs are located behind a removable conduit cover plate with sealed gland nuts for cable dressing. All in-thru and outputs are terminated to locking 4-pole Euroblock style connectors capable of 12AWG (2 mm) wire thickness.

To retain their stylish aesthetics, the rugged ABS baffle is further protected by using UV inhibitors that prevent discoloration. The magnetic grille features a stick-on logo that can be removed blemish-free for installations where branding is not permitted.

Installers will appreciate the two quick-link cable assemblies and slip-lock fasteners to speed the installation.

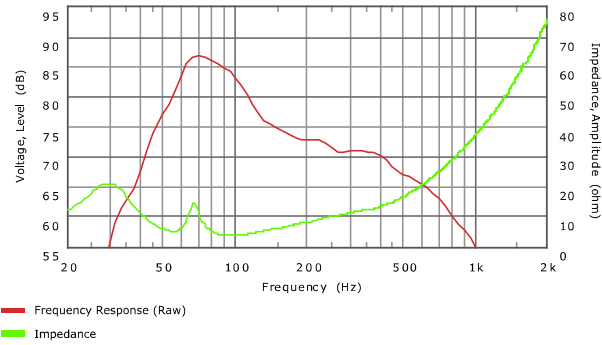
Intrinsic Correction™ voicings that optimize performance and speed the install process are easily deployed via the MP-M Series music and paging mixers as well as Q-SYS Platform, including CXD-Q Series amplifiers, as part of a complete QSC systems solution.

The AD-P.SUB is available in QSC standard black (RAL 9011) or white (RAL 9010) and may be painted to match any decor.

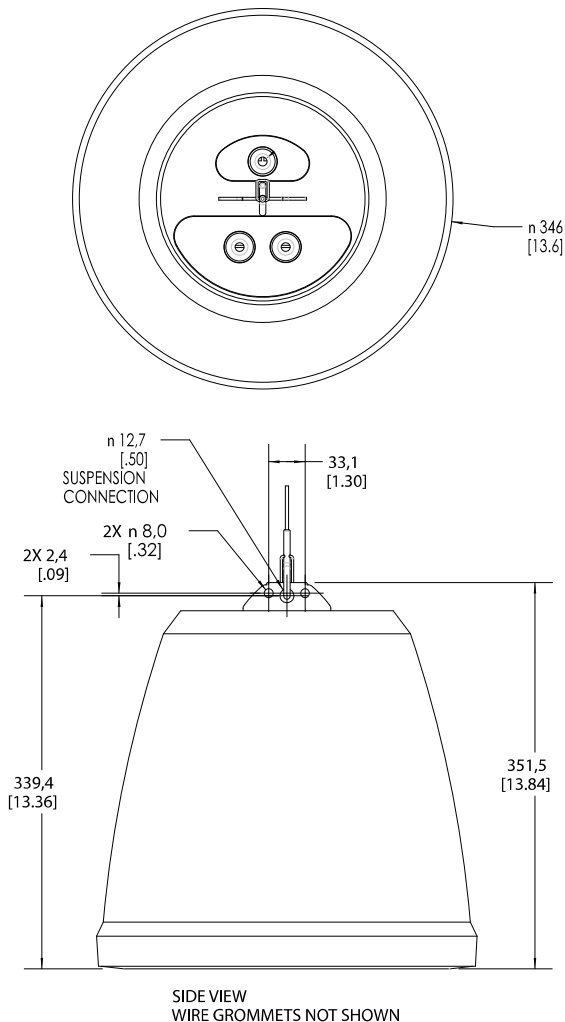
For your system integration needs, complete EASE, CF2, CAD, and BIM files will be available for download at QSC.com.

# AD-P.SUB Details

## Sound pressure, Level



## Dimensions



## Specifications

System Details	AD-P.SUB
LF transducer	6.5 in (165 mm) dual voice-coil weather treated paper cone woofer
HF transducer	N/A
Effective frequency range <sup>1,2</sup>	50 Hz – 150 Hz
Rated noise power / voltage <sup>4,6</sup>	100 W / 20 V (rms)
Sensitivity [dB] (rated @1 W, 1 m) <sup>3</sup>	86
Coverage (-6 dB)	Omni
Directivity index [dB] <sup>6</sup>	1.2
Directivity factor <sup>6</sup>	1.3
Maximum SPL [dB] (continuous / program / peak)	105 / 108 / 111
Recommended amplifier	100 W
Transformer taps / impedance	Bypass:4 Ω 100 W (70 V); NA (100 V) Tap: 50 Ω 50 W (70 V); 100 W (100 V) Tap: 100 Ω 25 W (70 V); 50 W (100 V) Tap: 200 Ω 12.5 W (70 V); 25 W (100 V) Tap: 400 Ω
Connectors	Mono input: 4-pole Euroblock with thru output Hi-pass mono output: 2x 4-pole Euroblock for 4x satellites
Enclosure material	ABS
Grille material	Powder coated steel
Ingress protection	IP-34
Operating environment	Designed for indoor use
Operating temperature range	-4 to 122° F (-20 to 50° C)
Net weight	17.53 lb (7.95 kg)
Product dimensions (Ø x H)	Ø 13.6 x 14.1 in (Ø 346 x 359 mm)
Shipping weight	21.8 lb / 9.89 kg
Shipping dimensions (H x W x D)	17.1 x 17.1 x 17.1 in (435 x 435 x 435 mm)
Included accessories	2x cable rigging, 3x Euroblock connector, 2x sealed input cover, grill
Safety agency	UL1480, Transformer UL registered per UL1876, ROHS, CE compliant.

As part of QSC's ongoing commitment to product development, specifications are subject to change without notice.

## Footnotes:

- 1) -10 dB from rated sensitivity, free space
- 2) Reference plane is the plane coincident with the loudspeaker baffle plane. Reference axis is the axis perpendicular to the reference plane and passing through the center of the baffle. Vertical plane is the plan intersecting the reference plane at a right angle, including the reference axis and the taps selector knob. Horizontal plane is the plane intersecting the reference plane and the vertical plane at a right angle, including the reference axis.
- 3) Calculated from Thiele-Small parameters.
- 4) IEC, 2hrs, 16 ohm nominal, rated noise power (W), rated noise voltage (Vrms).
- 5) Calculated from rated noise power and sensitivity
- 6) 50 Hz - 200 Hz



## DuetE-2 • Encoder | DuetD-2 • Decoder

Distribute 4K UHD & Dante® / AES67 over Gigabit Ethernet

### Overview

PacketAV® Duet has been nothing short of a paradigm shift for networked AV. True convergence; a single platform to support Dante®/AES67 and Video over IP. Building on their success and wide adoption, the next generation of PacketAV® Duet endpoints continue to provide powerful 4K UHD Video and Dante®/AES67 Audio - now over a single Gigabit Ethernet port, with USB-C connectivity and other enhanced features.

Visionary's PoE 4K UHD over IP cinema quality, ultra-low latency [~1 frame - visually lossless], encoders and decoders bypass the constraints of traditional switch matrix distribution systems by continuing to harness the flexibility and scalability of converged IP networks.

With the growing demand for 4K UHD video, professional AV designers and IT directors – in an increasingly converged AV/IT environment – have been using Visionary's products as an alternative to conventional distribution systems.

### Features

#### Single Main Gigabit LAN Port for 4K UHD Video, Dante®/AES67, Control, and Powered Device (PD)

- A single Ethernet port for Video over IP and Dante®/AES67 audio embedding and de-embedding, with VLAN tagging capability to separate Audio & Video network traffic as needed

#### Ethernet Expansion Port - Power Sourcing Equipment (PSE)

- This port enables network connectivity for control and IP traffic pass-through to remote LAN devices (ex. displays, projectors, control touch-panels).
- The port can also be used to daisy-chain multiple endpoints for easy video wall creation or extend distances to displays



Visionary's PacketTV® and PacketAV® products can be deployed on any industry standard IP network. They can be used on existing enterprise IP networks or a physically separate parallel network [private network] to offload traffic, using the same network protocols, methods, and devices but without intermingling of video traffic with data or voice; with equal ease of installation.

#### Power connected devices with PoE pass-through

- Encoders and Decoders only require standard PoE power (15w or lower), however, when PoE+ is supplied to the Main LAN port you can pass-through PoE power to devices connected to the Ethernet Expansion Port

#### Multiple selectable local input sources w/ HDMI loop-through (Encoder)

- 2 x HDMI® and 1 x USB-C input and 1 x HDMI output
- Switching between the three inputs can be performed automatically using auto-switching (input detect) mode, programmatically via a control system, or through a web browser
- HDMI loop-through: display any of the three locally connected sources

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## DuetE-2 • Encoder | DuetD-2 • Decoder

### Features cont.

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#### USB-C Connectivity

##### Encoder: USB-C Input

- Connect easily and share media from your Mac, Laptop, Tablet, Mobile, and Other USB-C enabled devices
- *Note: Not all devices will be compatible; Source devices must support DisplayPort Alt Mode for USB Type-C or Thunderbolt.*

##### Decoder: USB-C Output

- Enables soft-codec integration via driverless USB 2.0 connection to a PC for web conferencing applications such as Zoom, Skype, Cisco WebEx, and Microsoft Teams
- Capture, record, and stream meetings, presentations, conference cameras, and security footage directly to your PC
- Dynamically switch and view decoder output on your PC for recording, editing, videoconferencing, and streaming applications
- Use the PC streaming software of your choice and live broadcast your signal to any online video platform
- Bridge Dante®/AES67 audio into soft-codec via USB-C
- Eliminate distance limitations with USB cables and extension - access right where you need it, close to every device that needs it
- USB Video Class (UVC) - compliant, a video capture standard that's compatible with Mac OSX, Windows®, Linux® and Android operating systems
- Output Resolutions up to 1080p

#### Independent Routing

- Independently route all signals with the ability to separately matrix video, audio (including Dante®/AES67), USB, IR, and serial (RS-232)

#### Dynamically Optimized (Adaptive) bit-rate compression CODEC w/ built-in AI

- Visionary's highly efficient video compression codec is a modified full frame encoding that dynamically optimizes for fine lines (computer generated graphics) or motion video by using sophisticated AI to analyze the input source content. Actively matching the level of compression to a scene by leveraging periods of low motion video content reduces the stream's size and enhances performance - enabling, without compromising image quality, Visually Lossless transmission of computer generated graphics or full-motion video sources.
- Adjustable Video Bitrate: (50 – 200 Mbps or Auto [800Mbps max])

#### Enterprise Level Security –AES Encryption, 802.1x, HTTPS, SSH

##### Enterprise applications demand a secure Network AV solution

- AES Stream Encryption - The Advanced Encryption Standard, or AES, is a worldwide standard and was adopted as the standard encryption algorithm by the U.S. government for encrypting classified information
- HTTPS Secure API - Using secure SSL/TLS communications HTTPS provides integrity that a client is communicating with the real API and receiving back authentic data. It also ensures privacy for applications and users using the API
- 802.1x Authentication for Network access control - 802.1X provides a secure authentication mechanism for any device trying to access a network
- SSH Network Protocol - SSH is a network protocol used to remotely access and manage a device through command line communications. The key difference between Telnet (used by other AV over IP manufacturers) and SSH is that SSH uses encryption, which means that all data transmitted over a network is secure

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## DuetE-2 • Encoder | DuetD-2 • Decoder

### Features cont.

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#### Dynamic OSD text overlay capabilities

- The ability to overlay dynamic or fixed text on screen enables displaying of alerts, announcements, special instructions, clocks / timers, schedules, and other messaging

#### Mass Configuration

- Auto Discover all endpoints on the network, export to .CSV file (all configurable parameters included), make changes offline, upload .CSV file through embedded web page of encoder/decoder and push configuration to the network
- No external software required – mass configuration capabilities built into the endpoint embedded webpage UI

#### LLDP Support

- Link Layer Discovery Protocol (LLDP) is a protocol used by network devices for advertising their identity, capabilities, and neighbors on a local area network based on IEEE 802 technology
- Allows for dynamic control of endpoints based on automatic discovery of physical location

#### QoS Support

- Quality of Service (QoS) is an advanced feature that prioritizes network traffic resulting in performance improvement for critical network traffic

#### Control

- Vision Lite Control Software
- 3rd Party Control Drivers [Crestron, QSC, Symetrix, RTI, etc.]
- \*API providing access to the full range of features on the encoders and decoders offered to qualified System Integrators

#### Seamless Fast Switching

- Tearing free, no black screen, no frame lock

#### GPIO - 2x2 I/O User Configurable

- Control third party devices from any endpoint on the network

#### USB 2.0 over IP (KVM), RS-232 over IP, IR over IP, and CEC over IP

- Control practically any remotely located device using USB devices and interfaces
- Also supports KVM over IP
- Control any device with an RS-232 interface
- HDMI CEC signal extension over IP
- Seamlessly control infrared devices

#### KVM Multi Display Roaming

- Switch keyboard and mouse control automatically and seamlessly between PC's by moving the cursor across the boundaries of a display and 'roaming' to adjacently mapped displays.

#### Built in Video Wall Functions

- A Single platform to support distributed displays and Video Walls; without separate expensive video wall processors and controllers
- Enhanced Video Wall functionality – supports video rotation 180/270 degrees
- Easily create video walls using normal commodity displays
- Built-in video wall processor that allows you to build up to a 16x16 video wall

#### Auto Video Scaler

- No need to worry about configuring the source resolution
- 4K in/1080P out, 1080P in/4K out

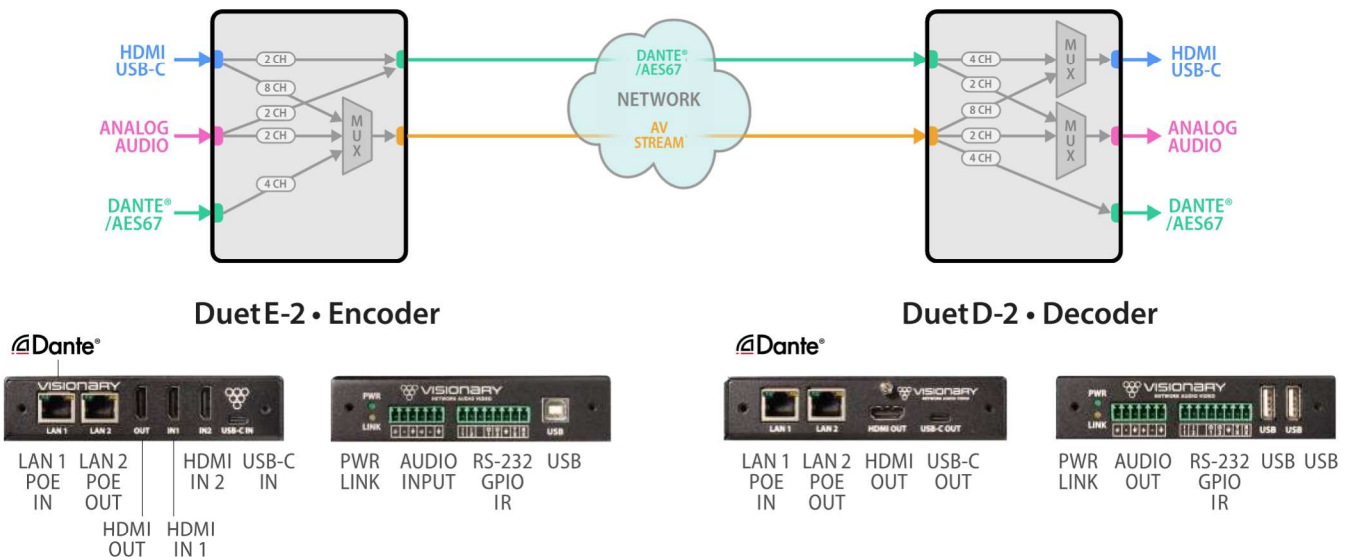
#### HDMI 2.0 and HDCP 2.2 Compliant

## DuetE-2 • Encoder | DuetD-2 • Decoder

### Benefits

- A single Gigabit LAN Port for PoE Power, 4K UHD Video, Dante®/AES67, and Control
- Secure Network Isolation - VLAN Tagging separates AV traffic on the corporate network
- One LAN drop to decoder enables local IP control of connected devices through Ethernet expansion port
- Built in connectivity for web conference soft-codec AV integration
- Eliminates need for separate AV Bridging hardware
- Capture, record, and stream meetings directly to PC (USB-C)
- Effortlessly share media from your USB-C enabled devices
- Acts as an in-rack or Bring Your Own Device (BYOD) endpoint for presentation sharing and conferencing applications
- Local input switching
- Easy Control Integration
- Ultra-low Latency [ ~1 frame - visually lossless ]
- Low bitrates
- No fiber or 10 Gigabit switch required
- Low-Cost network switches are used
- Scalable / Unlimited Distribution
- Any number and combination of inputs/outputs [in increments of one]
- Standard network cabling [CAT5e/6]
- Utilize existing network resources
- Rapid deployment
- Single network for AV and IT
- Reduced operating costs

### Audio Workflow





Analog-To-Digital Conversion	24-bit 48 kHz
Digital-To-Analog Conversion	24-bit 48 kHz
Dante™/AES67	24-bit 48 kHz

# DuetE-2 • Encoder | DuetD-2 • Decoder

## Specifications

### Adjustment

Encoding / Decoding	
Video Codec	JPEG2000 based visually lossless video compression algorithm
Audio Codec	Dante™ / AES67
Bit Rates	50 to 800 Mbps
Latency	Ultra-low Latency (visually lossless video) 17ms @ 1080p60 & 4K60 4:2:0 33ms @ 4K30 4:4:4
Streaming Protocols	IP, UDP, TCP, ICMP, IGMP
Copy Protection	HDCP 2.2, AES-128 Encryption
Video	
Maximum Resolutions	High Dynamic Range (HDR) 4K60 4:2:0 HDR 8 bit 4K30 4:4:4 HDR 8 bit 1080p60 4:4:4 HDR 12 bit 1080p30 4:4:4 HDR 12 bit
Input Signal Types (Encoder)	2x HDMI & 1x USB-C capable of receiving source input video formats up to 4K60 4:2:0 (DisplayPort Alt Mode for USB Type-C or Thunderbolt)
Output Signal Types:	Decoder: 1x HDMI capable of scaling and outputting video formats up to 4K30 4:4:4 Decoder: 1x USB-C capable of scaling and outputting video formats up to 1080p60 4:4:4 Encoder: (HDMI Loop Out) capable of outputting video formats up to 4K60 4:4:4
Switcher (Encoder)	2 x HDMI* and 1 x USB-C input and 1 x HDMI output (manual or auto-switching)
Scaler (Decoder)	Supports a wide range of resolutions and rates, up to 4K in/1080P out, 1080P in/4K out, image rotation, and video wall up to 16x16 Integrated scaling helps optimize image quality and switching performance
Audio	
Input Signal Types	HDMI Audio, Analog Stereo Audio, Dante™/AES67 Network Audio (up to 4 channels) • 1 analog stereo input, unbalanced or balanced • 1 digital input de-embedded from HDMI
Output Signal Types	HDMI Digital Audio (NLPCM pass-through), Analog Stereo Audio, Dante™/AES67 Network Audio • 1 digital audio output via HDMI • 1 Analog Stereo Audio balanced output • 1 Dante/AES67 digital audio output (up to 4 channels)
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS®, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, DTS:X, LPCM up to 8 channels.
Analog Formats	Stereo 2-channel
Analog-To-Digital Conversion	24-bit 48 kHz
Digital-To-Analog Conversion	24-bit 48 kHz
Dante™/AES67	24-bit 48 kHz
Analog Output Volume Adjustment	-80 to +20 dB

Communication & Control of External Devices	
Ethernet	Network connectivity for control and IP traffic pass-through to remote LAN devices
USB	USB 2.0 host or device signal extension and routing
GPIO	For extension and control of third-party devices
Serial / RS-232	Bi-directional device control and monitoring
IR	Device control via infrared
HDMI	HDCP 2.2, EDID (encoder), CEC (decoder)

Connectors	
LAN 1	8-pin RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet port / PD port POE+ (IEEE 802.3at), POE+ Only required for LAN2 PSE
LAN2	8-pin RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet port / PSE port POE (IEEE 802.3af)
HDMI INPUT 1 & 2 (Encoder)	(2) HDMI Type A connectors, female; HDMI digital video/audio inputs
HDMI Outputs (Encoder loop-through & Decoder output)	HDMI Type A connectors, female; HDMI digital video/audio inputs
USB-C	Encoder input: (1) USB Type C connector, female; Decoder output: (1) USB Type C connector, female;
6 pin Euroblock 3.81mm pitch connector	Shared GPIO / RS-232 / IR ports
USB Host (Decoder)	(2) USB Type-A connector, female; USB 2.0 host port; USB signal extender port for connection to a mouse, keyboard, or other USB 2.0 device
USB Device (Encoder)	(1) USB Type-B connector, female; USB 2.0 device port; USB signal extender port for connection to a computer or other USB 2.0 host

Power	
Power Consumption	12 W typical

Environmental	
Cooling	Convection / no fan ( no moving parts )
Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	41 BTU/hr
Acoustic Noise	0 dBA

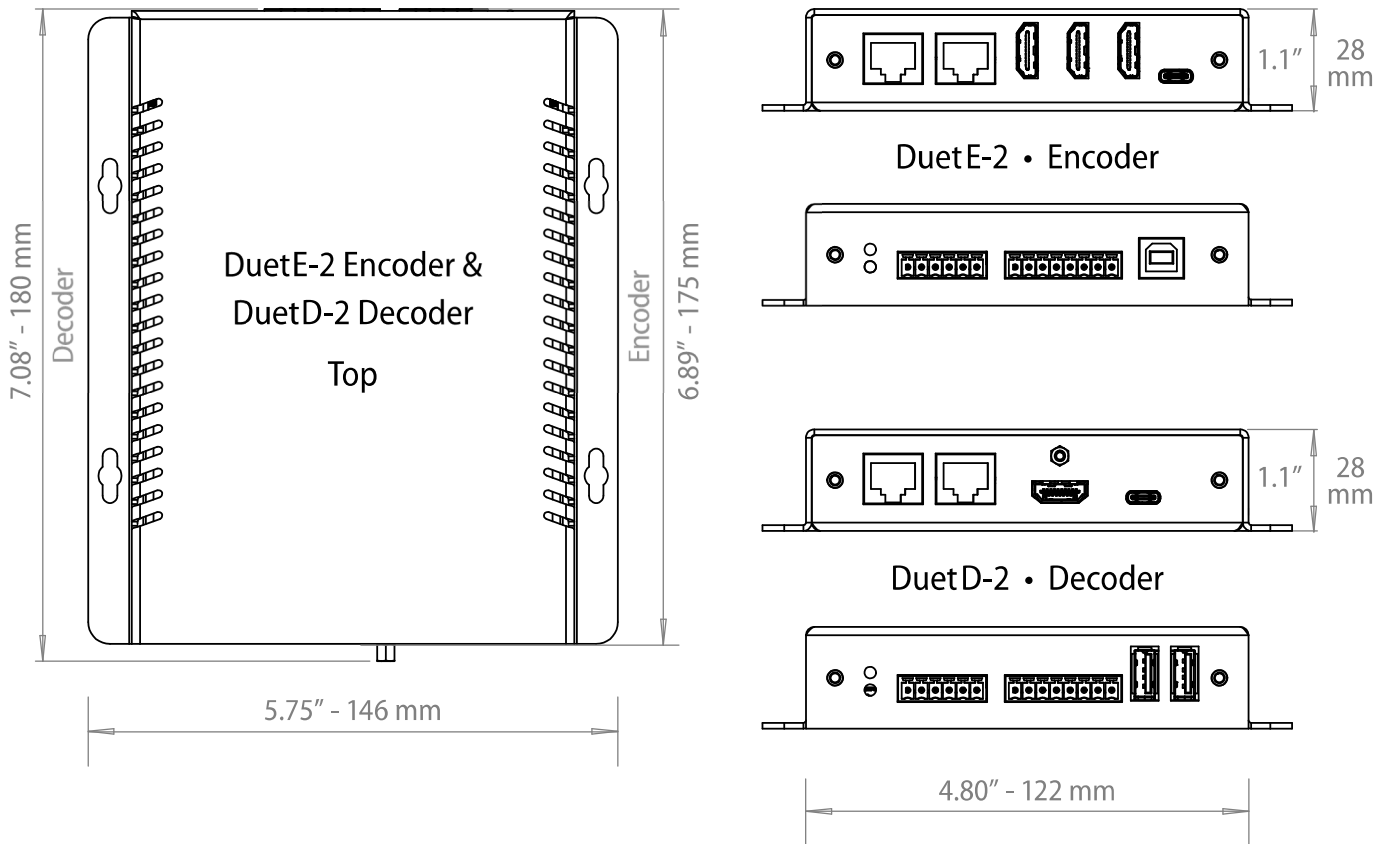
Form Factor	
Dimensions	Height: 1.1 in. (28 mm) Width: 5.75 in. (146 mm) Depth: Encoder 6.89 in. (175 mm) Decoder 7.08 in. (180 mm)
Weight	1.0 lb (0.45 kg)

Compliance	
	CE, FCC, C-tick, RoHS, WEEE

Ethernet	remote LAN devices
GPIO	For extension and control of third-party devices
Serial / RS-232	Bi-directional device control and monitoring
HDMI	HDCP 2.2, EDID (encoder), CEC (decoder)

DuetE-2 • Encoder | DuetD-2 • Decoder

Dimensions



## MV4 • IP MultiViewer

Simultaneously view and dynamically switch between four input streams in a variety of customizable layouts.



### Overview

Visionary's MV4 is a high performance IP Multiviewer with integrated scaling and multi-windowing technology.

The MV4 IP Multiviewer is a 1RU rack-mountable windowing appliance that connects to a network and accepts up to (4) AV over IP streams from PacketAV Matrix Series ultra-low latency 4K encoders. The MV4 is designed for processing these dynamically switchable input streams simultaneously in a variety of layouts. Each input can be scaled and positioned according to default presets (such as quad view, side-by-side, Full, PiP, PoP, 3+1, etc.) or in any user-defined configuration.

With the MV4 users can mix and match input resolutions, scale any video input up to 4K UHD and route any input to any window, combining up to four sources together into a single 4K image. The combined output video is then encoded into a single stream sent to one or more PacketAV Matrix Series Decoders at resolutions up to 4K. Multiple MV4's can be cascaded to provide 7x1, 10x1, 13x1, 16x1 or higher capability.

The MV4 IP Multiviewer enables users to select audio from any of the four sources for playback — even one not currently displayed. Seamless switching ensures no frame loss during

window and video transitions. Both 1080p60 (HD) and 4K (UHD) inputs can be displayed without downscaling, taking full advantage of the MV4 IP Multiviewer's remarkable image processing.

MV4 presents a paradigm shift in traditional multi-windowing technology that has until now required a separate HDMI multiviewer at each display. This flexible and scalable method of IP distributed multi-windowing allows the MV4 to be centrally located mounted in an MDF rack or anywhere else on the network, expanding capabilities while reducing installation and maintenance costs.

The MV4 IP Multiviewer is controllable via the front panel buttons along with an intuitive on-screen (OSD) Graphical User Interface, simplifying system configuration. Third-party control is supported via API.

Visionary's MV4 IP Multiviewer is an ideal solution for small and large commercial venues that require monitoring or displaying of multiple sources simultaneously. From the conference room to the control room, to the classroom, the versatile MV4 represents the next evolution in IP Multiviewer technology.

## MV4 • IP MultiViewer

### Features

#### 4K Multi-viewer / 1080p Multi-viewer

- Displays four windows up to 4K UHD resolution
- Compatible with all PacketAV Matrix Encoders and Decoders
- Supports simultaneous local HDMI output & Streaming Output (LAN Port)

#### Seamless Independent Matrix Switching

- Simultaneously view and dynamically switch between four PacketAV input sources
- Un-interrupted screen transitions during source selections in both Full Screen and Multiview modes

#### Supported Resolutions:

- Max Input/Output: 4K30 4:4:4 HDR 8 bit (3840x2160 30Hz) / 1080P60 4:4:4 HDR 12 bit (1920x1080 60Hz)
- 4K30 4:4:4 HDR 8 bit (3840x2160 30Hz) output supports up to 2-windows except in Quad Mode
- Independent Video In to Video Out resolution.
- Note: rotation only supports the same input/output resolutions

#### Display Modes

Supports Quad (2x2), (PIP) Picture In Picture, (PAP) Picture Aside Picture, Full Screen, and Custom Multiview layout configurations

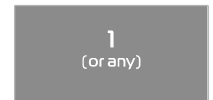
##### Quad Mode:

- In Quad Mode, the screen is split into four fields of equal size each displaying the entire contents of four different video sources.
- Supports 4K30 & 1080p output



##### Full Screen Mode:

- In Full Screen Mode, one of the four video sources is displayed in full screen size and maximum resolution.
- Supports 4K30 & 1080p output



##### Picture in Picture (PIP) Mode:

- In PIP Mode, the full screen display of one of the four video sources is accompanied by one, two, or three small images of the three other video sources on the right hand margin of the screen allowing simultaneous monitoring.
- Supports 4K30 output (max. 2 windows)
- Supports 1080p output (max. 4 windows)



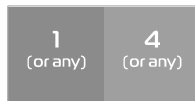
##### Custom Mode:

- Each video source is displayed in its own separate, detached window
- Size, position and selection of the windows are customizable
- Rotate each image 90 degrees to the left or right for a vertical mounted display
- Layer windows and adjust transparency of each video source
- 2- and 3-source viewing is possible with this method
- Maintain input aspect ratio if desired - no stretching necessary
- Supports 4K30 output (max. 2 windows)
- Supports 1080p output (max. 4 windows)



##### Picture Aside Picture (PAP) Mode:

- In PAP Mode, the screen is split in two fields of equal size displaying dual window side-by-side (portrait).
- Supports 4K30 & 1080p output



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## MV4 • IP MultiViewer

### Features cont.

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#### Cascade multiviewers to display video from any number of video sources on one screen

- Multiple MV4's can be cascaded to provide 7×1, 10×1, 13×1, 16×1, or higher capability
- PacketAV stream inputs and outputs mean the MV4 does not have to be located near the sources or the displays, which often have space limitations

#### Adjust output video brightness, contrast, color and sharpness

#### Auto Video Scaler & Image Rotation

- No need to worry about configuring the source resolution
- 4K in/1080P out, 1080P in/4K out
- Ultra HD/4K Up-scaling
- 4K60-to-1080p Downscaling
- The user can easily Rotate/Scale each input/window image 90° left and right.

#### Window Transparency & Border

- Transparency/Opacity/Fading - Alpha blending allows you to view content through each other
- Each window can have a border with a selectable bezel width and color

#### Control

- Window Scale and Position – Supports easy adjustment of window size, position and layout in the Multiview modes via front panel buttons
- Default pre-configured Multiview window presets can be accessed via front panel push-buttons
- \*API providing access to the full range of features on the encoders and decoders offered to qualified System Integrators

#### Independent Video & Audio

- Listen to any audio source while in quadrant or Multiview modes

#### Dynamically Optimized (Adaptive) bit-rate compression CODEC w/ built-in AI

- Visionary's highly efficient video compression codec is a modified full frame encoding that dynamically optimizes for fine lines (computer generated graphics) or motion video by using sophisticated AI to analyze the input source content. Actively matching the level of compression to a scene by leveraging periods of low motion video content reduces the stream's size and enhances performance – enabling, without compromising image quality, Visually Lossless transmission of computer generated graphics or full-motion video sources
- Adjustable Video Bitrate: (50 – 200 Mbps or Auto [800Mbps max])

#### Enterprise Level Security –AES Encryption, 802.1x, HTTPS, SSH

##### Enterprise applications demand a secure Network AV solution

- AES Stream Encryption - The Advanced Encryption Standard, or AES, is a worldwide standard and was adopted as the standard encryption algorithm by the U.S. government for encrypting classified information
- HTTPS Secure API - Using secure SSL/TLS communications HTTPS provides integrity that a client is communicating with the real API and receiving back authentic data. It also ensures privacy for applications and users using the API
- 802.1x Authentication for Network access control - 802.1X provides a secure authentication mechanism for any device trying to access a network
- SSH Network Protocol - SSH is a network protocol used to remotely access and manage a device through command line communications. The key difference between Telnet (used by other AV over IP manufacturers) and SSH is that SSH uses encryption, which means that all data transmitted over a network is secure

## MV4 • IP MultiViewer

### Features cont.

#### Dynamic OSD text overlay capabilities

- The ability to overlay dynamic or fixed text on screen enables displaying of alerts, announcements, special instructions, clocks / timers, schedules, and other messaging
- A customized text label can be added for each video window to provide easy input identification

#### QoS Support

- Quality of Service (QoS) is an advanced feature that prioritizes network traffic resulting in performance improvement for critical network traffic

#### LLDP Support

- Link Layer Discovery Protocol (LLDP) is a protocol used by network devices for advertising their identity, capabilities, and neighbors on a local area network based on IEEE 802 technology
- Allows for dynamic control of endpoints based on automatic discovery of physical location

#### 1U tall rack-mountable enclosure, rack ears included

#### HDCP 2.2 Compliant

### Benefits

- Locate Anywhere on the Network – PacketAV stream inputs and outputs mean the MV4 does not have to be located near the sources or the displays, which often have space limitations
- Easy Control Integration
- Ultra-low latency
- Low bitrates
- No fiber or 10 Gigabit switch required
- Low-Cost network switches are used
- Scalable / Unlimited Distribution
- Standard network cabling [CAT5e/6]
- Utilize existing network resources
- Rapid deployment
- Single network for AV and IT
- Reduced operating costs

MV4 IP • FRONT



MV4 IP • BACK



## MV4 • IP MultiViewer

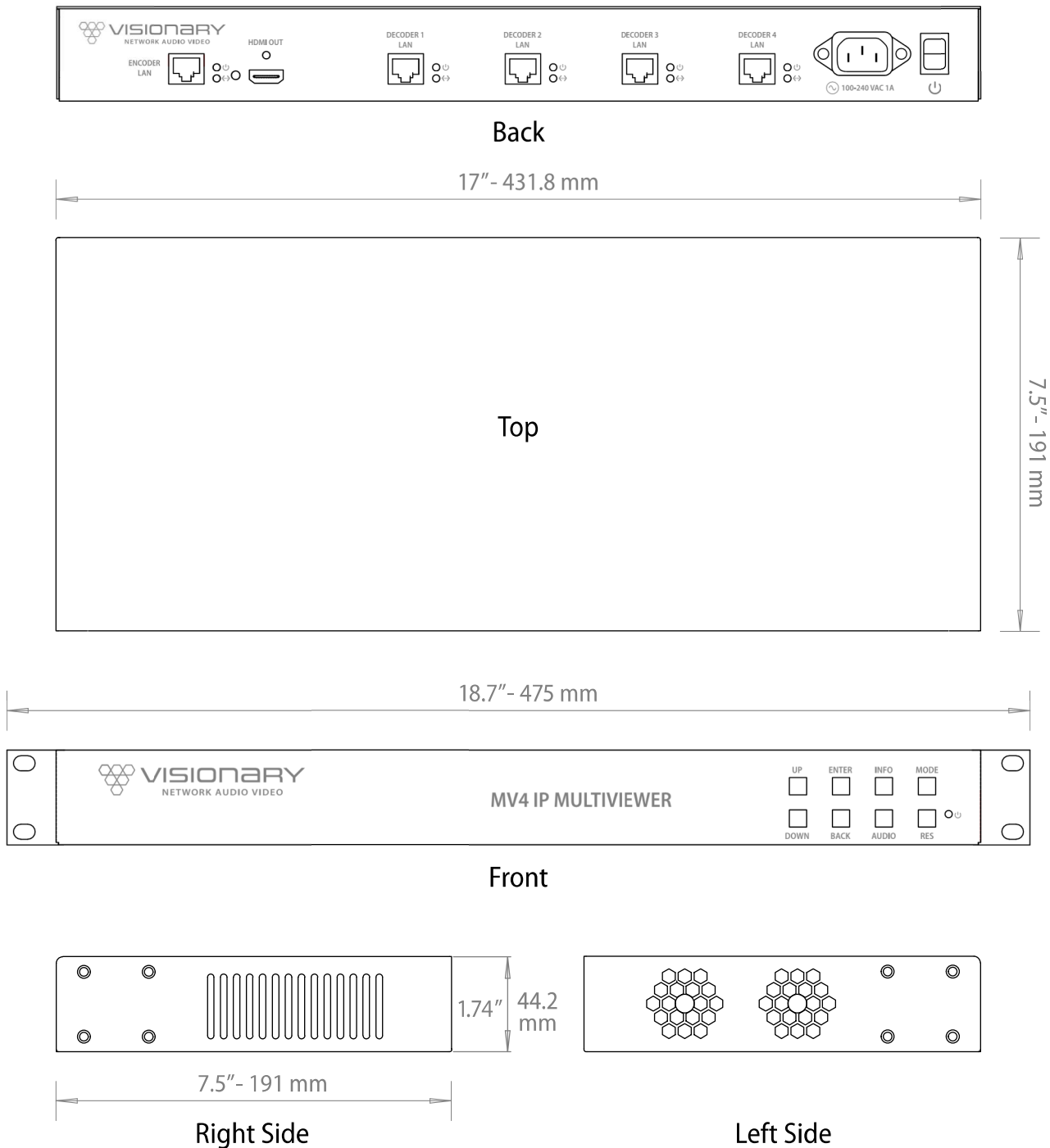
### Specifications

Encoding/Decoding	
Video Codec	JPEG2000 based visually lossless video compression algorithm
Bit Rates	50 to 800 Mbps
Latency	Ultra-low Latency 42ms @ 1080p60 116ms @ 4K30 4:4:4
Streaming Protocols	IP, UDP, TCP, ICMP, IGMP
Copy Protection	HDCP 2.2, AES-128 Encryption
Video	
Maximum Resolutions	High Dynamic Range (HDR) 4K30 4:4:4 HDR 8 bit 1080p60 4:4:4 HDR 12 bit 1080p30 4:4:4 HDR 12 bit
Input Signal Types (Encoder)	Up to (4) AV over IP streams from PacketAV Matrix Series ultralowlatency 4K encoders over Ethernet
Output Signal Types	1x HDMI capable of scaling and outputting video formats up to 4K30 4:4:4  1x AV over IP stream over Ethernet
Scaler	Supports a wide range of resolutions and rates, up to 4K in/1080p out, 1080p in/4K out and image rotation  Integrated scaling helps optimize image quality and switching performance
Audio	
Input Signal Types	Embedded in the AV over IP stream from the PacketAV Matrix series encoder source.
Output Signal Types	• 1 Embedded AV over IP stream output. • 1 digital audio output via HDMI Independently Selectable from one of the input streams
Digital Formats	Dolby Digital®, Dolby Digital EX, Dolby Digital Plus, Dolby True HD, Dolby Atmos, DTS®, DTS-ES, DTS96/24, DTS-HD High Res, DTS-HD Master A udio, DTS:X, LPCM up to 8 channels.

Control	
Front Panel Buttons	Control via buttons along with on-screen (OSD) Graphical User Interface
IP Control	UDP Unicast / Multicast API Control (encoder LAN port)
Connectors	
Decoder LAN 1 - 4	8-pin RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet ports
Encoder LAN	RJ-45 connector, female; 100BASE-TX / 1000BASE-T Ethernet port
HDMI Output	HDMI Type A connector, female; HDMI digital video/audio inputs
Power	One 120 Volt AC power input
Power	
Power Supply, Internal	1.8 Amp @ 115 Volts AC; 100-240 Volts AC power supply
Power Consumption	55 W typical
Environmental	
Cooling	Active – fans (2)
Temperature	32° to 104° F (0° to 40° C)
Humidity	10% to 85% RH (non-condensing)
Heat Dissipation	up to 188 BTU/hr
Acoustic Noise	15.7 dBA (fan)
Form Factor	
Dimensions	Height: 1.74 in. (44.2 mm) Width: 17 in. (431.8 mm) Depth: 7.5 in. (191 mm)
Weight	5.73 lb.(2.6 kg)
Compliance	
	CE, FCC, C-tick, RoHS, WEEE

**MV4 • IP MultiViewer**

**Dimensions**







# AIRCASTER® AQT8-QAM/IP

ATSC/QAM TRANSMODULATOR

## KEY FEATURES

- » Encrypted QAM sources can be mapped to IP MPTS or SPTS formats in Pass-through mode for Remote PHY and Switch Digital applications
- » Accepts up to eight RF inputs in 8VSB/QAM format
- » 2:1 Multiplex Mode to configure eight ATSC 1.0 off-air channels to four MPTS for QAM
- » **NEW** - Supports **SRT Error Correction** for Remote IP Applications
- » PSIP manipulation (PID, program number, short name, and major/minor channel)
- » Accepts EAS input in ASI or IP formats and
- » Supports EAS switching-based on contact closure trigger, or +5 to +12 VDC input



## PRODUCT OVERVIEW

The **Aircaster AQT8-QAM/IP** is a transmodulator that allows the user to create a custom IP and QAM output from off-air and/or QAM input sources. The unit accepts eight 8VSB off-air or QAM sources and simultaneously outputs these SPTS and/or MPTS programs in IP and/or QAM. At the same time, the AQT8-QAM/IP can be configured in Pass-through mode, which directly maps the demodulated RF port content in MPTS format to IP output.

