

PHONO LOCO ----- Q AND A

Q. WHAT'S SO LOCO ABOUT IT ?

Marketing wise ----- the Phono Loco is a disaster. There was a complete disregard for market acceptability. ALL design decisions were based on optimal engineering for trans impedance. It was all about performance possibilities. Marketing was thrown under the bus.

Loco:

Not 1 in a 1,000 turntables will plug into the Phono Loco. It requires (absolutely requires) balanced wiring between the tone arm and the Phono Loco.

There is ONLY a pair of XLR connectors for the input.

It has ONLY single-ended outputs (RCA) no balanced (XLR) option.

Has no loading resistors. Input impedance is a virtual short.

Has no traditional gain specifications. Three gain settings of high, med and low. No standard way to know. Just try.

Loco for dealers. At least one turntable MUST have balanced signal lines. Difficult to move a variety of TT into for comparisons.

Loco for customers. Can't fully get optimal performance without balanced input cables. Not friendly for in-home evaluation. Has the extra expense of buying a new balanced signal cable for turntable connection.

Loco for magazine reviewers. Again, requires specialized balanced input cable. No good for cable comparisons. No good for cartridge comparisons. A completely different load to cartridge. No flexibility beyond trans impedance application. Cannot compare with

conventional voltage gain phono preamps.

Loco for Sutherland. A full measure -- and then some -- went into development. For some odd reason, this crazy project was taken seriously. There was no stopping until performance was at a breakthrough level. No stopping until there were perfected circuit board layouts, meticulous in every detail. CAD designed metal work and a small production run. Professional studio photography. An owner's manual, covering all aspects of ownership and application. All that for a design that is essentially unmarketable !!!

MOST LOCO OF ALL. Each and every beta listener has been enraptured with the musical performance. It is CRAZY good. Each has passionately gone thru their record collection: hearing favorite recordings as never before. Lifelike – emotionally involving. It is seductive ---- beware.

Q. HAS THIS BEEN DONE BEFORE ?

Yes it has. A search will show several products using this type of input topology. They have consistently gotten favorable reviews.

Trans impedance is the correct engineering term. In the market, it is also called current mode input.

One example is :

CH P1, US retail \$31,000

Q. WHAT MAKES THE PHONO LOCO BETTER ?

Unlike the other designs, the Phono Loco is totally focused as a specialized trans impedance unit. There is no concession to flexibility and options. With that clutter removed, the circuit can be refined and optimized to ONE goal. What's it going to be? Voltage gain or trans impedance ? The Phono Loco does not hedge it's bets. It is ALL on trans impedance.

AND -uniquely- the Phono Loco can draw upon the Sutherland experience of phono preamp design. It is all Sutherland

Q. WHAT DOES TRANSIMPEDANCE MEAN

A trans impedance amplifier input looks like a virtual short to the input signal. The input voltage is therefore zero. The input 'signal' is the current going in/out of that virtual short. The input current is multiplied by the gain (in Ohms) to give an output voltage ----- corresponding to the input current.

Q. WHY ONLY BALANCED INPUT FROM CARTRIDGE ?

There are many approaches to designing a trans impedance gain stage. The very low level signals from a phono cartridge along with the challenge of preserving the subtle signal nuances is particularly formidable. As circuit possibilities unfolded, one approach looked the most promising. It offered many advantages, BUT it also required a balanced input signal. It required both connections from the cartridge coil to float with respect to ground. That's what the circuit needed and that's what it got. There was no bending around, or patching, or compromising to make it accept a single-ended signal. Market acceptability took a hit, but the circuit was optimal.

Q. BUT THE CABLE FROM MY TT DOESN'T HAVE XLR ?

Hardly any one has balanced signal connections from their turntable. While they are not commonly used, most cable manufacturers can provide that configuration. For best performance, you MUST have a truly balanced connection to the cartridges. Both pins 2 and 3 of the XLR must float from ground. The overall shield goes to pin 1.

If you are not willing to get a balanced cable for the input connections, you should buy a more conventional phono preamp.

Q. CAN I USE AN RCA TO XLR ADAPTER ?

Buried deeply and hidden in the Phono Loco packaging is a RCA to XLR adapter. If you must ----- use it only until your correct cabling arrives. It is NOT for long term use. If the shield of your single ended cable is tied to ground somewhere, this will not work. Both sides of the cartridge coil MUST float with respect to ground.

Do not waste your money on more expensive RCA to XLR adapters. Get the correct balanced cabling.

Use of an adapter is a compromise that will not allow the full expression of the Phono Loco's potential.

Q. WHY ONLY SINGLE-ENDED OUTPUT TO PREAMPLIFIER

As in other Sutherland designs, the circuit path is kept as direct and simple as possible. The Phono Loco is a purist design. The signal path within is inherently single-end (after the trans impedance input stage). Adding XLR outputs would have complicated the signal path.

Q. WHAT ARE THE LOADING OPTIONS ?

Conventional voltage input stages have a fairly high input impedance. A load resistor is placed at the input jack to provide a load to the cartridge. Almost always a wide range of values is available for selection. That is one of the set up parameters to experimentally optimize. The input voltage across that load resistor is then amplified.

A current input stage (trans impedance) is MUCH different. It's input is a virtual short. Ie the cartridge sees a short as it's load. That topology obviates load resistor selection. The current going into that short is then amplified.

There are no loading options or concerns.

Q. CAN I USE A MM CARTRIDGE ?

You are welcome to experiment along those lines. It is unlikely to work very well.

Q. WILL IT WORK WELL WITH XXX CARTRIDGE ?

We expect the Phono Loco to work very well with most MC cartridges. But there is not yet a body of info available. We will keep the user forum page updated so experiences can be shared.

Consider this a frontier product. There will be exploration and discovery along the way. Trust your own experience and feel free to enjoy the results.

Q. WHAT IS THE GAIN ?

Don't know.

With voltage gain amplifiers, the gain is expressed as the ratio of the input voltage and the output voltage. That is a dimensionless number, usually expressed in dB.

With a trans Impedance amplifier gain is expressed in Ohms (!!!). The output voltage is the input current times the gain, in Ohms. I could go to some trouble to measure / calculate the gain in Ohms. It would not be useful in application or discussion.

Q. WHAT GAIN SHOULD I USE FOR XXX CARTRIDGE ?

Don't know.

We can expect about the same output with most MC cartridges. To offer some adjustability, the Phono Loco has 3 gain options. High, Med and Low.

Going from Med to High, adds 6 dB to output.

Going from Med to Low, subtracts 6 dB from output.

Some simple experimentation may be required. Likely to be suggestions coming from the user forum.

Q. WILL IT WORK WELL WITH XXX CABELS ?

Don't know.

Most all audio signal cables are designed to transfer voltage changes. Since the Phono Loco input is a virtual short, the input voltage is zero and unchanging. What does change is the current.

Some simple experimentation may be required. Likely to be suggestions coming from the user forum.