

What is the difference between Traditional (LEMO) and CCP preamplifiers?

Just like with microphone capsules, there are also two main types of preamplifiers that are used together with measurement microphones. The difference between these two types lie in the type of power supply needed to drive the internal circuitry of the preamplifier. Unlike microphone capsules, where Prepolarized capsules don't need an external supply to work, preamplifiers will always require an external supply to work. It is possible to classify preamplifiers into two main types:

- 1) **Traditional:** They are referred as Traditional preamplifiers since it was the first technology used for measurement microphones. They are voltage driven, using both single sided and dual sided power supplies (some preamplifiers will support both types of supplies like +/-15V, +/-60V, +28V and +120V). They are also referred as "LEMO" type, given the fact that they are typically equipped with multi-pin LEMO style connectors for multi-wire cables. This multi-pin connector will carry the signal out of the microphone, carry the preamplifier supply, microphone capsule polarization voltage, etc. in different wires separately (see Figure 11).

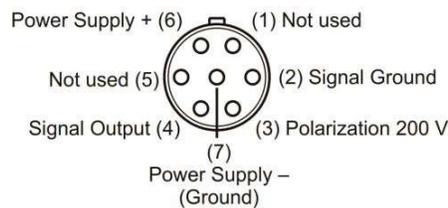


Figure 1. 7-pin LEMO style connector layout for Traditional type preamplifier.



Figure 2. Left: 1/2" Traditional preamp with 7-pin LEMO style connector. Middle: 1/4" Traditional preamp with 5-pin LEMO style connector. Right: 1/8" Traditional preamp with 4-pin LEMO style connector.

Traditional preamplifiers are typically using variations of multi-pin LEMO style connectors like 4, 5 and 7-pin and multi-wire cables (Figure 12).

It is important to note that Traditional Preamplifiers can be used with both externally polarized and Prepolarized microphone capsules.

GRAS examples: [26AA](#), [26AB](#), [26AC-1](#), [26AK](#) and [26AS](#).

- 2) **Constant Current Powered (CCP):** Also known as IEPE (Integrated Electronic Piezo-Electric), ICP (Integrated Circuit PiezoElectric) and CCLD (Constant Current Line Drive). It is compatible with many other constant current driven products such as Deltatron®, Isotron, etc. The CCP principle is a two-wire system using one wire for both the constant current supply for the preamplifier and the signal output. The signal is superimposed on the wire through which the current is kept constant. The other wire is used for ground connection. A CCP preamplifier uses a

Constant Current Power supply, which must be between 2 mA and 20 mA (nominally 4 mA), to produce a constant nominal voltage level of 12 Volt DC (referred to as the bias voltage) to drive the preamplifier. The output signal from the microphone superimposes fluctuations around the DC level.



Figure 3. Left: ½" CCP preamp with BNC connector. Middle: ¼" CCP preamp with Microdot 10/32 connector. Right: ¼" CCP preamp with SMB connector.

CCP preamplifiers are typically using BNC, Microdot 10/32 and SMB connectors with coaxial cables (Figure 13).

CCP preamplifiers can ONLY be used with Prepolarized microphone capsules.

GRAS examples: [26CA](#), [26CB](#), [26CC](#), [26CF](#) and [26CK](#).