For off-air applications, the AQT8-QAM/IP has a 2:1 Mux Mode feature, which allows you to multiplex two off-air sources to one MPTS for QAM distribution.

The AQT8-QAM/IP can accept encrypted QAM sources, and output the encrypted IP transport streams programs in MPTS or SPTS formats, while preserving the MPEG tables (PAT, PMT, PSIP, VCT, and MGT) from the source.

The transmodulator supports up to eight QAM-256 outputs that are agile from 54 to 1002 MHz as long as all eight outputs are kept within a 768 MHz span. In addition, the unit features Emergency Alert System (EAS) program switching through either an ASI or IP format EAS input, and terminal block contacts for triggering EAS messages.

## ORDERING INFORMATION



MODEL	STOCK#	DESCRIPTION
Aircaster AQT8-QAM/IP	<b>6281B</b>	ATSC/QAM Transmodulator; 8VSB/QAM input; QAM + IP output with EAS

INPUT	
CONNECTORS	
<b>8VSB/QAM</b>	8x "F" Female 1x Common "F" Female (with Internal Active Splitter)
8VSB MODE	
<b>Standard</b>	ATSC Digital Television A/53E
<b>Tuning Range</b>	UHF (Ch. 14-83), VHF (Ch. 2-13)
<b>Data Rate</b>	19.392 Mbps
<b>Bandwidth</b>	6 MHz
<b>Power Level</b>	-20 to +20 dBmV
<b>Impedance</b>	75 Ω
QAM MODE	
<b>Standard</b>	ITU-T J.83 - Annex B (64 & 256 QAM)
<b>Tuning Range</b>	CATV Ch. 2-158 (STD, HRC, IRC)
<b>Data Rate</b>	38.8 Mbps (QAM 256); 26.97 Mbps (QAM 64) – Auto Detect
<b>Bandwidth</b>	6 MHz
<b>Power Level</b>	-15 to 20 dBmV (@ QAM 256); -20 to 20 dBmV (@ QAM 64)
<b>Impedance</b>	75 Ω

EMERGENCY ALERT SYSTEM (EAS)	
ASI	
<b>Connector</b>	1x BNC Female
<b>Standard</b>	DVB-ASI; EN 50083-9 (SPTS)
IP	
<b>Connector</b>	1x RJ45
<b>Standard</b>	1000Base-T (GigE)
<b>UDP/RTP</b>	Supported (user-selectable)
<b>Video Bit Rate</b>	The EAS program bit rate must not exceed the lowest program video bit rate it will replace. <b>Example:</b> EAS at 2.5 Mbps will not work for a program at 2.0 Mbps.
TRIGGER	
<b>Connectors</b>	Terminal Block
<b>Mechanism</b>	5-12 VDC and Dry Contact Closure

OUTPUT	
IP	
<b>Connector</b>	1x RJ45 (Rear Panel)
<b>Standard</b>	1000Base-T Ethernet (GbE)
<b>UDP</b>	Supported
<b>Address Assignment</b>	64x IPv4 SPTS address & port numbers 8x IPv4 MPTS address & port numbers
SRT STREAM PROTOCOLS	
<b>Specifications</b>	<a href="http://www.SRTalliance.org">www.SRTalliance.org</a>
QAM	
<b>Output Modules</b>	8x Fully Agile QAM
<b>Connectors</b>	1x "F" Female (rear-panel, combined output)
<b>Modulation</b>	QAM 64 and 256
<b>Standards</b>	ITU-T J.83; Annex B
<b>DVB Symbol Rate</b>	5.360537 Msym/s (QAM 256); 5.056941 Msym/s (QAM 64)
<b>Frequency Range</b>	54 to 1002 MHz
<b>Tuning</b>	CATV Channel Selectable (CH. 2 to 158)
<b>No. of Programs</b>	Variable (≤ 38.8 Mbps input source Pass-thru)
<b>RF Level</b>	+40 dBmV, ± 1 dB increment
<b>RF Level Range</b>	+30 to +45 dBmV, 1 dB increment
<b>Frequency Tolerance</b>	± 0.5 kHz @ 77 °F (25 °C)
<b>Frequency Stability</b>	± 5 kHz over 32 to 122 °F (0 to 50 °C)
<b>Amplitude Flatness</b>	± 0.25 dB (over 6 MHz channel)
<b>Phase Noise</b>	-98 dBc (@ 10 kHz)
<b>Spurious</b>	-60 dBc
<b>Broadband Noise</b>	-70 dBc (@ +40 dBmV output lev., 5.5 MHz BW)
<b>Impedance</b>	75 Ω
<b>QAM Spectrum</b>	Inverted
<b>Carrier Suppression</b>	45 dB
<b>Return Loss</b>	14 dB typical
<b>Signal-to-Noise Ratio (SNR)</b>	42 dB typical
<b>MER</b>	42 dB typical
<b>I/Q Phase Error</b>	Less than 1 degree
<b>I/Q Amplitude Imbalance</b>	Less than 1%

# AIRCASTER® AQT8-QAM/IP

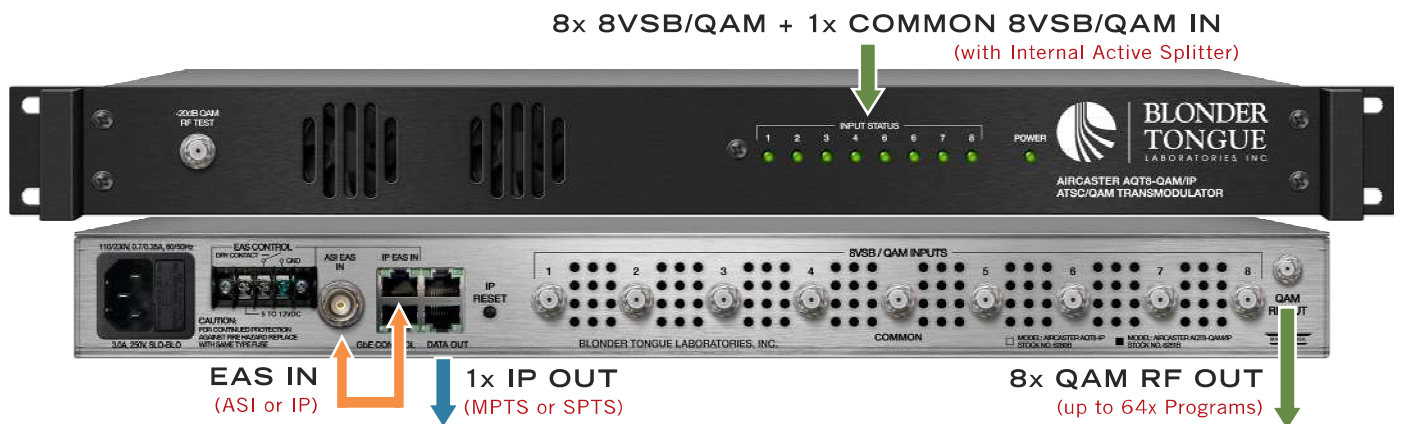
## ATSC/QAM TRANSMODULATOR

### SPECIFICATIONS

GENERAL	
Dimensions (W x H x D)	19.0 x 1.75 x 16.0 in (483 x 45 x 363 mm)
Weight	7.4 lbs (3.35 kg)
Power	110/230 VAC, 0.7/0.35 A, 60/50 Hz
Power Consumption	48 W
Operating Temp.	32 to 122 °F (0 to 50 °C)
Storage Temp.	-13 to 158 °F (-25 to 70 °C)
Operating/Storage Humidity	0 to 95% RH @ 35 °C max, non-condensing

ALARMS & MONITORING	
Local Monitoring	8x Channel Status LED (Bicolor) 1x Power LED (Bicolor)
Local Control	1x IP Reset Button
Remote Device Control	1x RJ45 (1000Base-T GbE) GUI-based menu via standard web browser

### I/O OVERVIEW



### ORDERING INFORMATION



MODEL	STOCK#	DESCRIPTION
Aircaster AQT8-QAM/IP	<b>6281B</b>	ATSC/QAM Transmodulator; 8VSB/QAM input; QAM + IP output with EAS

# DXLink™ 4K HDMI Decor Style Wallplate Transmitters (US)

DX-TX-DWP-4K-BL (FG1010-330-BL)

DX-TX-DWP-4K-WH (FG1010-330-WH)



## Overview

The DXLink 4K HDMI Decor Style Wallplate Transmitter sends HDMI/HDCP, along with embedded audio up to 80 meters over one shielded Cat6A or Cat7 standard twisted pair cable to an Enova DGX Digital Media Switcher.

## Common Applications

Mount the DXLink 4K HDMI Decor Style Wallplate Transmitter in the wall, lectern or popular floor box to connect guest equipment and send audio and video signals across the room, on the other side of the house or in a classroom down the hall. Since it is powered remotely, the wallplate can be installed virtually anywhere.

## Features

- 4K and Ultra High Definition (UHD) Support – Experience high-quality video resolution for 4K devices
- Only One Cable – Send audio and video over one twisted pair cable
- Send HDMI signals 80 meters – Extend the reach of the HDMI signals beyond the capabilities of HDMI cabling

- **Standard Twisted Pair Cable – Save time and effort in installation by leveraging cost effective twisted pair cable, see the Cabling for Success with DXLink white paper for more details**
- **Easy Installation – Mounts in standard decor style wallplates**

**Specifications**

<b>GENERAL</b>	
Dimensions (HWD)	4 1/5" (10.67 cm) x 1 1/4" (3.23 cm) x 1 3/4" (4.45 cm)
Mounting Options	Mounts onto standard single-gang US, UK, or EU back boxes Mounts into standard decor style wallplates (not included)
Weight	Approximately 0.45 lb (0.2 kg)
Shipping Weight	Approximately 1.05 lb (.47 kg)
MTBF	896,000 hrs
Airflow	Convection (openings on top of case)
Compatible AMX Products	<ul style="list-style-type: none"> <li>• Enova DGX 800/1600/3200/6400 Digital Media Switchers with DGX-I-DXL-4K DGX DXLink Twisted Pair 4K Input Board installed</li> <li>• DX-RX-4K, DXLink 4K HDMI Receiver Module as a point-to-point solution (when Wallplate TX is powered by PS-POE-AT-TC or PDXL-2)</li> <li>• DGX-I-DXL-4K, Enova DGX DXLink Twisted Pair 4K Input Board</li> <li>• PS-POE-AT-TC, High Power PoE Injector</li> <li>• PDXL-2, Power over DXLink Controller</li> <li>• Enova DVX-3255HD, DVX-3256HD and 2255HD, DVX-3155HD, DVX-3156HD and 2155HD All-In-One Presentation Switchers</li> </ul> <p>NOTE: For passage of 4K signal content, 4K products must be used. DXLink 4K HDMI Decor Style Wallplate Transmitters are also compatible with DXLink Twisted Pair (non-4K) equipment and Enova DVX-3255HD, DVX-3256HD and DVX-2255HD All-In-One Presentation Switchers. Conditions may apply, please reference hardware reference manuals or contact technical support for details</p>
Regulatory Compliance	UL 60950-1 2nd Ed. Am2 CAN/CSA 22.2 No. 60950-1 2nd Ed. Am2 IEC 60950-1 2nd Ed. Am2 CE EN 60950-1 2nd Ed. Am2 CE EN 55022:2010 Class A CE EN 55024:2010 FCC CFR Title 47 Part 15 Subpart B Class A ICES-003 issue 6 Class A CISPR 22 CISPR 24 RoHS WEEE
Optional Accessories	<ul style="list-style-type: none"> <li>• PS-POE-AT-TC High Power PoE Injector (FG423-84)</li> <li>• PDXL-2 Power over DXLink Controller (FG1090-170)</li> </ul>
<b>DXLink TWISTED PAIR</b>	
Transport Layer Throughput (max)	10.2 Gbps
Twisted Pair Cable Type	<ul style="list-style-type: none"> <li>• Shielded Cat6A or Cat7</li> </ul> DXLink twisted pair cable runs for DXLink equipment shall only be run within a common building where a

	<p>common building is defined as: the walls of the structure(s) are physically connected and the structure(s) share a single ground reference</p> <p>For more details and helpful cabling information, reference the white paper titled Cabling for Success with DXLink, or contact your AMX representative</p>
Twisted Pair Cable Length	<p>Up to 262 ft. (80 m) for full 4K signal support Up to 328 ft. (100 m) for 1080p and below</p> <p>IMPORTANT: DXLink twisted pair cable runs for DXLink equipment shall only be run within a common building. "Common building" is defined as: Where the walls of the structure(s) are physically connected and the structure(s) share a single ground reference.</p>

ACTIVE POWER REQUIREMENTS	
DXLink Power	<p>Power must be supplied by a DXLink Power sourcing device such as an Enova DGX 8/16/32/64 or 800/1600/3200/6400 Digital Media Switcher or compatible Enova DVX All-In-One Presentation Switcher (DVX-3255HD, 3256HD or 2255HD, DVX-3155HD, 3156HD or 2155HD), PS-POE-AT-TC High Power PoE Injector (FG423-84), or PDXL-2 Power over DXLink Controller (FG1090-170). AMX does not support the use of any other power supplies or PoE injectors as these may potentially damage the DXLink equipment.</p> <p>When installed in conjunction with the Enova DGX 100 Series Digital Media Switcher, use the Enova DGX 100 Series Configuration Tool located at <a href="http://www.amx.com/enova">www.amx.com/enova</a> to determine the power requirements of the configuration and whether any of the DXLink Transmitters or Receivers should be powered with the local power supplies or the supported Power over DXLink injector. The configuration tool contains instructions on how to determine power requirements.</p> <p>AMX only supports the use of these approved Power over DXLink solutions. Other third party power supplies or non-compatible standard PoE solutions may damage the DXLink equipment.</p>
Power Connector	Included on DXLink Connection
AC Power	<p>AMX POE Injector 100-240 VAC single phase, 50-60 Hz 0.8 A @ 100 VAC max.</p>
Power Consumption (Max)	<p>Enova DXLink Power Consumed (max) 4 W</p>

ENVIRONMENTAL	
Temperature (Operating)	32° to 104° F (0° to 40° C)
Temperature (Storage)	-22° to 158° F (-30° to 70° C)
Humidity (Operating)	5% to 85% RH (non-condensing)
Humidity (Storage)	0% to 90% RH (non-condensing)
Thermal Dissipation, Enova DXLink Power Supplied (max)	14 BTU/hr

<b>FRONT CONNECTORS</b>	
User Accessible (accessible with faceplate mounted)	
HDMI Input	HDMI connector (with locking center screw) for digital video and embedded digital audio (supports a DVI-D signal with use of DVI-to-HDMI cable adapter). HDMI Type A Female
<b>BACK CONNECTORS</b>	
DXLink Output	RJ-45
<b>INDICATORS</b>	
DXLink LED	Indicates when a link is established to a downstream device.
HDCP LED	Indicates that the signal being sent downstream is HDCP-encrypted content (blinks when passing non-HDCP video).
<b>HDMI</b>	
Compatible Formats	HDMI, HDCP, DVI (DVI requires conversion cable)
Input Signal Type	HDMI, DVI-D (Single Link with a DVI-to-HDMI cable adapter) DisplayPort ++ (Input only with HDMI cable adapter)
Input Connector	HDMI Type A Female
Propagation Delay (Typ)	5 $\mu$ s
Input Re-clocking (CDR)	Yes
Input Equalization	Adaptive
Video Data Rate (max)	8.91 Gbps
Video Pixel Clock (max)	297 MHz
Progressive Resolution Support	480p up to 4096 x 2160 @ 60 Hz* *Y/Cb/Cr 4:2:0 and 4K Scaler in Bypass  NOTE: See full list of formats on page 82 in the DXLink Twisted Pair Transmitters/Receiver Hardware Reference Manual
Interlaced Resolution Support	480i, 576i, 1080i* If input is interlaced, all scaled outputs will deinterlace video to a progressive resolution format. If in scaler Bypass mode interlaced input will pass through unaltered.  *Including but not limited to those resolutions shown in the DXLink Twisted Pair Transmitters/Receiver Instruction Manual
4K Resolution Support	<ul style="list-style-type: none"> <li>• 3840x2160p@24/25/30 Hz</li> <li>• 4096x2160p@24/25/30 Hz</li> <li>• 3840x2160p@60 Hz, 4:2:0*</li> <li>• 4096x2160p@60 Hz, 4:2:0*</li> </ul> * Supported by DX-RX-4K when in Bypass scaling mode.  NOTE: See full list of formats in the DXLink Twisted Pair Transmitters/Receiver Instruction Manual
Deep Color Support	24-bit, 30-bit*, 36-bit*

	*Only supported when the Receiver scaler is in Bypass mode using CEA-861 formats and the resolution is 1080p/60 or less
Color Space Support	RGB 4:4:4 YCbCr 4:4:4, 4:2:2, and 4:2:0 • Input signal support for YCbCr 4:4:4 and 4:2:2; output color-space is converted to RGB 4:4:4. 4:2:0 only supported at 2160p 50/60Hz with 4K RX Scaler in Bypass.
3D Format Support	(HDMI Primary Formats) • Frame Packing 1080p up to 24 Hz • Frame Packing 720p up to 50/60 Hz • Frame Packing 1080i up to 50/60 Hz • Top-Bottom 1080p up to 24 Hz • Top-Bottom 720p up to 50/60 Hz • Side-by-Side Half 1080i up to 50/60 Hz  NOTE: 3D supported when the HDMI DXLink RX Scaler is in Bypass mode and format is 1080p60 or less
HDMI Cable Requirement	HDMI High Speed Cable, Category 2, Required
Audio Format Support	Dolby TrueHD, Dolby Digital*, DTS-HD Master Audio, DTS*, 2CH through 8CH L-PCM *Dolby Digital and DTS support up to 48 kHz, 5.1 channels.
Audio Resolution	16 bit to 24 bit
Audio Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 96 kHz, 192kHz
HDCP Support	• Supports AMX HDCP 1.4 InstaGate Pro® Technology. • When used with Enova DGX switchers, the key support is up to 16 sinks per output, independent of the source device. • When used as a single point-to-point solution, key support is defined by the source device.
CEC Support	CEC is not currently supported
DDC/EDID Support	• The HDMI EDID in point to point mode is passed up from the sink device. • When used with Enova DGX 16/32 Digital Media Switcher or Enova DVX-2155 or -3155 the HDMI EDID is passed from the Enova Switcher input to the TX and is user re-programmable. The analog video input connection provides a fixed EDID set. • For the EDID list, see the specifications in the “Enova DGX DXLink Twisted Pair 4K Boards” chapter in the Hardware Reference Manual – Enova DGX 100 Series Digital Medial Switchers.

For a detailed PDF or DXF pictorial drawing please visit: <http://www.amx.com/products/DX-TX-DWP-4K.asp>

#### About AMX by HARMAN

Founded in 1982 and acquired by HARMAN in 2014, AMX® is dedicated to providing AV solutions for an IT World. AMX solves the complexity of managing technology with reliable, consistent and scalable systems comprising control, video switching and distribution, digital signage and technology management. AMX systems are deployed worldwide in conference rooms, classrooms, network operation/command centers, homes, hotels, entertainment venues and broadcast facilities, among others. AMX is part of the HARMAN Professional Group, the only total audio, video, lighting, and control vendor in the professional AV market. HARMAN designs, manufactures and markets premier audio, video, infotainment and integrated control solutions for the automotive, consumer and professional markets. Revised 1.20.17. ©2017 Harman. All rights reserved. Specifications subject to change.

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# 8x4+2 4K60 4:4:4 All-In-One Presentation Switcher (4 HDMI Inputs, 4 DXLink 4K60 Inputs)

DVX-3266-4K (FG1906-0401)  
DVX-3266-4K-TAA (AMX-FG1906-0402)



## Overview

The DVX-3266-4K 8x4+2 All-In-One Presentation Switcher is a unified audio, video, and control device that replaces a rack full of equipment for a solution that is less expensive, easier to install, and more reliable.

The compact 2U Presentation Switcher supports the latest video technologies to deliver full 4K60 4:4:4 and HDR video on every output. Audio technology from Crown, BSS, and dbx provide the legendary audio quality for which Harman products are known and the inclusion of Dante audio makes it possible to distribute that audio over the network.

The integrated NX processor provides extensive security features and technologies such as a mobile friendly HTML5 web interface, an ICSLan isolated network, and automatic binding of DXLink endpoints.

DVX 4K60 delivers the lowest Total Cost of Ownership in the industry thanks to ease of support, maintenance, and configuration as well as reduced hardware and cabling costs.

## Common Applications

The DVX-3266-4K is ideally suited for medium to large and complex conference rooms, classrooms, and auditoriums that can benefit from 4K60 4:4:4 resolution. It's four DXLink inputs enable support for dual room applications, where multiple collaboration spaces share a single DVX or the AV rack is not near source devices and displays. DVX's small size also makes it a perfect solution for any room or facility with space constraints, especially those that lack space in equipment racks.

## Features

- **4K60 4:4:4 Support – HDMI 2.0 and HDCP 2.2 Support – Scaled Outputs** – Supports the highest possible video quality over HDMI and category cable.
- **High Dynamic Range (HDR) and Deep Color Support** – Support for HDR10 and 36-bit Deep Color.
- **Simple Configuration and Support** – HTML5 Web Interface with built-in status and troubleshooting features alleviates the need for proprietary configuration software and internal network allows for automatic configuration of endpoints
- **Dante Audio** – 8 input channels and 8 output channels of IP audio
- **Crown DriveCore Amplifier** – 120W per channel stereo at 4/8 ohms 120W mono at 70/100 Volt.
- **USB 2.0** - High-speed USB 2.0 data from devices like conferencing cameras and storage devices are transmitted without the need for separate cables.
- **DXLink™ Twisted Pair Inputs and Outputs** – Send and receive audio, video, bi-directional control, USB 2.0, and Ethernet to DXLink HDMI Receivers and Transmitters up to 100m away over one twisted pair cable.
- **All-In-One Device** – Controller, matrix switcher, video scaler, audio signal processor, amplifier, plus twisted pair distribution - all in a space-saving 2U chassis.
- **Simplicity & Reliability** – Replaces the need for numerous individual components and equipment, ensuring high reliability and saving on configuring and programming costs.
- **Low Total Cost of Ownership** – With a consistent platform across a variety of sizes, it is easy to standardize on the DVX and reduce costs for hardware, training, support, troubleshooting and sparing.
- **Unrivaled Network Security** – With Dual NICs to isolate AMX or third-party AV equipment from the primary network, IPv6, 802.1X for protected network access, LDAP integration with unlimited user-defined groups, syslog support, and support for encrypted IP communication using FIPS 140-2 validated cryptographic modules, the Enova DVX provides rock-solid security.
- **Optimal Video Image Quality Every Time** – Exclusive SmartScale Technology automatically scales the image to the best resolution and video parameters for each display—even for displays of different information— without manual setup, eliminating the need for costly external scalers.
- **BSS Audio Processing** – Includes an integrated digital signal processor with advanced capabilities like independent 10-band parametric EQ, independent input gain adjustments and variable compression, allowing precision tuning to match unique source and room attributes.
- **dbx AFS2** - Advanced Feedback Suppression
- **Audio Breakaway** – Embedded audio from any HDMI or DXLink input can be de-embedded from the video, processed through the DSP, and switched to any analog, HDMI or DXLink output.
- **Audio Matrix Switching** – Four independently switched and processed audio paths provide four unique volume, EQ, ducking and mixing configurations for perfectly tuned room audio as well as integration with audio/video conferencing, induction loop systems, voice re-enforcement speakers and audio recording devices.
- **Enhanced Microphone Processing** – Independent 3-band parametric EQ, compression, gating, auto-ducking, and limiting on each microphone input ensures crystal clear communication.

## Specifications

GENERAL	
Enclosure	Metal with dark gray matte finish
Dimensions (HWD)	3 1/2" x 17 1/3" x 15" (8.8 cm x 44.0 cm x 38.0 cm) without front rack mounting brackets 3 1/2" x 19" x 15" (8.8 cm x 44.0 cm x 48.3 cm) with front rack mounting brackets
Weight	11.90 Kg without front rack mounting brackets 12.23 Kg with front rack mounting brackets
Regulatory Compliance (PENDING)	FCC Part 15 Class A EN 55032 EN 55035 IEC/EN 60950 IEC/EN 62368-1 UL 60950 UL 62368-1 RoHS/WEEE EMC (Australia) EMC (Canada) EMC (Japan)
Included Accessories	<ul style="list-style-type: none"> <li>• (1) Power Cord, US</li> <li>• (1) Power Cord, EU</li> <li>• (1) Power Cord, UK</li> <li>• (2) Front Rack Mounting Bracket (Attached)</li> <li>• (4) Rubber foot (Attached)</li> <li>• (2) IR Emitter</li> <li>• (3) 4-position, 3.5mm Phoenix Male Connector</li> <li>• (8) 3-position, 3.5mm Phoenix Male Connector</li> <li>• (4) 5-position, 3.5mm Phoenix Male Connector</li> <li>• (1) 3-position, 5.08mm Phoenix Male Connector</li> <li>• (1) 4-position, 5.08mm Phoenix Male Connector</li> </ul>
Optional Accessories	<ul style="list-style-type: none"> <li>• CC-3.5ST5-RCA2F, 5-pin 3.5mm Phoenix to 2 RCA Female Cable (FG10-003-20)</li> <li>• DX-RX-4K60, DXLink HDMI Receiver Module (FG1010-512-01)</li> <li>• DX-TX-4K60, DXLink HDMI Transmitter Module (FG1010-312-01)</li> <li>• DXL-RX-4K60, DXLite HDMI Receiver Module (FG1010-505)</li> <li>• DXL-TX-4K60, DXLite HDMI Transmitter Module (FG1010-311)</li> <li>• EXB-IRS4, ICSLan IR/S Interface, 4 IR/S and 4 Inputs (FG2100-23)</li> <li>• EXB-COM2, ICSLan Serial Interface, 2 Ports (FG2100-22)</li> <li>• EXB-REL8, ICSLan Relay Interface, 8 Channels (FG2100-20)</li> <li>• EXB-I/O8, ICSLan Input/Output Interface, 8 Channels (FG2100-21)</li> <li>• EXB-MP1, ICSLan Multi-Port, 1 COM, 1 IR/S, 2 I/O, 1 IR RX (FG2100-26)</li> <li>• CBL-HDMI-FL HDMI, High Speed Flat Cable (FG10-2180-16)</li> <li>• CBL-DP-FL, DisplayPort High Speed Flat Cable (FG10-2181-16)</li> <li>• CBL-ETH-FL, Ethernet Cat5e Flat Cable (FG10-2182-16)</li> </ul>

ACTIVE POWER REQUIREMENTS	
Power Consumption	90 Watts typical without amplifier

	130 Watts typical average with amplifier 75 Watts idle
Power Connection	IEC Power Cord Connector 100-240 VAC, 10A 47-63 Hz
Power Factor Correction (PFC)	Supported, complies with N60555-2 and EN61000-3-2

ENVIRONMENTAL	
Temperature (Operating)	0° C to 40° C (32° F to 104° F)
Temperature (Storage)	--10° C to 70° C (14° F to 158° F)
Humidity (Operating)	5% to 85% RH, Non-condensing
Heat Dissipation (Typical)	307 BTU/hr.

ETHERNET	
Connection	(1) RJ-45
Description	10/100/1000 Port RJ-45 connector provides TCP/IP communication. Auto MDI/MDI-X enabled. Supports IPv4 and IPv6 networks. Supports HTTP, HTTPS, Telnet, FTP.
Link/Act Indicator	Link/Activity LED (green) blinks when receiving Ethernet data packets, one on Ethernet RJ-45 connector and one on the front panel
Speed Indicator	Speed LED (yellow) lights ON when the connection speed is 1000 Mbps Ethernet connection and turns OFF when the speed is 10 or 100 Mbps

INTEGRATED AMPLIFIER	
Integrated Amplifier	Selectable between: 2 x 120 W RMS into 8 Ohms Class D stereo amplifier (4 Ohms stable) Or 120 W, 70V / 100V mono amplifier NOTE: Only one amplifier output can be in use at any one time. NOTE: This amplifier is floating output, do not connect any output to ground!

ICSLAN	
ICSLan Connection	(1) RJ-45, 10/100 Port RJ-45 connector. Auto MDI/MDI-X enabled. Supports IPv4 and IPv6 networks.
ICSLan Link/Active Indicator	ICSLan LED (green) blinks when receiving Ethernet data packets, one on Ethernet RJ-45 connector and one on the front panel
ICSLan Speed Indicator	Speed LED (yellow) lights ON when the connection speed is 100 Mbps Ethernet connection and turns OFF when the speed is 10 Mbps

ONBOARD MASTER	
Controller	Integrated Controller is the equivalent of a NetLinx NX-2200 Integrated Controller with the exception of the number of control ports
Memory	<ul style="list-style-type: none"> <li>• NVRAM: 1 MB</li> <li>• Memory Card: 16 GB Micro SD</li> <li>• DDRAM: 512MB</li> <li>• Note: Supports external USB Solid State Drive</li> </ul>

Processor	1600 MIPS
Program Port	(1) USB Standard B
Configuration Dip Switch	4-Position
ID Pushbutton	Black ID pushbutton for setting IP mode and reverting to default configuration and firmware It has no effect on the Internal Switcher Device
Status Indicator	Status LED (green) blinks to indicate that the system is programmed and communicating properly
Input Indicator	Input LED (yellow) blinks to indicate that the Controller is receiving data
Output Indicator	Output LED (red) blinks to indicate that the Controller is transmitting data
USB Host Port	(2) USB Standard A, one on front and one on back, USB Host port supports Solid State drive for upgrading firmware, loading code files, copying configuration data and remote storage

CONTROL PORTS & INDICATORS	
RS-232 Port (Rear Panel)	(2) 3-position 3.5mm Screw Terminal NetLinx Ports 1 and 2 300 -115,200 baud
Serial Indicators (Front Panel)	(2) sets of LEDs (red/yellow) indicate when serial Ports 1-2 are transmitting and receiving data
IR/Serial Port (Rear Panel)	(2) 2-position 3.5mm Screw Terminal 2 IR Transmit / 1-way Serial ports NetLinx Ports 11-12 Support high-frequency carriers up to 1.142 MHz 2 IR/Serial data signals can be generated simultaneously
IR/Serial Indicators (Front Panel)	(2) LEDs (red) indicate when each of the IR/Serial ports (11-12) are transmitting control data
I/O Channels (Rear Panel)	(1) 4-position 3.5mm Screw Terminal 2-channel binary I/O port for contact closure with each input being capable of voltage sensing +12V DC and GND Included on the connector NetLinx Port 22 Channels 1-2
I/O Indicators (Front Panel)	(2) LEDs (yellow) indicate each of the I/O channels (1-2) are active
Relays (Rear Panel)	(2) 2-position 3.5 mm Screw Terminal, (2) single-pole, single-throw relays NetLinx Port 21 Channels 1-2 Each relay can switch up to 24 VDC or 28 VAC @ 1 A Each relay is independently controlled
Relay Indicators (Front Panel)	(2) LEDs (red) indicate when each of the relay channels (1-2) are active (closed)

INTEGRATED MATRIX SWITCHER CONTROL	
LCD Display	Liquid crystal display (2 lines with 20 characters per line) indicates current volume level and displays the Video, Audio, and Tools menus
SWITCH Pushbutton	Press to enter the SWITCH menu on the LCD display. Choose to switch audio, video or both from any input to any output. Press the TAKE pushbutton to implement the switch
TAKE Pushbutton	While in the SWITCH menu, press to implement an audio/video switch. When not in the SWITCH menu, press to cycle through audio and/or video inputs

VIDEO MENU Pushbutton	Press to access the Video menu on the LCD display. Multiple presses cycle through the various VIDEO menus
AUDIO MENU Pushbutton	Press to access the Audio menu on the LCD display. Multiple presses cycle through the various AUDIO menus
Navigation Pushbuttons	(4) directional buttons for navigating the options in the Video and Audio menu (on the LCD display)
STATUS Pushbutton	Press to access the STATUS menu on the LCD display
EXIT Pushbutton	Press to exit any menu
VIDEO MUTE Pushbutton	Press to mute/un-mute (enable/disable) all video output displays. Video Mute results in a blank screen on the output display
AUDIO MUTE Pushbutton	Press to mute/un-mute all audio outputs

INTEGRATED MATRIX SWITCHER	
Video Switching	8x4 Matrix Video Switching, any of the 8 inputs can be routed to any or all of the 4 video outputs
Video Inputs	(4) HDMI; supports HDMI/ HDCP (4) DXLink; supports digital video, HDCP, audio, Ethernet, bi-directional control and power  Design Note: Supported capabilities for DXLink vary by connected device, see connected device manual for more information
Video Outputs	(4) HDMI; supports HDMI/ HDCP (2) DXLink; mirrors associated HDMI output; supports digital video, audio, Ethernet and bi-directional control
Video Resolution Support	Supports resolutions up to 4096 x 2160 @ 30Hz, including 3840 x 2160 @ 60Hz. See Operations Reference Guide for details for each signal type
Progressive Resolution Support	480p up to 4096 x 2160 @ 30Hz, including 3840 x 2160 @ 60Hz. If input is interlaced, all scaled outputs will deinterlace video to a progressive resolution format. If in scaler Bypass mode, interlaced input will pass through unaltered
HDCP Support	Full matrix HDCP1.4 and HDCP2.0 support (includes any input to any or all outputs) Key Management System AMX HDCP InstaGate Pro Technology Key support up to 16 sinks per output, independent of source device
EDID Management	A preferred EDID can be selected for each input or any display EDID can be mirrored to any input independently
Audio Switching	14x4 Matrix Audio Switching. Each of the 4 audio outputs has independent volume, EQ, ducking, sync delay and mixing. Any of the 4 audio paths can be routed to any analog, HDMI or Dante output (each mirrored DXLink output passes audio sent to its associated HDMI output)
Audio Inputs	(2) 3.5 mm 5-position captive-wire terminals; support balanced (differential) or unbalanced (single-ended) stereo audio (6) 3.5 mm 3-pin captive-wire MIC connectors; supports up to six mono microphones, unbalanced or balanced audio (4) HDMI connections support digital audio (4) DXLink connections support audio from DXLink Transmitters (8) Dante mono input channels. Each of 4 pairs of mono Dante inputs can be configured as 2 mono mic inputs to be mixed, or 1 stereo audio input to be switched.

Audio Outputs	<p>(1) Amplified audio output; 4-position captive wire connector; supports amplified, variable, mono or stereo audio into 4-8 Ohm</p> <p>(1) Amplified audio output; 3-position captive wire connector; supports 70V or 100V mono audio</p> <p>Connect speakers to either but not both simultaneously</p> <p>(2) Line level audio output; supports balanced or unbalanced mono or stereo</p> <p>(8) Dante mono outputs; each of 4 pairs can be configured as mono or stereo; mirrors any of the 4 audio outputs, or 4 HDMI outputs</p> <p>(4) HDMI connections support digital versions of analog audio or direct pass-through audio</p> <p>(2) DXLink output mirrors associated HDMI output; supports digital version of analog audio or direct pass-through.</p>
Audio Breakaway	Yes, stereo audio from any input can be de-embedded from its associated video, processed through the DSP, and switched independently to any analog, Dante or HDMI output for a total of up to four unique audio output signals. (DXLink outputs are mirrored to associated HDMI outputs so they will pass the same associated audio.)

