



# UNIVERSITY

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## LEVEL 3, LESSON 3

4-20 MA LOOP POWER SENSORS  
AND SIGNAL CONDITIONERS

# Introduction



Welcome to **Level 3, Lesson 3 – 4-20 mA Loop Power Sensors And Signal Conditioners**, part of CTC's free online vibration analysis training series.

We hope you enjoyed and benefitted from the previous course and will continue to build your vibration analysis knowledge as you progress through Level 3.

*4-20 mA Loop Power Sensors and Signal Conditioners is created and presented by CTC for complimentary educational use only. This training presentation may not be edited or used for any other purpose without express written consent from CTC.*



# Training Objectives

Upon completion of this lesson, you will understand the basic application and benefits of:

- ① 4-20 mA Loop Power Sensors
- ② Signal Conditioners

# 4-20 mA Loop Power Sensors

4-20 mA loop power sensors from CTC require only two connections:

+18 to 30 volt power lead

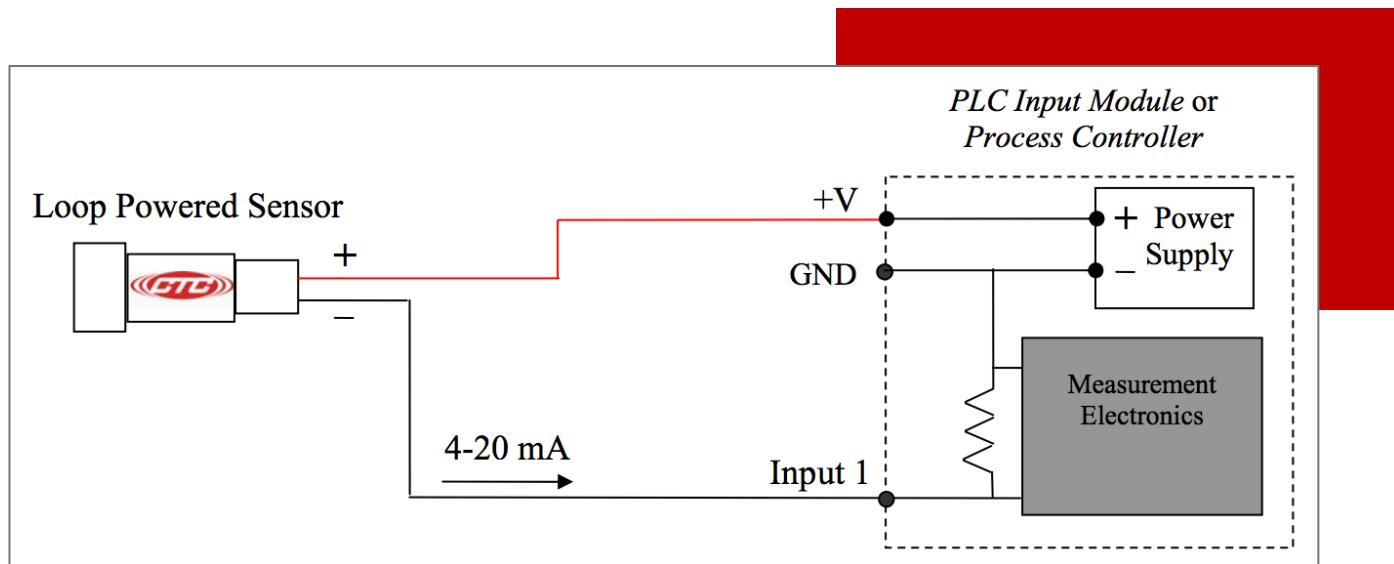
DC common (negative) lead

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The sensor regulates the loop so that the current is proportional to the vibration parameter being measured.



