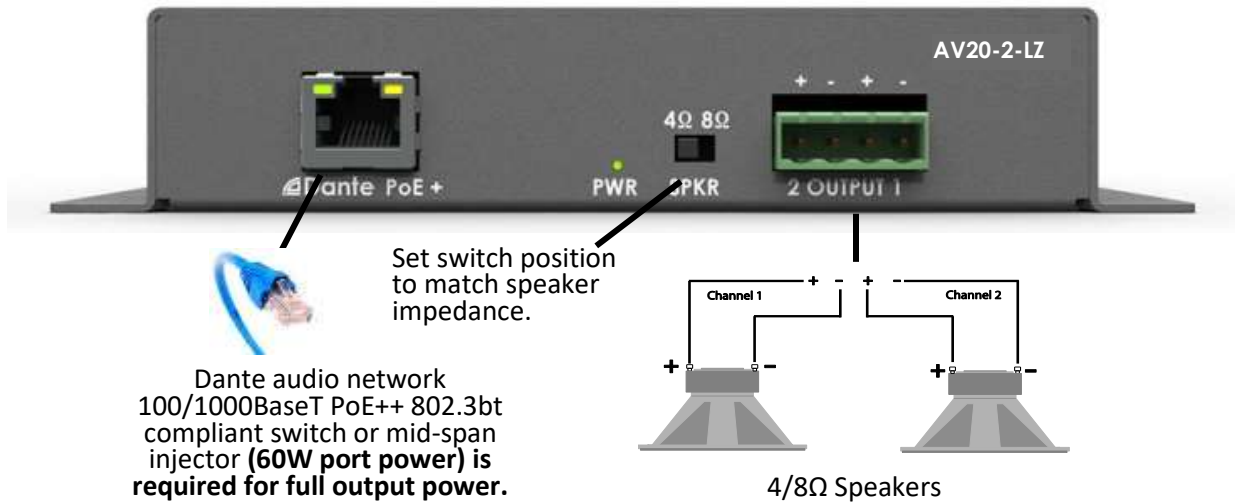


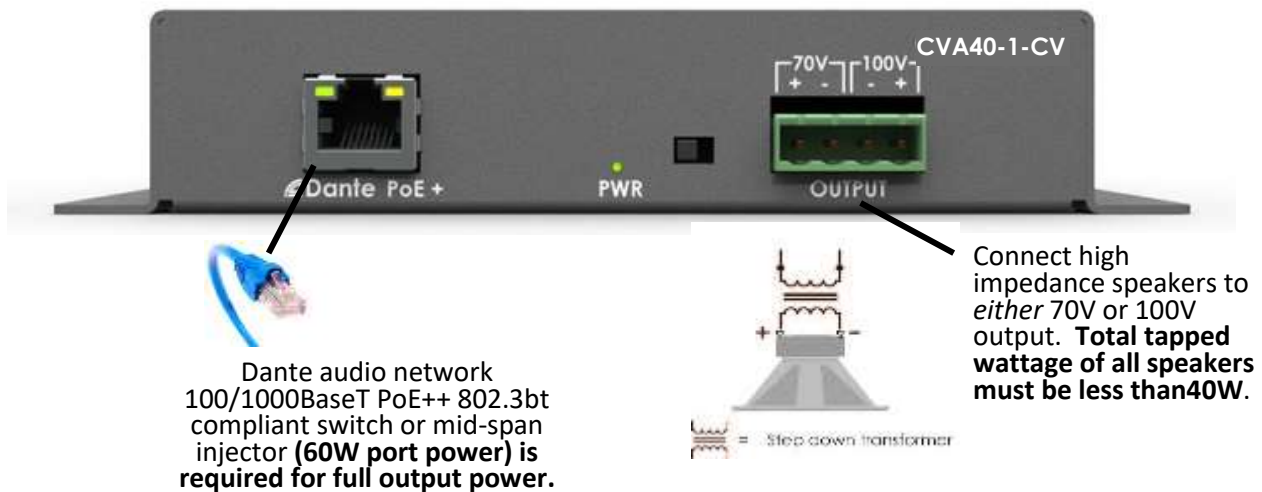
Stewart Audio Commercial PoE++ Audio Amplifier

QUICK-START GUIDE

LOW IMPEDANCE MODEL (AV20-2-LZ-D)



HIGH IMPEDANCE (CONSTANT VOLTAGE) MODEL (CVA40-1-CV-D)