HDMI	
Input Connections	(4) HDMI Type A Female, Ports (1-4)
Input Signal Type Support	HDMI/HDCP, DVI/HDCP, Display Port ++
Data Rate (Max)	18 Gbps
Pixel Clock (Max)	600 MHz
Input Equalization	Yes
Input Re-Clocking (CDR)	Yes
Output Connections	(4) HDMI Type A Female, Ports (1-4)
Output Signal Type Support	HDMI/HDCP1.4 and HDCP2.0, DVI/HDCP1.4 and HDCP2.0
Output Scaling	SmartScale or Manual Configuration or Bypass SmartScale output resolution support: All resolutions between 480p and 4096 x 2160 @ 30Hz via automatic SmartScale query of the display's declared EDID Detailed Timing Definition
Deep Color Support	Scaled Outputs: 24-bit, Pass-thru Outputs: 24-bit, 30-bit, 36-bit
Color Space Support	Y,Cb,Cr & RGB
HDCP1.4 Compliance	Yes
HDCP2.0 Compliance	Yes
Audio Format Support for HDMI	Supports Dolby TrueHD, Dolby Digital, Dolby Digital Plus, Dolby Atmos, DTS-HD Master Audio, DTS, L-PCM
Note	<p>DisplayPort ++ requires DisplayPort to HDMI adapter cable</p> <p>Supports full matrix switching, video processing and scaling of 8 bit per color standard Input video signals.</p> <p>Supports full matrix switching and pass-thru of all HDMI compliant video signals including Deep Color</p> <p>Each output can deliver processed and scaled video or pass-thru video from any video input</p> <p>Each output can embed audio from any of the 4 audio</p>

	outputs as Stereo L-PCM or can pass-thru Dolby TrueHD, Dolby Digital, Dolby Digital Plus, Dolby Atmos, DTS-HD Master Audio, DTS, L-PCM audio from the selected video source
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DXLINK	
Input Connections	(4) RJ-15; Port (5 - 8) (4) USB Micro AB for point-to-point USB connection to a compatible DXLink Transmitter
Input Compatible Formats	Digital video, audio, Ethernet, bi-directional control and power (supported capabilities for DXLink vary by connected device, see connected device manual for more information)
Output Connections	(2) RJ-45; Port (3,4); DXLink output mirrors HDMI Outputs 3 and 4 (2) USB Micro AB for point-to-point USB connection to a compatible DXLink Receiver
Output Compatible Formats	Digital Video with embedded audio, analog audio, Ethernet, bidirectional control  Supports full matrix switching and pass-thru of all HDMI compliant video signals including Deep Color  Audio Signal Types: Supports Dolby TrueHD, Dolby Digital, Dolby Digital Plus, Dolby Atmos, DTS-HD Master Audio, DTS, L-PCM
Output Re-Clocking	Yes
Output Scaling	SmartScale or Manual Configuration or Bypass
HDCP Support	Yes
Twisted Pair Cable Type	Shielded Cat6, Cat6A and Cat7 <b>DXLink twisted pair cable runs for DXLink equipment shall only be run within a common building where a common building is defined as: the walls of the structure(s) are physically connected and the structure(s) share a single ground reference</b>  For more details and helpful cabling information, reference the white paper titled <a href="#">Cabling for Success with DXLink</a> , or contact your AMX representative

ANALOG AUDIO	
Analog Audio Input Connections	(2) 3.5 mm 5-position captive-wire terminals; support balanced (differential) or unbalanced (single-ended) stereo audio
Input Level (Nominal)	+4 dBu (1.228 Vrms) balanced or -10 dBV (0.3162 Vrms) unbalanced
Input Level (Maximum)	+8.2 dBu 2 Vrms
Input Impedance	>12 kOhms balanced, >12 kOhms unbalanced
Analog Audio Output Connections	(1) Amplified audio output; 4-position captive wire connector; supports amplified, variable, mono or stereo audio into 4 or 8 Ohms. (1) Amplified audio output; 3-position captive wire connectors; supports 70V or 100V mono audio. Connect a speaker to either but not both simultaneously (2) Line level audio output; supports balanced or unbalanced mono or stereo
Volume Control	-100 dB to +0 dB in 1 dB steps



Balance Control	20 steps each left and right
Output Level (Maximum)	+8.2 dBu (line level)
Output Impedance	200 Ohms (line level)
Audio Channel Crosstalk	Balanced Line Inputs: -100 dB @ 0 dBV, 20 Hz to 20 kHz Unbalanced Line Inputs: -80 dB @ 0 dBV, 20 Hz to 20 kHz
Audio Frequency Response	AMP: (+0.5 dB, -1 dB) 20 Hz to 20 kHz @ 8 Ohms Line: (+0.5 dB, -1 dB) 20 Hz to 20 kHz
Audio Input Compression	Independent Compression per input Attack: 1 to 2000 ms Release: 10 to 5000 ms Compression Ratio: 1 to 20 Threshold: -60 to 0 dB
Audio Input Gain Compensation	-24 dB to +24 dB, 1 dB steps
Audio Output Equalizer	10-band parametric EQ with variable center frequency, filter type and Q per band Center Frequency: 20 Hz to 20 kHz EQ Gain: -12 to +12 dB Q: 0.1 to 20 Filter Types: Bell, Base Shelf, Treble Shelf, Low Pass, High Pass, Band Pass, Band Stop
Audio Output Sync Delay	0 to 200 ms
Audio S/N Ratio	AMP: 106 dB @ 8 Ohms, full output, 1kHz A-weighted Line: 106 dB @ 2 Vrms, AES17
Audio THD+N	AMP: <0.01% @ 8 Ohms, 20 Watts, 20 Hz to 20 kHz <0.025% @ 8 Ohms, 120 Watts, 20 Hz to 20kHz Line: <0.003% @ 0 dBV, 1 kHz
Note	Independent EQ, Volume and Balance control per output

MICROPHONE AUDIO	
Microphone Input Connections	(6) 3.5 mm 3-pin captive-wire MIC connectors; supports up to two mono microphones, unbalanced or balanced audio
Microphone Input Level (Maximum)	8.2 dBu
Microphone Input Format Support	Line or Mic level, balanced or unbalanced audio
Microphone Input Impedance	3.5 kOhms, accepts 60 to 600 Ohms sources
Microphone Input Frequency Response	(+0.5 dB, -1 dB) 20 Hz to 20 kHz
Microphone Input Gain	-24 dB to 84 dB, 1 dB steps
Microphone Input Equalizer	3-band parametric EQ with variable center frequency, filter type and Q Center Frequency: 20 Hz to 20 kHz EQ Gain per Band: -12 to +12 dB Q per band: 0.1 to 20 Filter Types: Bell, Base Shelf, Treble Shelf, Low Pass, High Pass, Band Pass, Band Stop
Microphone Input Compression	Independent Compression per Microphone Attack: 1 to 2000 ms Release: 10 to 5000 ms Compression Ratio: 1 to 20 Threshold: -60 to 0 dB
Microphone Gating	Independent Gating per Microphone Attack: 1 to 2000 ms Release: 10 to 5000 ms Depth: 0 to 20 dB Hold Off: 0 to 2000 ms Threshold: -60 to 0 dB
Microphone Limiter	Independent Limiting per Microphone Attack: 1 to 2000 ms Release: 10 to 5000 ms

	Threshold: -60 to 0 dB
Microphone Ducking	Independent Ducking per each of 4 audio paths Attack: 1 to 2000 ms Release: 10 to 5000 ms Attenuation: 0 to 20 dB Hold Off: 0 to 4000 ms Threshold: -60 to 0 dB
Microphone Inputs Note	Phantom Power: switchable 48 V to each microphone @ 7 mA max per port

<b>DANTE AUDIO</b>	
Dante Audio Inputs	(8) On Primary or Secondary RJ-45 Connector. Eight mono Dante/AES67 digital audio inputs with support for 48KHz.
Dante Audio Outputs	(8) On Primary or Secondary RJ-45 Connector. Eight mono Dante/AES67 digital audio outputs with support for 48KHz.

### About AMX by HARMAN

Founded in 1982 and acquired by HARMAN in 2014, AMX® is dedicated to providing AV solutions for an IT World. AMX solves the complexity of managing technology with reliable, consistent and scalable systems comprising control, video switching and distribution, digital signage and technology management. AMX systems are deployed worldwide in conference rooms, classrooms, network operation/command centers, homes, hotels, entertainment venues and broadcast facilities, among others. AMX is part of the HARMAN Professional Group, the only total audio, video, lighting, and control vendor in the professional AV market. HARMAN designs, manufactures and markets premier audio, video, infotainment and integrated control solutions for the automotive, consumer and professional markets. Revised 8.30.16. ©2016 Harman. All rights reserved. Specifications subject to change.



MT-1002 (FG5969-47) Tabletop Touch Panel

## Overview

The MT-1002 / 10.1" Modero G5 Tabletop Touch Panel is a premium user interface that includes the G5 graphics engine and delivers superior performance. Designed specifically for dedicated room control, this elegantly-styled touch panel provides fast and smooth animations and transitions, along with a quad-core processor that provides more than enough processing power to run the most demanding applications today and in the future. The MT-1002 also includes a built-in web browser and document viewers, enabling users to access real-time information during meetings or lectures.

The MT-1002 is built for usability, offering edge-to-edge capacitive touch glass with multi-touch capabilities. The distinctive, low-profile design is engineered to sit perfectly on a table without obstructing views, and comes with a variety of mounting options for added security and convenience.

## Common Applications

- The MT-1002 is ideal for boardrooms, conference rooms or auditoriums where a premium control surface is needed to provide access to multiple functions simultaneously while remaining elegantly unobtrusive.
- In Higher Education, the MT-1002 is ideal for lecture halls, auditoriums, performing arts theaters and boardrooms that require extensive control capabilities.
- In residences, it is perfect for main living areas such as kitchens, living rooms, home theaters or home offices where the control surface can be used to manage systems throughout the home.

## Features

- **G5 Graphics Engine and Quad Core Processing** – The most powerful processing in the industry delivers smooth gesturing, swiping, dynamic reordering, enhanced animation with transitions all at higher speeds for an experience any user will enjoy.
- **Simplified Enterprise Touch Panel and Firmware Updates** – Deploy and update touch panel files and firmware files from a network URL for simplified company-wide updates.
- **Built-in Web Browser and Content Viewers** – Conveniently simplifies accessing and presenting real-time content and documents during meetings. Simply preview files accessed via the native web browser, USB, or cloud storage apps. Easily update or disable apps using the onboard G5 App Update Manager.

- **Adjustable Security Modes** – With the ability to select from high security or custom modes, administrators can customize the panel's security levels for access, networking and communication.
- **Enhanced User Experience** – Modero Series features intuitive UI functionality including: gesturing, swiping, dynamic reordering and enhanced animation capabilities.
- **View and Select Dynamic Data with Listview Buttons** – Display a listing of entries generated by a dynamic data source (e.g. phonebook contacts, call logs, RSS feed or other real time data sources) enabling the user to scroll or search to make a selection. Demos are available in the UI Resource Center.

## Specifications

TOUCH SCREEN DISPLAY	
Display Type	TFT Active Matrix Color LCD
Display Size (WH)	9.9" x 6.7" (252 mm x 170 mm), 12.0" (304 mm) diagonal
Viewable Area (WH)	8.5" x 5.3" (217mm x 136mm), 10.1" (257mm) diagonal
Resolution (WH)	1280x800
Aspect Ratio (WH)	16:9
Brightness	400 cd/m2
Contrast Ratio	700:1
Color Depth	16.7M colors
Illumination	LED
Touch Overlay	Projected capacitive, multi-touch support, 3 simultaneous max
Viewing Angle	Vertical $\pm 89^\circ$ , Horizontal $\pm 89^\circ$

MEMORY	
SDRAM	2 GB
Flash	16 GB
Maximum Project Size	12 GB flash, available for apps and touch panel files

COMMUNICATIONS	
Ethernet	10/100 Auto MDI-X port, RJ-45 connector. Supported IP and IP-Based Protocols: UCP, TCP, ICMP, ICSP, IGMP, DHCP, SSH, FTP, DNS, RFB (for VNC), HTTP
USB	USB host 2.0, Type A ports (1 with limited physical access requiring right angle connection); Firmware upgrade, touch panel file transfer, document and image viewing, HID peripherals
Bluetooth	Mouse/Keyboard: HID Profile v1.1 (requires external USB-BT adapter)

<b>VIDEO</b>	
Supported Video Codecs	MPEG-2-TS: MPEG-2 Main Profile @High Level up to 720p at 25 fps (decode only) MPEG-2-TS: H.264 High Profile @Layer 4, AAC-LC up to 720p at 25 fps (encode/decode) MJPEG up to 720p at 25 fps (decode only)
Supported Video Transport Streams	MPEG-TS for MPEG-2 and H.264; HTTP for MJPEG
Max Number of Active Video Streams	Two decode plus one encode

<b>AUDIO</b>	
Speakers	4 ohm, 2 Watt, 300 Hz cutoff frequency
Supported Audio Codecs	MP2 Layer I and II, MP3 (8 kHz, 11.025 kHz, 12 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz, 48 kHz) AAC-LC (8 kHz, 96 kHz) G.711 with $\mu$ Law (VoIP encode/decode at 8kHz)
File Formats	WAV, MP3 (as part of touch panel file only - no USB storage)

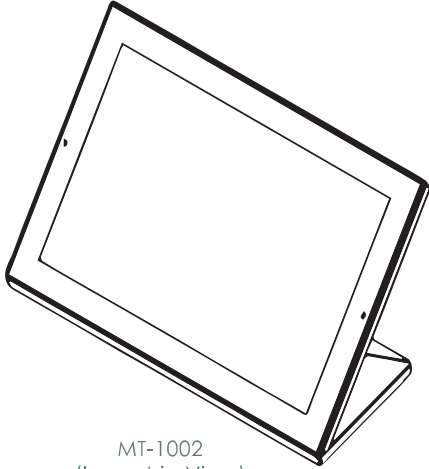
<b>GRAPHICS ENGINE</b>	
AMX G5	G5 enhanced feature set supporting multi-touch and gestures, scrolling, transitions, applications - See TPD5 Operations Guide for more information

<b>EMBEDDED APPLICATIONS</b>	
Viewer Applications	PDF, JPEG, BMP, PNG, TIFF, GIF, PowerPoint, .doc, .docx, .xls, .xlsx, .ppt, .pptx
Remote Management	VNC Server
Video Conferencing	Skype

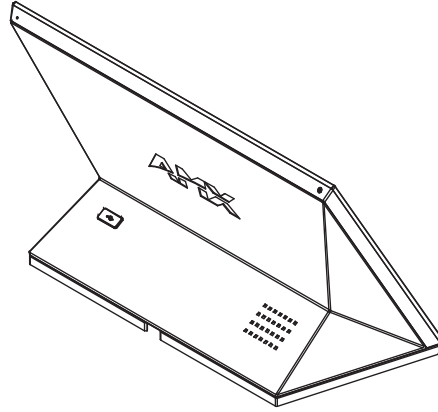
<b>CONNECTIONS</b>	
Ethernet	10/100 Auto MDI-X port, RJ-45 connector through cable extension
USB	(1) USB host 2.0, Type A ports
Power	PoE (Power over Ethernet), 802.3af, class 3

<b>ENVIRONMENTAL</b>	
Temperature (Operating)	32° F to 104° F (0° C to 40° C)
Temperature (Storage)	4° F to 140° F (-20° C to 60° C)
Humidity (Operating)	20% to 85% RH
Humidity (Storage)	5% to 85% RH
Power ("Heat") Dissipation	On: 44.2 BTU/hr Standby: 19.8 BTU/hr

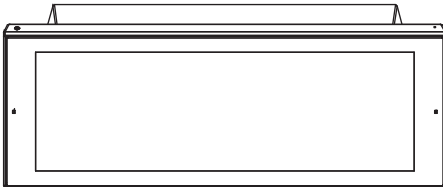
<b>GENERAL</b>	
Dimensions (HWD)	6.3" x 10" x 3.81" (160mm x 255mm x 97mm)
Weight	3.1 lbs (1.41 Kg)
Power Consumption	Full-On: 12.95 W maximum Standby: 5.8 W Shutdown: 1 W
Start-Up Inrush Current	Not applicable due to PoE standard
External Power Supply Required	Optimal performance requires use of one of the following AMX PoE power supplies (not included): <ul style="list-style-type: none"> <li>• PS-POE-AF-TC, PoE Injector, 802.3AF Compliant (FG423-83)</li> <li>• NXA-ENET8-POE+, Gigabit PoE Ethernet Switch (FG2178-64)</li> </ul>
Regulatory Compliance	UL 60950-1 FCC Part 15 Class B C-Tick CISPR 22 Class B CE EN 55022 Class B and EN 55024 CB Scheme IEC 60950-1 IC IEC/EN-60950 RoHS/WEEE compliant
Included Accessories	<ul style="list-style-type: none"> <li>• MXA-USB-C, USB Port Cover Kit, Modero X/S Series Touch Panel (FG5968-18)</li> <li>• HPG-10, 3/4" Mini-Grommet (FG570-01)</li> <li>• MXA-CLK, Modero X/S Series Cleaning Kit (FG5968-16)</li> </ul>
Optional Accessories	<p><b>MOUNT</b></p> <ul style="list-style-type: none"> <li>• MSA-STMK-10, Secure Table Mount Kit, for Modero 10" Tabletop Touch Panel (FG2265-16)</li> </ul> <p><b>VIDEO</b></p> <ul style="list-style-type: none"> <li>• MXA-MPL, Modero X/S Series Multi Preview Live (FG5968-10)</li> </ul>



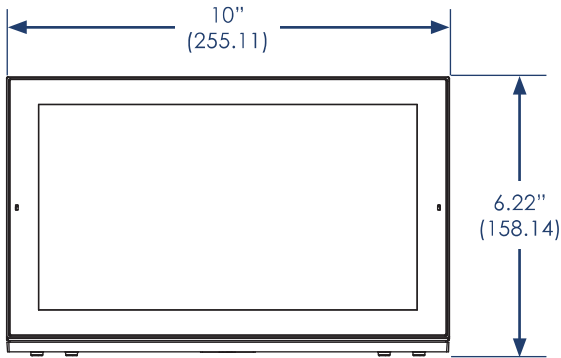
MT-1002  
(Isometric View)



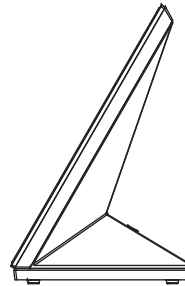
MT-1002  
(Isometric View)



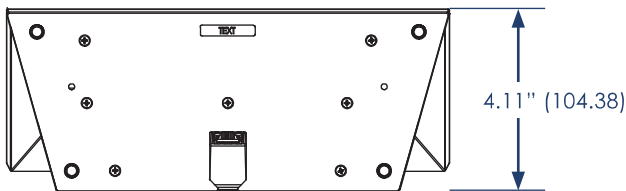
MT-1002  
(Top View)



MT-1002  
(Front View)



MT-1002  
(Right View)



MT-1002  
(Bottom View)



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## AMX DXLite 4K60 Transmitter

4K60 4:4:4 transmitter which supports up to four sources via traditional HDBaseT  
DXL-TX-4K60 (FG1010-311)

Front



Rear



### Overview

AMX DXLite transmitters and receivers leverage HDBaseT technology to distribute audio, video, and USB 2.0 over a single category cable. AMX DXLite supports 4K60 4:4:4, HDCP 2.2, and HDR video, providing compatibility with the latest source devices and displays. DXLite can be used point-to-point (with a transmitter connected directly to a receiver over a single cable) or be used for distant transport in conjunction with an AMX Incite All-in-One Presentation Switcher.

The onboard USB 2.0 available on the DXLite allows for easy distribution of USB signals between the transmitter and receiver. A USB device, such as an AMX Acendo Vibe conferencing soundbar, can be mounted at the display and connected to a DXLite receiver. A laptop can then connect to the transmitter at the table, with USB and video distributed over category cable.

### Common Applications

Ideal for supporting cost-effective conferencing in BYOD meeting environments.

### Features

- **4K60 4:4:4 and HDCP 2.2 Support over HDBaseT with Display Stream Compression (DSC)**– Visually lossless compression and future-proof support
- **Power over HDBaseT** – Can be powered from HDBaseT inputs which means there is no need for an additional power source at the table
- **USB 2.0 Transmission** – Connect devices such as cameras, keyboard, mouse and other USB devices
- **Compatible** – With the AMX Incite presentation switcher and DXLite RX



**Specifications – Subject to Change**

<b>General</b>	
Dimensions	3.55 in (9.02 cm) depth 9.6 in (24.5 cm) width 1 in (2.5 cm) height
Weight	Approx. 1.45 lbs. (.66 kg)
Shipping Weight	TBD
Mounting Options	Includes V-Style surface mount brackets
AMX Products Compatible with DXLink RX:	Incite, DXLite RX, DVX
MTBF	TBD
Airflow	Convection (openings on top, sides and bottom of case)
Approvals: Regulatory Compliance	CE, FCC, NRTL, RoHS, WEEE
Twisted Pair Cable Type	Shielded Cat6, Cat6A and Cat7 / Shielded Cat6A and Cat7
Twisted Pair Cable Length	Up to 328 ft. (100 m)
Included Accessories	2x3P-3.5MM Phoenix Connectors 1x2P-3.5MM Phoenix Connectors 1x 12V/2A Power Adapter 1xIR Receiver 1xUS exchangeable adapters 1xEU exchangeable adapters 1xUK exchangeable adapters 2x mounting ear 4x M2.5 screw (for mounting ears)
<b>HDBaseT</b>	
HDBaseT Layer Throughput (Max)	10.2 Gbps
Important Notice	DXLink/DXLite twisted pair cable runs for DXLink/DXLite equipment shall only be run within a common building.
Note	Specifications are subject to change.
<b>Active Power Requirements</b>	
AC Power: Power Consumption, Local 12V	12 VDC 2A Max Output; 100-240V 50/60Hz AC Input
Supplied (Max)	6.3 w
Power Connector	Screw Down Locking Power Connector
HDBaseT Power	Power Supplied From a HDBaseT Receiving Device If Available
<b>Environmental</b>	
Temperature (Operating)	32° F to 122° F (0° C to 50° C)
Temperature (Storage)	14° to 140° F (-10° to 60° C)
Humidity (Operating)	10% to 90% RH (non-condensing)
Humidity (Storage)	10% to 90% RH (non-condensing)
Thermal Dissipation, Local 12V Supplied (max):	21 BTU/hr.
<b>Back Connectors</b>	
Local Power	Screw Down Locking Power Connector
HDBaseT Output Serial	RJ-45
Serial	3 Position 3.5mm Pluggable Phoenix Terminal
HDMI Input	HDMI Type A Female
USB 2.0 HDBaseT Pass-through	(4) USB Type A Connectors for USB Peripheral Devices (1) USB 2.0 Type B Connector For Host Device Either Host or Peripheral Devices Active Based on Front USB Switch Selection
IR RX	3.5mm Mini-Stereo Jack
IR TX	3.5mm Pluggable Phoenix Terminal Block

Front Indicators	
Power Indicator	Green LED, Solid ON when power is applied
Status	Green LED, blinking
HDCP Indicator	Yellow LED, Blinking when Non-HDCP, Solid ON when HDCP
Link	Green LED, Solid ON when linked to HDBaseT Transmission Source

Controls and Indicators	
USB Mode Selection	Settable USB Directional Control - Enables USB Host Device or Peripheral Device For USB 2.0 Pass-through Over HDBaseT

HDMI	
Compatible Formats	HDMI , HDCP, DVI (DVI requires conversion cable)
Signal Type Support	HDMI, DVI-D (Single Link with a DVI-HDMI Cable Adapter) DisplayPort++ (input only with HDMI cable adapter)
Input Signal Type	HDMI, HDCP DVI
Data Rate (Max)	18 Gbp
Pixel Clock (Max)	Up to 600 MHz
Progressive Resolution Support	480p up to 4096 x 2160@ 60 Hz*
HDR Support	HDR 10 Dolby Vision (with data rate under 10.2 Gbps) if supported by RX device
Color Space Support	RGB 4:4:4 , YCbCr 4:4:4, 4:2:2, and 4:2:0
HDBaseT 4K Format Support	3840x2160p@24/25/30/60 Hz, 4:4:4 4096x2160p@24/25/30 3840x2160p@50/60 Hz, 4:2:0 4096x2160p@50/60 Hz, 4:2:0
Audio Format Support	Dolby TrueHD, Dolby Digital, DTS-HD Master Audio, DTS, 2 CH L-PCM, 6 CH L-PCM, 8 CH L-PCM Dolby Digital and DTS support up to 48kHz, 5.1 channel
HDCP Support	Yes HDCP 1.4, 2.2

Signal Transport - HDBaseT	
Connector	(1) RJ-45
Supported Signal Styles	Digital video, audio, bidirectional control, USB 2.0 and power
Transport Layer Throughput (Max)	10.2 Gbps
Input Formats	Supports 4K60 4:4:4 HDMI 2.0, HDCP 2.2., embedded audio, power, bi-directional control and USB 2.0 pass-through
Twisted Pair Cable Type	Shielded Cat6, Cat6A and Cat7 HDBaseT cable runs for equipment shall only be run within a common building where common building is defined as: The walls of the structure(s) are physically connected and the structure(s) share a single ground reference

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# DXLite 4K60 4:4:4 Receiver

DXL-RX-4K60 (FG1010-505)



## Overview

The DXLite 4K 4:4:4 Receiver is a 4K and Ultra High Definition (UHD) capable distance transport solution designed to work with AMX Incite Digital Video Presentation Switchers. The DXLite receives audio, video, power, and control, from the distance transport (RJ-45) output on the Incite Switcher and connects to the output display, projector, or other output device via HDMI.

Note: For integrated central control use NCITE-813AC, the other models do not include an integrated central controller.

## Common Applications

Join together the DXLite 4K 4:4:4 Receiver with an Incite Digital Video Presentation System to deliver an outstanding experience in university lecture halls and theaters, corporate and government boardrooms and meeting spaces, hotel boardrooms, or anyplace serving the needs of a presenter. Incite delivers precision video, supports new and legacy visiting devices, provides professional presentation transitions and windowing features, and promises the best audio on the market, making it the ideal solution for any high use presentation area.

## Features

- **4K/60 4:4:4 Support** – Incite supports today's 4K content without modifying the color space or reducing the frame rate.
- **HDMI 2.0 and HDCP 2.2 Support** – By incorporating HDMI 2.0 and HDCP 2.2, Incite is compatible with all the latest 4K sources and displays.
- **Only One Cable** – Receive audio and video while passing control, USB 2.0, and power over one twisted pair cable.
- **USB 2.0** – Utilize the DXLite path for a convenient way to connect USB 2.0 devices such as HID compliant keyboard and mouse, monitors, and projectors, as well as web cameras, microphones and storage devices.
- **Native NetLinx® Control Everywhere** - Control connected destination devices using the built-in IR and RS-232 ports
- **Standard Twisted Pair Cable** – Save time and effort in installation by leveraging cost effective twisted pair cable, see the Cabling for Success with DXLink white paper for more details

\*AMX only supports the following DXLink Power sourcing devices for the DXL-RX-4K60: NCITE-813, NCITE-813A, NCITE-813AC, PS-POE-AT-TC High Power PoE Injector, and PDXL-2 Power over DXLink Controller. AMX only supports the use of these approved Power over DXLite solutions. Other third party power supplies or non-compatible standard PoE solutions may damage the DXLite equipment. The DXLink HDMI 4K RX can also be powered via the included desktop power supply (ENERGY STAR® qualified) with power cord.

## Specifications

GENERAL	
Dimensions (HWD)	TBD
Weight	TBD
Mounting Options	Compatible with all V Style versatile mounting options including rack, surface or pole (for V Style Mounting kits, see <a href="http://www.amx.com">www.amx.com</a> )
Compatible AMX Products	<ul style="list-style-type: none"> <li>• Incite</li> <li>• PS-POE-AT-TC, High Power PoE Injector</li> <li>• PDXL-2, Power over DXLink Controller</li> </ul>
MTBF	TBD
Regulatory Compliance	TBD RoHS WEEE
Included Accessories	<p>Desktop power supply (ENERGY STAR® qualified): 1 per module</p> <p>Unless using DXLink Power as described above, only the provided desktop power supply should be used, and it must not be altered in any way</p>
Recommended Accessories	<ul style="list-style-type: none"> <li>• AVB-VSTYLE-SURFACE-MNT, V Style Module Surface Mount (FG1010-722)</li> <li>• AVB-VSTYLE-RMK-1U, V Style Module Tray (FG1010-720)</li> <li>• AVB-VSTYLE-RMK-FILL-1U, V Style Module Tray w/fill Plates (FG1010-721)</li> <li>• AVB-VSTYLE-POLE-MNT, V Style Module Pole Mount (FG1010-723)</li> <li>• CC-NIRC, NetLinx IR Emitter Cable (FG10-000-11)</li> <li>• IR03, External IR Receiver Module (FG-IR03)</li> <li>• PS-POE-AT-TC High Power PoE Injector (FG423-84)</li> <li>• PDXL-2 Power over DXLink Controller (FG1090-170)</li> </ul>

DXLINK	
Transport Layer Throughput (Max)	10.2 Gbps (DSC visually lossless compression allows 4K60 4:4:4 to pass through 10.2 Gbps path)
Twisted Pair Cable Type	<p>Shielded Cat6A and Cat7</p> <p>DXLite twisted pair cable runs for DXLink equipment shall only be run within a common building where a common building is defined as: the walls of the structure(s) are physically connected and the structure(s) share a single ground reference</p> <p>For more details and helpful cabling information, reference the white paper titled <i>Cabling for Success with DXLite</i>, or contact your AMX representative</p>
Twisted Pair Cable Length	<p>Up to 262 ft. (80 m) for full 4K format support Up to 328 ft. (100 m) for 1080p and below format support</p> <p>DXLite twisted pair cable runs for DXLink equipment shall only be run within a common building where a common building is defined as: the walls of the structure(s) are physically connected and the structure(s) share a single ground reference</p>

	For more details and helpful cabling information, reference the white paper titled Cabling for Success with DXLite, or contact your AMX representative
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ACTIVE POWER REQUIREMENTS	
AC Power	TBD
DXLink Power	Power can also be supplied by a DXLite Power sourcing device such as NCITE-813, NCITE-813A, NCITE-813AC, PS-POE-AT-TC High Power PoE Injector (FG423-84), and PDXL-2 Power Controller (FG1090-170). AMX does not support the use of any other power supplies or PoE injectors as these may potentially damage the DXLink equipment.  AMX only supports the use of these approved Power over DXLite solutions. Other third party power supplies or non-compatible standard PoE solutions may damage the DXLite equipment.
Power Consumption, Local 12 V Supplied (max)	TBD
Power Consumption, Enova DXLink Power Consumed (max)	TBD
Power Connector (Module only)	2.1 mm DC Power Jack (for optional local DC power) DXLink Power connector is included on DXLink connection

POWER SUPPLY	
External, Included	Each TX ships with a desktop power supply (ENERGY STAR® qualified) with power cord Unless using DXLite Power as described above, only the provided desktop power supply should be used, and it must not be altered in any way.
External, Optional	Power can also be supplied by a DXLite Power sourcing device such as NCITE-813, NCITE-813A, NCITE-813AC, PS-POE-AT-TC High Power PoE Injector (FG423-84), and PDXL-2 Power Controller (FG1090-170). AMX does not support the use of any other power supplies or PoE injectors as these may potentially damage the DXLink equipment.  AMX only supports the use of these approved Power over DXLite solutions. Other third party power supplies or non-compatible standard PoE solutions may damage the DXLite equipment.

ENVIRONMENTAL	
Temperature (Operating)	32° to 104° F (0° to 40° C)
Temperature (Storage)	-22° to 158° F (-30° to 70° C)
Humidity (Operating)	5% to 85% RH (non-condensing)
Humidity (Storage)	0% to 90% RH (non-condensing)
Thermal Dissipation, Local 12 V Supplied (max)	TBD
Thermal Dissipation, Enova DXLite Power Supplied (max)	TBD

BACK CONNECTORS	
Local Power	2.1 mm DC Power Jack
DXLite Connection	RJ-45
Serial	3.5mm Pluggable Phoenix Terminal Block

	Bidirectional RS-232 Standard NetLinx Baud Rate 1200 to 115k Parity support: Odd/Even/None
IR Control	Port (IR RX) for use with IR03 Receiver (Optional Accessory FG-IR03) Port (IR TX) for use with CC-NIRC Emitter (Optional Accessory FG10-000-11)
IR TX	3.5mm Pluggable Phoenix Terminal Block Port for IR01 Emitter (Optional)
USB 2.0 Pass-through	USB Type A Connector. Connect a PC to an Incite, and a USB 2.0 compliant device to the DXLite RX to pass-through USB path (for example, for use of a keyboard and mouse)
HDMI Output	HDMI Type A Female

<b>CONTROLS &amp; INDICATORS</b>	
Video Indicator	Green LED on DXLite RJ45 indicates a link with an uplink stream device
HDCP	Yellow LED on DXLite RJ45; when blinking indicates unprotected content, solid yellow indicates HDCP

<b>HDMI</b>	
Compatible Formats	HDMI , HDCP, DVI (DVI requires conversion cable)
Signal Type Support	HDMI DVI-D (Single Link with a DVI-HDMI Cable Adapter) DisplayPort++ (input only with HDMI cable adapter)
Output Signal Type	HDMI DVI-D (Single Link with Cable Adapter)
Output Connector	HDMI Type A Female
Output Re-clocking	Yes
Propagation Delay (Typical)	5 microseconds
Video Data Rate (max)	18 Gbps (Max)
Video Pixel Clock (max)	Up to 600 Mhz
Output Format	Matched to incoming DXLite video resolution up to 4K60 4:4:4 HDMI 2.0, HDCP 2.2
HDCP Support	Yes, including HDCP 1.x and HDCP 2.2

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## Summary

The Solstice Pod provides industry-leading wireless collaboration that improves meeting start-up times, participant engagement, and meeting room productivity. Solstice supports a broad range of room configurations and is fully IT-compliant, enterprise-secure, and scalable to any number of spaces. The Gen3 Pod delivers the most powerful, flexible platform for proximate meetings through a consistent and contemporary collaboration experience for every user across every meeting space.



## Key Capabilities

- Wireless 'Bring Your Own Meeting' solution
- Supports Windows, macOS, Android, and iOS devices, with browser-based support for Chromebook and Linux
- Solstice collaboration app
  - Share desktop, application windows, videos or images
  - Intuitive drag-and-drop UI
  - Customizable layout control
- Multiple app-free sharing options including
  - AirPlay
  - Miracast
  - Browser sharing
  - Wired HDMI input
- Touchless markup and annotation
- Screen key authentication
- Session moderation
- Supports up to two displays at 1080p, or supports a single touch and up to 4K UHD display

## Additional Features and Integrations

- Agnostic room support for all major conferencing services such as Teams, Zoom, and GoToMeeting
- Wireless support for USB A/V room devices
- HTML-based digital signage playback
- Room and personal calendar integration
- Active video routing capabilities available with additional subscription
- API for third party integrations

## IT Management & Security

- Secure support for up to 5 networks
- Remote cloud-based management
- Global deployment monitoring and alerts
- Meeting analytics and insights
- Support for network protocols such as 802.1x
- Quality of Service (QoS)
- Annual penetration testing

# Pod Hardware and Technical Specs

Click to download files: [CAD](#) | [BIM](#) | [Visio](#)



Part #: SP-8000-E1, SP-8100-E1

## Hardware Ports

- Gigabit Ethernet with PoE+ support
- Power supply, DC 12V at 2 Amps (not included, order if needed)
- 2x HDMI out
- HDMI in (note: HDCP support can be enabled)
- Stereo out (3.5mm), 8-channel 7.1 surround sound
- 2x USB 3.0
- 1x USB-C

## Dimensions

Hardware Type	Compute Console
Size	184.2mm x 86.2mm x 26.3mm
Weight	0.75 lbs (340g)

## Technical Specifications

Processor	Qualcomm Snapdragon™ 820, quad-core Kryo™ CPU
Graphics Processor	Adreno™ 530
Internal Storage	4GB RAM, 16GB eMMC Flash Storage
Ethernet	RJ45 Gigabit
Wireless	Dual band, 802.11ac 2x2 MIMO
Streaming Video Support	4K (4096 x 2160 @ 30Hz), HD (1920x1080 @ up to 60Hz), SD (1280x720 @ up to 60Hz)
Output	HDMI 2.0 for HDMI1 with Audio (8-channel 7.1 surround sound), HDMI 1.4 for HDMI2 with Audio (8-channel 7.1 surround sound), Stereo output
Input	HDMI 1.4b
I/O	2x USB 3.0, USB-C port
Operating Temperature (Ambient)	0° C (32° F) to 50° C (122° F)
Power Input	UL/IEC/EN Certified power source of 12VDC, 2A (PS2/LPS) rating with barrel connector of 5.5mm outer diameter, 2.1mm inner diameter, center positive polarity OR PoE+ source compliant to IEEE 802.3 at Type 2
Avg. Power Consumption	6-10W
Power Efficiency Level	VI
Adaptor	Switching 100-240VAC, 50/60Hz, changeable plug type (international support)
Adaptor Region Support	US, EU, AK, AUS





## Testing and Certifications

Warranty	Limited 1-year manufacturer's hardware warranty with option to extend to 3 years
Certifications	ANRT, BSMI, CCC, CE, EAC, ETA, FCC, IEC CB Scheme, IMDA, KC, MIC-T, MIC / VNTA, MOC, NOM, NTC, RCM, RoHS, SRRC, UL, TAA compliant (upon request)
Accessibility	WCAG 2.0 AA Compliant. Full VPAT document available <a href="#">here</a> .

## WiFi/Transmission Specifications

Frequency Bands	Bluetooth Classical: 2402MHz - 2480MHz BLE: 2402MHz - 2480MHz 2.4GHz WIFI: 20MHz BW: 2412MHz - 2472MHz 40MHz BW: 2422MHz - 2462MHz 5GHz WIFI: 20MHz BW: 5180MHz - 5240MHz, 5260MHz - 5320MHz, 5500MHz - 5700MHz 40MHz BW: 5190MHz - 5230MHz, 5270MHz - 5310MHz, 5510MHz - 5670MHz 80MHz BW: 5210MHz, 5290MHz, 5530MHz - 5610MHz
Transmit Power/Power Range	Bluetooth Classical: 12.50dBm EIRP BLE: 4.81dBm EIRP 2.4GHz WIFI: 20MHz BW: 15.90dBm EIRP 40MHz BW: 15.93dBm EIRP 5GHz WIFI: 20MHz BW: 15.84dBm EIRP 40MHz BW: 15.72dBm EIRP 80MHz BW: 15.41dBm EIRP

## How to Buy

Please contact [sales@mersive.com](mailto:sales@mersive.com) for purchase options.





## Architects and Engineers Specs

The Solstice Pod is designed for two primary use cases:

1. Enabling wired or wireless content streaming and/or device screen sharing to an in-room display over the LAN or a P2P connection. Connection is made via the Solstice user app supporting Windows, MacOS, Android, and iOS devices. Alternate connection methods include Airplay, Miracast, browser sharing and wired HDMI input.
2. To wirelessly connect web-based soft codec conferencing applications installed on a meeting host's laptop with in-room audio and video devices, as well as the in-room display. Connection to the Solstice Pod can be controlled via a random 4-digit code displayed on the splash screen.

The Solstice Pod utilizes an Ethernet network and/or internal wireless NIC to support up to 5 networks. Configuration is achieved via Solstice Cloud (cloud-based management portal) or Solstice Dashboard (LAN-based management tool). Limited local configurations can be made via USB 3.0 ports on the back of the Pod.

The Solstice Pod can be powered by any UL/IEC/EN Certified power source of 12VDC, 2A (PS2/LPS) rating with barrel connector of 5.5mm outer diameter, 2.1mm inner diameter, center positive polarity OR a PoE+ source compliant to IEEE 802.3 at Type 2. Mersive can also provide a DC 12V @ 2 Amps power supply designed for the Gen3 Pod (not included, order if needed).

The Solstice Pod is equipped with two USB 3.0 type A ports on the back of the Pod. The Solstice Pod can receive camera or microphone input from a supported USB A/V device via a USB 3.0 connector or USB 2.0 connector. The Solstice Pod can transmit the audio and video streams to the meeting host laptop wirelessly over the LAN.

The Solstice Pod supports HDMI output connectivity to up to two in-room displays. The Solstice Pod supports output resolutions up to 4K when connected to a single display via HDMI 1 port, or output resolutions up to 1080p when connected to a single display via HDMI 2 port, or output resolutions up to 1080p when connected to two displays using both HDMI 1 and HDMI 2 ports.

The Solstice Pod sends audio out (7.1 surround sound) over the connected HDMI port. When connected to two displays, the Solstice Pod will send audio out over the inner HDMI 2 port. Additionally, the Solstice Pod supports a stereo out (3.5mm) audio out connection.

Solstice Pods support HDCP 1.4 via the HDMI in port (Gen3 Pod; serial #MPOD8000A2xxxxxx or higher).

The Solstice Pod can display a room or personal calendar by integrating with Microsoft Exchange, Microsoft O365, Google Workspace Calendar, or other third-party calendar applications via API.

# Indoor 5-1000 MHz Splitters

SXRS Series & SCVS Series



SXRS-2



SXRS-3



SXRS-4



SXRS-8

## ○ Features & Benefits

- Superior Performance to 1000 MHz
- 2,3,4, 6 (SCVS Only) and 8 Way Models
- Die Cast Housing
- RFI Shielding 120 dB
- Built-in Ground Block



SCVS-2



SCVS-3



SCVS-4



SCVS-6



SCVS-8

## ○ Specifications

Electrical	SCVS/SXRS-2	SCVS/SXRS-3	SCVS/SXRS-4	SCVS-6	SCVS/SXRS-8
Number of Outputs:	2	3	4	6	8
Frequency Range (MHz):	5-1000	5-1000	5-1000	5-1000	5-1000
Splitter Loss (dB) (max)					
5-500 MHz:	3.6	6.1	7.0	9.5	10.5
500-860 MHz:	3.8	6.2	7.5	10.0	11.5
860-1000MHz:	4.2	6.8	8.0	11.0	12.0
Input Return Loss (dB) (min):					
5-40 MHz:	16	16	16	16	16
40-500 MHz:	22	20	20	18	20
500-860 MHz:	20	20	18	18	18
860-1000 MHz:	18	16	16	18	16
Isolation Between Outputs (dB) (min):					
5-40 MHz:	22	22	22	25	22
40-500 MHz:	26	25	25	28	25
500-860 MHz:	26	25	25	23	25
860-1000 MHz:	24	21	22	21	21

## ○ Ordering Information

Model	Stock No.	Description	Model	Stock No.	Description
SCVS-2	1902	Splitter, 2 Way Solder Back, 5-1000 MHz, L Style	SXRS-2	1922	Splitter, 2 Way Solder Back, 5-1000 MHz, In-Line Style
SCVS-3	1903	Splitter, 3 Way Solder Back, 5-1000 MHz, L Style	SXRS-3	1923	Splitter, 3 Way Solder Back, 5-1000 MHz, In-Line Style
SCVS-4	1904	Splitter, 4 Way Solder Back, 5-1000 MHz, L Style	SXRS-4	1924	Splitter, 4 Way Solder Back, 5-1000 MHz, In-Line Style
SCVS-6	1906	Splitter, 6 Way Solder Back, 5-1000 MHz, L Style	SXRS-8	1928	Splitter, 8 Way Solder Back, 5-1000 MHz, L Style
SCVS-8	1908	Splitter, 8 Way Solder Back, 5-1000 MHz, L Style			



**Configuration:**

LT-800-072-01 Stationary RF Transmitter (72 MHz) (North America)

**Product Overview:**

Offering outstanding audio clarity and 57 selectable channels, the LT-800 is a perfect RF transmitter choice for a wide range of applications. Connected to your main audio system, the LT-800 broadcasts strong, reliable audio to both belt pack receivers and stationary receivers, ideal for providing listeners with the best possible assistive listening experience. Antenna not included.