# 4-20 mA Loop Power Sensors

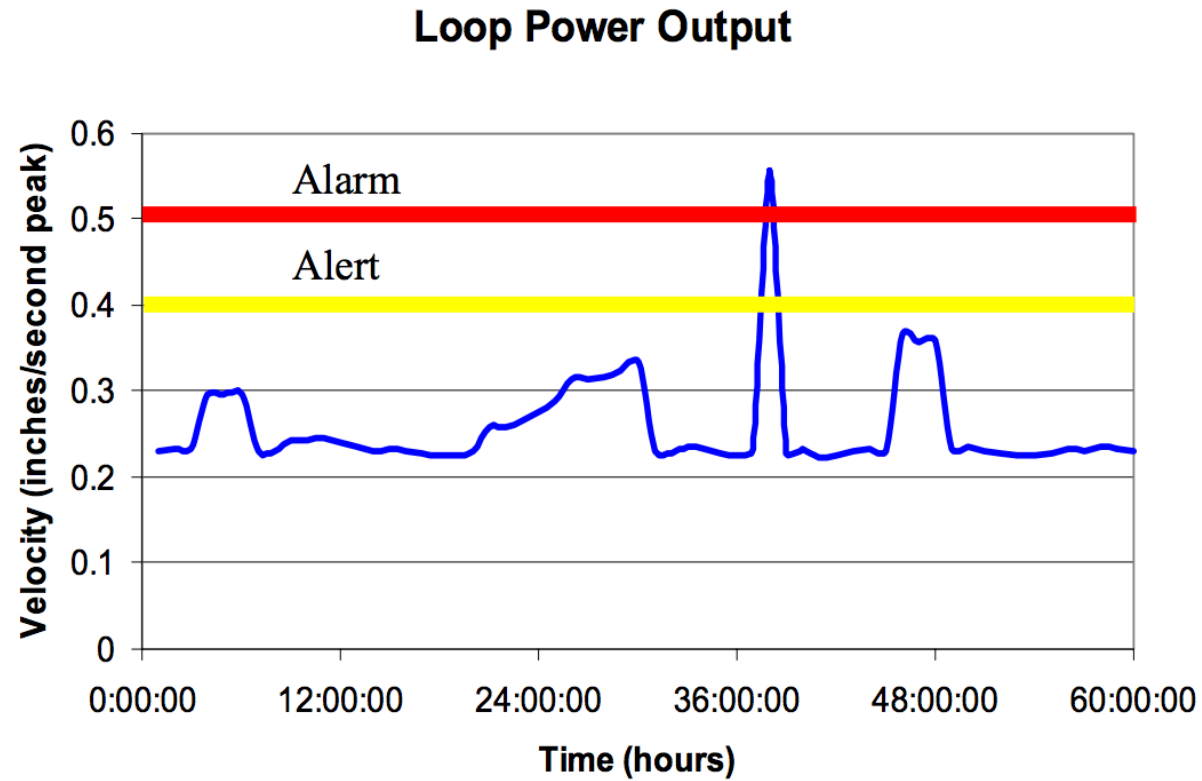


The sensor can be wired directly into analog input modules on PLCs or Process Controllers that accept 4-20 mA signals

The sensor must be connected to a power source at the positive lead and the common (negative) lead will be connected to the Controller's analog input

The power supply is used to complete the loop through the Controller's ground

# 4-20 mA Loop Power Sensors



Example of a loop power sensor's  
output vs. time

# Signal Conditioners

CTC's signal conditioners are a more versatile approach to continuous monitoring than standard loop power sensors.

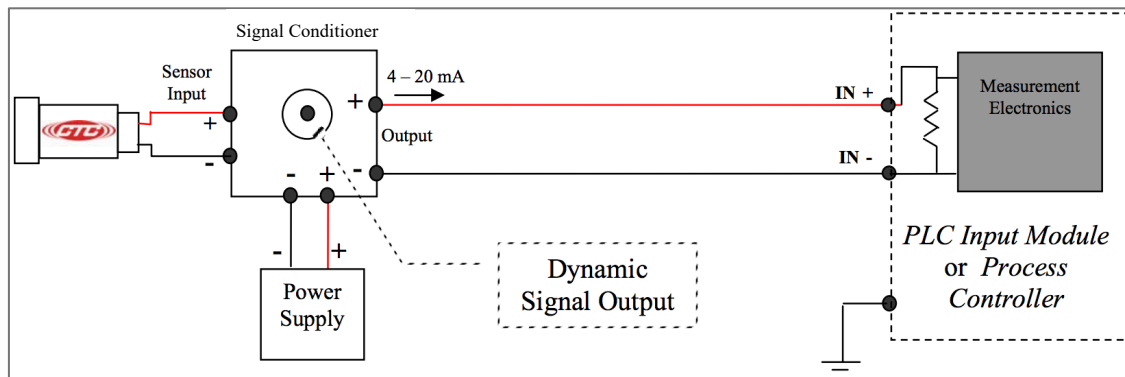
Signal conditioners are capable of wider frequency and amplitude ranges and can provide a dynamic vibration signal in addition to the overall 4-20 mA output.

The dynamic vibration signal is available through a buffered output.





# Signal Conditioners



The four wires needed to monitor overall vibration level using a signal conditioner are:

Positive and negative power supply leads that provide power to the electronics

Positive and negative lead signals

These two pairs of leads are separate and distinct from one another. The figure on the left shows typically wiring into a PLC or Process Controller with analog input module

A two-conductor cable with a plug (F) type BNC connector can be used to monitor the dynamic vibration signal coming out of the BNC jack on the signal conditioner.



# Why Choose CTC?



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