



iT Series Beginner's Guide

Introduction to 4-20 mA vibration monitoring

What is a 4-20 mA signal?

» Current loops 101

- Allows for remote, continuous monitoring
- Used to monitor:



- Represents “zero” to “full-scale” of parameter being measured
 - 4 mA = zero
 - 20 mA = full-scale
 - Linear output, easy to reconcile

How can 4-20 mA be applied to vibration?

» Current loops 101

- Vibration is monitored on rotating machinery across the world
- Some data requires analysis – think frequency or spectral content
 - Allows for troubleshooting and fault identification
- 4-20 mA monitoring gives a simple way to track vibration



- Two things important to know:
 - Output type (proportional to what?)
 - Full-scale (what is the maximum [20 mA] equivalent to?)

How can you acquire a 4-20 mA signal?

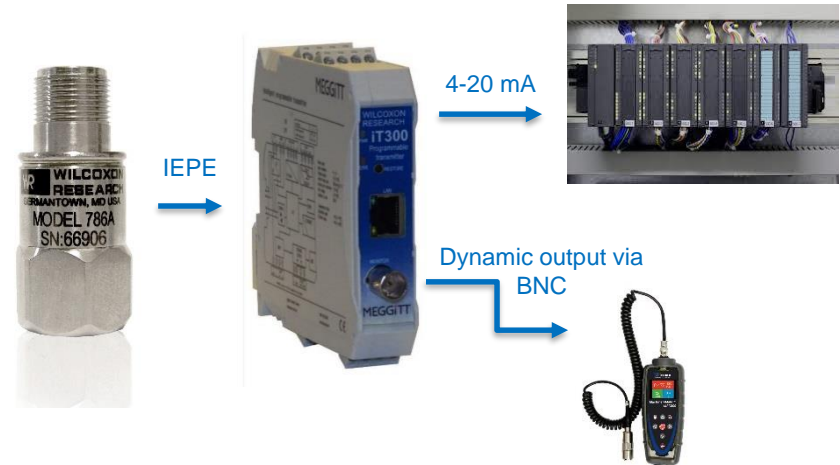
» Product offerings for 4-20 mA vibration monitoring – two paths

1. 4-20 mA sensor



<https://buy.wilcoxon.com/vibration-sensors-4-20ma.html>

2. Accelerometer + vibration transmitter



<https://buy.wilcoxon.com/vibration-sensors-iepe.html>

<https://buy.wilcoxon.com/vibration-transmitters.html>

How is 4-20 mA be applied to vibration?

» An example

- Motor operating at 1800 RPM (nominal)
- Regardless of the path chosen, sensible 4-20 mA settings are:
 - Output proportional to peak velocity
 - Full-scale value of 1.0 ips (inch per second)
- Once measurement chain is complete, you establish a baseline of....6 mA?
 - If 4 mA = zero vibration and 20 mA = 1 ips (remember full-scale), then 6 mA must be between 0 and 1 ips.
 - For the full-scale selected, each mA represents 0.0625 ips
 - 1 ips/16 mA = 0.0625 ips/mA
 - Therefore, 6 mA = 2 mA * 0.0625 ips/mA = **0.125 ips**
- Now that baseline is established, PLC tracks current (mA) level and reacts to any changes or programmed alarms.

How can Wilcoxon Intelligent Transmitters help?

» Applicable to the real-world

- The iT series of vibration transmitters allow for the user to configure the desired output type and full-scale range
 - Through pre-order part number selection (iT150 series)
 - Through field configuration (iT30X series)
- Wire two separate 4-20 mA outputs to control system for continuous monitoring
- Provide access to the raw voltage signal originating in the sensor
 - Troubleshoot the machinery through spectrum analysis
 - Pinpoint and identify faults with ability to narrow frequency bands of interest
- Alarm and relay capability, MODBUS communication, temperature sensor input compatibility
 - Available on select models

Any questions?

» Contact us!



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