**Highlights:**

- Look & Listen (TM) LCD display for quick channel, programming, and channel lock status information
- Balanced and unbalanced audio inputs allow for use with any audio source
- Built-in auto processor optimizes audio (voice or music) prior to transmission
- 57 available, selectable channels
- VU level meter and test tone for simple installation and set up
- 30-day, no-obligation demonstration available for your venue or business

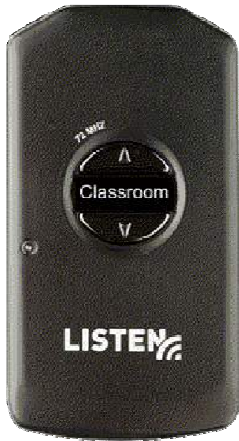
**Includes:**

- One (1) LT-800 Stationary RF Transmitter (72 MHz)
- One (1) LA-207 Power Supply for LT-800
- One (1) Quick reference card

Product Specification: Stationary RF Transmitter (72 MHz)	
<b>Audio</b>	
Frequency Response	50 Hz - 15 kHz ( $\pm 3$ dB)
Signal-to-Noise Ratio	SQ enabled 80 dB, SQ disabled 60 dB
Audio Input 1	Rear panel, one (1) Female XLR or 1/4 in combo connector, balanced, 0 / -55 dBu (line/mic) nominal input level adjustable, +21 / -30 dBu (line/mic) maximum input level, impedance 20k / 1k ohm (line/mic), phantom power +12 VDC
Audio Input 2	Rear panel, two (2) phono connectors, unbalanced, -10 / +10 dBu nominal input level adjustable, +30 dBu maximum, impedance 100k ohm
Audio Processing	Compression can be turned on/off, slope internally adjustable from 1:1 to 4:1, default 2:1
Contour	Cuts and boosts frequencies above 5 kHz
Distortion	< 2% total harmonic distortion (THD) at 80% deviation
Audio Output	Input 1 and input 2, mixed output (rear panel), two (2) phono connectors, unbalanced, -10 dBu nominal output level, +15 dBu maximum, impedance 10 ohm
Headphone Output	Front panel, one (1) 3.5 mm (0.14 in.) stereo connector, unbalanced, adjustable output level, +3 dBu maximum, impedance 10 ohm
<b>Controls</b>	

Product Specification: Stationary RF Transmitter (72 MHz)	
User Controls	Front Panel: Power, test tone on/off, channel up/down, input levels, mix level, contour, monitor volume control Rear Panel: Input 1 Level, (Line, Mic, Mic-Phantom Power), Input 2 level (-10 / +10 dBu), RF power level (low, mid, high)
Internal Adjustments	Compression ratio for audio processor
Programming	SQ on/off, process on/off, channel lock
<b>Indicators</b>	
LCD	Channel designation, lock status, RF power level, programming (front panel)
Audio Input Status LEDs	Indicates Input 1, Input 2, and Mix audio levels; 10 segment LED's (8 green, 2 red)
Processing	Indicated by a green LED when on (front panel)
Test Tone	Red LED illuminates when test tone is enabled.
RF Power	Indicated on the LCD (low, mid, high)
<b>RF</b>	
Frequency Range	72.025 - 75.950 MHz
Number of Channels	17 wide band, 40 narrow band
Frequency Accuracy	± .005% stability +32° to +122 °F (0° to +50 °C)
Antenna Type	Various antennas available
Transmitter Stability	50 PPM
Transmission Range	Up to 305 m (1,000 ft.)
Antenna Connector	BNC, 50 Ohms (Use RG-58 < 100 ft or RG-8 > 100ft)
Output Power	80,000 uV at 3 m
Number of Simultaneous Transmitters	Up to 8
<b>Power</b>	
Power Supply	In line power supply, Listen part number LA-207 (Line cord is determined by the each Country's AC power standards)
Power Supply Input	100-240 VAC, 50-60 Hz, 0.4 A
Power Supply Output	12 VDC, 1.3 A, 15.6 W
Power Supply Connector	0.02 in (5.0 mm) OD, 0.01 in. (2.5 mm) ID, barrel type
Compliance	UL, CE, GS, TÜV, RoHS
<b>Physical</b>	
Width	21.5 cm (8.50 in.)
Height	4.5 cm (1.75 in.)
Depth	23 cm (9.13 in.)
Color	Black with grey silk screening
Unit Weight with Power Supply	1.6 kg (3.5 lbs.)
Shipping Weight	2.7 kg (6.0 lbs.)
Rack Mounting	One (1) rack space height, 1/2 rack space wide. One (1) or two (2) transmitters can be mounted in one rack space, optional rack mount (LA-326)
Weight	1.2 kg (2.6 lbs.)
<b>Environmental</b>	

Product Specification: Stationary RF Transmitter (72 MHz)	
Temperature - Operation	-10 °C (14 °F) to +40 °C (104 °F)
Temperature - Storage	-20 °C (-4 °F) to +50 °C (122 °F)
Relative Humidity	0 to 95% relative humidity, non condensing
<b>Compliance</b>	
Safety	RoHS
RF	FCC Part 15, Part 90, Industry Canada



**Configuration:**

LR-4200-072 Intelligent DSP RF Receiver (72 MHz)

**Product Overview:**

The LR-4200-072 receiver from Listen Technologies offers outstanding audio clarity and quality with the best range and reception in its class.

Part of our Intelligent Digital Signal Processing (iDSP) line, the LR-4200-072 is the smallest device of its kind, resulting in a compact unit that won't burden the end user. An integrated neck loop/lanyard makes each receiver easy to wear, and the DSP loop driver offers an improved listening experience for anyone with a T-coil-equipped hearing aid. Dual 3.5mm output jacks also allow receivers to be shared between users.

Each receiver is equipped with a micro USB connection which can be used with free [iDSP software](#) for charging, set up, programming, inventory management and firmware updates.

Extended speaking sessions, presentations and more can be challenging for other devices, but the LR-4200-072 incorporates advanced Lithium-ion rechargeable batteries that offer long life and reliable power. Charge status, along with channel information and volume level, are easy to read on the integrated OLED display.

From classrooms to boardrooms, conferences and more, the LR-4200-072 is an outstanding receiver choice for any venue looking to offer convenient, reliable assistive listening.

**Highlights:**

- High-performance RF receiver offering best-in-class sensitivity and 20dB less noise than other devices
- Integrated neck loop/lanyard with DSP loop driver for an enhanced T-coil listening experience
- Smallest device of its kind makes it easier to wear and use and for venues to dispense, store and maintain
- OLED display showing channels, battery status, channel status, volume level, and more
- Lanyard and belt clip options offer convenient and discreet choices for the end user
- Advanced rechargeable battery technology eliminates the costs and hassles associated with frequent battery replacement
- Designed for single-channel applications

**Includes:**

One (1) LR-4200-072 Intelligent DSP RF Receiver (72 MHz)\* \*The LR-4200-072 comes with a quick start guide and a non-proprietary field replaceable Lithium-ion battery.

Product Specification: Intelligent DSP RF Receiver (72 MHz)	
Audio	
System Distortion	< 2% total harmonic distortion (THD) at 80% deviation
Output/s	Two (2) 3.5 mm (0.14 in.) connectors, unbalanced, 0 dBu nominal output level, 16 mW maximum, impedance 32 ohm

Product Specification: Intelligent DSP RF Receiver (72 MHz)	
System Frequency Response	50 Hz - 15 kHz ( $\pm 3$ dB)
System Signal to Noise Ratio	SQ enabled 80 dB, SQ disabled 60 dB
<b>Controls</b>	
User Controls	Power, up/down volume
Programming	Via software and USB port
Set-up Controls	Press and hold up/down volume buttons for 5 seconds to enter channel adjust, use up/down to select channel
<b>Indicators</b>	
LEDs	Flashes when batteries are low or to indicate charging, solid when fully charged
Display	Channel designation, battery level, unit number, charging status
<b>RF</b>	
Frequency Range	72.0250 - 75.9500 MHz
Number of Channels	17 wide band, 40 narrow band
Sensitivity	.6uV typical, 1 uV maximum for 12 dB sinad
Frequency Accuracy	$\pm .005\%$ stability 32 to 122 °F (0 to 50 °C)
Squelch	Programmable in 20 steps, automatic on loss of RF signal
Antenna Type	Uses ear phone/neck loop lanyard and short ear phone cable or standard earphone cable
<b>Power</b>	
Power Supply	Micro USB connector, 5 V, 500 mA
Battery Type	Lithium Ion 3.7 Vdc, 1200 mAh
Battery Life	8 Hours of continuous use
Battery Charging Time	Fully charged in 2.5 Hours
<b>Physical</b>	
Color	Black
Unit Weight with Batteries	2.40 oz. (68 g)
Shipping Weight	3.20 oz. (91 g) with 1.0 lbs. (454 g) minimum
Dimensions (H x W x D)	3.75 x 2.00 x 0.64 in. (9.6 x 5 x 1.7 cm)
Unit Weight	1.60 oz. (45 g)
Dimensions with Belt Clip	3.75 x 2.00 x 0.80 in. (9.6 x 5.0 x 2.1 cm)
<b>Environmental</b>	
Temperature - Operation	14 to 104 °F (-10 to 40 °C)
Temperature - Storage	(-4) to 122 °F (-20 to 50 °C)
Relative Humidity	0 to 95% relative humidity, non-condensing
<b>Compliance</b>	
Standards	FCC Part 15, Part 90, Industry Canada, RoHS





**Configuration:**

LA-430 Intelligent Ear Phone/Neck Loop Lanyard

**Product Overview:**

Incorporating an advanced DSP loop driver for an outstanding listening experience, the LA-430 integrated neck loop provides industry-leading assistive listening for individuals with telecoil-equipped hearing aids and cochlear implants.

By providing the proper field strength and flat frequency response from the neck to the listening plane of the hearing aid, the LA-430 optimizes speech and enables a wide range of signal levels for a clear, reliable listening experience.

The integrated 3.5mm earphone jack allows the wearer to connect any of Listen Technologies' universal earphones or ear buds. The unit easily slips over the head to be worn comfortably around the neck, and it features a quick release for added safety.

From theaters to lecture halls, concert venues to classrooms and all other venues, the LA-430 makes it easy for your venue or business to meet the legal requirements for assistive listening systems while offering customers and clients an enhanced audio experience.

**Highlights:**

- Integrated neck loop incorporates our advanced DSP loop driver for an improved listening experience
- Provides the correct field strength and flat frequency response according to IEC60118-4
- 3.5mm earphone jack for compatibility with any Listen Technologies earphones or ear buds
- Compatible with all Listen iDSP receivers
- A simple and affordable way for venues to provide optimized assistive listening while meeting legislative requirements

**Includes:**

One (1) LA-430 Intelligent Ear Phone/Neck Loop Lanyard

Product Specification: Intelligent Ear Phone/Neck Loop Lanyard	
<b>Interconnections</b>	
Connection to Receiver	Male 3.5 mm (TRRS) to Male 3.5 mm (TRRS)
Connection to Short Ear Phone	Female 3.5 mm (TRS)
<b>Loop</b>	
Neck Loop Field Strength	400 mA/m (+/- 3dB)
Neck Loop Frequency Response	100Hz to 5kHz (+/- 3 dB ref 1kHz)
<b>Physical</b>	
Color	Black
Shipping Weight	1.0 lbs. (454 g)
Cord Length	31.5 in. (80 cm)
Unit Weight	2.34 oz. (66.3 g)

Product Specification: Intelligent Ear Phone/Neck Loop Lanyard	
Compliance	
Standards	RoHS, IEC60118-4



**Product Overview:**

Safely and easily transport and store up to sixteen (16) receivers with the LA-313 16-Unit Portable RF Product Carrying Case. Sturdy foam interior features individual slots for eight receivers, as well as two large pockets ideal for storing earphones and additional items. Durable latches keep the contents securely contained during transit, and the included shoulder strap offers a convenient way to carry the case to and from classrooms, conference rooms and more. (NOTE: Case not suitable as a shipping container)

**Highlights:**

- Sturdy, secure case featuring a protective foam interior
- Conveniently stores up to sixteen (16) receivers
- Interior pockets provide additional storage for earphones, cords, and accessories
- Locking latches offer additional security
- Detachable nylon shoulder strap for hands-free carrying

**Includes:**

One (1) LA-313 16-Unit Portable RF Product Carrying Case

One (1) Shoulder Strap

Product Specification: 16-Unit Portable RF Product Carrying Case (Limited Quantities)	
Physical	
Color	Grey
Material	Lockable hard case, interior foam
Shipping Weight	9.0 lbs. (5.0 kg)
Dimensions (H x W x D)	6.75 H x 18.5 W x 14.0 D in. (17.15 x 47 x 35.6 cm)
Weight	6.2 lbs. (2.8 kg)
Shoulder Strap Length	Adjustable 33 to 53 in. (83 to 135 cm)

# Cisco 550X Series Stackable Managed Switches

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### Performance & Use

- AC1200 - 300+900Mbps† speeds
- For up to 20 devices and 1200 square foot coverage
- Nighthawk® App—Easily set up and monitor your home network
- 880MHz processor delivers high-performance connectivity
- USB 2.0 port—Wirelessly access & share USB hard drive
- Great for 4K streaming, online gaming, and smart home devices
- Ultimate connectivity for latest dual band WiFi devices such as smartphones, tablets, smart TVs, and more



### Overview

The NETGEAR AC1200 Smart WiFi Router is an incredibly fast router delivering AC1200 WiFi and Gigabit Ethernet speeds. External antennas provide improved WiFi coverage for larger homes. This router offers 3x faster speed than similar 802.11n and more reliable streaming for mobile phones and tablets. It delivers the speed and reliability needed for applications such

as lag-free multiple HD video streaming, multi-player gaming, ultra-fast speed and a secure and reliable connection to the Internet. Compatible with next-generation WiFi devices and backward compatible with 802.11 a/b/g/n devices, it enables HD streaming throughout your home. With up to 300+900Mbps† speed and simultaneous dual band WiFi technology, it avoids wireless

interference, ensuring top WiFi speeds and reliable connections. These technologies also provide ultimate connectivity for the latest dual band mobile devices like iPads and iPhones. The 880MHz processor delivers high-performance connectivity, while the USB 2.0 port provides wireless access and sharing of USB hard drives.

## Speed

Speed makes HD video better. Speed makes online gaming awesome. Speed makes all your devices really go. And anyplace you need speed, with NETGEAR you got it. Extreme download speeds up to 300+900Mbps†. Next-generation 11ac WiFi with dual band technology providing whole home coverage with Gigabit wired and wireless connection. Everything you need for a fast, fast, fast connected home.



EXTREMELY FAST WIFI—Up to 300+900Mbps†

## WiFi Range

Homes come in all shapes and sizes. The NETGEAR AC1200 Smart WiFi Router with high-power external antennas provides WiFi connectivity throughout your home for all your Internet-enabled devices.



BETTER RANGE—WiFi coverage throughout your home

## Reliable Connections

Stay connected—with your devices, your media, and your friends. Simultaneous dual band WiFi provides two separate WiFi networks—2.4GHz for legacy devices and 5GHz which is less interference-prone for media streaming. The advanced QoS technology provides higher priority for media streaming, which gives you smoother HD video streaming and low-latency online gaming.



SIMULTANEOUS DUAL BAND WIFI—Reduces interference for better connections to more WiFi devices



ADVANCED QOS—Optimized for smooth HD streaming & gaming

### Sharing

Relive memories and share them with others. Find photos, videos and music stored on a shared USB hard drive and enjoy them on your DLNA TV right from your couch. If it's secure and shared storage access you want NETGEAR has easy ways to do it.



DLNA®—Find & play your media on DLNA TVs & game consoles



READYSHARE® USB ACCESS—Wirelessly access & share USB hard drives via one (1) USB port

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### Ease Of Use

Start enjoying your new device faster than ever. NETGEAR wants to make sure installation and management is simple & easy, so you can connect quickly & make sure you stay that way!



EASY INSTALL—Easy setup for iPad®, tablets & smartphones



NIGHTHAWK® APP—Easily set up and monitor your home network



PUSH 'N' CONNECT—Easy push button WiFi connections (WPS)



WiFi & POWER ON/OFF—Convenient power savings

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### Security

Ensure your privacy & keep your family safe while online. NETGEAR has you covered.



GUEST NETWORK ACCESS—Separate & secure access for guests



SECURE WIFI CONNECTIONS—Standards-based WiFi Security (802.11i, 128-bit AES encryption with PSK)



PERSONAL FTP SERVER—Customized free URL to create FTP server



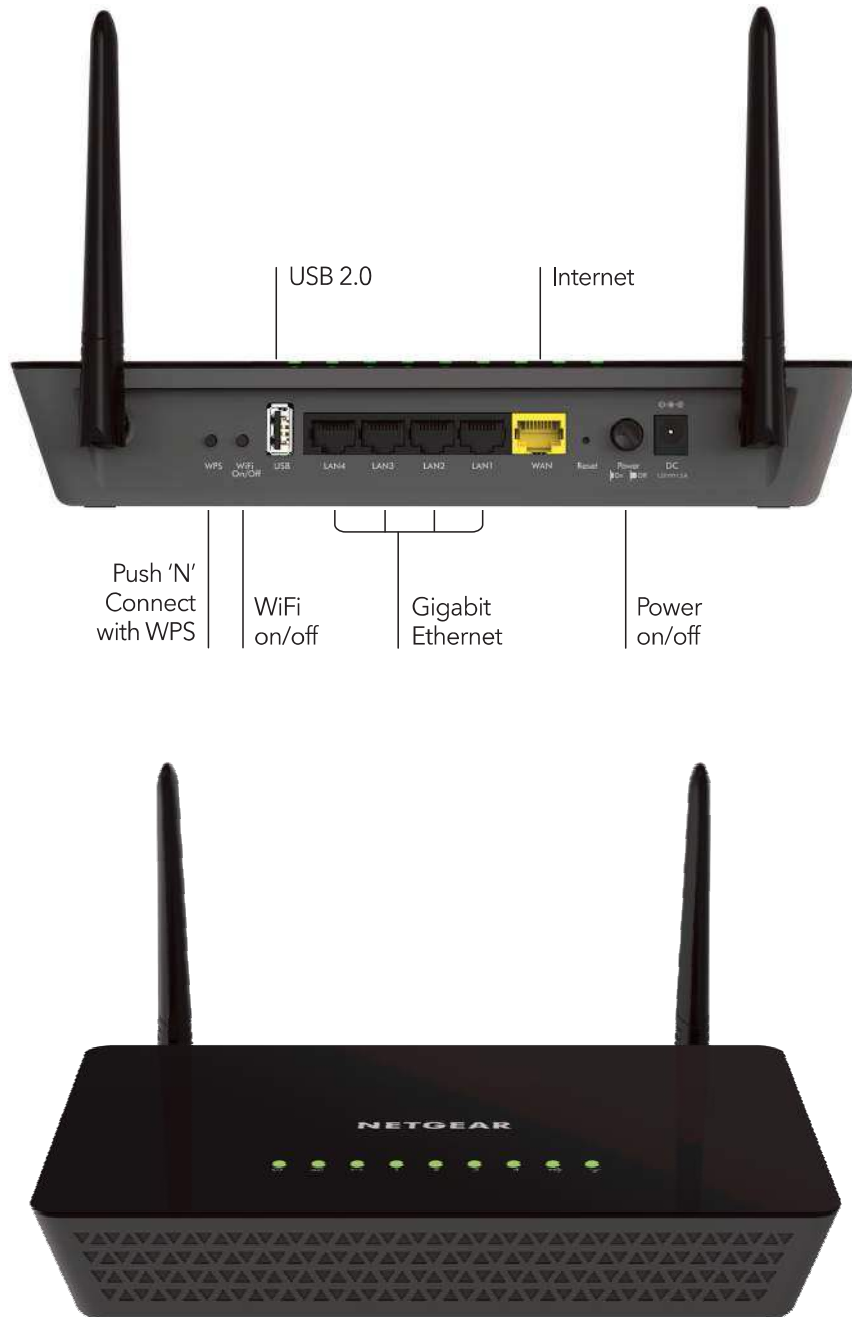
### Nighthawk® App

The Nighthawk® App makes it easy to set up your router and get the most out of your WiFi. With the app, you can install your router in few steps—just connect your mobile device to the router network and the app will walk you through the rest. Once set up, you can use the intuitive dashboard to pause the Internet on your connected devices, run a quick Internet speed test, and much more!

- Anywhere Access—Easily monitor your home network anytime, anywhere
- Internet Speed Test—Check the broadband speeds from your service provider
- Pause Internet—Pause the Internet to any device
- Traffic Meter—Track Internet data usage
- Guest Networks—Setup separate WiFi access for guests
- Quick Setup—Get connected in just minutes
- Get it at [nighthawk-app.com](http://nighthawk-app.com)



### Connection Diagram



**Package Contents**

- AC1200 Smart WiFi Router (R6220)
- Ethernet cable
- Quick start guide
- Power adapter, localized to country of sale

**Physical Specifications**

- Dimensions: 239.65 x 181.45 x 40.6 mm (9.43 x 7.14 x 1.59 in)
- Weight: 385 g (0.84 lb)

**Technical Specifications**

- AC1200 (300+900Mbps)<sup>†</sup>
- Simultaneous Dual Band WiFi—2.4 & 5 GHz
- WiFi transmitters/receivers (Tx/Rx) - 2x2 (2.4GHz) + 2x2 (5GHz)
- Powerful 880MHz processor
- WiFi Boost with high-power radio amplifiers
- Memory: 128 MB flash and 128 MB RAM
- Advanced Quality of Service (QoS)
- IPv6 Support (Internet Protocol Version 6)

**Standards**

- One (1) USB 2.0 port
- IEEE® 802.11 b/g/n 2.4GHz
- IEEE® 802.11 a/n/ac 5GHz
- Five (5) 10/100/1000Mbps (1 WAN and 4 LAN) Gigabit Ethernet ports with auto-sensing technology

**Security**

- Standards-based WiFi Security (802.11i, 128-bit AES encryption with PSK)
- Double firewall protection (SPI and NAT firewall)
- Denial-of-service (DoS) attack prevention
- Free custom URL using NETGEAR Dynamic DNS service

**System Requirements**

- Microsoft® Windows® 7, 8, 10, Vista®, XP®, 2000, Mac OS®, UNIX®, or Linux®
- Microsoft® Internet Explorer® 5.0, Firefox® 2.0, Safari® 1.4, or Google Chrome™ 11.0 browsers or higher
- Use laptop with 2x2 300Mbps adapter like Centrino® 6205/6235, 3x3 450Mbps adapter like Centrino® 6300/5300, or 802.11ac adapter like NETGEAR A6210 for maximum performance

**Warranty**

- [www.netgear.com/warranty](http://www.netgear.com/warranty)
- Extend your warranty & technical support within 90 days of product purchase [US only]. Visit: [prosupport.netgear.com/home](http://prosupport.netgear.com/home)

**Support**

- 90-day complimentary technical support following purchase from a NETGEAR authorized reseller.
- Join the NETGEAR Community Forum. Visit <http://community.netgear.com>

This product comes with a limited warranty that is valid only if purchased from a NETGEAR authorized reseller.

<sup>\*</sup>90-day complimentary technical support following purchase from a NETGEAR authorized reseller.

<sup>†</sup>Maximum wireless signal rate derived from IEEE® 802.11 specifications. Actual data throughput and wireless coverage will vary and be lowered by network and environmental conditions, including network traffic volume, device limitations, and building construction. NETGEAR makes no representations or warranties about this product's compatibility with future standards. Up to 1200Mbps wireless speeds achieved when connecting to other 802.11ac 1200Mbps devices.

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## Advanced features for demanding environments at an affordable price

Your business is growing, and that means more customers, more opportunities, and more attention on your company. The only problem: Your network was built for a smaller operation. As you add more devices, applications, and users, your IT environment will become increasingly difficult and expensive to manage. Even worse, as the network becomes more complex and overloaded, your users are likely to see sluggish performance and even outages.

With customers and employees depending on your business more than ever before, a slow or unreliable network is not an option. You need an IT backbone that provides excellent performance, nonstop availability, and advanced security. The ideal network will be easy to manage, support advanced features that will grow with your company, and be at a price that's affordable.

### Cisco 550X Series Stackable Managed Switches

The Cisco® 550X Series (Figure 1) are the next-generation stackable managed Ethernet switches that provide the advanced capabilities and superior performance you need to support a more demanding network environment at an affordable price. These switches incorporate fan and power hardware redundancy, increasing overall network availability. The SG550X and SF550X models provide 24 or 48 ports of Gigabit Ethernet and Fast Ethernet connectivity with 10 Gigabit uplinks. The SX550X models provide 12, 16, 24, or 48 ports of 10 Gigabit Ethernet with both copper and fiber connection options, providing a solid foundation for your current business applications, as well as those you are planning for the future. At the same time, these switches are easy to deploy and manage, without a large IT staff.



**Figure 1.**  
Cisco 550X Series Stackable Managed Switches

Cisco 550X Series switches are designed to protect your technology investment as your business grows. Unlike switches that claim to be stackable but have elements that are administered and troubleshot separately, the Cisco 550X Series provides true stacking capability, allowing you to configure, manage, and troubleshoot multiple physical switches as a single device and more easily expand your network.

A true stack delivers a unified data and control plane, in addition to a management plane, providing flexibility, scalability, and ease of use because the stack of units operate as a single entity constituting all the ports of the stack members. The switches also protect your technology investment with an enhanced warranty, dedicated technical support, and the ability to upgrade equipment in the future and receive credit for your Cisco 550X Series switch. Overall, the Cisco 550X Series provides the ideal technology foundation for a growing business.

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## Features and benefits

Cisco 550X Series switches provide the advanced feature set that growing businesses require and that high-bandwidth applications and technologies demand. These switches can improve the availability of your critical applications, protect your business information, and optimize your network bandwidth to more effectively deliver information and support applications. The switches provide the following benefits.

### High-performance 10 Gigabit Ethernet

Cisco 550X Series switches break the barrier of 10 Gigabit Ethernet adoption by providing affordable and flexible configurations customized for the demanding network requirements of small and medium businesses.

With 10G copper ports on the SX550X switches, you can easily and cost-effectively enable 10G connections to servers and network storage devices with standard RJ-45 Ethernet cable. You can also connect your SG550X access switches to the SX550X aggregation with 10G SFP+ fiber, building a high-performance backbone to speed up the overall operation of your network.

### High reliability and resiliency

In a growing business in which availability 24 hours a day, 7 days a week is critical, you need to assure that employees and customers can always access the data and resources whenever they need. In these environments, stackable switches can play an important role in minimizing downtime and improving network resiliency. For example, if the master switch within a Cisco 550X Series stack fails, another switch takes over, keeping your network up and running. You can also replace individual devices in the stack without taking your whole network offline or affecting employee productivity.

The Cisco 550X Series is designed to deliver hardware redundancy at the lowest incremental cost. Power redundancy is delivered with the Cisco RPS2300 external RPS system. If power to the switch is lost (through loss of AC power or power supply failure), the switch will automatically, and instantaneously, obtain its power from the RPS. This switchover occurs so quickly that there is no loss in traffic or reboot of the device. A Cisco RPS2300 system can be connected to up to six 550X Series switches to provide redundancy. Cooling fan redundancy is delivered through preinstalled N+1 configuration. A switch can fully support all its capabilities for the life of the product with only N fans. If one of the fans fails, the spare fan automatically takes over, without causing any downtime.

The Cisco 550X Series provides an additional layer of resiliency with support for the Virtual Router Redundancy Protocol (VRRP). VRRP lets you extend the same resiliency that stacking provides for individual switches to complete network domains. By running VRRP between two stacks, you can instantly cut over from one stack to another in the event of a problem and continue operating even after a failure.

The Cisco 550X Series also supports dual images, allowing you to perform software upgrades without having to worry about the network going down during the upgrade.

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## Power over Ethernet Plus (PoE+) and 60W PoE

Cisco 550X Series switches support the Power over Ethernet Plus (PoE+) standard (IEEE 802.3at), providing up to 30 watts per port. The switches also support 60W PoE on selected ports to power compact switches, high-power wireless access points, or connected lighting. The power is managed in a smart fashion such that only the amount of power the endpoint needs is delivered to it and not wasted. As a result, the switches can support devices that require more power, such as 802.11ac wireless access points, video-based IP phones, surveillance cameras, and more.

PoE capabilities simplify the deployment of advanced technologies by allowing you to connect and power network endpoints over a single Ethernet cable, without having to install separate power supplies. Cisco 550X Series switches are also fully backward compatible with IEEE 802.11af PoE and Cisco legacy PoE protocols.

## Power efficiency

The Cisco 550X Series integrates a variety of power-saving features across all models, providing the industry's most extensive energy-efficient switching portfolio. These switches are designed to conserve energy by optimizing power use, which helps protect the environment and reduce your energy costs. They provide an eco-friendly network solution without compromising performance. Cisco 550X Series switches feature:

- Support for the Energy Efficient Ethernet (IEEE 802.3az) standard, which reduces energy consumption by monitoring the amount of traffic on an active link and putting the link into a sleep state during quiet periods
- The latest Application-Specific Integrated Circuits (ASICs), which use low-power 28- or 40-nanometer technology and low-power, high-performance ARM CPUs
- Automatic power shutoff on ports when a link is down
- LEDs that can be turned off to save power
- Embedded intelligence to adjust signal strength based on the length of the connecting cable
- Smart fans in which fan speed is automatically adjusted according to switch temperature to decrease acoustic noise and save power

## Advanced stacking

Some switches claim to support stacking but in practice support only “clustering,” meaning that each switch must still be managed and configured individually. Cisco 550X Series switches provide true stacking capability, allowing you to configure, manage, and troubleshoot all switches in a stack as a single unit, with a single IP address for up to a maximum of 400 Ethernet ports.

A true stack delivers a unified data and control plane, in addition to management plane, providing flexibility, scalability, and ease of use because the stack of units operates as a single entity constituting all the ports of the stack members. This capability can radically reduce complexity in a growing network environment while improving the resiliency and availability of network applications. True stacking also provides other cost savings and administrative benefits through features such as cross-stack QoS, VLANs, LAGs, and port mirroring, which clustered switches cannot support.

Using standard 10G fiber or copper connections, the Cisco 550X Series supports both local and horizontal stacking deployments and the flexibility of ring or chain topology. The switches also have the capability to use link aggregation port as the stacking port, providing even higher stacking bandwidth for demanding applications.

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## Easy deployment and use

Cisco 550X Series switches are designed to be easy to use and manage by small and medium businesses, commercial customers, or the partners that serve them. Features include the following:

- Smart Network Application (SNA) is an innovative network-level monitoring and management tool embedded in the Cisco 250 to 550X Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network.
- The FindIT Network Manager and Probe are designed to manage Cisco 100 to 500 Series switches, routers, and wireless access points. They let you proactively manage the network instead of just reacting to events. Cisco 550X Series switches support the embedded FindIT Network Probe, eliminating the need to set up a separate hardware or virtual machine on site. For more information, visit <https://www.cisco.com/c/en/us/products/cloud-systems-management/findit-network-management/index.html>.
- The FindIT Network Discovery Utility works through a simple toolbar on the user's web browser to discover Cisco devices on the network and display basic device information, inventory, and new firmware updates to aid in the configuration and speed the deployment of Cisco Small Business products. For more information, visit <https://www.cisco.com/c/en/us/products/cloud-systems-management/small-business-findit-network-discovery-utility/index.html>.
- Simple and advanced mode graphic user interfaces reduce the time required to deploy, troubleshoot, and manage the network and allow you to support sophisticated capabilities without increasing IT head count.
- Configuration wizards simplify the most common configuration tasks and provide the ultimate tool for anyone to easily set up and manage the network.
- The switches also support Textview, a full Command-Line Interface (CLI) option for customers or partners that prefer it.
- Using Auto Smart ports intelligence, the switch can detect a network device connected to any port and automatically configure the optimal security, Quality of Service (QoS), and availability on that port.
- Cisco Discovery Protocol discovers Cisco devices and allows devices to share critical configuration information, simplifying network setup and integration.
- Support for Simple Network Management Protocol (SNMP) allows you to set up and manage your switches and other Cisco devices remotely from a network management station, improving IT workflow and mass configurations.
- The USB port on the switch enables easy image and configuration transfer for faster deployment or upgrade.

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## Simplified IT operation

Cisco 550X Series switches help optimize your IT operations with built-in features that simplify day-to-day network operation:

- True stacking allows you to configure, manage, and troubleshoot multiple physical switches as a single entity.
- Unlike other stacking switches that require uniform configurations, the Cisco 550X Series allows you to mix Fast Ethernet, Gigabit Ethernet, and 10 Gigabit Ethernet models in a single stack, providing total flexibility without sacrificing manageability.
- Cisco switches use common chipsets/software across all switching portfolios, so all Cisco switches within a series support the same feature set, making it easier to manage and support all switches across the network.

## Strong security

Cisco 550X Series switches provide the advanced security features you need to protect your business data and keep unauthorized users off the network:

- Embedded Secure Sockets Layer (SSL) encryption protects management data traveling to and from the switch.
- Extensive Access Control Lists (ACLs) restrict sensitive portions of the network to keep out unauthorized users and guard against network attacks.
- Guest VLANs let you provide Internet connectivity to nonemployee users while isolating critical business services from guest traffic.
- Support for advanced network security applications such as IEEE 802.1X port security tightly limits access to specific segments of your network. Web-based authentication provides a consistent interface to authenticate all types of host devices and operating systems, without the complexity of deploying IEEE 802.1X clients on each endpoint.
- Advanced defense mechanisms, including dynamic Address Resolution Protocol (ARP) inspection, IP Source Guard, and Dynamic Host Configuration Protocol (DHCP) snooping, detect and block deliberate network attacks. Combinations of these protocols are also referred to as IP-MAC port binding (IPMB).
- IPv6 First Hop Security extends the advanced threat protection to IPv6. This comprehensive security suite includes ND inspection, RA guard, DHCPv6 guard, and neighbor binding integrity check, providing unparalleled protection against a vast range of address spoofing and man-in-the-middle attacks on IPv6 networks.
- Time-based ACLs and port operation restrict access to the network during predesignated times, such as business hours.
- Uniform MAC address-based security can be applied automatically to mobile users as they roam between wireless access points.
- Secure Core Technology (SCT) helps ensure that the switch is able to process management traffic in the face of a Denial-of-Service (DoS) attack.
- Private VLAN provides Layer 2 isolation between devices on the same VLAN.
- Storm control can be applied to broadcast, multicast, and unknown unicast traffic.



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- Protection of management sessions is possible using RADIUS, TACACS+, and local database authentication as well as secure management sessions over SSL, SSH, and SNMPv3.
  - DoS attack prevention maximizes network uptime in the presence of an attack.

### Advanced Layer 3 traffic management

The Cisco 550X Series enables a more advanced set of traffic management capabilities to help growing businesses organize their networks more effectively and efficiently. For example, the switches provide static Layer 3 routing, allowing you to segment your network into workgroups and communicate across VLANs without degrading application performance.

With these capabilities, you can boost the efficiency of your network by offloading internal traffic-handling tasks from your router and allowing it to manage primarily external traffic and security.

Additionally, the Cisco 550X Series provides dynamic Layer 3 routing features. These capabilities help you minimize the need to manually configure routing devices and simplify the ongoing operation of the network.

### IPv6 support

As the IP address scheme evolves to accommodate a growing number of network devices, the Cisco 550X Series can support the transition to the next generation of networking and operating systems. These switches continue to support previous-generation IPv4, allowing you to evolve to the new IPv6 standard at your own pace and helping ensure that your current network will continue to support your business applications in the future. Cisco 550X Series switches have successfully completed rigorous IPv6 testing and have received the USGv6 and IPv6 Gold certification.

### Networkwide automatic voice deployment

Using a combination of Cisco Discovery Protocol, LLDP-MED, Auto Smart ports, and Voice Services Discovery Protocol (VSDP, a unique Cisco protocol), customers can deploy an end-to-end voice network dynamically. The switches in the network automatically converge around a single voice VLAN and QoS parameters and then propagate them out to the phones on the ports where they are discovered. For example, automated voice VLAN capabilities let you plug any IP phone (including third-party phones) into your IP telephony network and receive an immediate dial tone. The switch automatically configures the device with the right VLAN and QoS parameters to prioritize voice traffic.

### Peace of mind and investment protection

Cisco 550X Series switches offer the reliable performance and peace of mind you expect from a Cisco switch. When you invest in the Cisco 550X Series, you gain the benefits of:

- Limited lifetime warranty with Next-Business-Day (NBD) advance replacement (where available; otherwise same-day ship)
- A solution that has been rigorously tested to help ensure optimal network uptime to keep employees connected to primary resources and productive
- A solution designed and tested to easily and fully integrate with other Cisco voice, unified communications, security, and networking products as part of a comprehensive technology platform for your business

## Cisco limited lifetime hardware warranty

Cisco 550X Series switches offer a limited lifetime hardware warranty with NBD advance replacement (where available; otherwise same-day ship) and a limited lifetime warranty for fans and power supplies.

In addition, Cisco offers telephone technical support at no charge for the first 12 months following the date of purchase and software application updates for bug fixes for the warranty term. To download software updates, go to <https://software.cisco.com/download/navigator.html>.

Product warranty terms and other information applicable to Cisco products are available at <https://www.cisco.com/go/warranty>.

## World-class service and support

Your time is valuable, especially when you have a problem affecting your business. Cisco 550X Series switches are backed by Cisco Small Business Support Service and Cisco Smart Net Total Care® Service, which provide affordable peace-of-mind coverage. These subscription-based services help you protect your investment and derive maximum value from Cisco SMB products. Delivered by Cisco and backed by your trusted partner, Cisco Small Business Support Service includes software updates and access to the Cisco Small Business Support Center, and it extends technical service to three years. Cisco Smart Net Total Care offers a consistent service platform for customers with networks that combine traditional Cisco products with Cisco Small Business products. It also provides global coverage and flexibility of contract terms as well as multiple advance hardware replacement options.

Cisco SMB products are supported by professionals in the Cisco Support Center, a dedicated resource for small business customers and networks, with locations worldwide that are specifically trained to understand your needs. You also have access to extensive technical and product information through the Cisco Support Community, an online forum that enables you to collaborate with your peers and reach Cisco technical experts for support information.

## Product specifications

Table 1 describes the product specifications.