Notes:

1. At this time there is no recognized standard for PoE utilizing all 4 pairs for DC power. PoE++, UltraPoE (Cisco), and 802.3bt are often used interchangeably. It is recommended that switches or mid-span injectors with 60W/port capability be used to achieve rated output power. Ideally, the switch or mid-span injector (PSE) will negotiate with the amplifier (PD) before applying DC power to the port. Passive mid-span injectors that do not communicate with the amplifier but merely supply power at all times may be used but do not offer the same safety features as a negotiated connection.
2. Not all PoE++ compliant switches deliver the same DC power. If audio cuts out and returns several seconds later, lower the amplifier drive level, add a limiter in the Dante™ chain, or reduce the total tapped power of the constant voltage speakers.
3. Low impedance models can deliver up to $40W_{rms}$ into a **single** 4Ω speaker by connecting the speaker to either output and positioning the switch to the 8Ω position. The amplifier will drive an 8Ω speaker to $\sim 34W_{rms}$.

Considerations When Using PoE+ Amplifiers

All PoE powered devices (PD's) have limited power available to them from the switch or mid-span injector (PSE or Power Sourcing Equipment). More specifically, the current through the category cable is limited because the twisted pair conductor diameter is so small. The current a Class D audio amplifier draws from its power supply increases as the audio output power increases. If too much audio power is drawn into the speakers, the PSE will do the job it is designed to do and shut down DC power from the port, and thus to the amplifier (PD). This is done for safety reasons and to avoid potential damage to the category cable. Stewart Audio has configured our low impedance amplifiers with a 2-position switch which limits the output power of the amplifier to $20W_{\text{rms}}$ per channel into 4Ω or 8Ω speakers (depending on the switch position) to avoid shutting down the PoE++ supply. With the constant voltage PoE++ model, the user must ensure that **the total tapped power for all high impedance speakers connected to the output does not exceed 40W.**

Please note the following switch recommendations from Audinate.

All Ethernet switches are capable of working with Dante. However, please be aware that there are some features on some kinds of switches that will allow you to build larger and more reliable Dante networks.

While Gigabit switches are recommended, 100Mbps switches may be used in limited scenarios.

- For channel counts of 32 or more, Gigabit switches are essential. QoS is required when using Dante in networks that have 100Mbps devices. QoS is also recommended for Gigabit switches on networks that share data with services other than Dante.
- For lower channel count (<32) applications, a 100Mbps switch may be used as long as it supports proper QoS, and QoS is active. The use of 100Mbps switches without QoS is not recommended or supported.

Dante makes use of standard Voice over IP (VoIP) Quality of Service (QoS) switch features, to prioritize clock sync and audio traffic over other network traffic. VoIP QoS features are available in a variety of inexpensive and enterprise Ethernet switches. Any switches with the following features should be appropriate for use with Dante:

- Gigabit ports for inter-switch connections
- Quality of Service (QoS) with 4 queues
- Diffserv (DSCP) QoS, with strict priority
- A managed switch is also recommended, to provide detailed information about the operation of each network link: port speed, error counters, bandwidth used, etc.

If you find that the PoE++ power shuts down during loud audio sections, reduce the input signal level or place a signal processing limiter ahead of the amplifier in the Dante™ chain to prevent overdriving the amplifier and shutting down the PSE power. If excessive power (for the particular switch or injector used) is drawn and the supply shuts down, it will automatically restart in 5-7 seconds with no damage to either the amplifier or the switch/injector. However, this is an indication that the signal level to the amplifier should be reduced or limited.

Stewart Audio PoE++ amplifiers should only be used with switches and injectors that negotiate the power required by the amplifier before DC voltage is applied to the port. There are products on the market that merely place a DC voltage on the category cable (so-called passive injectors). They do not conform to any standard. There is no negotiation between the PSE and (PD) for available power, nor do some monitor the power drawn and shut down if an overload or open circuit condition occurs. This can result in damage to the amplifier or the category cable. Stewart Audio recommends that these types of power sources never be used with our amplifiers.

One final note: It is possible to run the PoE++ amplifiers from PoE PSE's with lower output power. The amplifier cannot deliver the full specified audio power without causing the PSE power to shut down power to the port and renegotiate the powered connection. Under these conditions, reduce the input level to the amplifier to avoid this power shut-down and renegotiation process.