**Table 1.** Product specifications

Feature	Description		
<b>Performance</b>			
<b>Switching capacity and forwarding rate</b> <b>All switches are wire-speed and nonblocking</b>	<b>Product name</b>	<b>Capacity in mpps (64-byte packets)</b>	<b>Switching capacity (Gbps)</b>
	SF550X-24	63.09	84.8
	SF550X-24P	63.09	84.8
	SF550X-24MP	63.09	84.8
	SF550X-48	66.66	89.6
	SF550X-48P	66.66	89.6
	SF550X-48MP	66.66	89.6

Feature	Description		
	SG550X-24	95.23	128
	SG550X-24P	95.23	128
	SG550X-24MP	95.23	128
	SG550X-24MPP	95.23	128
	SG550X-48	130.94	176
	SG550X-48P	130.94	176
	SG550X-48MP	130.94	176
	SG550XG-8F8T	238.08	320
	SG550XG-24F	357.12	480
	SG550XG-24T	357.12	480
	SG550XG-48T	714.24	960
	SX550X-12F	178.56	240
	SX550X-16FT	238.08	320
	SX550X-24FT	240.00	480
	SX550X-24F	240.00	480
	SX550X-24	240.00	480
	SX550X-52	755.81	1,040
<b>Layer 2 switching</b>			
<b>Spanning Tree Protocol</b>	<p>Standard 802.1d spanning tree support</p> <p>Fast convergence using 802.1w (Rapid Spanning Tree [RSTP]), enabled by default</p> <p>Multiple spanning tree instances using 802.1s (MSTP); 16 instances are supported</p> <p>Per-VLAN Spanning Tree Plus (PVST+) and Rapid PVST+ (RPVST+); 126 instances are supported</p>		
<b>Port grouping/link aggregation</b>	<p>Support for IEEE 802.3ad Link Aggregation Control Protocol (LACP)</p> <ul style="list-style-type: none"> <li>• Up to 32 groups</li> <li>• Up to 8 ports per group with 16 candidate ports for each (dynamic) 802.3ad LAG</li> </ul>		

Feature	Description
<b>VLAN</b>	<p>Support for up to 4,094 active VLANs simultaneously; port-based and 802.1Q tag-based VLANs; MAC-based VLAN</p> <p>Management VLAN</p> <p>Private VLAN with promiscuous, isolated, and community port</p> <p>Guest VLAN, unauthenticated VLAN, protocol-based VLAN, IP subnet-based VLAN, CPE VLAN</p> <p>Dynamic VLAN assignment using RADIUS server along with 802.1x client authentication</p>
<b>Voice VLAN</b>	<p>Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS. Auto voice capabilities deliver networkwide zero-touch deployment of voice endpoints and call control devices</p>
<b>Multicast TV VLAN</b>	<p>Multicast TV VLAN allows the single multicast VLAN to be shared in the network while subscribers remain in separate VLANs. This feature is also known as Multicast VLAN Registration (MVR)</p>
<b>VLAN translation</b>	<p>Support for VLAN One-to-One Mapping. In VLAN One-to-One Mapping, on an edge interface C-VLANs are mapped to S-VLANs and the original C-VLAN tags are replaced by the specified S-VLAN</p>
<b>Q-in-Q</b>	<p>VLANs transparently cross over a service provider network while isolating traffic among customers</p>
<b>Selective Q-in-Q</b>	<p>Selective Q-in-Q is an enhancement to the basic Q-in-Q feature and provides, per edge interface, multiple mappings of different C-VLANs to separate S- VLANs</p> <p>Selective Q-in-Q also allows configuring of Ethertype (TPID) of the S-VLAN tag</p> <p>Layer 2 protocol tunneling over Q-in-Q is also supported</p>
<b>GVRP/GARP</b>	<p>Generic VLAN Registration Protocol (GVRP) and Generic Attribute Registration Protocol (GARP) enable automatic propagation and configuration of VLANs in a bridged domain</p>
<b>Unidirectional Link Detection (UDLD)</b>	<p>UDLD monitors physical connection to detect unidirectional links caused by incorrect wiring or port faults to prevent forwarding loops and blackholing of traffic in switched networks</p>
<b>DHCP relay at Layer 2</b>	<p>Relay of DHCP traffic to DHCP server in a different VLAN. Works with DHCP option 82</p>
<b>IGMP (versions 1, 2, and 3) snooping</b>	<p>Internet Group Management Protocol (IGMP) limits bandwidth-intensive multicast traffic to only the requesters; supports 4K multicast groups (source-specific multicasting is also supported)</p>
<b>IGMP querier</b>	<p>IGMP querier is used to support a Layer 2 multicast domain of snooping switches in the absence of a multicast router</p>
<b>HOL blocking</b>	<p>Head-Of-Line (HOL) blocking</p>
<b>Loopback Detection</b>	<p>Loopback detection provides protection against loops by transmitting loop protocol packets out of ports on which loop protection has been enabled. It operates independently of STP</p>

Feature	Description
<b>Layer 3</b>	
<b>IPv4 routing</b>	Wirespeed routing of IPv4 packets Up to 7,168 routes and up to 256 IP interfaces
<b>Wirespeed IPv6 static routing</b>	Up to 1,792 routes and up to 256 IPv6 interfaces
<b>Layer 3 interface</b>	Configuration of Layer 3 interface on physical port, LAG, VLAN interface, or loopback interface
<b>CIDR</b>	Support for classless interdomain routing
<b>RIP v2</b>	Support for Routing Information Protocol version 2 for dynamic routing
<b>VRRP</b>	Virtual Router Redundancy Protocol (VRRP) delivers improved availability in a Layer 3 network by providing redundancy of the default gateway servicing hosts on the network. VRRP versions 2 and 3 are supported. Up to 255 virtual routers are supported
<b>Policy-Based Routing (PBR)</b>	Flexible routing control to direct packets to different next hop based on IPv4 or IPv6 ACL
<b>IP Service-Level Agreement (SLA) object tracking</b>	IP SLA object tracking relies on IP SLA ICMP echo operation to detect connectivity to a certain network destination  IP SLA object tracking for VRRP provides a mechanism to track the connectivity to the VRRP router default route next hop  IP SLA object tracking for static routes provides a mechanism to track the connectivity to the destination network via the next hop specified in the static route
<b>DHCP server</b>	Switch functions as an IPv4 DHCP server serving IP addresses for multiple DHCP pools/scopes  Support for DHCP options
<b>DHCP relay at Layer 3</b>	Relay of DHCP traffic across IP domains
<b>User Datagram Protocol (UDP) relay</b>	Relay of broadcast information across Layer 3 domains for application discovery or relaying of BOOTP/DHCP packets
<b>Stacking</b>	
<b>Hardware stack</b>	Up to 8 units in a stack. Up to 400 ports managed as a single system with hardware failover
<b>High availability</b>	Fast stack failover delivers minimal traffic loss. Support link aggregation across multiple units in a stack
<b>Plug-and-play stacking configuration/management</b>	Master/backup for resilient stack control  Autonumbering  Hot swap of units in stack  Ring and chain stacking options, auto stacking port speed, flexible stacking port options
<b>High-speed stack interconnects</b>	Cost-effective high-speed 10G fiber and copper interfaces. Support LAG as stacking interconnects for even higher bandwidth

Feature	Description
<b>Hybrid stack</b>	A mix of SF550X, SG550X, SG550XG, and SX550X in the same stack (10/100, Gigabit, and 10 Gigabit Ethernet)
<b>Security</b>	
<b>SSH</b>	SSH is a secure replacement for Telnet traffic. SCP also uses SSH. SSH versions 1 and 2 are supported
<b>SSL</b>	Secure Sockets Layer (SSL) encrypts all HTTPS traffic, allowing secure access to the browser-based management GUI in the switch
<b>IEEE 802.1X (authenticator role)</b>	RADIUS authentication and accounting, MD5 hash, guest VLAN, unauthenticated VLAN, single/multiple host mode, and single/multiple sessions  Supports time-based 802.1X dynamic VLAN assignment
<b>IEEE 802.1X supplicant</b>	A switch can be configured to act as a supplicant to another switch. This enables extended secure access in areas outside the wiring closet (such as conference rooms)
<b>Web-based authentication</b>	Web-based authentication provides network admission control through web browser to any host devices and operating systems
<b>STP BPDU Guard</b>	A security mechanism to protect the networks from invalid configurations. A port enabled for Bridge Protocol Data Unit (BPDU) Guard is shut down if a BPDU message is received on that port. This avoids accidental topology loops
<b>STP Root Guard</b>	This prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes
<b>STP loopback guard</b>	Provides additional protection against Layer 2 forwarding loops (STP loops)
<b>DHCP snooping</b>	Filters out DHCP messages with unregistered IP addresses and/or from unexpected or untrusted interfaces. This prevents rogue devices from behaving as a DHCP server
<b>IP Source Guard (IPSG)</b>	When IP Source Guard is enabled at a port, the switch filters out IP packets received from the port if the source IP addresses of the packets have not been statically configured or dynamically learned from DHCP snooping. This prevents IP address spoofing
<b>Dynamic ARP Inspection (DAI)</b>	The switch discards ARP packets from a port if there are no static or dynamic IP/MAC bindings or if there is a discrepancy between the source or destination address in the ARP packet. This prevents man-in-the-middle attacks
<b>IP/MAC/Port Binding (IPMB)</b>	The preceding features (DHCP Snooping, IP Source Guard, and Dynamic ARP Inspection) work together to prevent DoS attacks in the network, thereby increasing network availability
<b>Secure Core Technology (SCT)</b>	Makes sure that the switch will receive and process management and protocol traffic no matter how much traffic is received
<b>Secure Sensitive Data (SSD)</b>	A mechanism to manage sensitive data (such as passwords, keys, and so on) securely on the switch, populating this data to other devices, and secure autoconfig. Access to view the sensitive data as plaintext or encrypted is provided according to the user-configured access level and the access method of the user
<b>Trustworthy systems</b>	Trustworthy systems provide a highly secure foundation for Cisco products  Run-time defenses (Executable Space Protection [X-Space], Address Space Layout Randomization [ASLR], Built-In Object Size Checking [BOSC])

Feature	Description
<b>Private VLAN</b>	Private VLAN provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic; supports multiple uplinks
<b>Port security</b>	Ability to lock source MAC addresses to ports and limit the number of learned MAC addresses
<b>RADIUS/TACACS+</b>	Supports RADIUS and TACACS authentication. Switch functions as a client
<b>RADIUS accounting</b>	The RADIUS accounting functions allow data to be sent at the start and end of services, indicating the amount of resources (such as time, packets, bytes, and so on) used during the session
<b>Storm control</b>	Broadcast, multicast, and unknown unicast
<b>DoS prevention</b>	Denial-of-Service (DoS) attack prevention
<b>Multiple user privilege levels in CLI</b>	Level 1, 7, and 15 privilege levels
<b>ACLs</b>	<p>Support for up to 2000 entries on SG550XG and SX550X models</p> <p>Support for up to 3000 entries on all other models</p> <p>Drop or rate limit based on source and destination MAC, VLAN ID or IPv4 or Pv6 address, IPv6 flow label, protocol, port, DSCP/IP precedence, TCP/User Datagram Protocol (UDP) source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, Internet Group Management Protocol (IGMP) packets, TCP flag; ACL can be applied on both ingress and egress sides</p> <p>Time-based ACLs supported</p>
<b>Quality of service</b>	
<b>Priority levels</b>	8 hardware queues
<b>Scheduling</b>	Strict priority and Weighted Round-Robin (WRR)
<b>Class of service</b>	<p>Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/ToS/DSCP based; DiffServ; classification and remarking ACLs, trusted QoS</p> <p>Queue assignment based on Differentiated Services Code Point (DSCP) and class of service (802.1p/CoS)</p>
<b>Rate limiting</b>	Ingress policer; egress shaping and ingress rate control; per VLAN, per port, and flow base; 2R3C policing
<b>Congestion avoidance</b>	A TCP congestion avoidance algorithm is required to minimize and prevent global TCP loss synchronization
<b>iSCSI traffic optimization</b>	A mechanism for giving priority to iSCSI traffic over other types of traffic

Feature	Description
<b>Standards</b>	
<b>Standards</b>	IEEE 802.3 10BASE-T Ethernet, IEEE 802.3u 100BASE-TX Fast Ethernet, IEEE 802.3ab 1000BASE-T Gigabit Ethernet, IEEE 802.3ad Link Aggregation Control Protocol, IEEE 802.3z Gigabit Ethernet, IEEE 802.3ae 10 Gbit/s Ethernet over fiber for LAN, IEEE 802.3an 10GBase-T 10 Gbit/s Ethernet over copper twisted pair cable, IEEE 802.3x Flow Control, IEEE 802.1D (STP, GARP, and GVRP), IEEE 802.1Q/p VLAN, IEEE 802.1w Rapid STP, IEEE 802.1s Multiple STP, IEEE 802.1X Port Access Authentication, IEEE 802.3af, IEEE 802.3at, IEEE 802.1AB Link Layer Discovery Protocol, IEEE 802.3az Energy Efficient Ethernet, RFC 768, RFC 783, RFC 791, RFC 792, RFC 793, RFC 793, RFC 813, RFC 826, RFC 879, RFC 896, RFC 854, RFC 855, RFC 856, RFC 858, RFC 894, RFC 919, RFC 920, RFC 922, RFC 950, RFC 951, RFC 1042, RFC 1071, RFC 1123, RFC 1141, RFC 1155, RFC 1157, RFC 1213, RFC 1215, RFC 1286, RFC 1350, RFC 1442, RFC 1451, RFC 1493, RFC 1533, RFC 1541, RFC 1542, RFC 1573, RFC 1624, RFC 1643, RFC 1700, RFC 1757, RFC 1867, RFC 1907, RFC 2011, RFC 2012, RFC 2013, RFC 2030, RFC 2131, RFC 2132, RFC 2233, RFC 2576, RFC 2616, RFC 2618, RFC 2665, RFC 2666, RFC 2674, RFC 2674, RFC 2737, RFC 2819, RFC 2863, RFC 3164, RFC 3176, RFC 3411, RFC 3412, RFC 3413, RFC 3414, RFC 3415, RFC 3416, RFC 4330
<b>IPv6</b>	
<b>IPv6</b>	IPv6 host mode IPv6 over Ethernet dual IPv6/IPv4 stack IPv6 Neighbor and Router Discovery (ND), IPv6 Stateless Address Autoconfiguration, path MTU Discovery Duplicate Address Detection (DAD) ICMPv6 DHCPv6 stateful client IPv6 over IPv4 network with ISATAP tunnel support USGv6 and IPv6 Gold Logo certified
<b>IPv6 QoS</b>	Prioritize IPv6 packets in hardware
<b>IPv6 ACL</b>	Drop or rate limit IPv6 packets in hardware
<b>IPv6 First Hop Security</b>	RA guard ND inspection DHCPv6 guard Neighbor binding table (snooping and static entries) Neighbor binding integrity check
<b>Multicast Listener Discovery (MLD v1/2) snooping</b>	Deliver IPv6 multicast packets only to the required receivers
<b>IPv6 applications</b>	Web/SSL, Telnet Server/SSH, Ping, Traceroute, SNTP, TFTP, SNMP, RADIUS, Syslog, DNS client, DHCP Client, DHCP Autoconfig, IPv6 DHCP Relay, TACACS
<b>IPv6 RFC supported</b>	RFC 4443 (which obsoletes RFC 2463): ICMPv6 RFC 4291 (which obsoletes RFC 3513): IPv6 address architecture RFC 4291: IP Version 6 Addressing Architecture RFC 2460: IPv6 Specification RFC 4861 (which obsoletes RFC 2461): Neighbor Discovery for IPv6



Feature	Description	
	RFC 4862 (which obsoletes RFC 2462): IPv6 Stateless Address Autoconfiguration RFC 1981: Path MTU Discovery RFC 4007: IPv6 Scoped Address Architecture RFC 3484: Default address selection mechanism RFC 5214 (which obsoletes RFC 4214): ISATAP tunneling RFC 4293; MIB IPv6: Textual Conventions and General Group RFC 3595; Textual Conventions for IPv6 Flow Label	
<b>Management</b>		
<b>Web user interface</b>	Built-in switch configuration utility for easy browser-based device configuration (HTTP/HTTPS).  Supports simple and advanced mode, configuration, wizards, customizable dashboard, system maintenance, monitoring, online help, and universal search	
<b>Smart Network Application (SNA)</b>	An innovative network-level monitoring and management tool embedded in Cisco 250 to 550X Series switches. It can discover network topology, display link status, monitor events, apply configurations, and upgrade software images across multiple switches in the network	
<b>SNMP</b>	SNMP versions 1, 2c, and 3 with support for traps, and SNMP v3 User-based Security Model (USM)	
<b>Standard MIBs</b>	Ildp-MIB Ildpextdot1-MIB Ildpextdot3-MIB Ildpextmed-MIB rfc2674-MIB rfc2575-MIB rfc2573-MIB rfc2233-MIB rfc2013-MIB rfc2012-MIB rfc2011-MIB RFC-1212 RFC-1215 SNMPv2-CONF SNMPv2-TC p-bridge-MIB q-bridge-MIB rfc1389-MIB rfc1493-MIB rfc1611-MIB	rfc2668-MIB rfc2737-MIB rfc2925-MIB rfc3621-MIB rfc4668-MIB rfc4670-MIB trunk-MIB tunnel-MIB udp-MIB draft-ietf-bridge-8021x-MIB draft-ietf-bridge-rstpmib-04-MIB draft-ietf-hubmib-etherif-mib-v3-00-MIB draft-ietf-syslog-device-MIB ianaaddrfamnumbers-MIB ianaifty-MIB ianaprot-MIB inet-address-MIB ip-forward-MIB ip-MIB RFC1155-SMI

Feature	Description	
	rfc1612-MIB rfc1850-MIB rfc1907-MIB rfc2571-MIB rfc2572-MIB rfc2574-MIB rfc2576-MIB rfc2613-MIB rfc2665-MIB	RFC1213-MIB SNMPv2-MIB SNMPv2-SMI SNMPv2-TM RMON-MIB rfc1724-MIB dcb-raj-DCBX-MIB-1108-MIB rfc1213-MIB rfc1757-MIB
<b>Private MIBs</b>	CISCOB-ldp-MIB CISCOB-brgmulticast-MIB CISCOB-bridgemibobjects-MIB CISCOB-bonjour-MIB CISCOB-dhcpcl-MIB CISCOB-MIB CISCOB-wrandomtaildrop-MIB CISCOB-traceroute-MIB CISCOB-telnet-MIB CISCOB-stormctrl-MIB CISCOBssh-MIB CISCOB-socket-MIB CISCOB-sntp-MIB CISCOB-smon-MIB CISCOB-phy-MIB CISCOB-multisessionterminal-MIB CISCOB-mri-MIB CISCOB-jumboframes-MIB CISCOB-gvrp-MIB CISCOB-endofmib-MIB CISCOB-dot1x-MIB CISCOB-deviceparams-MIB CISCOB-cli-MIB CISCOB-cdb-MIB CISCOB-brgmacswitch-MIB CISCOB-3sw2swtables-MIB CISCOB-smartPorts-MIB CISCOB-tbi-MIB	CISCOB-iprouter-MIB CISCOB-ipv6-MIB CISCOB-mnginf-MIB CISCOB-ldi-MIB CISCOB-localization-MIB CISCOB-mcmngr-MIB CISCOB-localization-MIB CISCOB-mcmngr-MIB CISCOB-mng-MIB CISCOB-physdescription-MIB CISCOB-PoE-MIB CISCOB-protectedport-MIB CISCOB-rmon-MIB CISCOB-rs232-MIB CISCOB-SecuritySuite-MIB CISCOB-snmp-MIB CISCOB-specialbpdu-MIB CISCOB-banner-MIB CISCOB-syslog-MIB CISCOB-TcpSession-MIB CISCOB-traps-MIB CISCOB-trunk-MIB CISCOB-tuning-MIB CISCOB-tunnel-MIB CISCOB-udp-MIB CISCOB-vlan-MIB CISCOB-ipstdacl-MIB CISCOB-eee-MIB

Feature	Description	
	CISCOSB-macbaseprio-MIB CISCOSB-env_mib-MIB CISCOSB-policy-MIB CISCOSB-sensor-MIB CISCOSB-aaa-MIB CISCOSB-application-MIB CISCOSB-bridgesecurity-MIB CISCOSB-copy-MIB CISCOSB-CpuCounters-MIB CISCOSB-Custom1BonjourService-MIB CISCOSB-dhcp-MIB CISCOSB-dlf-MIB CISCOSB-dnscl-MIB CISCOSB-embweb-MIB CISCOSB-fft-MIB CISCOSB-file-MIB CISCOSB-greeneth-MIB CISCOSB-interfaces-MIB CISCOSB-interfaces_recovery-MIB CISCOSB-ip-MIB CISCOSB-iprouter-MIB CISCOSB-ipv6-MIB CISCOSB-mnginf-MIB CISCOSB-lcli-MIB	CISCOSB-ssl-MIB CISCOSB-digitalkeymanage-MIB CISCOSB-qosclimib-MIB CISCOSB-vrrp-MIB CISCOSB-tbp-MIB CISCOSB-stack-MIB CISCOSMB-MIB CISCOSB-secsd-MIB CISCOSB-draft-ietf-entmib-sensor-MIB CISCOSB-draft-ietf-syslog-device-MIB CISCOSB-rfc2925-MIB CISCOSB-vrrpv3-MIB CISCO-SMI-MIB CISCOSB-DebugCapabilities-MIB CISCOSB-CDP-MIB CISCOSB-vlanVoice-MIB CISCOSB-EVENTS-MIB CISCOSB-sysmng-MIB CISCOSB-sct-MIB CISCO-TC-MIB CISCO-VTP-MIB CISCO-CDP-MIB
<b>RMON</b>	Embedded RMON software agent supports 4 RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis	
<b>IPv4 and IPv6 dual stack</b>	Coexistence of both protocol stacks to ease migration	
<b>Firmware upgrade</b>	<ul style="list-style-type: none"> <li>• Web browser upgrade (HTTP/HTTPS) and TFTP and SCP</li> <li>• Upgrade can be initiated through console port as well</li> <li>• Dual images for resilient firmware upgrades</li> </ul>	
<b>Port mirroring</b>	Traffic on a port or LAG can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to 8 source ports can be mirrored to one destination port	
<b>VLAN mirroring</b>	Traffic from a VLAN can be mirrored to a port for analysis with a network analyzer or RMON probe. Up to 8 source VLANs can be mirrored to one destination port	
<b>Flow-based redirection and mirroring</b>	Redirect or mirror traffic to a destination port or mirroring session based on flow	
<b>Remote Switch Port Analyzer (RSPAN)</b>	Traffic can be mirrored across Layer 2 domain to a remote port on a different switch for easier troubleshooting	

Feature	Description
<b>sFlow agent</b>	Switch can export sFlow sample to external collectors. sFlow provides visibility into network traffic down to flow level
<b>DHCP (options 12, 66, 67, 82, 129, and 150)</b>	DHCP options facilitate tighter control from a central point (DHCP server), to obtain IP address, autoconfiguration (with configuration file download), DHCP Relay, and host name
<b>Autoconfiguration with Secure Copy (SCP) file download</b>	Enables secure mass deployment with protection of sensitive data
<b>Text-editable configs</b>	Config files can be edited with a text editor and downloaded to another switch, facilitating easier mass deployment
<b>Smartports</b>	Simplified configuration of QoS and security capabilities
<b>Auto Smartports</b>	Automatically applies the intelligence delivered through the Smartports roles to the port based on the devices discovered over Cisco Discovery Protocol or LLDP-MED. This facilitates zero-touch deployments
<b>Secure Copy (SCP)</b>	Securely transfer files to and from the switch
<b>Textview CLI</b>	Scriptable CLI. A full CLI as well as a menu CLI are supported
<b>Cloud services</b>	Support for Cisco FindIT Network Manager and Active Advisor
<b>Embedded FindIT Network Probe</b>	Support for embedded FindIT Network Probe running on the switch. Eliminates the need to set up a separate hardware or virtual machine for the FindIT Network Probe on site
<b>Cisco Network Plug and Play (PnP) agent</b>	The Cisco Network PnP solution provides a simple, secure, unified, and integrated offering to ease new branch or campus device rollouts or for provisioning updates to an existing network. The solution provides a unified approach to provision Cisco routers, switches, and wireless devices with a near-zero-touch deployment experience  Supports Cisco PnP Connect
<b>Localization</b>	Localization of GUI and documentation into multiple languages
<b>Login banner</b>	Configurable multiple banners for web as well as CLI
<b>Time-based port operation</b>	Link up or down based on user-defined schedule (when the port is administratively up)
<b>Other management</b>	Traceroute; single IP management; HTTP/HTTPS; SSH; RADIUS; port mirroring; TFTP upgrade; DHCP client; Simple Network Time Protocol (SNTP); Xmodem upgrade; cable diagnostics; Ping; syslog; Telnet client; SSH client; automatic time settings from Management Station
<b>Green (power efficiency)</b>	
<b>Energy detect</b>	Automatically turns power off on RJ-45 port when detecting link down. Active mode is resumed without loss of any packets when the switch detects the link is up
<b>Cable length detection</b>	Adjusts the signal strength based on the cable length. Reduces the power consumption for shorter cables
<b>EEE compliant (802.3az)</b>	Supports IEEE 802.3az on all 10 Gigabit copper ports
<b>Disable port LEDs</b>	LEDs can be manually turned off to save on energy

Feature	Description																														
<b>Time-based PoE</b>	PoE power can be on or off based on user-defined schedule to save energy																														
<b>General</b>																															
<b>Jumbo frames</b>	Frame sizes up to 9000 bytes. The default MTU is 2000																														
<b>MAC table</b>	32,000 addresses on the SG550XG and SX550X models 16,000 addresses on all other models																														
<b>Discovery</b>																															
<b>Bonjour</b>	The switch advertises itself using the Bonjour protocol																														
<b>LLDP (802.1ab) with LLDP-MED extensions</b>	Link Layer Discovery Protocol (LLDP) allows the switch to advertise its identification, configuration, and capabilities to neighboring devices that store the data in a MIB. LLDP-MED is an enhancement to LLDP that adds the extensions needed for IP phones																														
<b>Cisco Discovery Protocol</b>	The switch advertises itself using the Cisco Discovery Protocol. It also learns the connected device and its characteristics using Cisco Discovery Protocol																														
<b>Product specifications</b>																															
<b>Power over Ethernet</b>	<p>The following switches support 802.3at PoE+, 802.3af PoE, and Cisco prestandard (legacy) PoE on any of the RJ45 network ports. 60W PoE is also supported on selected RJ-45 network ports</p> <p>Maximum power of 60W is delivered to any of the 60W PoE ports, and maximum power of 30W is delivered to any of the other RJ45 network ports, until the PoE budget for the switch is reached</p> <p>The total power available for PoE per switch is as follows</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Power dedicated to PoE</th> <th>Number of ports that support PoE</th> </tr> </thead> <tbody> <tr> <td>SF550X-24P</td> <td>195W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SF550X-24MP</td> <td>382W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SF550X-48P</td> <td>382W</td> <td>48 (16 support 60W PoE)</td> </tr> <tr> <td>SF550X-48MP</td> <td>740W</td> <td>48 (16 support 60W PoE)</td> </tr> <tr> <td>SG550X-24P</td> <td>195W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-24MP</td> <td>382W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-24MPP</td> <td>740W</td> <td>24 (8 support 60W PoE)</td> </tr> <tr> <td>SG550X-48P</td> <td>382W</td> <td>48 (16 support 60W PoE)</td> </tr> <tr> <td>SG550X-48MP</td> <td>740W</td> <td>48 (16 support 60W PoE)</td> </tr> </tbody> </table>	Model	Power dedicated to PoE	Number of ports that support PoE	SF550X-24P	195W	24 (8 support 60W PoE)	SF550X-24MP	382W	24 (8 support 60W PoE)	SF550X-48P	382W	48 (16 support 60W PoE)	SF550X-48MP	740W	48 (16 support 60W PoE)	SG550X-24P	195W	24 (8 support 60W PoE)	SG550X-24MP	382W	24 (8 support 60W PoE)	SG550X-24MPP	740W	24 (8 support 60W PoE)	SG550X-48P	382W	48 (16 support 60W PoE)	SG550X-48MP	740W	48 (16 support 60W PoE)
Model	Power dedicated to PoE	Number of ports that support PoE																													
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SG550X-24MP	382W	24 (8 support 60W PoE)																													
SG550X-24MPP	740W	24 (8 support 60W PoE)																													
SG550X-48P	382W	48 (16 support 60W PoE)																													
SG550X-48MP	740W	48 (16 support 60W PoE)																													

Feature	Description				
Power consumption (worst case)	Model name	Green power (mode)	System power consumption	Power consumption (with PoE)	Heat dissipation (BTU/hr)
	SF550X-24	EEE, Energy Detect, Short Reach	110V=20.0W 220V=20.8W	N/A	70.97
	SF550X-24P	EEE, Energy Detect, Short Reach	110V=39.3W 220V=39.9W	110V=242.1W 220V=239.2W	826.08
	SF550X-24MP	EEE, Energy Detect, Short Reach	110V=41.2W 220V=42.0W	110V=452.0W 220V=440.9W	1,542.29
	SF550X-48	EEE, Energy Detect, Short Reach	110V=35.9W 220V=37.6W	N/A	128.30
	SF550X-48P	EEE, Energy Detect, Short Reach	110V=50.7W 220V=51.3W	110V=461.8W 220V=448.9W	1,575.73
	SF550X-48MP	EEE, Energy Detect, Short Reach	110V=54.7W 220V=54.4W	110V=842.1W 220V=820.7W	2,873.36
	SG550X-24	EEE, Energy Detect, Short Reach	110V=33.5W 220V=33.5W	N/A	114.31
	SG550X-24P	EEE, Energy Detect, Short Reach	110V=49.4W 220V=50.1W	110V=269.2W 220V=260.1W	918.55
	SG550X-24MP	EEE, Energy Detect, Short Reach	110V=53.8W 220V=54.8W	110V=471.2W 220V=460.4W	1,607.80
	SG550X-24MPP	EEE, Energy Detect, Short Reach	110V=62.3W 220V=62.2W	110V=870.1W 220V=860.2W	2,968.90
	SG550X-48	EEE, Energy Detect, Short Reach	110V=52.0W 220V=51.8W	N/A	177.43
	SG550X-48P	EEE, Energy Detect, Short Reach	110V=76.3W 220V=76.9W	110V=494.3W 220V=483.1W	1,686.62
	SG550X-48MP	EEE, Energy Detect, Short Reach	110V=82.9W 220V=82.9W	110V=893.1W 220V=878.0W	3,047.38
	SG550XG-8F8T	EEE, Energy Detect, Short Reach	110V=84.3W 220V=84.6W	N/A	288.67
	SG550XG-24F	EEE, Energy Detect, Short Reach	110V=76.6W 220V=77.5W	N/A	264.44

Feature	Description				
	SG550XG-24T	EEE, Energy Detect, Short Reach	110V=143.9W 220V=142.9W	N/A	491.01
	SG550XG-48T	EEE, Energy Detect, Short Reach	110V=264.4W 220V=255.8W	N/A	902.17
	SX550X-12F	EEE, Energy Detect, Short Reach	110V=24.3W 220V=25.3W	N/A	86.33
	SX550X-16FT	EEE, Energy Detect, Short Reach	110V=57W 220V=57.7W	N/A	196.88
	SX550X-24FT	EEE, Energy Detect, Short Reach	110V=78.4W 220V=80.2W	N/A	273.65
	SX550X-24F	EEE, Energy Detect, Short Reach	110V=54.9W 220V=55.5W	N/A	189.37
	SX550X-24	EEE, Energy Detect, Short Reach	110V=124.1W 220V=124.6W	N/A	425.15
	SX550X-52	EEE, Energy Detect, Short Reach	110V=234.5W 220V=229.3W	N/A	800.15
Ports	Model name	Total system ports	Network ports	Uplink ports	
	SF550X-24	24x FE + 4x 10 GE	24x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SF550X-24P	24x FE + 4x 10 GE	24x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SF550X-24MP	24x FE + 4x 10 GE	24x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SF550X-48	48x FE + 4x 10 GE	48x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SF550X-48P	48x FE + 4x 10 GE	48x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SF550X-48MP	48x FE + 4x 10 GE	48x FE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SG550X-24	24x GE + 4x 10 GE	24x GE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SG550X-24P	24x GE + 4x 10 GE	24x GE	2x 10 GE copper/SFP+ combo + 2x SFP+	
	SG550X-24MP	24x GE + 4x 10 GE	24x GE	2x 10 GE copper/SFP+ combo + 2x SFP+	

Feature	Description			
	SG550X-24MPP	24x GE + 4x 10 GE	24x GE	2x 10 GE copper/SFP+ combo + 2x SFP+
	SG550X-48	48x GE + 4x 10 GE	48x GE	2x 10 GE copper/SFP+ combo + 2x SFP+
	SG550X-48P	48x GE + 4x 10 GE	48x GE	2x 10 GE copper/SFP+ combo + 2x SFP+
	SG550X-48MP	48x GE + 4x 10 GE	48x GE	2x 10 GE copper/SFP+ combo + 2x SFP+
	SG550XG-8F8T	8x 10 GE copper + 8x 10 GE SFP+ plus 1x GE OOB management	8x 10 GE	8x 10 GE SFP+
	SG550XG-24F	22x 10 GE SFP+ slots + 2x combo 10 GE copper/SFP+ plus 1x GE OOB management	22x 10 GE SFP+	2x 10 GE copper/SFP+ combo
	SG550XG-24T	22x 10 GE copper + 2x combo 10 GE copper/SFP+ plus 1x GE OOB management	22x 10 GE	2x 10 GE copper/SFP+ combo
	SG550XG-48T	46x 10 GE copper + 2x combo 10 GE copper/SFP+ plus 1x GE OOB management	46x 10 GE	2x 10 GE copper/SFP+ combo
	SX550X-12F	10x 10 GE SFP+ slots + 2x combo 10 GE copper/SFP+ plus 1x GE OOB management	10x 10 GE	2x 10 GE copper/SFP+ combo
	SX550X-16FT	8x 10 GE copper + 8x 10 GE SFP+ plus 1x GE OOB management	8x 10 GE	8x 10 GE SFP+
	SX550X-24FT	12x 10 GE copper + 12x 10 GE SFP+ plus 1 GE OOB management	12x 10 GE	12x 10 GE SFP+
	SX550X-24F	20x 10 GE SFP+ slots + 4x combo 10 GE copper/SFP+ plus 1x GE OOB management	20x 10 GE SFP+	4x 10 GE copper/SFP+ combo
	SX550X-24	20x 10 GE copper + 4x combo 10 GE copper/SFP+ plus 1x GE OOB management	20x 10 GE	4x 10 GE copper/SFP+ combo
	SX550X-52	48x 10 GE copper + 4x 10 GE SFP+ plus 1x GE OOB management	48x 10 GE	4x 10 GE SFP+



Feature	Description	
<b>Console port</b>	Cisco Standard RJ-45 console port	
<b>OOB management port</b>	Dedicated Gigabit management port for out-of-band management on SG550XG and SX550X models	
<b>RPS</b>	RPS connector	
<b>USB slot</b>	USB Type-A slot on the front panel of the switch for easy file and image management	
<b>Buttons</b>	Reset button	
<b>Cabling type</b>	Unshielded Twisted Pair (UTP) Category 5 or better; fiber options (SMF and MMF); coaxial SFP+	
<b>LEDs</b>	System, master, fan, RPS, stack ID, link/speed per port	
<b>Flash</b>	256 MB	
<b>CPU</b>	1.3 GHz (dual-core) ARM for SX550X models 800 MHz (dual-core) ARM for all other models	
<b>CPU memory</b>	512 MB	
<b>Packet buffer</b>	All numbers are aggregate across all ports because the buffers are dynamically shared:	
	Model name	Packet buffer
	SF550X-24	1.5 MB
	SF550X-24P	1.5 MB
	SF550X-24MP	1.5 MB
	SF550X-48	3 MB
	SF550X-48P	3 MB
	SF550X-48MP	3 MB
	SG550X-24	1.5 MB
	SG550X-24P	1.5 MB
	SG550X-24MP	1.5 MB
	SG550X-24MPP	1.5 MB
	SG550X-48	3 MB
	SG550X-48P	3 MB
	SG550X-48MP	3 MB
SG550XG-8F8T	2 MB	

Feature	Description			
	SG550XG-24F	2 MB		
	SG550XG-24T	2 MB		
	SG550XG-48T	4 MB		
	SX550X-12F	3 MB		
	SX550X-16FT	3 MB		
	SX550X-24FT	3 MB		
	SX550X-24F	3 MB		
	SX550X-24	3 MB		
	SX550X-52	10 MB		
<b>Supported SFP/SFP+ modules</b>	<b>SKU</b>	<b>Media</b>	<b>Speed</b>	<b>Maximum distance</b>
	MGBBX1	Single-mode fiber	1000 Mbps	10 km
	MGBSX1	Multimode fiber	1000 Mbps	500 m
	MGBLH1	Single-mode fiber	1000 Mbps	40 km
	MGBLX1	Single-mode fiber	1000 Mbps	10 km
	MGBT1	UTP cat 5e	1000 Mbps	100 m
	GLC-LH-SMD=	Single-mode fiber	1000 Mbps	10 km
	GLC-BX-U=	Single-mode fiber	1000 Mbps	10 km
	SFP-H10GB-CU1M	Copper coax	10 Gig	1 m
	SFP-H10GB-CU3M	Copper coax	10 Gig	3 m
	SFP-H10GB-CU5M	Copper coax	10 Gig	5 m
	SFP-10G-SR	Multimode fiber	10 Gig	26 m - 400 m
	SFP-10G-LR	Single-mode fiber	10 Gig	10 km
	SFP-10G-SR-S	Multimode fiber	10 Gig	26 m - 400 m
	SFP-10G-LR-S	Single-mode fiber	10 Gig	10 km

Feature	Description	
<b>Environmental</b>		
<b>Unit dimensions (W x H x D)</b>	<b>Model name</b>	<b>Unit dimensions</b>
	SF550X-24	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SF550X-24P	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SF550X-24MP	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SF550X-48	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SF550X-48P	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SF550X-48MP	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-24	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SG550X-24P	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-24MP	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-24MPP	440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550X-48	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SG550X-48P	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550X-48MP	440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550XG-8F8T	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550XG-24F	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SG550XG-24T	440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SG550XG-48T	440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)
	SX550X-12F	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SX550X-16FT	440 x 44 x 257 mm (17.3 x 1.7 x 10.12 in)
	SX550X-24FT	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SX550X-24F	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
	SX550X-24	440 x 44 x 350 mm (17.3 x 1.7 x 13.78 in)
SX550X-52	440 x 44 x 450 mm (17.3 x 1.7 x 17.72 in)	

Feature	Description	
<b>Unit weight</b>	Model name	Unit weight
	SF550X-24	3.09 kg (6.81 lb)
	SF550X-24P	4.14 kg (9.13 lb)
	SF550X-24MP	4.74 kg (10.45 lb)
	SF550X-48	3.54 kg (7.80 lb)
	SF550X-48P	5.09 kg (11.22 lb)
	SF550X-48MP	5.16 kg (11.38 lb)
	SG550X-24	3.27 kg (7.21 lb)
	SG550X-24P	4.72 kg (10.41 lb)
	SG550X-24MP	5.33 kg (11.75 lb)
	SG550X-24MPP	6.19 kg (13.65 lb)
	SG550X-48	3.73 kg (8.22 lb)
	SG550X-48P	5.82 kg (12.83 lb)
	SG550X-48MP	6.69 kg (14.75 lb)
	SG550XG-8F8T	5.23 kg (11.53 lb)
	SG550XG-24F	4.16 kg (9.17 lb)
	SG550XG-24T	6.38 kg (14.07 lb)
	SG550XG-48T	7.43 kg (16.38 lb)
	SX550X-12F	3.42 kg (7.54 lb)
	SX550X-16FT	3.79 kg (8.36lb)
SX550X-24FT	4.84 kg (10.67 lb)	
SX550X-24F	4.70 kg (10.36 lb)	
SX550X-24	5.16 kg (11.38 lb)	
SX550X-52	7.36 kg (16.23 lb)	
<b>Power</b>	100 - 240V 47 - 63 Hz, internal, universal	
<b>Certification</b>	UL (UL 60950), CSA (CSA 22.2), CE mark, FCC Part 15 (CFR 47) Class A	
<b>Operating temperature</b>	32° to 122° F (0° to 50° C)	

Feature	Description			
Storage temperature	-4° to 158°F (-20° to 70°C)			
Operating humidity	10% to 90%, relative, noncondensing			
Storage humidity	10% to 90%, relative, noncondensing			
Acoustic noise and Mean Time Between Failures (MTBF)	Model name	Fan (number)	Acoustic noise	MTBF at 50° C (hours)
	SF550X-24	1 + 1 (redundant)	0° C - 30° C: 35.2dB 50° C: 38.3dB	581,004
	SF550X-24P	2 + 1 (redundant)	0° C - 25° C: 36.3dB 50° C: 41.6dB	573,356
	SF550X-24MP	3 + 1 (redundant)	0° C - 30° C: 37.9dB 50° C: 41.2dB	575,569
	SF550X-48	1 + 1 (redundant)	0° C - 25° C: 35.7dB 50° C: 40.8dB	504,328
	SF550X-48P	3 + 1 (redundant)	0° C - 25° C: 37.2dB 50° C: 43.8dB	495,885
	SF550X-48MP	4 + 1 (redundant)	0° C - 25° C: 42.5dB 50° C: 46.5dB	472,180
	SG550X-24	1 + 1 (redundant)	0° C - 30° C: 34.2dB 50° C: 49.3dB	375,790
	SG550X-24P	3 + 1 (redundant)	0° C - 25° C: 41.0dB 50° C: 52.9dB	299,949
	SG550X-24MP	3 + 1 (redundant)	0° C - 30° C: 43.9dB 50° C: 52.3dB	178,798
	SG550X-24MPP	4 + 1 (redundant)	0° C - 30° C: 43.1dB 50° C: 53.2dB	170,213
	SG550X-48	1 + 1 (redundant)	0° C - 30° C: 35.0dB 50° C: 51.7dB	248,097
	SG550X-48P	3 + 1 (redundant)	0° C - 25° C: 43.6dB 50° C: 52.1dB	159,129
	SG550X-48MP	4 + 1 (redundant)	0° C - 30° C: 43.1dB 50° C: 53.2dB	163,264

Feature	Description			
	SG550XG-8F8T	3 + 1 (redundant)	0° C - 30° C: 39.2dB 50° C: 49.6dB	434,724
	SG550XG-24F	4 + 1 (redundant)	0° C - 30° C: 40.0dB 50° C: 49.1dB	642,449
	SG550XG-24T	4 + 1 (redundant)	0° C - 30° C: 40.1dB 50° C: 50.5dB	217,465
	SG550XG-48T	4 + 1 (redundant)	0° C - 25° C: 44.5dB 50° C: 58.9dB	111,323
	SX550X-12F	3 + 1 (redundant)	0° C - 30° C: 45.8dB 50° C: 60.0dB	652,253
	SX550X-16FT	2 + 1 (redundant)	0° C - 30° C: 39.1dB 50° C: 49.9dB	412,309
	SX550X-24FT	2 + 1 (redundant)	0° C - 30° C: 43.3dB 50° C: 60.3dB	824,453
	SX550X-24F	3 + 1 (redundant)	0° C - 30° C: 41.9dB 50° C: 52.9dB	433,149
	SX550X-24	4 + 1 (redundant)	0° C - 30° C: 41.9dB 50° C: 53.6dB	289,691
	SX550X-52	5 + 1 (redundant)	0° C - 30° C: 47.8dB 50° C: 61.2dB	174,542
<b>Warranty</b>	Limited lifetime with next-business-day advance replacement (where available, otherwise same day ship)			

### Package contents

- Cisco 550X Series Stackable Managed Switch
- Power cord
- Mounting kit included with all models
- Console cable
- Quick Start Guide

## Minimum requirements

- Web browser: Mozilla Firefox version 34 or later; Microsoft Internet Explorer version 9 or later, Chrome version 40 or later, Safari version 5 or later
- Category 5 Ethernet network cable for 10/100 speeds at up to 100m; Category 5e Ethernet network cable for Gigabit speeds at up to 100m; Category 6a Ethernet network cable for 10 Gig speeds at up to 100m
- TCP/IP, network adapter, and network operating system (such as Microsoft Windows, Linux, or Mac OS X) installed

## Ordering information

Table 2 provides ordering information.

**Table 2.** Ordering information

Model name	Product order ID number	Description
<b>Fast Ethernet</b>		
<b>SF550X-24</b>	SF550X-24-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100 ports</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SF550X-24P</b>	SF550X-24P-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100 PoE+ ports with 195W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SF550X-24MP</b>	SF550X-24MP-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100 PoE+ ports with 382W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SF550X-48</b>	SF550X-48-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100 ports</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SF550X-48P</b>	SF550X-48P-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100 PoE+ ports with 382W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SF550X-48MP</b>	SF550X-48MP-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100 PoE+ ports with 740W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>Gigabit Ethernet</b>		
<b>SG550X-24</b>	SG550X-24-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000 ports</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SG550X-24P</b>	SG550X-24P-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000 PoE+ ports with 195W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SG550X-24MP</b>	SG550X-24MP-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000 PoE+ ports with 382W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SG550X-24MPP</b>	SG550X-24MPP-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10/100/1000 PoE+ ports with 740W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SG550X-48</b>	SG550X-48-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000 ports</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>SG550X-48P</b>	SG550X-48P-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000 PoE+ ports with 382W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>

Model name	Product order ID number	Description
<b>SG550X-48MP</b>	SG550X-48MP-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10/100/1000 PoE+ ports with 740W power budget</li> <li>• 4 x 10 Gigabit Ethernet (2 x 10GBase-T/SFP+ combo + 2 x SFP+)</li> </ul>
<b>10 Gigabit Ethernet</b>		
<b>SG550XG-8F8T</b>	SG550XG-8F8T-K9-xx	<ul style="list-style-type: none"> <li>• 8 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 8 x 10 Gigabit Ethernet SFP+ (dedicated)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SG550XG-24F</b>	SG550XG-24F-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10 Gigabit Ethernet SFP+</li> <li>• 2 x 10 Gigabit Ethernet 10Gbase-T copper port (combo with 2 SFP+)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SG550XG-24T</b>	SG550XG-24T-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SG550XG-48T</b>	SG550XG-48T-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 2 x 10 Gigabit Ethernet SFP+ (combo with 2 copper ports)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-12F</b>	SX550X-12F-K9-xx	<ul style="list-style-type: none"> <li>• 12 x 10 Gigabit Ethernet SFP+</li> <li>• 2 x 10 Gigabit Ethernet 10Gbase-T copper port (combo with 2 SFP+)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-16FT</b>	SX550X-16FT-K9-xx	<ul style="list-style-type: none"> <li>• 8 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 8 x 10 Gigabit Ethernet SFP+ (dedicated)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-24FT</b>	SX550X-24FT-K9-xx	<ul style="list-style-type: none"> <li>• 12 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 12 x 10 Gigabit Ethernet SFP+ (dedicated)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-24F</b>	SX550X-24F-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10 Gigabit Ethernet SFP+</li> <li>• 4 x 10 Gigabit Ethernet 10Gbase-T copper port (combo with 4 SFP+)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-24</b>	SX550X-24-K9-xx	<ul style="list-style-type: none"> <li>• 24 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 4 x 10 Gigabit Ethernet SFP+ (combo with 4 copper ports)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>
<b>SX550X-52</b>	SX550X-52-K9-xx	<ul style="list-style-type: none"> <li>• 48 x 10 Gigabit Ethernet 10GBase-T copper port</li> <li>• 4 x 10 Gigabit Ethernet SFP+ (dedicated)</li> <li>• 1 x Gigabit Ethernet management port</li> </ul>

The 10 Gigabit Ethernet copper and SFP+ port supports 10 GE and 1 GE speeds.

Each combo port includes one copper port and one SFP/SFP+ port, with 1 port active at a time.

The -xx in the Product Order ID Number is a country/region specific suffix. For example, the complete PID of SG550X-48P for the United States is SG550X-48P-K9-NA. Please refer to the following table for which suffix to use for your country/region.



**Table 3.** Country/region suffix for product order ID number

Suffix	Country/region
-NA	USA, Canada, Mexico, Colombia, Chile, and rest of LATAM
-BR	Brazil
-AR	Argentina
-EU	EU, Russia, Ukraine, Israel, UAE, Turkey, Egypt, South Africa, Indonesia, Philippines, Vietnam, Thailand, India, Korea
-UK	United Kingdom, Saudi Arabia, Qatar, Kuwait, Singapore, Hong Kong, Malaysia
-AU	Australia, New Zealand
-CN	China
-JP	Japan

The products may also be available in countries or regions not listed above. Not all product models are offered in all countries/regions. For India, either the -EU or -IN suffix will be used depending on product models. For Korea, either the -EU or -KR suffix will be used depending on product models. Please consult your local Cisco sales representative or Cisco partner for more details.

### An advanced technology backbone for growing businesses

Growth is never a bad thing. However, as you gain new customers and a higher profile, you need a business technology platform capable of delivering a higher level of service and reliability. With more users, more devices and applications, and more exposure to security threats, a switching platform designed for a smaller operation simply cannot meet your growing needs. It's time for a network that will support your business as you take it to the next level. Cisco 550X Series switches provide the advanced feature set, reliability, and investment protection your business needs, today and in the future.

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Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	<a href="#">Materials</a>
Information on electronic waste laws and regulations, including products, batteries, and packaging	<a href="#">WEEE compliance</a>

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# BGR SERIES PRE-CONFIGURED FOR AV SYSTEMS

A pre-configured BGR Built for today's AV systems. The accessories and options included with the Pre-Configured BGR for AV are exactly what you need to deliver an optimized AV system.

## INCLUDES

### PANELS

- (4) Forward 1RU flanged blank panels (FWD-EB1)
- (2) Forward 2RU flanged blank panels (FWD-EB2)

### HORIZONTAL CABLE MANAGEMENT

- (1) 4pk of Forward straight horizontal lacer bar (FWD-LB-1A-4PK)
- (1) 4pk of Forward 2" offset horizontal lacer bar (FWD-LB-2A-4PK)

### VERTICAL CABLE MANAGEMENT

- (1) Forward Vertical Wire Grid Lace (FWD-LACE-WB3-XX-XX\*)
- (1) Forward Vertical Cable Management Lace (FWD-LACE-UMV-XX-XX\*)
- (2) Lever Lock™ vertical channel (LL-VC21)

### CABLE MANAGEMENT ACCESSORIES

- (1) 15pk of Forward tie saddles (FWD-TSW-15)
- (2) Velcro® straps for tie saddles (TW12)

### SMALL DEVICE MOUNTING

- (2) 4pk of Forward small device clamps (FWD-SIDECLMP-4)
- (1) Lever Lock™ plate for small device mounting (LL-VP2110)

### THERMAL MANAGEMENT

- (1) DC fan top (IBGR-276FT-FC)

### OPTIONS

- (1) Solid front door (BFD-XX\*)
- (1) Pair of side panels (BSPN-XX-YY\*)
- (1) set of leveling feet (LF-HD)

### HARDWARE

- (100) 10-32 threaded rackscrews (HP)

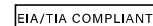


\*See compatibility matrix for full part number.

# BGR SERIES PRE-CONFIGURED FOR AV SYSTEMS

## SPECIFICATIONS

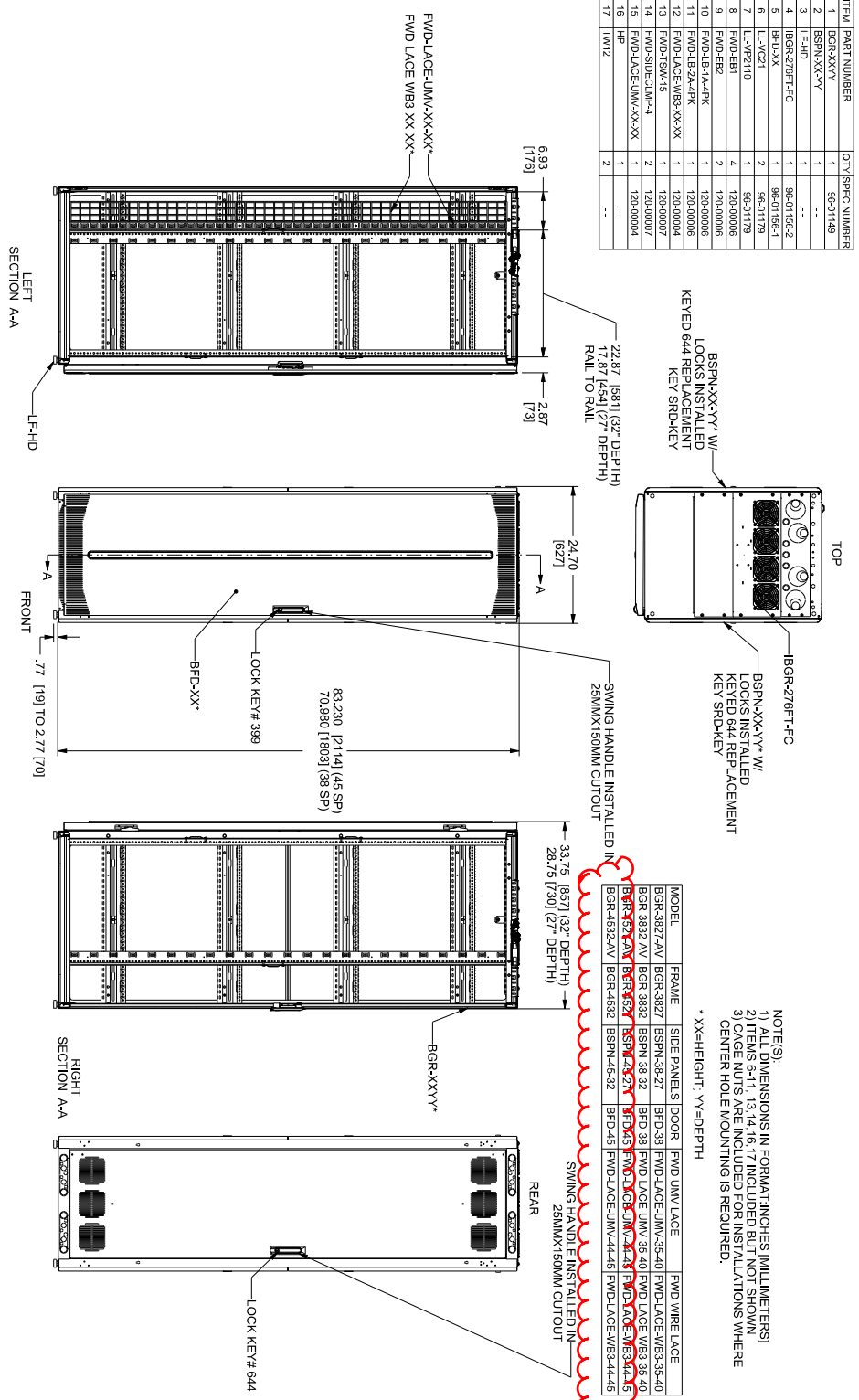
EIA compliant pre-configured 19" gangable AV equipment rack shall be Middle Atlantic Products model #BGR-\_\_-AV (see chart for available models). Overall dimensions of BGR shall be \_\_"H x 23"W x \_\_"D (refer to chart). Useable height of BGR shall be \_\_ rackspace, useable depth shall be \_\_"D (refer to chart). BGR shall come equipped with two pairs of fully adjustable steel rackrail with two 10-32 threaded holes per side of each marked rackspace, and a cage-nut style mount that is compatible with tool-free Forward Family rackmount accessories. BGR rackrail shall include cable management lacing provisions and accept tool-free Forward Family cable management accessories. BGR shall have .100" thick steel along rackrail brackets, .310" thick steel at corners. BGR shall include vented locking and latching rear door, which shall be capable of accepting up to six 4-1/2" fans. Top and bottom of BGR shall feature vertical slotted vent pattern for ventilation. BGR shall have two 1" x 7" rear obround knockouts with 1/2", 1", 1-1/4" and 1-1/2" electrical knockouts and 5/8" and 1/2" D UHF/ VHF antennae knockouts in base and top. BGR shall accept patented Lever Lock™ tool free and hardware free internal cable and device management system accessories. BGR shall have pre-threaded 5/16"-18 ganging holes. BGR shall be capable of ganging while fully loaded, using bolts only. BGR shall have marked rackrail depth indicators. BGR shall be of fully welded construction. BGR shall be finished in an environmentally friendly, durable black powdercoat. Grounding and bonding studs shall be 1/4-20 threaded, installed in top and base of enclosure. BGR shall include side panels, leveling feet, 276 CFM fan top, solid front door, rackscrews, Lever Lock™ panels and Forward Family blank panels, lacer bars, lace strips, lighting and other cable management accessories. Fully welded construction shall provide a UL Listed load capacity of 3,000 lbs. BGR shall be UL Listed in the US and Canada. BGR shall be GREENGUARD Gold Certified. BGR enclosure shall meet the RoHS EU Directive 2011/65/EU. BGR shall be manufactured by an ISO 9001 and ISO 14001 registered company. BGR enclosure and sheet metal accessories shall be warrantied to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product, power shall be warrantied for a period of 3 years.



# BGR SERIES

## PRE-CONFIGURED FOR AV BASIC DIMENSIONS

ITEM	PART NUMBER	QTY/SPEC NUMBER
1	BGR-XXXX	1 96-0148
2	BSPN-XXYY	1 ...
3	LF-HD	1 ...
4	BGR-276T-FC	1 96-0156-2
5	BFD-XX	1 96-0156-1
6	LV-C21	2 96-0179
7	LV-P210	1 96-0179
8	FWD-EB1	4 120-0006
9	FWD-EB2	2 120-0006
10	FWD-LB-1A-4PK	1 120-0006
11	FWD-LB-2A-4PK	1 120-0006
12	FWD-LAGE-WB3-XX-XX	1 120-0004
13	FWD-TSM-15	1 120-0007
14	FWD-SIDECLMP-4	2 120-0004
15	FWD-LAGE-UWV-XX-XX	1 ...
16	HP	1 ...
17	TWV2	2 ...



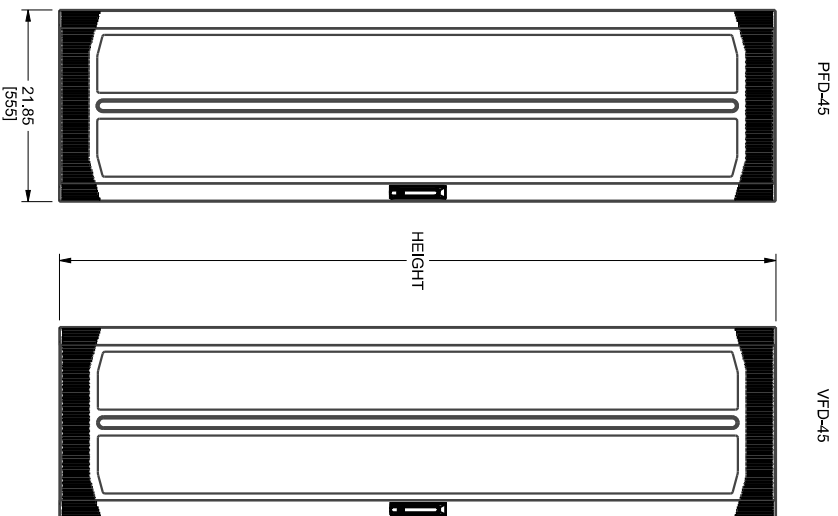
MODEL	FRAME	SIDE PANELS	DOOR	FWD U/W LAGE	FWD WIRE LAGE
BGR-3827-AV	BGR-3827	BSPN-38-27	BFD-38	FWD-LAGE-UWV-3S-40	FWD-LAGE-WB3-3S-40
BGR-3832-AV	BGR-3832	BSPN-38-32	BFD-38	FWD-LAGE-UWV-3S-40	FWD-LAGE-WB3-3S-40
BGR-4532-AV	BGR-4532	BSPN-45-32	BFD-45	FWD-LAGE-UWV-4A-45	FWD-LAGE-WB3-4A-45

NOTE(S):  
 1) ALL DIMENSIONS IN FORMAT INCHES (MILLIMETERS)  
 2) ITEMS 6-11, 13, 14, 16, 17 INCLUDED BUT NOT SHOWN  
 3) CAGE NUTS ARE INCLUDED FOR INSTALLATIONS WHERE CENTER HOLE MOUNTING IS REQUIRED.

\* XX=HEIGHT; YY=DEPTH

# BGR SERIES

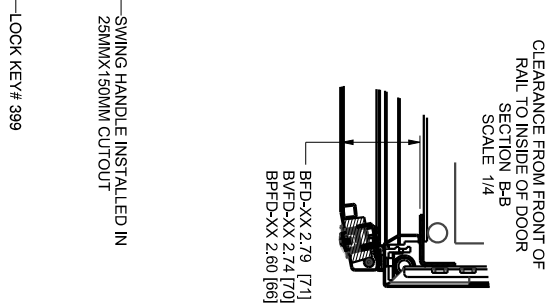
## DOOR BASIC DIMENSIONS



PFD-45

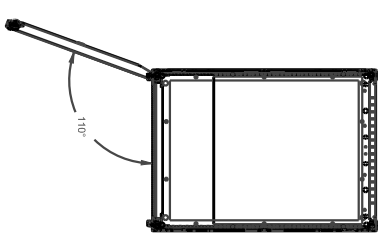
VFD-45

BFD-45



SWING HANDLE INSTALLED IN 25MMX150MM CUTOUT

LOOK KEY# 399

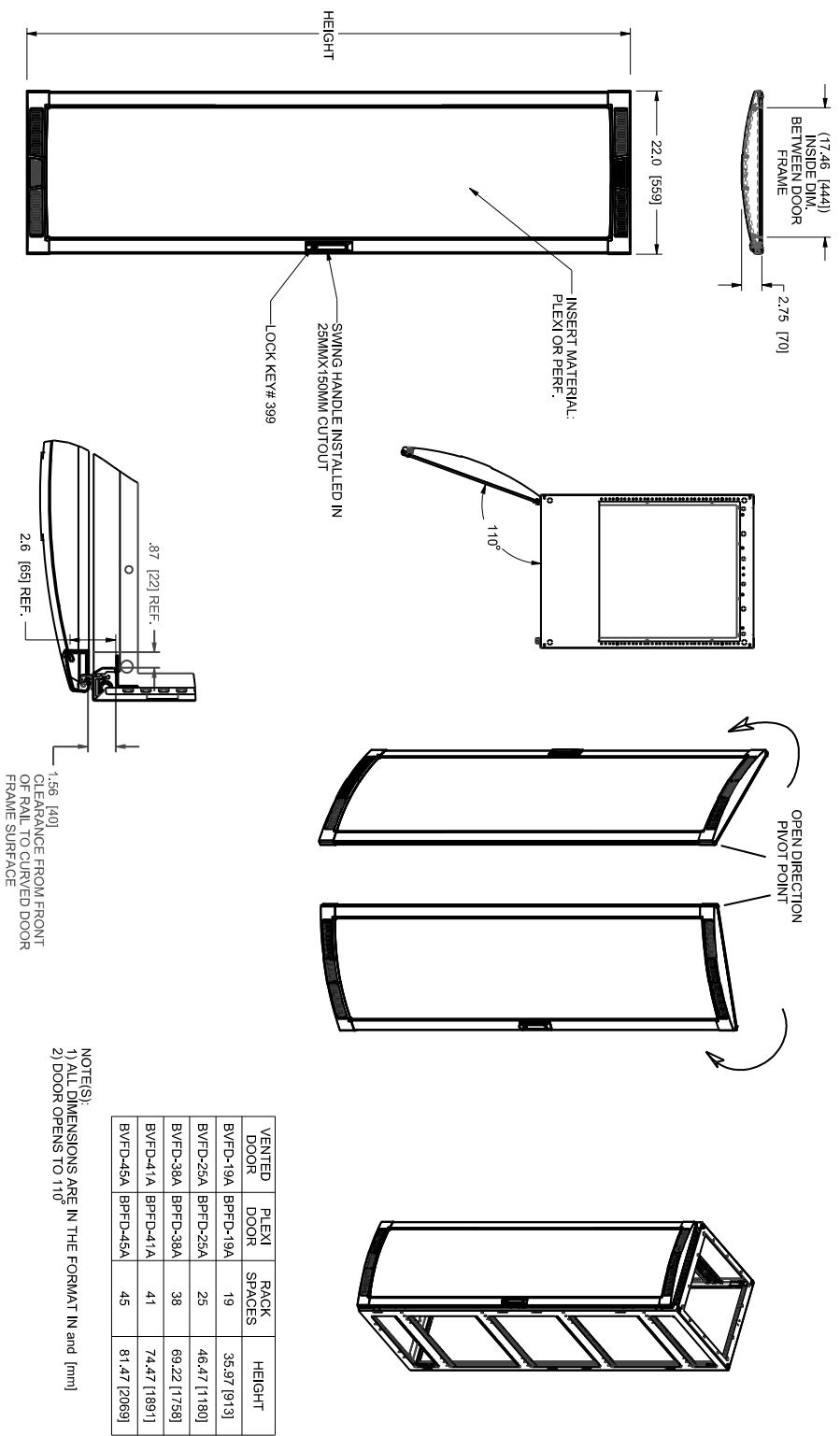


SOLID DOOR	VENTED DOOR	PLEXI DOOR	RACK SPACES	HEIGHT
BFD-19	BVFD-19	BPFD-19	19	36.22 [920]
BFD-25	BVFD-25	BPFD-25	25	46.72 [1187]
BFD-38	BVFD-38	BPFD-38	38	69.47 [1765]
BFD-41	BVFD-41	BPFD-41	41	74.72 [1898]
BFD-45	BVFD-45	BPFD-45	45	81.72 [2076]

NOTES:  
1) ALL DIMENSIONS ARE IN THE FORMAT IN [MM]  
2) DOOR OPENS TO 110°

# BGR SERIES

## DOOR BASIC DIMENSIONS



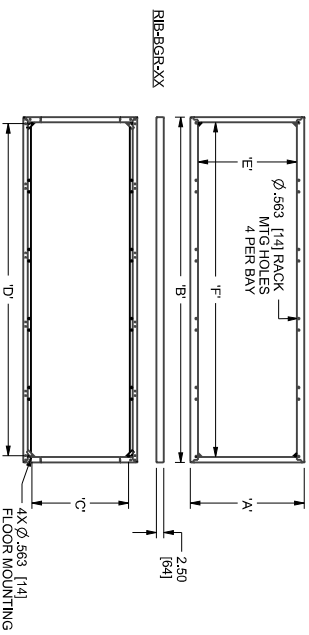
VENTED DOOR	PLEXI DOOR	RACK SPACES	HEIGHT
BVFD-19A	BPFD-19A	19	35.97 [913]
BVFD-25A	BPFD-25A	25	46.47 [1180]
BVFD-38A	BPFD-38A	38	69.22 [1758]
BVFD-41A	BPFD-41A	41	74.47 [1881]
BVFD-45A	BPFD-45A	45	81.47 [2069]

NOTES:  
 1) ALL DIMENSIONS ARE IN THE FORMAT IN and [mm]  
 2) DOOR OPENS TO 110°

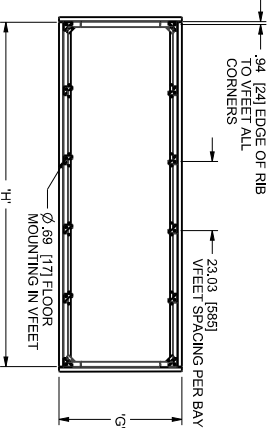
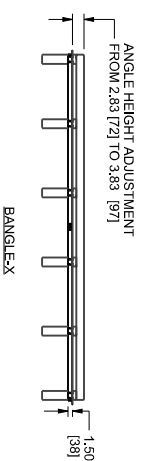
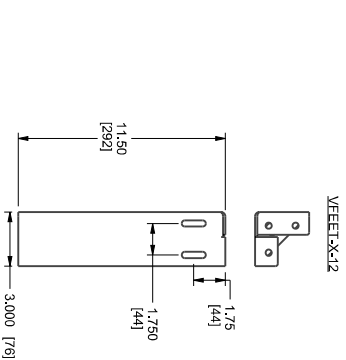
# BGR SERIES

## RISER BASE BASIC DIMENSIONS

NOTE(S):  
1. DIMENSION FORMAT SHOWN IN (MM)  
2. 27", 32" AND 38" DEEP MODELS ARE  
REPRESENTED IN THIS DRAWING.  
(RIB-X-BGR-27 / RIB-X-BGR-32 / RIB-X-BGR-38)



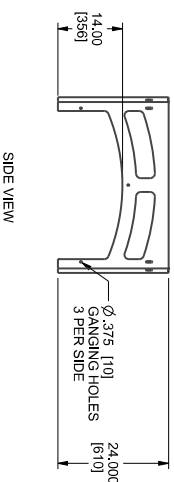
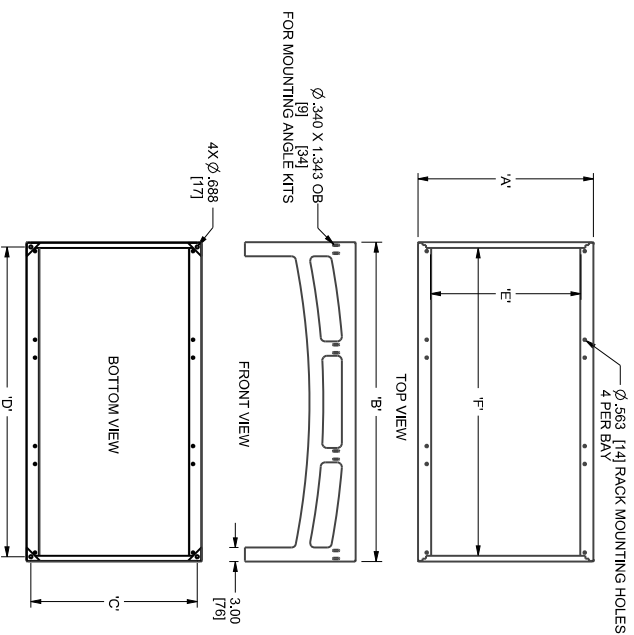
PART NUMBER	'A' DEPTH	'B' WIDTH	'C' DEPTH MING HOLE C TO C	'D' WIDTH MING HOLE C TO C	'E' OPENING DEPTH	'F' OPENING WIDTH	VEEET (QTY OF FEET)	ANGLE	'G' ANGLE DEPTH	'H' ANGLE WIDTH
RIB-4-BGR-27	27.00 (686)	23.00 (584)	21.18 (538)	18.62 (473)	22.00 (559)	19.5 (495)	VEEET-1-12 (4)	BANGLE-1	30.00 (762)	22.75 (578)
RIB-4-BGR-32	32.00 (813)	23.00 (584)	26.18 (665)	18.62 (473)	27.00 (686)	19.5 (495)	VEEET-1-12 (4)	BANGLE-1	30.00 (762)	22.75 (578)
RIB-4-BGR-38	38.00 (965)	23.00 (584)	32.18 (817)	18.62 (473)	33.00 (838)	19.5 (495)	VEEET-1-12 (4)	BANGLE-1-38	41.00 (1041)	22.75 (578)
RIB-2-BGR-27	27.00 (686)	46.03 (1169)	21.18 (538)	41.85 (1059)	22.00 (559)	42.53 (1080)	VEEET-2-12 (6)	BANGLE-2	30.00 (762)	45.78 (1163)
RIB-2-BGR-32	32.00 (813)	46.03 (1169)	26.18 (665)	41.85 (1059)	27.00 (686)	42.53 (1080)	VEEET-2-12 (6)	BANGLE-2	30.00 (762)	45.78 (1163)
RIB-2-BGR-38	38.00 (965)	46.03 (1169)	32.18 (817)	41.85 (1059)	33.00 (838)	42.53 (1080)	VEEET-2-12 (6)	BANGLE-2-38	41.00 (1041)	45.78 (1163)
RIB-3-BGR-27	27.00 (686)	69.06 (1754)	21.18 (538)	64.88 (1643)	22.00 (559)	65.56 (1665)	VEEET-3-12 (8)	BANGLE-3	30.00 (762)	68.81 (1748)
RIB-3-BGR-32	32.00 (813)	69.06 (1754)	26.18 (665)	64.88 (1643)	27.00 (686)	65.56 (1665)	VEEET-3-12 (8)	BANGLE-3	30.00 (762)	68.81 (1748)
RIB-3-BGR-38	38.00 (965)	69.06 (1754)	32.18 (817)	64.88 (1643)	33.00 (838)	65.56 (1665)	VEEET-3-12 (8)	BANGLE-3-38	41.00 (1041)	68.81 (1748)
RIB-4-BGR-27	27.00 (686)	92.09 (2339)	21.18 (538)	87.71 (2228)	22.00 (559)	88.59 (2250)	VEEET-4-12 (10)	BANGLE-4	30.00 (762)	91.84 (2333)
RIB-4-BGR-32	32.00 (813)	92.09 (2339)	26.18 (665)	87.71 (2228)	27.00 (686)	88.59 (2250)	VEEET-4-12 (10)	BANGLE-4	30.00 (762)	91.84 (2333)
RIB-4-BGR-38	38.00 (965)	92.09 (2339)	32.18 (817)	87.71 (2228)	33.00 (838)	88.59 (2250)	VEEET-4-12 (10)	BANGLE-4-38	41.00 (1041)	91.84 (2333)
RIB-5-BGR-27	27.00 (686)	115.12 (2924)	21.18 (538)	110.74 (2813)	22.00 (559)	111.62 (2835)	VEEET-5-12 (12)	BANGLE-5	30.00 (762)	114.87 (2918)
RIB-5-BGR-32	32.00 (813)	115.12 (2924)	26.18 (665)	110.74 (2813)	27.00 (686)	111.62 (2835)	VEEET-5-12 (12)	BANGLE-5	30.00 (762)	114.87 (2918)
RIB-5-BGR-38	38.00 (965)	115.12 (2924)	32.18 (817)	110.74 (2813)	33.00 (838)	111.62 (2835)	VEEET-5-12 (12)	BANGLE-5-38	41.00 (1041)	114.87 (2918)



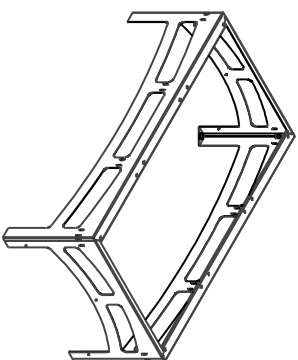


# BGR SERIES

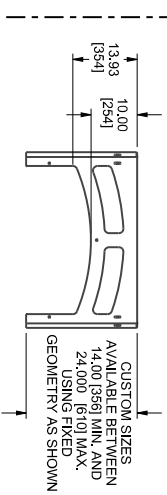
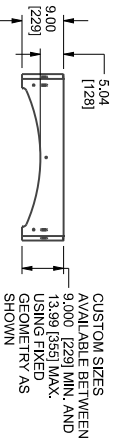
## SEISMIC RISER BASE BASIC DIMENSIONS



NOTE:  
1. 2/24 MOUNTING BRACKETS REQUIRED  
1 SET PER BAY  
BGR-Z4  
BGR-ISO-Z4

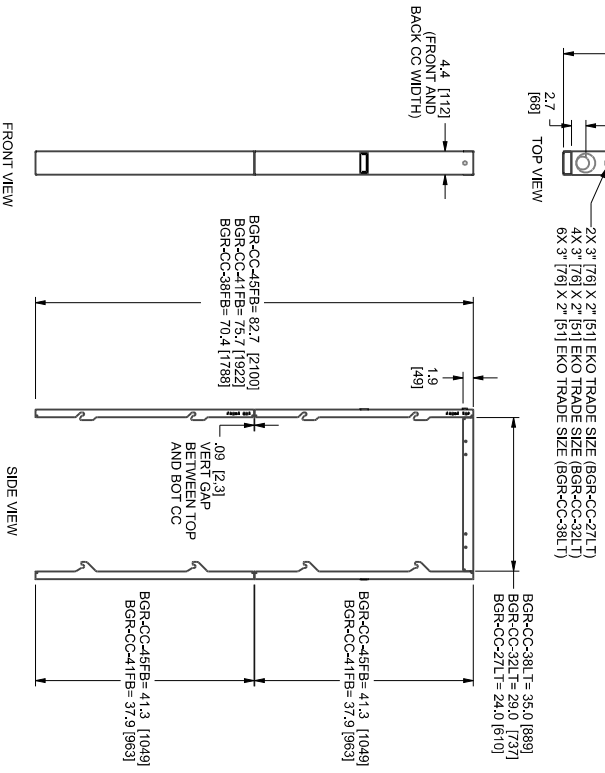
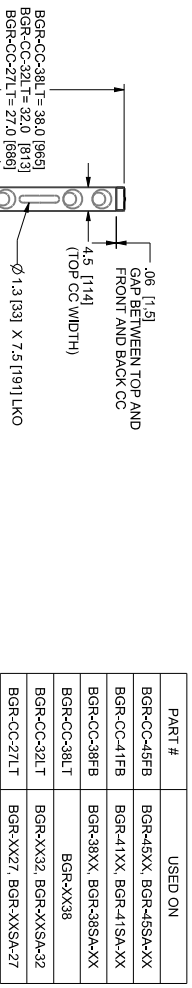


PART NUMBER	A' DEPTH	B' WIDTH	C' DEPTH MTG HOLE C TO C	D' WIDTH MTG HOLE C TO C	E' OPENING DEPTH	F' OPENING WIDTH	ANGLE KITS
SRB-1-BGR-3224	32.00 (813)	23.00 (584)	29.94 (761)	20.94 (532)	26.58 (675)	20.50 (521)	BANGLE-1
SRB-2-BGR-3224	32.00 (813)	46.03 (1169)	29.94 (761)	43.97 (1117)	26.58 (675)	43.53 (1109)	BANGLE-2
SRB-3-BGR-3224	32.00 (813)	69.06 (1754)	29.94 (761)	67.00 (1702)	26.58 (675)	66.56 (1691)	BANGLE-3
SRB-1-BGR-3824	38.00 (965)	23.00 (584)	35.94 (913)	20.94 (532)	32.58 (828)	20.50 (521)	BANGLE-1-38
SRB-2-BGR-3824	38.00 (965)	46.03 (1169)	35.94 (913)	43.97 (1117)	32.58 (828)	43.53 (1109)	BANGLE-2-38
SRB-3-BGR-3824	38.00 (965)	69.06 (1754)	35.94 (913)	67.00 (1702)	32.58 (828)	66.56 (1691)	BANGLE-3-38

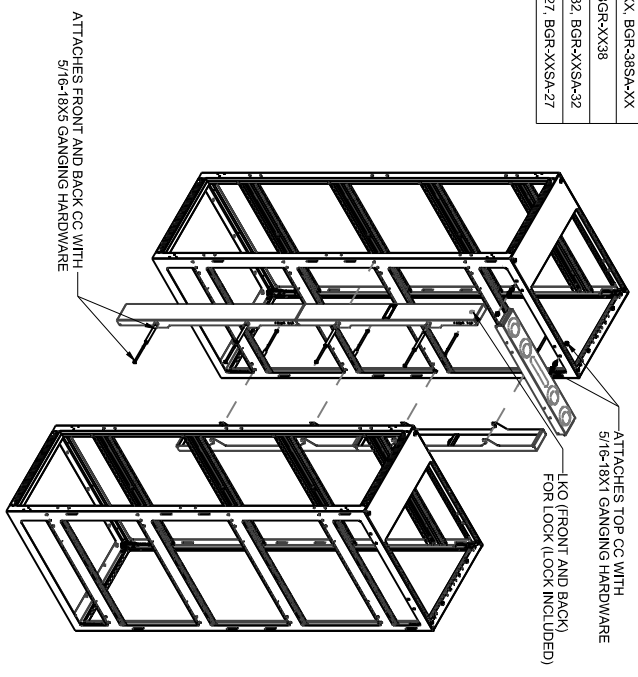


# BGR SERIES

## CABLE CHASE BASIC DIMENSIONS

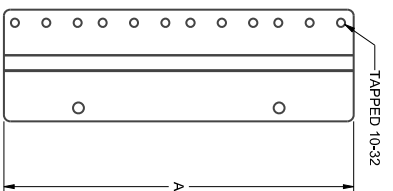
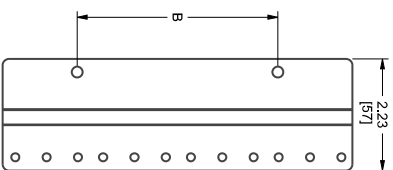
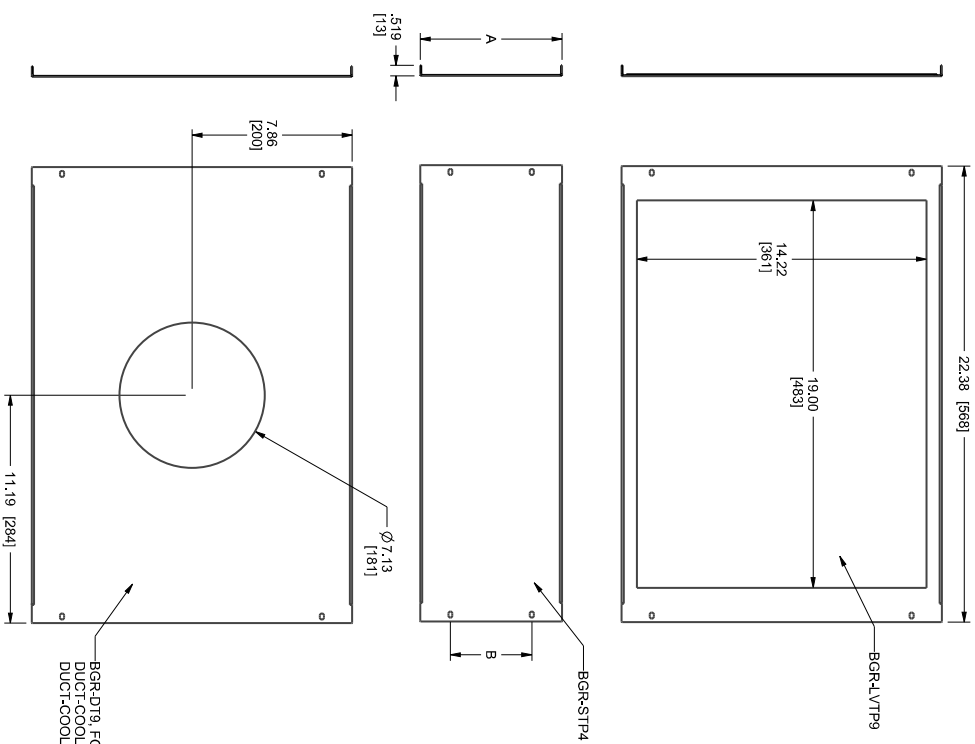


NOTE:  
 DIMENSION FORMAT SHOWN IN (MM)  
 BGR-CC-45FB, BGR-CC-41FB INCLUDES FOUR PIECES AND  
 BGR-CC-38FB INCLUDES TWO PIECES.  
 LKO = LASER KNOCKOUT  
 EKO = ELECTRICAL KNOCKOUT



# BGR SERIES

## TOP PANEL / RAIL BASIC DIMENSIONS



PART #	A	B	RACK SPACES
BGR-TRR4	6.97 [177]	4.00 [102]	4
BGR-TRR9	15.72 [399]	12.75 [324]	9

PART #	A	B	TYPE	MATERIAL	OPEN AREA
BGR-STP3	5.22 [133]	2.25 [57]	SOLID	ALUM	-
BGR-STP4	6.97 [177]	4.00 [102]	SOLID	ALUM	-
BGR-STP9	15.72 [399]	12.75 [324]	SOLID	STEEL	-
BGR-LVTP9	15.72 [399]	12.75 [324]	VENTED	STEEL	64%
BGR-DT9	15.72 [399]	12.75 [324]	DUCT TOP	STEEL	-

BGR-DT9, FOR USE WITH  
DUCT-COOL-1PT AND  
DUCT-COOL-2PT

# RCS SERIES RACK SYSTEM

**Configured rack series designed for use in residential installations.**

## FEATURES

- Fully welded steel construction
- UL Listed with up to a 1,200 lb. weight capacity, depending on model
- Includes removable locking side panels
- Includes 2 top-mounted DC fans
- Includes locking, reversible glass door and locking rear access panel
- Ships complete with locking swivel casters and leveling feet
- Each rack includes pre-installed shelves and blank panels

## SPECIFICATIONS

EIA compliant 19" equipment rack shall be Middle Atlantic Products model #RCS-\_\_24 (see chart for available models). Overall dimensions of RCS shall be \_\_"H x 23.3"W x 24"D (refer to chart). Useable height of RCS shall be \_\_ rackspace, useable depth shall be 20.2" (refer to chart). RCS shall come equipped with two pairs of adjustable steel rackrail with tapped 10-32 mounting holes in universal EIA spacing, black e-coat finish and numbered rackspace. RCS shall be of fully welded construction. RCS shall include locking reversible tempered glass front door with a push-button latch. RCS shall include solid locking rear and side panels. RCS shall include two 69 CFM top-mounted DC fans. RCS shall include locking swivel casters and leveling feet. RCS shall have a top mounted grommet with an opening of 1.3" x 7.5" for cable pass through. RCS shall have a 12" x 12" and 1.3" x 7.5" bottom opening. RCS shall come preconfigured with shelves and blank panels, please refer to chart. RCS shall be finished in an environmentally friendly, durable metallic grey powdercoat. Fully welded construction shall provide UL Listed load capacity of \_\_\_lbs.(refer to chart.) RCS shall be UL Listed in the US and Canada. RCS shall be GREENGUARD Gold Certified. RCS shall be manufactured by an ISO 9001 and ISO 14001 registered company. RCS enclosure shall be warranted to be free from defects in material or workmanship under normal use and conditions for the lifetime of the rack.



RCS-1824



RCS-2724



RCS-3524



RCS-4224

EIA/TIA COMPLIANT

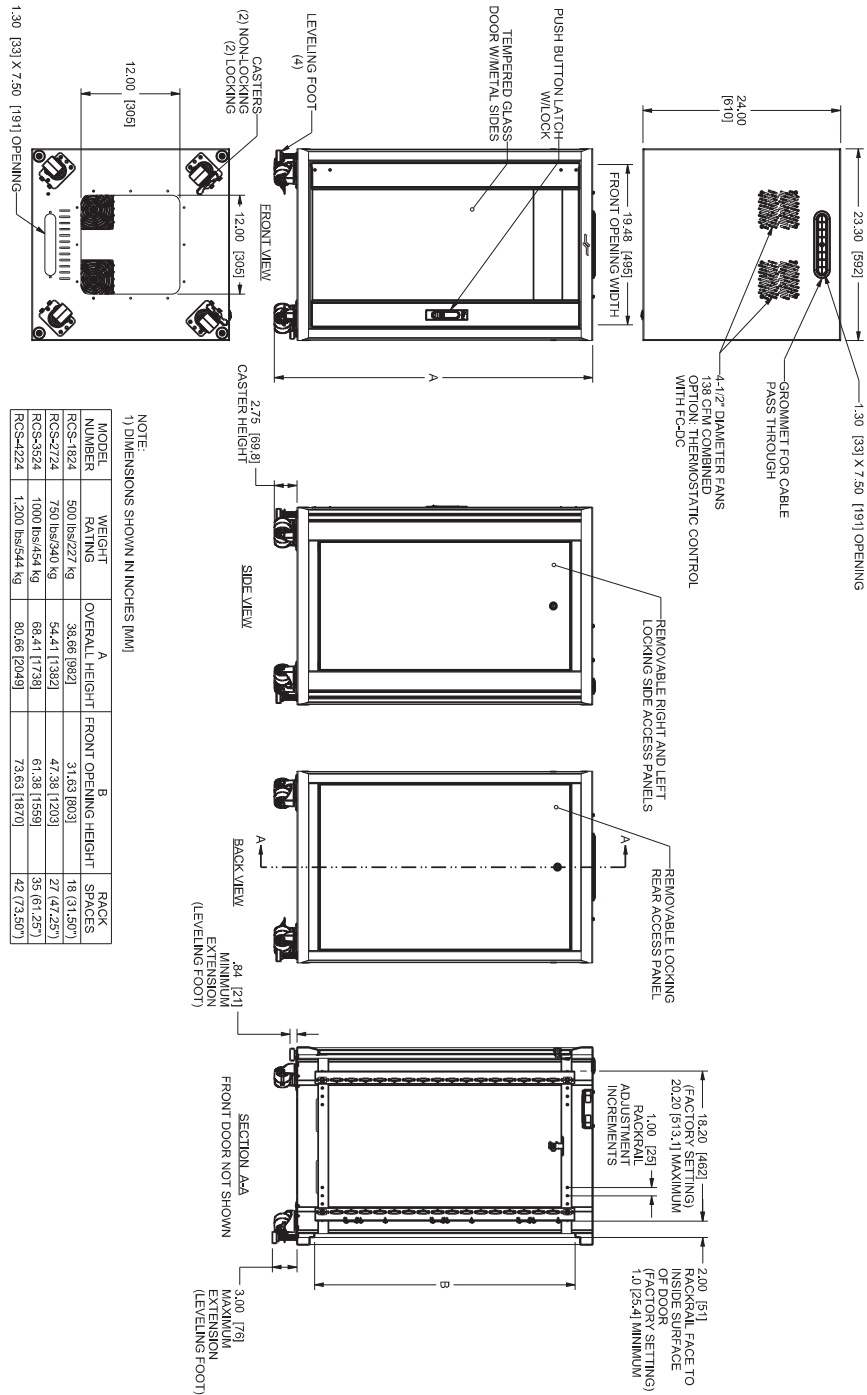


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Chief | Da-Lite | Luxul | Middle Atlantic | On-Q | SANUS

# RCS SERIES RACK SYSTEM

## SPECIFICATIONS



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Chief | De-Lite | Luxul | Middle Atlantic | On-Q | SANUS

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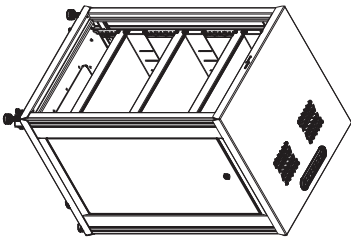
USA 800.266.7225 awmiddleatlantic.support@legrand.com CANADA 888.766.9770 awmiddleatlantic.support@legrand.com

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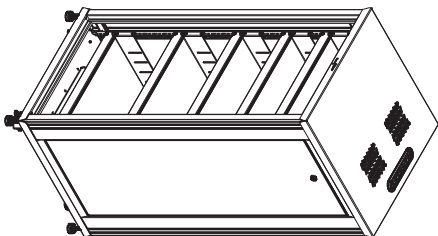
# RCS SERIES RACK SYSTEM

## SPECIFICATIONS

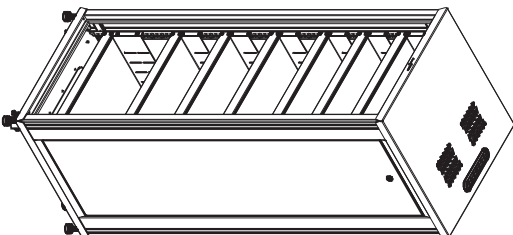
SHELF SIZE	WEIGHT RATING	A USABLE DEPTH	B USABLE WIDTH	C RACK SPACES
2 SP 16" SHELF	50 lbs	13.86 (403)	17.38 (441)	2
2 SP 18" SHELF	50 lbs	17.86 (494)	17.38 (441)	2
3 SP 20" SHELF	100 lbs	19.86 (504)	17.38 (441)	3



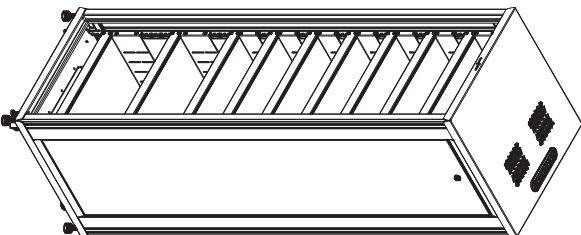
RCS-1824  
FACTORY CONFIGURATION  
(4) 2 SPACE 16" DEEP SHELVES  
(3) 1 SPACE BLANK PANELS



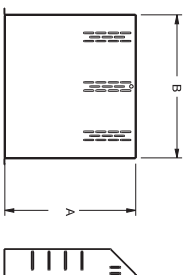
RCS-2724  
FACTORY CONFIGURATION  
(4) 2 SPACE 18" DEEP SHELVES  
(5) 1 SPACE BLANK PANELS



RCS-3524  
FACTORY CONFIGURATION  
(9) 2 SPACE 16" DEEP SHELVES  
(1) 2 SPACE 18" DEEP SHELF  
(7) 1 SPACE BLANK PANELS



RCS-4224  
FACTORY CONFIGURATION  
(6) 2 SPACE 16" DEEP SHELVES  
(2) 2 SPACE 18" DEEP SHELVES  
(1) 3 SPACE 20" DEEP SHELF  
(9) 1 SPACE BLANK PANELS



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# PD Series

slim power strips

high density power strips feature a slim, low-profile design and staggered outlets to accommodate plug-in power supplies

## features:

- UL Listed and CSA certified (PD-2420SC-NS UL Listed only)
- (1) 15 or 20 amp circuit depending on model
- Includes SignalSAFE™ power cord terminated with NEMA 5-15P or NEMA 5-20P plug depending on model
- Up to 24 outlets depending on model
- Outlets spaced to accommodate plug-in power supplies
- Circuit breaker or MOV surge & EMI filter & breaker protected, depending on model
- Mounting hardware included
- Slim low-profile design requires less space
- Gray outlets easy to see in rear of enclosures
- Lightweight anodized aluminum chassis



\* For additional Vertical Power Strips, please see A&E Spec # 96-938

## specifications:

High density slim power strip shall be Middle Atlantic Products model # PD-\_\_-\_\_ with \_\_ outlets and \_\_ amps (refer to chart). Slim power strip shall be \_\_" long x 1.25" deep x 1.6" wide and shall have gray \_\_ NEMA \_\_ outlets (refer to chart) in unique spacing pattern that allows up to \_\_ plug-in power supplies (refer to chart). Slim power strip includes \_\_ amp circuit breaker protection and mounting hardware (refer to chart). Terminated with \_\_\_\_ (refer to chart) SignalSAFE™ power cord with NEMA \_\_\_\_ plug (refer to chart). Grounding and bonding stud shall be 1/4 - 20 threaded. Slim power strip shall be ETL listed to UL standards 1149 and 1363 in US and to CAN/CSA standard C22.2 #8 and C22.2 #21 in Canada. Slim power strip shall be manufactured by an ISO 9001 registered company. Slim power strip shall be warranted to be free from defects in material or workmanship under normal use and conditions for a period of 3 years.

Customizable specification clips available at [middleatlantic.com](http://middleatlantic.com)



## options:

- Model # PB-XS, rackmounting bracket shall mount any 8 outlet power strip (PD-815SC, PD-815SC-NS) between rackrail of any EIA compliant 19" rack. Includes cable management tie points
- Model # PB-5A mounting brackets shall accommodate the mounting of vertical power strips to rackrail of any rack
- Model # PB-DWR mounting bracket shall accommodate the mounting of vertical power strips to rear rackrail of Middle Atlantic Products DWR & SR series wall racks

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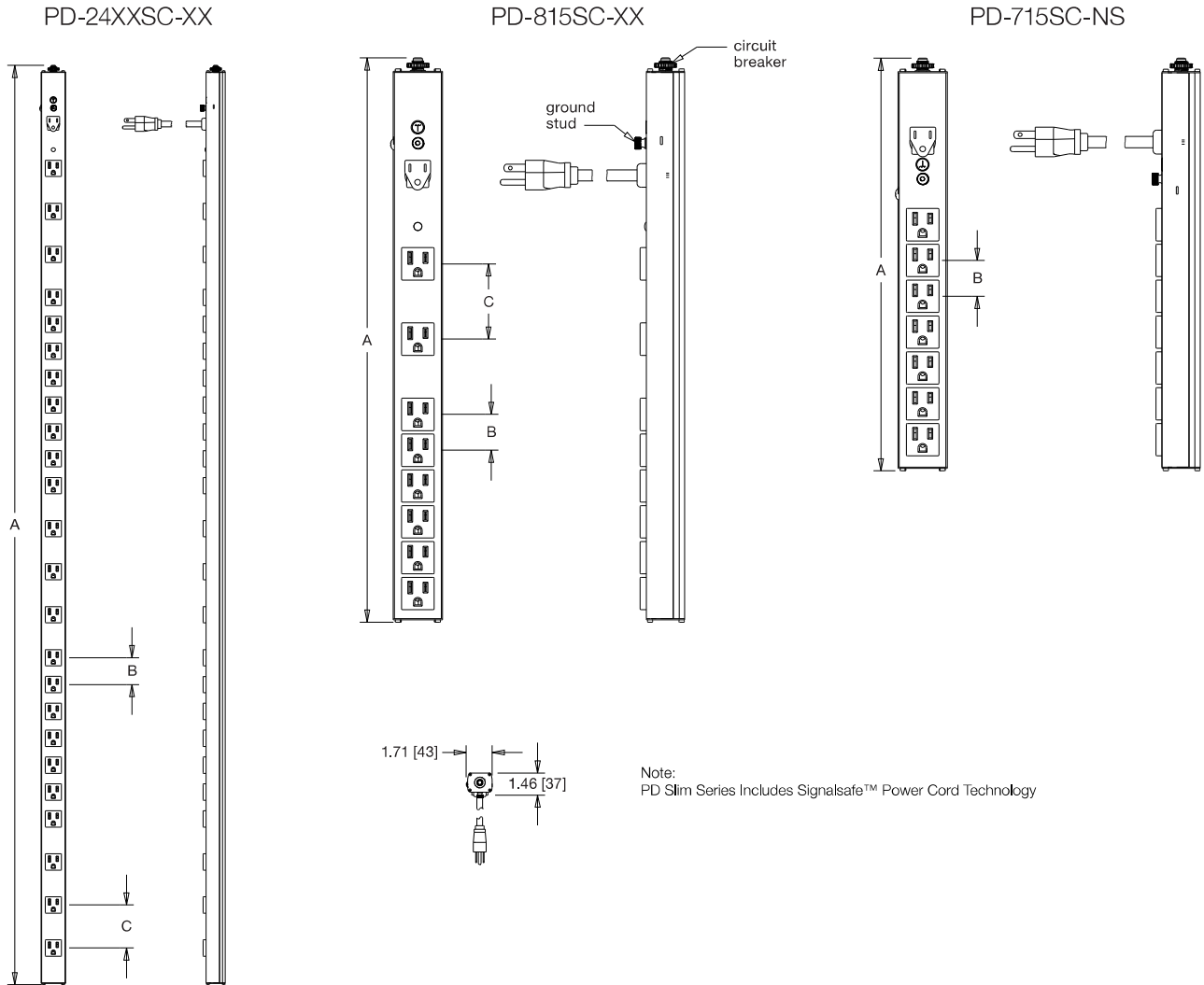
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96-976 / rev f / 5-18-20

# PD Series Slim

## basic dimensions

all dimensions in inches unless otherwise noted [all dimensions in brackets are in millimeters]



Part #	A Overall Length	B Outlet Spacing	C Outlet Spacing	# of Plug In Power Supplies Accomodated	# Of Outlets	Outlet Type	Cord Length/ Termination	Circuit	Surge Protection	Overcurrent Protection
PD-715SC-NS	13.60 [345]	1.18 [30]	N/A	1	7	5-15R	10' cord w/NEMA 5-15 plug	15 AMP (1)	none	circuit breaker
PD-815SC	18.60 [472]	1.18 [30]	2.48 [63]	3	8	5-15R	10' cord w/NEMA 5-15 plug	15 AMP (1)	single stage	circuit breaker
PD-815SC-20	18.60 [472]	1.18 [30]	2.48 [63]	3	8	5-15R	20' cord w/NEMA 5-15 plug	15 AMP (1)	single stage	circuit breaker
PD-815SC-NS	18.60 [472]	1.18 [30]	2.48 [63]	3	8	5-15R	10' cord w/NEMA 5-15 plug 15 AMP (1)	none	circuit breaker	
PD-815SC-PBSH*	18.60 [472]	1.18 [30]	2.48 [63]	3	8	5-15R	10' cord w/NEMA 5-15 plug	15 AMP (1)	single stage	circuit breaker
PD-2415SC	60.60 [1539]	1.77 [45]	2.84 [72]	11	24	5-15R	10' cord w/NEMA 5-15 plug	15 AMP (1)	single stage	circuit breaker
PD-2415SC-NS	60.60 [1539]	1.77 [45]	2.84 [72]	11	24	5-15R	10' cord w/NEMA 5-15 plug	15 AMP (1)	none	circuit breaker
PD-2420SC-NS	60.60 [1539]	1.77 [45]	2.84 [72]	11	24	5-15R (22), 5-20R (2)	10' cord w/NEMA 5-20 plug	20 AMP (1)	none	circuit breaker

\*PD-815SC-PBSH mounts on UXV Series fully vented utility shelves, RC and CAP Series clamping rackshelves, VRS - Vertical Rackmount Shelves, KD Series ready-to-assemble rackshelves, RSH Series custom face rackmounts

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**Outdoor Charging Station with Area Light.**

## Satisfy the Power Hungry

Outdoor spaces are becoming hubs for social activity and productivity. From corporate campuses with outdoor meeting spaces to colleges offering outdoor courses, the need for convenient and safe access to power outdoors continues to grow.

The Outdoor Charging Stations from Legrand provide an ideal solution for employees, students, and guests to charge their mobile devices in outdoor spaces. Each station includes a combination of standard GFCI power outlets and USB outlets. In addition, some stations incorporate LED lighting to enable easy usage at night. They can also support A/V or communication connectivity.

All stations are ADA compliant and NEMA 3R listed for use in outdoor locations. Shelves are available for device storage while charging. Available in three standard finishes, these elegant pedestals are designed to enhance your facility while blending into existing landscaping.

## Products



### Charging Station with Accent Light

Select a charging station with an LED accent light to enable device charging during the day and after dark. Accent light ensures the station stands out from standard bollards and clearly indicates "charging."



### Charging Station with Area Light

Combine outdoor device charging with an LED light to eliminate the need for a stand-alone bollard. Perfect for use as pathway lighting in educational, corporate and recreational applications.



### Power Pedestal

Ideal for areas that are already illuminated, such as outdoor dining areas. Shorter height enables use beside tables or as a lower-profile solution in landscaping.



### Lighting Station

Add lighting-only stations to complement the charging stations in your space. Enable a consistent look and provide pathway lighting to campuses.

## Compliance



cULus Listed, File Number E479489, Guide PUPR

Outdoor Charging Stations are UL Listed to meet NEMA 3R requirements for use in outdoor locations.

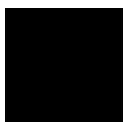
Outdoor Charging Stations comply with ADA guidelines.

## Features & Benefits

- **Charging and Illumination** – Combine charging with accent or area lighting in one pedestal to maximize functionality of outdoor spaces.
- **2- or 3-Gang Options** – Customize the station with two or three gangs of devices to meet your facility’s unique needs. Prewired versions include weather-resistant GFCI outlets and 4-port USB outlets. Also available unwired for complete customization.
- **Outdoor-Rated Construction** – Rugged aluminum form designed for durability in outdoor locations. UL listed to NEMA 3R requirements to ensure optimal performance. Door closes automatically to meet while-in-use requirements.
- **Durable, Premium Finishes** – Available in three outdoor-rated finishes to complement your space design. Choose from black, bronze, and silver to perfectly match your project.
- **A/V & Communication Compatible** – Add an A/V-Communication Kit to 3-gang versions to accommodate Wiremold AVIP plates, as well as decorator A/V or communication devices. Enables pedestal to support outdoor presentation areas and classrooms, eliminating the need to bring cables from inside a building.
- **Device Shelves** – Add up to two pairs of shelves to hold mobile devices while charging.
- **Door Options** – Interior illuminates when door is opened. Replace standard color-matched door with a transparent version to make devices inside more visible. Or, select a lockable door for added security or to ensure use is limited to facility personnel.
- **ADA compliant** – Meets all specifications for ADA guidelines, including unobstructed reach requirements.



COLOR OPTIONS:



Black



Bronze

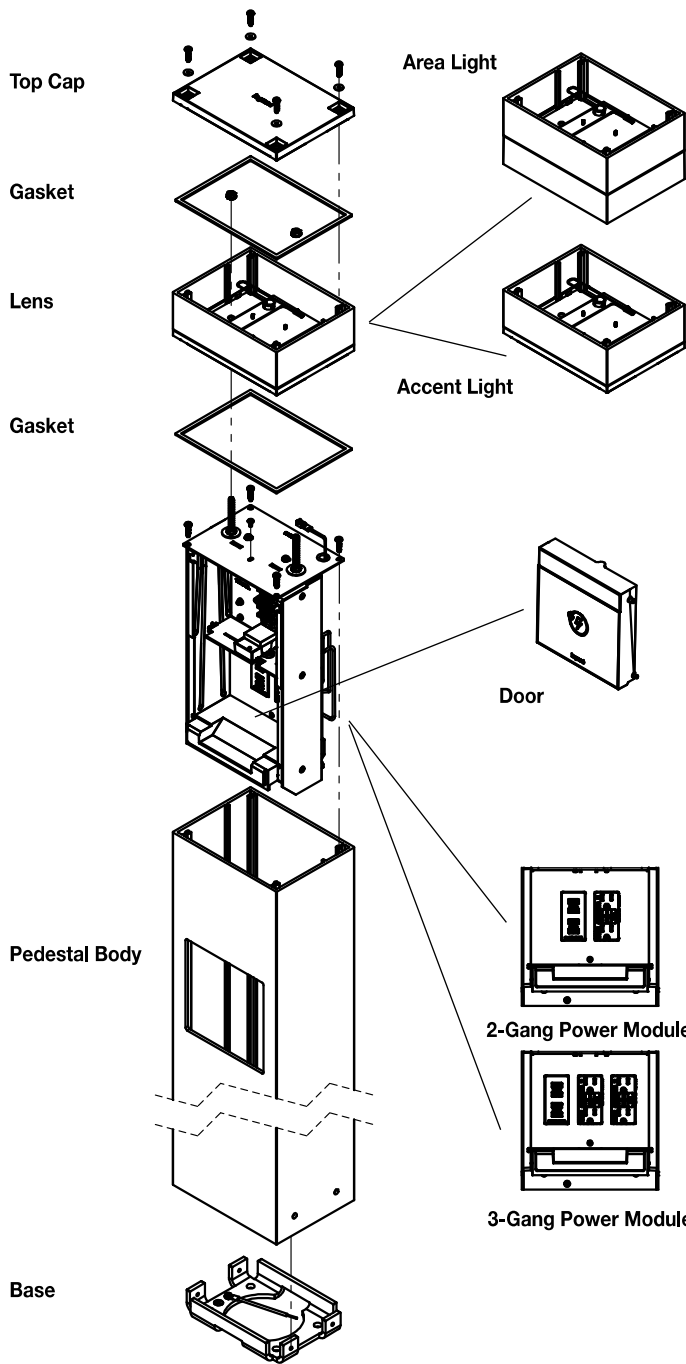


Silver

## Vertical Markets

- Commercial
- Education
- Entertainment
- Healthcare
- Hospitality
- Parks
- Retail
- Transit

### Charging Station Components



**Lens Options:**

- Charging Station or Lighting Station with Area Light
- Charging Station with Accent Light
- No Lens – Power Pedestal

**Door Options:**

- Color-Matched Door – shipped with pedestal
- Transparent Door – available accessory
- Locking Door – available accessory
- No Door – Lighting Station

**Device Options:**

- 2-Gang Power Module – Prewired with GFCI, USB devices or unwired with no devices
- 3-Gang Power Module – Prewired with GFCI, USB devices or unwired with no devices
- 3-Gang Power Module – Select unwired version and add A/V-Communications Kit (AVKIT) to combine power and low voltage
- No Devices – Lighting Station

## Technical Information

<b>Components &amp; Material</b>	
Lenses	Polycarbonate. UL F1 rating to ensure UV resistance.
Paint	Outdoor-rated powder coat
Pedestal Base & Hardware	Steel base (4 1/4" (108mm) diameter opening) with four (4) 3/8" (9.5mm) L bolts (8" length (203mm))
Pedestal Body	0.188" thick aluminum extrusion
Shelves	0.25" thick aluminum coated with outdoor-rated plasticcoat coating
Transparent Door	Polycarbonate. UL F1 rating to ensure UV resistance.
<b>Idle Power Draw</b>	
4-Port USB Outlet	0.775W
<b>Lighting</b>	
Accent Light	7W, 4000k
Area Light	25W, 4000k
LED Driver	Accepts 120V and 277V
<b>Temperature Ratings</b>	
Charging Station with Accent Light	-22° F (-30° C) to 140° F (60° C)
Charging Station with Area Light	-22° F (-30° C) to 140° F (60° C)
Power Pedestal	-31° F (-35° C) to 140° F (60° C)

### CHARGING STATION INSTALLATION:

Pedestal installs via four L bolts sunk into concrete. Conduit should be stubbed up to a height of 8" for standard power installations. If using AVKIT, conduit should be run up to bottom of power module/door.

To wire, remove four screws from top of pedestal, then remove gasketing and lens (if applicable). Loosen screw inside door area. Power module lifts out of pedestal body, allowing wiring to be pulled up through pedestal. Make all wiring connections, then lower power module back into pedestal body, tighten door area screw, and reassemble top.

### LIGHTING STATION INSTALLATION:

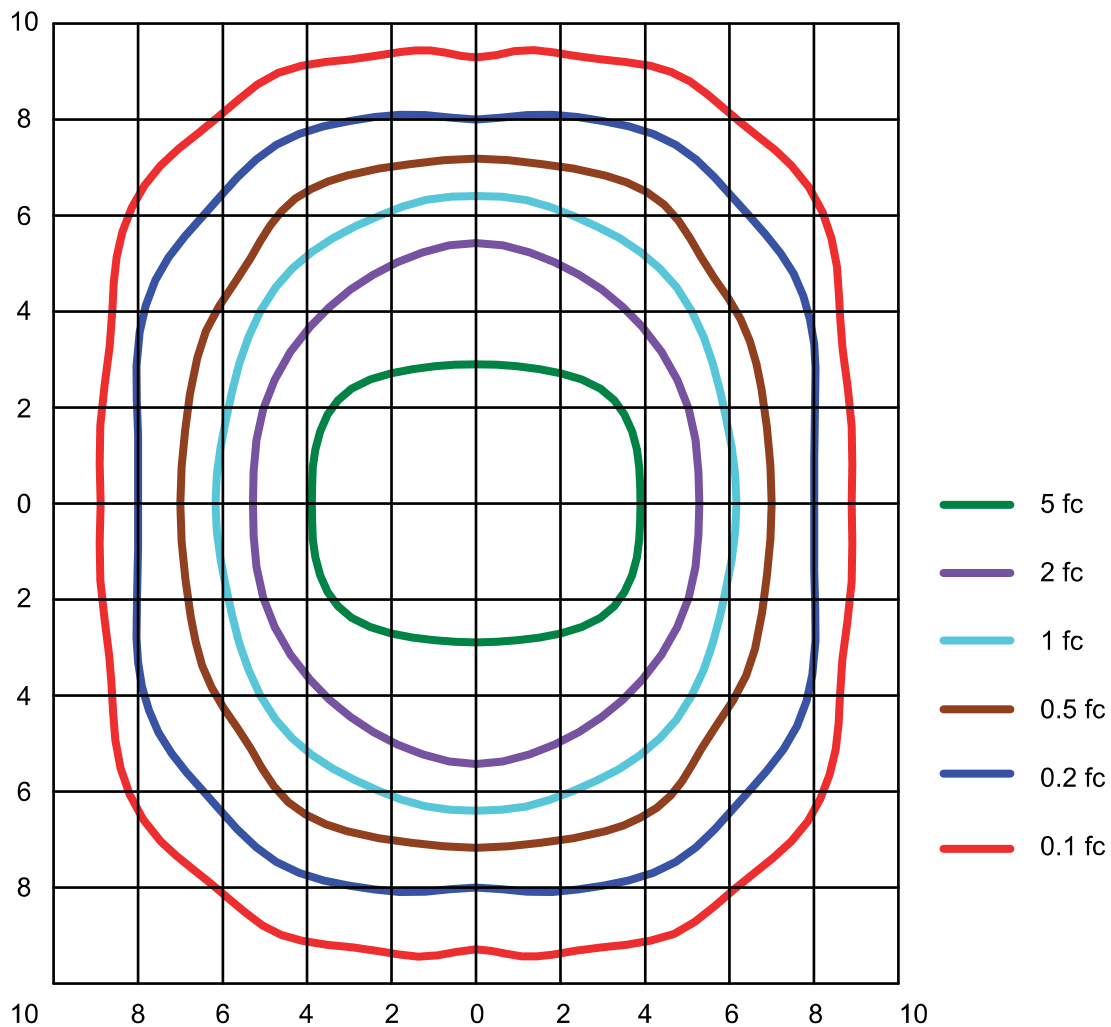
Pedestal installs via four L bolts sunk into concrete. Conduit should be stubbed up to a height of 8". All wiring should be completed at base of pedestal, with incoming power wired to included leads .

## Technical Information – Area Light & Lighting Station

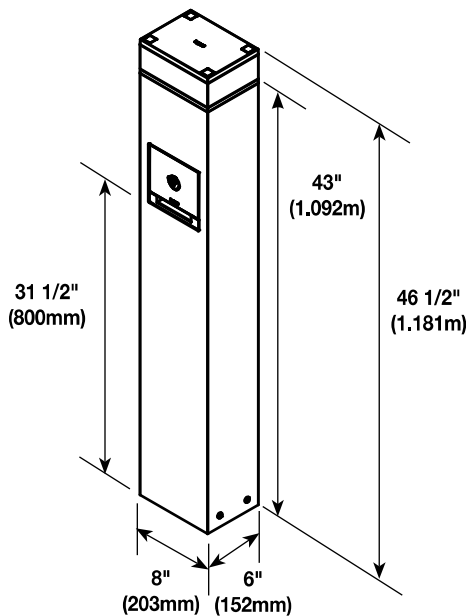
### Lighting Data

Light Output (Lumens):	457 Lumens
Watts:	21.8 W
B.U.G. Rating:	B0 U2 G0
Max. Intensity:	230 candela
Correlated Color Temperature (CCT):	4000k
Color Rendering Index (CRI):	84
Rated Life (L70):	> 50,000

### Photometrics



## Outdoor Charging Station with Accent Light



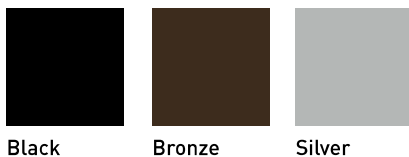
Station features rugged aluminum construction and includes an accent LED light (7W, 4000k) for easy identification at night.

- NEMA 3R listed for use in outdoor locations.
- Aluminum body is 0.188" (4.78mm) thick and powder-coated with durable, outdoor-rated paint. Mounts into concrete with four L bolts.
- Available prewired with two or three devices, per chart below. Devices include weather-resistant 20A GFCIs and 4-port USB outlets. Power and lighting are prewired on separate circuits. Lighting circuit can be controlled by a timer at the panel if desired.
- Also available unwired in two- or three-gang versions. Unwired versions can be populated with any combination of weather-resistant GFCI receptacles and USB outlets.
- Includes color-matched door, which can be easily replaced by a color-matched locking door (XCSLOCK-XX) or a transparent door (XCSCLEAR) (see page 8).
- Interior illuminates when door is open. Door closes automatically to meet while-in-use requirements.
- A/V and communication devices can be added to unwired three-gang versions with addition of A/V-Communication Kit (AVKIT – see page 8). Kit includes two replacement device plates to accommodate:
  - > two decorator-style power devices and one decorator style A/V or communication device,
  - > two decorator-style power devices and four Wiremold AVIP device plates.
- Use unwired two- or three-gang pedestal versions for dedicated low voltage applications where power is not required – no A/V-Communication kit needed.

### Components Included:

- Top Cap and Pedestal Body
- Required Gasketing
- Accent Light Assembly
- Power Module (2- or 3-Gang)
- Color-Matched Door
- Mounting Base
- Four (4) L Bolts

### COLOR OPTIONS:

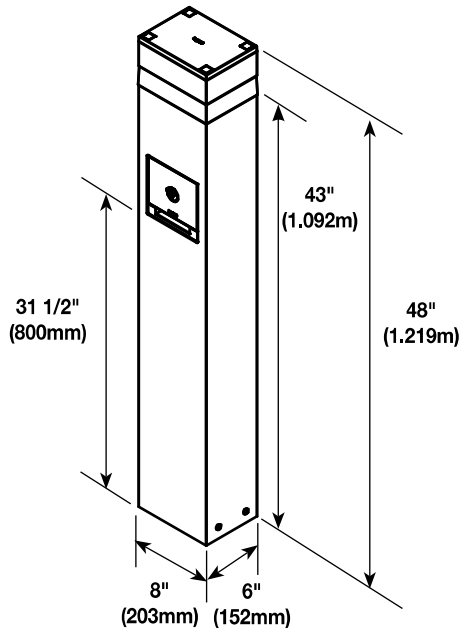


## Outdoor Charging Station with Accent Light Ordering Information

Part Number	Gangs	20A WR GFCI	4-Port 4.2A USB	Finish
XCSAL2GRU-BK	2	1	1	Black
XCSAL2GRU-BZ	2	1	1	Bronze
XCSAL2GRU-SV	2	1	1	Silver
XCSAL2GUU-BK	2	0	2	Black
XCSAL2GUU-BZ	2	0	2	Bronze
XCSAL2GUU-SV	2	0	2	Silver
XCSAL2GRR-BK	2	2	0	Black
XCSAL2GRR-BZ	2	2	0	Bronze
XCSAL2GRR-SV	2	2	0	Silver
XCSAL2G-BK*	2	0	0	Black
XCSAL2G-BZ*	2	0	0	Bronze
XCSAL2G-SV*	2	0	0	Silver
XCSAL3GRUU-BK	3	1	2	Black
XCSAL3GRUU-BZ	3	1	2	Bronze
XCSAL3GRUU-SV	3	1	2	Silver
XCSAL3GRRU-BK	3	2	1	Black
XCSAL3GRRU-BZ	3	2	1	Bronze
XCSAL3GRRU-SV	3	2	1	Silver
XCSAL3G-BK*	3	0	0	Black
XCSAL3G-BZ*	3	0	0	Bronze
XCSAL3G-SV*	3	0	0	Silver

\* Stations with no devices are provided unwired for addition of customized selections. Lighting element is prewired.

## Outdoor Charging Station with Area Light



Station features rugged aluminum construction and includes an LED light for area illumination (25W, 4000k).

- NEMA 3R listed for use in outdoor locations.
- Aluminum body is 0.188" (4.78mm) thick and powder-coated with durable, outdoor-rated paint. Mounts into concrete with four L bolts.
- Available prewired with two or three devices, per chart below. Devices include weather-resistant 20A GFCIs and 4-port USB outlets. Power and lighting are prewired on separate circuits. Lighting circuit can be controlled by a timer at the panel if desired.
- Also available unwired in two- or three-gang versions. Unwired versions can be populated with any combination of weather-resistant GFCI receptacles and USB outlets.
- Includes color-matched door, which can be easily replaced by a color-matched locking door (XCSLOCK-XX) or a transparent door (XCSCLEAR) (see page 8).
- Interior illuminates when door is open. Door closes automatically to meet while-in-use requirements.
- A/V and communication devices can be added to unwired three-gang versions with addition of A/V-Communication Kit (AVKIT – see page 8). Kit includes two replacement device plates to accommodate:
  - > two decorator-style power devices and one decorator style A/V or communication device,
  - > two decorator-style power devices and four Wiremold AVIP device plates.
- Use unwired two- or three-gang pedestal versions for dedicated low voltage applications where power is not required – no A/V-Communication kit needed.

### Components Included:

- Top Cap and Pedestal Body
- Required Gasketing
- Area Light Assembly
- Power Module [2- or 3-Gang]
- Color-Matched Door
- Mounting Base
- Four (4) L Bolts

### COLOR OPTIONS:

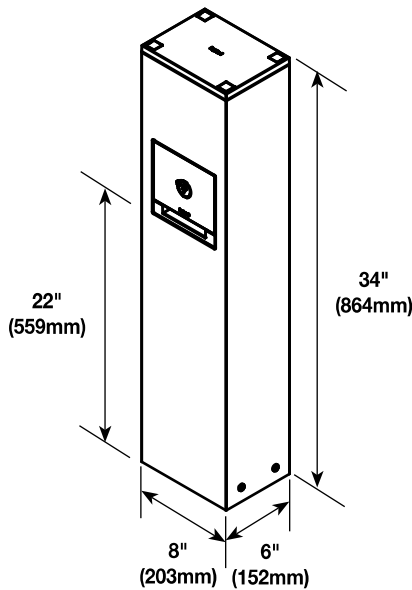


## Outdoor Charging Station with Area Light Ordering Information

Part Number	Gangs	20A WR GFCI	4-Port 4.2A USB	Finish
XCSLF2GRU-BK	2	1	1	Black
XCSLF2GRU-BZ	2	1	1	Bronze
XCSLF2GRU-SV	2	1	1	Silver
XCSLF2GUU-BK	2	0	2	Black
XCSLF2GUU-BZ	2	0	2	Bronze
XCSLF2GUU-SV	2	0	2	Silver
XCSLF2GRR-BK	2	2	0	Black
XCSLF2GRR-BZ	2	2	0	Bronze
XCSLF2GRR-SV	2	2	0	Silver
XCSLF2G-BK*	2	0	0	Black
XCSLF2G-BZ*	2	0	0	Bronze
XCSLF2G-SV*	2	0	0	Silver
XCSLF3GRUU-BK	3	1	2	Black
XCSLF3GRUU-BZ	3	1	2	Bronze
XCSLF3GRUU-SV	3	1	2	Silver
XCSLF3GRRU-BK	3	2	1	Black
XCSLF3GRRU-BZ	3	2	1	Bronze
XCSLF3GRRU-SV	3	2	1	Silver
XCSLF3G-BK*	3	0	0	Black
XCSLF3G-BZ*	3	0	0	Bronze
XCSLF3G-SV*	3	0	0	Silver

\* Stations with no devices are provided unwired for addition of customized selections. Lighting element is prewired.

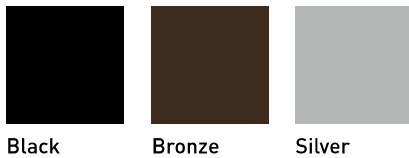
## Power Pedestal



### Components Included:

- Top Cap and Pedestal Body
- Required Gasketing
- Power Module (2- or 3-Gang)
- Color-Matched Door
- Mounting Base
- Four (4) L Bolts

### COLOR OPTIONS:



Station features rugged aluminum construction.

- NEMA 3R listed for use in outdoor locations.
- Aluminum body is 0.188" (4.78mm) thick and powder-coated with durable, outdoor-rated paint. Mounts into concrete with four L bolts.
- Available prewired with two or three devices, per chart below. Devices include weather-resistant 20A GFCIs and 4-port USB outlets.
- Also available unwired in two- or three-gang versions. Unwired versions can be populated with any combination of weather-resistant GFCI receptacles and USB outlets.
- Includes color-matched door, which can be easily replaced by a color-matched locking door (XCSLOCK-XX) or a transparent door (XCSCLEAR) (see page 8).
- Interior illuminates when door is open. Door closes automatically to meet while-in-use requirements.
- A/V and communication devices can be added to unwired three-gang versions with addition of A/V-Communication Kit (see page 8). Kit includes two replacement device plates to accommodate:
  - > two decorator-style power devices and one decorator style A/V or communication device,
  - > two decorator-style power devices and four Wiremold AVIP device plates.
- Use unwired two- or three-gang pedestal versions for dedicated low voltage applications where power is not required – no A/V-Communication kit needed.

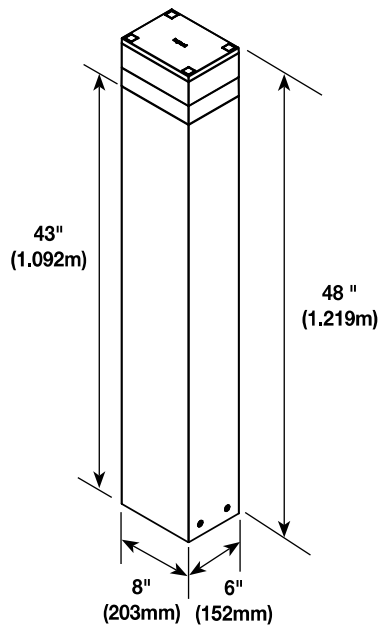
### Power Pedestal Ordering Information

Part Number	Gangs	20A WR GFCI	4-Port 4.2A USB	Finish
XCSPP2GRU-BK	2	1	1	Black
XCSPP2GRU-BZ	2	1	1	Bronze
XCSPP2GRU-SV	2	1	1	Silver
XCSPP2GUU-BK	2	0	2	Black
XCSPP2GUU-BZ	2	0	2	Bronze
XCSPP2GUU-SV	2	0	2	Silver
XCSPP2GRR-BK	2	2	0	Black
XCSPP2GRR-BZ	2	2	0	Bronze
XCSPP2GRR-SV	2	2	0	Silver
XCSPP2G-BK*	2	0	0	Black
XCSPP2G-BZ*	2	0	0	Bronze
XCSPP2G-SV*	2	0	0	Silver
XCSPP3GRUU-BK	3	1	2	Black
XCSPP3GRUU-BZ	3	1	2	Bronze
XCSPP3GRUU-SV	3	1	2	Silver
XCSPP3GRRU-BK	3	2	1	Black
XCSPP3GRRU-BZ	3	2	1	Bronze
XCSPP3GRRU-SV	3	2	1	Silver
XCSPP3G-BK*	3	0	0	Black
XCSPP3G-BZ*	3	0	0	Bronze
XCSPP3G-SV*	3	0	0	Silver

\* Stations with no devices are provided unwired for addition of customized selections.



## Lighting Station



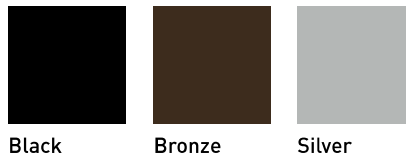
Station features rugged aluminum construction and includes an LED light for area illumination (25W, 4000k).

- NEMA 3R listed for use in outdoor locations.
- Aluminum body is 0.188" (4.78mm) thick and powder-coated with durable, outdoor-rated paint. Mounts into concrete with four L bolts.

### Lighting Station Ordering Information

Part Number	Finish
XLF-BK	Black
XLF-BZ	Bronze
XLF-SV	Silver

#### COLOR OPTIONS:

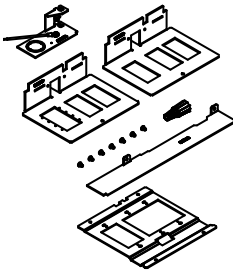


#### Components Included:

- Top Cap and Pedestal Body
- Required Gasketing
- Area Light Assembly
- Mounting Base
- Four (4) L Bolts

## Outdoor Charging Station Accessories

### A/V-COMMUNICATION KIT – XCSAV



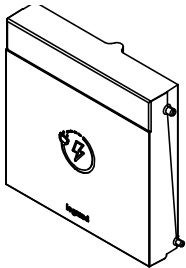
Kit enables combining power and low voltage in one three-gang pedestal. Includes two device plates to accommodate:

- two decorator-style power devices and one decorator style A/V or communication device,
- two decorator-style power devices and four Wiremold AVIP device plates

Also includes interior divider to separate A/V or communication from high voltage wiring. Compatible with three-gang versions only.

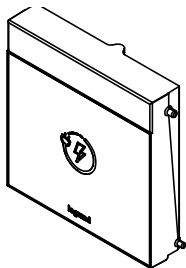
Use unwired two- or three-gang pedestal versions for dedicated low voltage applications where power is not required – no A/V-Communication kit (AVKIT) needed.

### TRANSPARENT DOOR – XCSCLEAR



Replaces color-matched door (included).

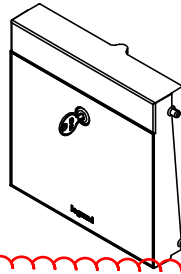
### REPLACEMENT DOOR – XCSDOOR



Available Colors:  
**XCSDOOR-BK Black**  
**XCSDOOR-BZ Bronze**  
**XCSDOOR-SV Silver**

Replacement door for all charging stations. Included with initial shipment of all models.

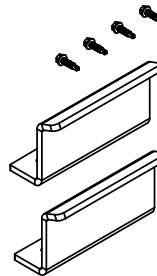
### LOCKING DOOR – XCSLOCK



Available Colors:  
**XCSLOCK-BK Black**  
**XCSLOCK-BZ Bronze**  
**XCSLOCK-SV Silver**

Replaces standard color-matched door (included). Includes standard lock and two keys.

### DEVICE SHELVES – XCSSHELF



Available Colors:  
**XCSSHELF-BK Black**  
**XCSSHELF-SV Silver**

Pair of shelves to hold mobile device while charging. Shelves are intended to mount to the pedestal sides and have been tested to hold up to 250 lbs. Recommend maximum of two shelves per pedestal.

**NOTE: Shelves must be mounted below door opening.**





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FOLLOW US





**227**

12/2 UTP CL3R  
Audio, Control, and Low Voltage Power

**Construction & Dimensions**

<b>CONSTRUCTION &amp; DIMENSIONS</b>	
<b>CONDUCTOR PARAMETER</b>	
• Number of Conductors	2
• AWG Size	12
• Conductor Stranding	19x25
• Conductor Type	Bare copper
• Nominal DCR	1.7 Ohm/1000ft
• Cabling Lay Length	4.5 in
• Twists/Foot	2.7 twist/ft
<b>INSULATION PARAMETER</b>	
• Insulation Type	Th rmoplastic
• Insulation Thi kness	0.012 in
• Insulation Color Code	1. Black 2.White
<b>SHIELDING PARAMETER</b>	
• Shield Type	None
<b>ELECTRICAL CHARACTERISTICS</b>	

**Overall Construction**

<b>OVERALL CONSTRUCTION PARAMETERS</b>	
Jacket Type	PVC
Jacket Thi kness	0.017 in
Nominal Cable O.D.	0.264 in
Plenum	No
NEC UL Rating	CL3R, FPLR
RoHS Compliant	Yes
Pull Tension	152 lbs
Bend Radius	2.376 in
Cable Weight	61 lbs

**Overall Electrical & Optical Characteristics**

<b>OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS</b>	
UL Flammability	UL1666 Vertical Shaft
Operating Range	-20 to 60 Deg C
UL Voltage Rating	300

## Detailed Specification & Technical Data



**227**

12/2 UTP CL3R

### Related Products

RELATED PRODUCTS	
Plenum Number	25227B
Aquaseal Direct Burial Number	AQ227
SpeakOn Panel Mount	CN-NL4MP

## Detailed Specification & Technical Data

4 Pair 23 AWG UTP Category 6 CMR  
10/100/1000 Base-T Ethernet, IP CCTV, Digital Integration, HD Base-T



**4246**

### Construction & Dimensions

CONDUCTOR PARAMETERS		-
Number Of Pairs		4
AWG Size		23
Conductor Stranding		Solid
Conductor Type		Bare Copper
Nominal DCR		24 $\Omega$ /1000 ft
INSULATION PARAMETERS		-
Insulation Type		Polyolefin
Insulation Color Code		1. Blue, WH-Blue 2. Orange, WH-Orange 3. Green, WH-Green 4. Brown, WH-Brown
SHIELDING PARAMETERS		-
Shield Type		Unshielded Twisted Pair (UTP)
ELECTRICAL CHARACTERISTICS		-
Nominal Impedance		100 $\Omega$
Nominal Capacitance Between Conductors		15 pF/ft

### Overall Construction

OVERALL CONSTRUCTION PARAMETERS	
Total Number of Conductors	8
Jacket Type	PVC
Nominal Cable O.D.	0.22 in
Plenum	No
NEC UL Rating	CMR
RoHS Compliant	Yes
ANSI/TIA Category	Category 6 TIA/EIA 568C.2
TIA Test	ANSI/TIA-568-C.2
Pull Tension	40 lbs
Bend Radius	1.1 in
Cable Weight	29 lbs

### Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	
Nominal Velocity of Propagation (VP)	72%
Delay Skew	45 ns/100 m
UL Flammability	UL1666 Vertical Shaft
CSA Flammability	FT4
Operating Range	0 to 75 C
UL Voltage Rating	300

## Detailed Specification & Technical Data



**4246**

Frequency (Mhz)	Max. Insertion Loss	Min. NEXT	Min. NEXT	Max/Min Fitted Imp.	Min. ACR	Min. PSACRF (PSELF-EXT)	Min. ACRF (ELF-EXT)	Min. RL (Return Loss)	Max/Min Input Imp. Unfit	Max/Min Fitted Imp.
1 MHz	2 db/100 m	75.3 dB	73.3 dB	71.3 dB	73.3 dB	67.8 dB	70.8 dB	20 dB	100 ± 15 Ω	100 ± 15 Ω
4 MHz	3.7 db/100 m	66.3 dB	64.3 dB	60.6 dB	62.6 dB	55.8 dB	58.8 dB	23 dB	100 ± 15 Ω	100 ± 15 Ω
8 MHz	5.2 db/100 m	63.3 dB	61.3 dB	56.1 dB	58.1 dB	49.7 dB	52.7 dB	24.5 dB	100 ± 15 Ω	100 ± 15 Ω
10 MHz	5.8 db/100 m	61.8 dB	59.8 dB	54 dB	56 dB	47.8 dB	50.8 dB	25 dB	100 ± 15 Ω	100 ± 15 Ω
16 MHz	7.4 db/100 m	58.6 dB	56.6 dB	49.2 dB	51.2 dB	43.7 dB	46.7 dB	25 dB	100 ± 15 Ω	100 ± 15 Ω
20 MHz	8.3 db/100 m	57.1 dB	55.1 dB	46.8 dB	46.8 dB	41.8 dB	44.8 dB	25 dB	100 ± 15 Ω	100 ± 15 Ω
25 MHz	9.3 db/100 m	55.5 dB	53.5 dB	44.3 dB	46.3 dB	39.8 dB	42.8 dB	24.3 dB	100 ± 15 Ω	100 ± 15 Ω
31.25 MHz	11.4 db/100 m	54 dB	52 dB	41.6 dB	43.6 dB	37.9 dB	40.9 dB	23.6 dB	100 ± 15 Ω	100 ± 15 Ω
62.5 MHz	15 db/100 m	49.1 dB	47.1 dB	32.1 dB	34.1 dB	31.9 dB	34.9 dB	21.5 dB	100 ± 15 Ω	100 ± 15 Ω
100 MHz	19.3 db/100 m	45.8 dB	43.8 dB	24.5 dB	26.5 dB	27.8 dB	30.8 dB	20.8 dB	100 ± 15 Ω	100 ± 15 Ω
155 MHz	24.5 db/100 m	42.7 dB	40.7 dB	16.2 dB	18.2 dB	24 dB	27 dB	19.8 dB	100 ± 15 Ω	100 ± 15 Ω
200 MHz	28.3 db/100 m	40.9 dB	38.9 dB	10.6 dB	12.6 dB	21.8 dB	24.8 dB	18.7 dB	100 ± 22 Ω	100 ± 15 Ω
250 MHz	32.1 db/100 m	39.3 dB	37.3 dB	5.2 dB	7.2 dB	19.8 dB	22.8 dB	18 dB	100 ± 32 Ω	100 ± 15 Ω
300 MHz	38 db/100 m	38.1 dB	36.1 dB	-0.5 dB	2.5 dB	18.3 dB	21.3 dB	17.5 dB	100 ± 32 Ω	100 ± 15 Ω
350 MHz	38.9 db/100 m	37.1 dB	35.1 dB	-3.7 dB	-1.7 dB	16.9 dB	19.9 dB	17 dB	100 ± 32 Ω	100 ± 15 Ω
400 MHz	42 db/100 m	36.3 dB	34.3 dB	-7.7 dB	-5.7 dB	15.8 dB	18.8 dB	16.6 dB	100 ± 32 Ω	100 ± 15 Ω
450 MHz	45 db/100 m	35.5 dB	33.5 dB	-11.5 dB	-9.5 dB	14.7 dB	17.7 dB	16.2 dB	100 ± 32 Ω	100 ± 15 Ω
500 MHz	47.9 db/100 m	34.8 dB	32.8 dB	-15 dB	-13 dB	13.8 dB	16.8 dB	15.9 dB	100 ± 32 Ω	100 ± 15 Ω
550 MHz	50.6 db/100 m	34.2 dB	32.2 dB	-18.4 dB	-16.4 dB	13 dB	16 dB	15.6 dB	100 ± 32 Ω	100 ± 15 Ω

Tested to 550 MHz - Values above 250 MHz are for Engineering Purposes Only

### Related Products

RELATED PRODUCTS	
Plenum Number	254246
Indoor/Outdoor Non Aquaseal	4246IO
Outdoor Direct Burial 1	4246OSP
Jack	KJ458MT-C6C-XX
Modular Plug	32-6EZP
Modular Plug 2	32-6198UL





**291**

22/2 Shielded CMR  
 Audio and Control

**Construction & Dimensions**

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	22
• Conductor Stranding	7x30
• Conductor Type	Bare copper
• Nominal DCR	17 Ohm/1000ft
• Cabling Lay Length	2.5 in
• Twists/Foot	4.8 twist/ft
INSULATION PARAMETER	-
• Insulation Type	Th rmoplastic
• Insulation Thi kness	0.007 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	Overall 100% Aluminum Foil
• Drain Wire Type	Tinned Copper
• Drain Wire AWG	24 AWG
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	34 pF/ft
• Nom. Cap. Conductor to Shield	67 pF/ft

**Overall Construction**

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	PVC
Jacket Thi kness	0.017 in
Nominal Cable O.D.	0.127 in
Plenum	No
NEC UL Rating	CMR, CMG
RoHS Compliant	Yes
Pull Tension	24 lbs
Bend Radius	1.143 in
Cable Weight	14 lbs

**Overall Electrical & Optical Characteristics**

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1666 Vertical Shaft
CSA Flammability	FT4
Operating Range	-20 to 60 Deg C
UL Voltage Rating	300



**291**

22/2 Shielded CMR  
Audio and Control

**Related Products**

RELATED PRODUCTS	-
Plenum Number	25291B
Aquaseal Number	AQC291
3 Pin XLR Male	CN-NC3MX
3 Pin XLR Female	CN-NC3FX
3.5mm Stereo Mini	CN-NYS231

# PART NUMBER CAT6AS-GRY

ETL TYPE CMR, C(ETL)

PAGE 1

AUGMENTED CATEGORY 6 FTP SUPRA 10G --- 4P/23 FT4 C(UL)US CMR - COMPLIANT TO CAT 6A ANSI/TIA 568-C.2



SMARTWIRE  
**GLIDE**  
TECHNOLOGY

## CABLE SPECIFICATIONS

<b>DESCRIPTION</b>	ANSI/TIA 568-C.2 CATEGORY 6A, 4 TWISTED PAIR CABLE, (FTP-FOIL) SHIELDED, ETL TYPE CMR, C(ETL)
<b>CONDUCTOR</b>	23 AWG, SOLID BARE COPPER
<b>INSULATION</b>	POLYOLEFIN
<b>ISOLATOR</b>	POLYOLEFIN
<b>TAPE (CORE WRAP)</b>	PET
<b>SHIELD</b>	POLYOLEFIN/ALUMINUM, (FTP-FOIL)
<b>DRAIN WIRE</b>	24 AWG, SOLID TINNED COPPER
<b>JACKET</b>	FRPVC
<b>COLOR CODE</b>	BLUE/WHITE WITH BLUE STRIPE ORANGE/WHITE WITH ORANGE STRIPE GREEN/WHITE WITH GREEN STRIPE BROWN/WHITE WITH BROWN STRIPE
<b>JACKET COLOR</b>	GRAY
<b>MARKING</b>	AUGMENTED CATEGORY CAT 6A FTP SUPRA 10G - 4P/23 FT4 C(UL)US CMR - COMPLIANT TO CAT 6A ANSI/TIA 568.C.2

## MECHANICAL SPECIFICATIONS

<b>NOMINAL JACKET OD</b>	0.288"
<b>CABLE WEIGHT</b>	38.0 LBS/1000 FT
<b>JACKET THICKNESS</b>	0.020"
<b>TEMPERATURE</b>	INSTALLATION TEMPERATURE 0°C TO 60°C OPERATION TEMPERATURE -20°C TO 60°C



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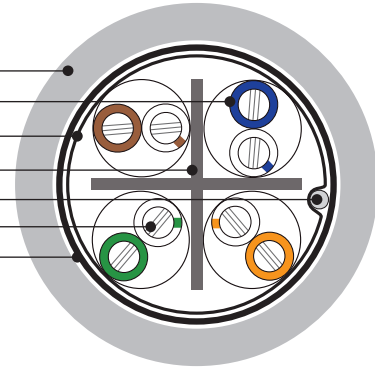
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# CAT6AS-GRY: 4 TWISTED PAIR CABLE

C(UL)US CMR

## TWISTED PAIR CABLE – 4 PR. 23 AWG FEP INS.

- JACKET \_\_\_\_\_
- INSULATION \_\_\_\_\_
- TAPE \_\_\_\_\_
- ISOLATOR \_\_\_\_\_
- DRAIN WIRE \_\_\_\_\_
- CONDUCTOR \_\_\_\_\_
- SHIELD \_\_\_\_\_



## TWISTED PAIR CABLES

- PAIR 1** BLUE/WHITE WITH BLUE STRIPE
- PAIR 2** ORANGE/WHITE WITH ORANGE STRIPE
- PAIR 3** GREEN/WHITE WITH GREEN STRIPE
- PAIR 4** BROWN/WHITE WITH BROWN STRIPE

## MECHANICAL SPECIFICATION

- INPUT IMPEDANCE** 100 OHMS
- MUTUAL CAPACITANCE** 5.6 NF/100M MAX
- DC RESISTANCE/UNBALANCE** 8.00 OHMS/100M 4% MAX
- DIELECTRIC BREAKDOWN** 2500 VOLTS DC CONDUCTOR TO CONDUCTOR
- PROPAGATION DELAY SKEW** ≤45 NS/100 M
- NOMINAL VELOCITY OF PROPAGATION, NVP** 68%

## ELECTRICAL PERFORMANCE

FREQ MHZ.	IL		NEXT		ACR		PSNEXT		PSACR		ACRF		PSACRF		RL	
	STD	TYP	STD	TYP	STD	TYP	STD	TYP	STD	TYP	STD	TYP	STD	TYP	STD	STD
1.0	2.1	1.8	74.3	88.1	72.2	86.3	72.3	86.0	70.2	84.3	67.8	87.6	64.8	86.0	20.0	86.0
4.0	3.8	3.4	65.3	79.5	61.5	76.1	63.3	77.2	59.5	73.9	55.8	76.8	52.8	75.3	23.0	75.3
8.0	5.3	4.8	60.8	74.8	55.4	70.0	58.8	72.7	53.4	68.0	49.7	70.5	46.7	69.2	24.5	69.2
10.0	5.9	5.3	59.3	72.8	53.4	67.4	57.3	70.2	51.4	64.9	47.8	69.1	44.8	67.7	25.0	67.7
16.0	7.5	6.8	56.2	69.0	48.8	62.2	54.2	66.9	46.8	60.1	43.7	64.9	40.7	63.6	25.0	63.6
20.0	8.4	7.6	54.8	68.5	46.4	60.9	52.8	66.3	44.4	58.7	41.8	62.8	38.8	61.6	25.0	61.6
25.0	9.4	8.5	53.3	66.8	44.0	58.3	51.3	64.4	42.0	55.9	39.8	60.8	36.8	59.5	24.3	59.5
31.25	10.5	9.6	51.9	64.7	41.4	55.1	49.9	62.4	39.4	52.8	37.9	59.0	34.9	57.7	23.6	57.7
62.5	15.0	13.6	47.4	60.0	32.4	46.4	45.4	57.8	30.4	44.2	31.9	53.6	28.9	51.8	21.5	51.8
100.0	19.1	17.3	44.3	56.3	25.2	38.9	42.3	54.3	23.2	36.9	27.8	51.6	24.8	49.8	20.1	49.8
155.0	24.1	21.7	41.4	53.2	17.4	31.5	39.4	51.2	15.4	29.5	24.0	47.0	21.0	45.3	18.8	45.3
200.0	27.6	24.8	39.8	50.7	12.2	25.9	37.8	48.9	10.2	24.0	21.8	44.6	18.8	42.4	18.0	42.4
250.0	31.1	27.9	38.3	50.4	7.3	22.5	36.3	48.3	5.3	20.3	19.8	41.9	16.8	40.1	17.3	40.1
300.0	34.3	30.7	37.1	48.0	2.9	17.3	35.1	46.1	0.9	15.4	18.3	41.4	15.3	39.4	16.8	39.4
350.0	37.2	33.84	36.1	46.3	-1.1	12.9	34.1	44.5	-3.1	11.2	16.9	39.4	13.9	37.4	16.3	37.4
400.0	40.1	35.9	35.3	44.9	-4.8	9.1	33.3	42.8	-6.8	6.9	15.8	38.3	12.8	36.3	15.9	36.3
450	42.7	38.2	35.5	43.6	-7.2	5.3	33.5	41.6	-10.2	3.4	17.7	36.9	15.7	34.8	15.5	34.8
500.0	45.3	40.96	33.8	41.3	-11.4	0.7	31.8	39.9	-13.4	-0.7	13.8	36.3	10.8	34.0	15.2	34.0
550	-	42.8	-	39.6	-	-3.2	-	37.8	-	-5.0	-	33.3	-	31.0	-	31.0
600	-	45.1	-	38.5	-	-6.5	-	36.6	-	-8.4	-	33.2	-	30.9	-	30.9
650	-	46.9	-	34.6	-	-	-	33.4	-	-	-	31.6	-	29.3	-	29.3

\*ALL TESTS INCLUDE SWEPT FREQUENCY MEASUREMENTS.



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# MIC® Tight-Buffered Cable, Riser 12 F, Single-mode (OS2)



**Part Number:**  
**012E81-33131-24**

Corning MIC® riser cables are designed for use in riser and general purpose environments for intrabuilding backbone and horizontal installations. These multifiber cables use 900 µm buffered fibers to enable easy, consistent stripping and facilitate termination. The fibers are surrounded by dielectric strength members and protected by a flame-retardant outer jacket. The all-dielectric cable construction requires no grounding or bonding, making these cables ideal for routing inside buildings including riser shafts, to the telecommunications rooms and workstations. The MIC Riser Cables meet the application requirements of the National Electrical Code® (NEC®) Article 770 and the ICEA S-83-596 test criteria. They are OFNR and FT-4 listed for riser and general-purpose use.

## Features and Benefits

### 900 µm buffered fibers

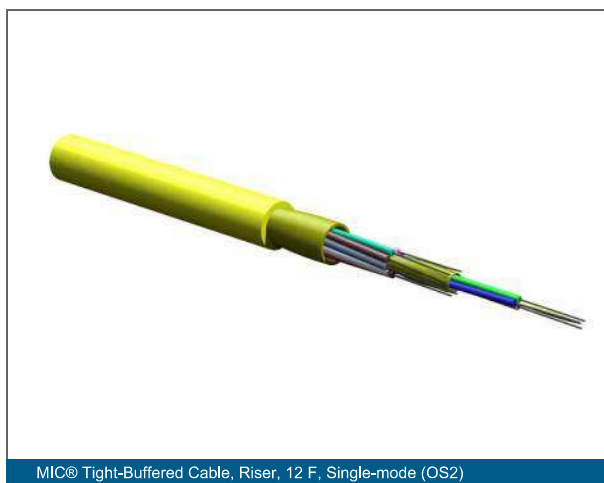
Easy, consistent stripping

### All-dielectric construction

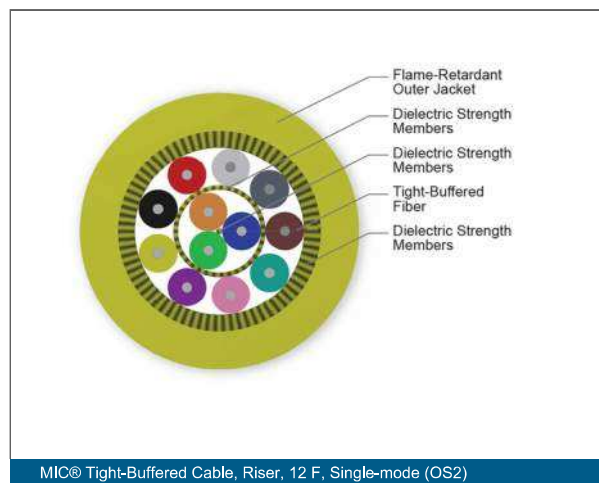
Requires no grounding or bonding

### Flame-retardant jacket

Rugged and durable



MIC® Tight-Buffered Cable, Riser, 12 F, Single-mode (OS2)



MIC® Tight-Buffered Cable, Riser, 12 F, Single-mode (OS2)

# MIC® Tight-Buffered Cable, Riser 12 F, Single-mode (OS2)



## Specifications

General Specifications	
Environment	Indoor
Cable Type	Tight-Buffered
Product Type	Distribution
Fiber Category	Single-mode (OS2)
Flame Rating	Riser (OFNR)
Application	General Purpose Horizontal, Vertical Riser
Fiber Count	12

Standards	
RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	National Electrical Code® (NEC®) OFNR, UL 1666, CSA FT-4, ICEA S-83-596
Flame Test Method	UL-1666 and CSA FT-4 (for riser and general building applications), ICEA S-83-596

Environmental Conditions	
Temperature Range, Installation	-10 °C to 60 °C (14 °F to 140 °F )
Temperature Range, Operation	-20 °C to 70 °C (-4 °F to 158 °F )
Temperature Range, Storage	-40 °C to 70 °C (-40 °F to 158 °F )

Cable Design	
Central Element	Yarn
Fiber Count	12
Outer Jacket Color	Yellow
Outer Jacket Material	Flame-retardant
Tensile Strength Elements and/or Armoring - Layer 1	Dielectric strength members

# MIC® Tight-Buffered Cable, Riser 12 F, Single-mode (OS2)



## Cable Design

Tensile Strength Elements and/or Armoring - Layer 2	Dielectric strength members
Tight Buffer Color	Blue, Orange, Green
Flame Rating	Riser (OFNR)

## Mechanical Specifications

Max. Tensile Strength, Long-Term, ≤12F	200 N (44.96 lbf)
Max. Tensile Strength, Long-Term, >12F	400 N (89.92 lbf)
Max. Tensile Strength, Short-Term, ≤12F	660 N (148.37 lbf)
Max. Tensile Strength, Short-Term, >12F	1320 N (296.75 lbf)
Min. Bend Radius Installation	91.5 mm (3.6 in)
Min. Bend Radius Operation	61 mm (2.4 in)
Nominal Outer Diameter	6.1 mm (0.24 in)

## Optical Characteristics

Fiber Code	E
Fiber Name	SMF-28e+® fiber
Fiber Type	Single-mode
Performance Option Code	31
Maximum Attenuation	0.4 dB/km / 0.4 dB/km / 0.4 dB/km
Wavelengths	1310 nm / 1383 nm / 1550 nm
Fiber Category	G.652.D

## Ordering Information

Product Number	012E81-33131-24
EAN Code	4056418191010
Weight	301 kg/km (202.26 lb/1000 ft)

# MIC® Tight-Buffered Cable, Riser 12 F, Single-mode (OS2)

The CORNING logo is displayed in white, uppercase letters within a dark blue square.

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## 1694A Coax - Low Loss Serial Digital Coax

For more Information  
please call

1-800-Belden1



### General Description:

RG-6/U Type, 18 AWG solid .040" bare copper conductor, gas-injected foam HDPE insulation, Duofoil® + tinned copper braid shield (95% coverage), PVC jacket.

### Usage (Overall)

**Suitable Applications:** SMPTE 2081-1 6 Gb/s UHD TV, SMPTE 424M 3 Gb/s HD-SDI 1080p

### Physical Characteristics (Overall)

#### Conductor

**AWG:**

# Coax	AWG	Stranding	Conductor Material	Dia. (in.)
1	18	Solid	BC - Bare Copper	.040

**Total Number of Conductors:** 1

#### Insulation

**Insulation Material:**

Insulation Material	Dia. (in.)
Gas-injected FHDPE - Foam High Density Polyethylene	.180

#### Outer Shield

**Outer Shield Material:**

Layer #	Outer Shield Trade Name	Type	Outer Shield Material	Coverage (%)
1	Duofoil®	Tape	Aluminum Foil-Polyester Tape-Aluminum Foil	100
2		Braid	TC - Tinned Copper	95

#### Outer Jacket

**Outer Jacket Material:**

Outer Jacket Material
PVC - Polyvinyl Chloride

#### Overall Cable

**Overall Nominal Diameter:** 0.274 in.

### Mechanical Characteristics (Overall)

**Operating Temperature Range:** -30°C To +75°C

**Bulk Cable Weight:** 41 lbs/1000 ft.

**Max. Recommended Pulling Tension:** 69 lbs.

**Min. Bend Radius/Minor Axis:** 2.750 in.

### Applicable Specifications and Agency Compliance (Overall)

#### Applicable Standards & Environmental Programs

**NEC/(UL) Specification:** CMR

**CEC/C(UL) Specification:** CMG

**EU Directive 2011/65/EU (ROHS II):** Yes

**EU CE Mark:** Yes

**EU Directive 2000/53/EC (ELV):** Yes

EU Directive 2002/95/EC (RoHS):	Yes
EU RoHS Compliance Date (mm/dd/yyyy):	01/01/2004
EU Directive 2002/96/EC (WEEE):	Yes
EU Directive 2003/11/EC (BFR):	Yes
CA Prop 65 (CJ for Wire & Cable):	Yes
MII Order #39 (China RoHS):	Yes
RG Type:	6/U

### Flame Test

UL Flame Test:	UL1666 Vertical Shaft
CSA Flame Test:	FT4

### Suitability

Suitability - Indoor:	Yes
Suitability - Outdoor:	Yes - Black only.
Suitability - Aerial:	Yes - Black only, when supported by messenger wire.
Suitability - Burial:	No

### Plenum/Non-Plenum

Plenum (Y/N):	No
Plenum Number:	1695A

## Electrical Characteristics (Overall)

#### Nom. Characteristic Impedance:

Impedance (Ohm)
75

#### Nom. Inductance:

Inductance (µH/ft)
0.106

#### Nom. Capacitance Conductor to Shield:

Capacitance (pF/ft)
16.2

#### Nominal Velocity of Propagation:

VP (%)
82

#### Nominal Delay:

Delay (ns/ft)
1.24

#### Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)
6.4

#### Nominal Outer Shield DC Resistance:

DCR @ 20°C (Ohm/1000 ft)
2.8

#### Nom. Attenuation:

Freq. (MHz)	Attenuation (dB/100 ft.)
1.000	0.240
3.580	0.440
5.000	0.520
6.000	0.570
7.000	0.610
10.000	0.710

## 1694A Coax - Low Loss Serial Digital Coax

12.000	0.780
25.000	1.080
67.500	1.650
71.500	1.690
88.500	1.860
100.000	1.950
135.000	2.240
143.000	2.300
180.000	2.570
270.000	3.170
360.000	3.690
540.000	4.500
720.000	5.300
750.000	5.400
1000.000	6.300
1500.000	7.800
2000.000	9.200
2250.000	9.800
3000.000	11.500
4500.000	14.500
6000.000	17.700

### Max. Operating Voltage - UL:

<b>Voltage</b>
300 V RMS

**Other Electrical Characteristic 1:** TDR Impedance: 75 +/- 1.5 Ohms

**Other Electrical Characteristic 2:** Return Loss: Fixed bridge and termination.

### Minimum Return Loss:

Start Freq. (MHz)	Stop Freq. (MHz)	Min. RL (dB)
5.000	1600.000	23.000
1600.000	4500.000	21.000
4500.000	6000.000	15.000

### Sweep Test

**Sweep Testing:** 100#37; Sweep tested 5 MHz to 6 GHz.

### Misc. Information (Overall)

### Notes (Overall)

**Notes:** Print legend includes sequential footage marks. Also available in 4.5 GHz multi-coax bundled versions. See 7710A through 7713A.

### Put Ups and Colors:

Item #	Putup	Ship Weight	Color	Notes	Item Desc
1694A N3UN1000	1,000 FT	45.000 LB	GREEN, MIL		#18 PE/GIFHDPE SH FR PVC
1694A N3U1000	1,000 FT	45.000 LB	GREEN, MIL	C	#18 PE/GIFHDPE SH FR PVC
1694A N3U10000	10,000 FT	480.000 LB	GREEN, MIL		#18 PE/GIFHDPE SH FR PVC
1694A N3U5000	5,000 FT	225.000 LB	GREEN, MIL	C N	#18 PE/GIFHDPE SH FR PVC
1694A 0011000	1,000 FT	45.000 LB	BROWN	C	#18 PE/GIFHDPE SH FR PVC
1694A 0015000	5,000 FT	225.000 LB	BROWN	C N	#18 PE/GIFHDPE SH FR PVC
1694A 002Z1000	1,000 FT	46.000 LB	RED		#18 PE/GIFHDPE SH FR PVC
1694A 0021000	1,000 FT	45.000 LB	RED	C	#18 PE/GIFHDPE SH FR PVC
1694A 0025000	5,000 FT	225.000 LB	RED	C N	#18 PE/GIFHDPE SH FR PVC
1694A 003Z1000	1,000 FT	46.000 LB	ORANGE		#18 PE/GIFHDPE SH FR PVC
1694A 0031000	1,000 FT	45.000 LB	ORANGE	C	#18 PE/GIFHDPE SH FR PVC
1694A 00310000	10,000 FT	480.000 LB	ORANGE		#18 PE/GIFHDPE SH FR PVC
1694A 004N1000	1,000 FT	45.000 LB	YELLOW		#18 PE/GIFHDPE SH FR PVC
1694A 004Z1000	1,000 FT	46.000 LB	YELLOW		#18 PE/GIFHDPE SH FR PVC
1694A 0041000	1,000 FT	45.000 LB	YELLOW	C	#18 PE/GIFHDPE SH FR PVC

## 1694A Coax - Low Loss Serial Digital Coax

1694A 006Z1000	1,000 FT	46.000 LB	BLUE, LIGHT		#18 PE/GIFHDPE SH FR PVC
1694A 0061000	1,000 FT	45.000 LB	BLUE, LIGHT	C	#18 PE/GIFHDPE SH FR PVC
1694A 0065000	5,000 FT	225.000 LB	BLUE, LIGHT	C N	#18 PE/GIFHDPE SH FR PVC
1694A 007N1000	1,000 FT	44.000 LB	VIOLET		#18 PE/GIFHDPE SH FR PVC
1694A 007Z1000	1,000 FT	46.000 LB	VIOLET		#18 PE/GIFHDPE SH FR PVC
1694A 0071000	1,000 FT	45.000 LB	VIOLET	C	#18 PE/GIFHDPE SH FR PVC
1694A 00710000	10,000 FT	480.000 LB	VIOLET		#18 PE/GIFHDPE SH FR PVC
1694A 0075000	5,000 FT	225.000 LB	VIOLET	C N	#18 PE/GIFHDPE SH FR PVC
1694A 0081000	1,000 FT	45.000 LB	GRAY	C	#18 PE/GIFHDPE SH FR PVC
1694A 00810000	10,000 FT	480.000 LB	GRAY		#18 PE/GIFHDPE SH FR PVC
1694A 0085000	5,000 FT	225.000 LB	GRAY	C N	#18 PE/GIFHDPE SH FR PVC
1694A 009N1000	1,000 FT	45.000 LB	WHITE		#18 PE/GIFHDPE SH FR PVC
1694A 009Z1000	1,000 FT	46.000 LB	WHITE		#18 PE/GIFHDPE SH FR PVC
1694A 0091000	1,000 FT	45.000 LB	WHITE	C	#18 PE/GIFHDPE SH FR PVC
1694A 00910000	10,000 FT	480.000 LB	WHITE		#18 PE/GIFHDPE SH FR PVC
1694A 010N1000	1,000 FT	45.000 LB	BLACK		#18 PE/GIFHDPE SH FR PVC
1694A 010Z1000	1,000 FT	46.000 LB	BLACK		#18 PE/GIFHDPE SH FR PVC
1694A 010Z500	500 FT	24.500 LB	BLACK		#18 PE/GIFHDPE SH FR PVC
1694A 0101000	1,000 FT	45.000 LB	BLACK	C	#18 PE/GIFHDPE SH FR PVC
1694A 01010000	10,000 FT	480.000 LB	BLACK		#18 PE/GIFHDPE SH FR PVC
1694A 010500	500 FT	22.500 LB	BLACK	C	#18 PE/GIFHDPE SH FR PVC
1694A 0105000	5,000 FT	225.000 LB	BLACK	C N	#18 PE/GIFHDPE SH FR PVC

**Notes:**

C = CRATE REEL PUT-UP.

N = FINAL PUT-UP LENGTH MAY VARY -0% TO +10% FROM LENGTH SHOWN.

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