iii Guide - Powering Your Device

Reading These Diagrams

Two sets of diagrams are included for every type of device - the first showing a device with an integral sensor (such as a pressure transmitter or flowmeter) and the second shows a device with an external input (such as an isolator, signal converter, temperature or frequency transmitter).

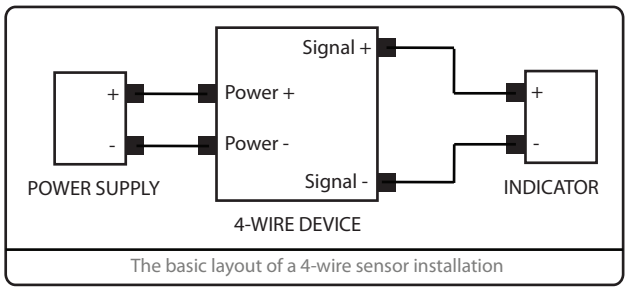
Where we show 'Indicator' or 'PLC', you could actually have any device with an input - including controllers, alarm systems, loggers, recorders, telemetry systems and more.

Aux. Powered

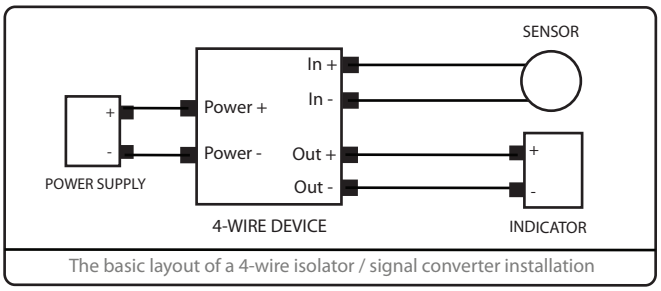
Also Known As: Four-Wire / Externally Powered

Auxillary powered devices are also known as 'four-wire' devices because they need to be powered via a seperate set of wires - meaning you have two wires running to your power supply and two carrying the signal.

Four-wire devices can come in a range of voltages, the most common being 24VDC, 110VAC or 240VAC, and they are the only devices capable of 0-20mA signals, or voltage signals such as 0-10, 0-5 or -10 to +10V.



The basic layout of a 4-wire sensor installation



The basic layout of a 4-wire isolator / signal converter installation

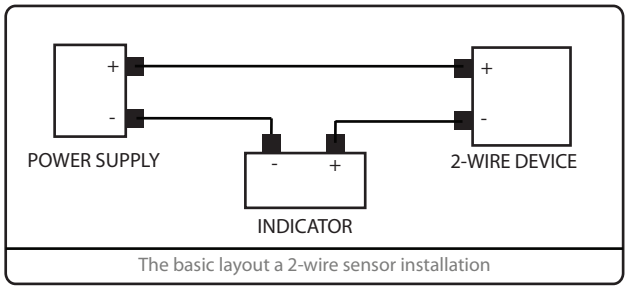
Loop Powered

Also Known As: Two Wire / Output Loop Powered

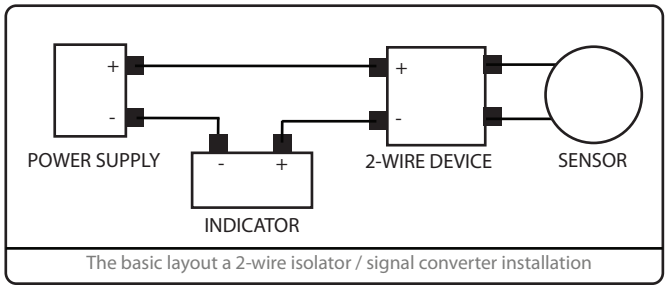
Loop powered devices are simpler to install as they only require 2 wires - they draw their power from the same cables they use to run the signal.

Two wire devices are 24VDC powered and always output 4-20mA signals. Care must be taken when designing a loop to ensure you do not have too much load. If in doubt, install four-wire isolators to re-transmit the signal

A hint when wiring a loop - while '+' connects to '+' between the power-supply and the 2-wire device, all of your other connections are made '-' to '+'. In the example below, you'll notice that the negative side of the 2-wire device is wired to the positive side of the indicator.



The basic layout a 2-wire sensor installation



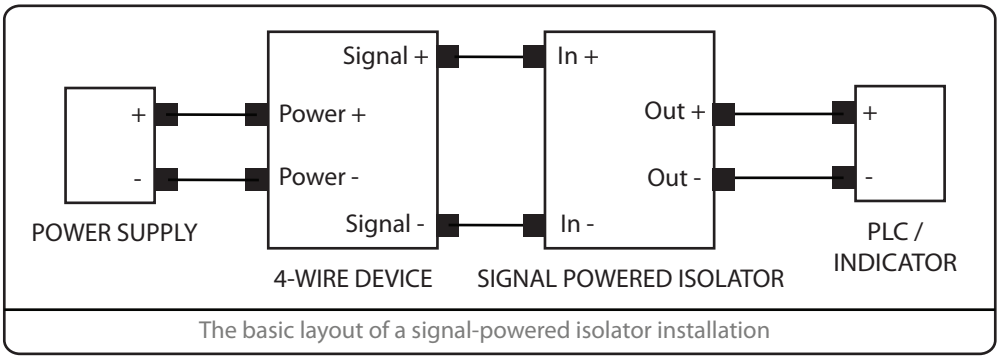
The basic layout a 2-wire isolator / signal converter installation

Signal Powered [Isolators Only]

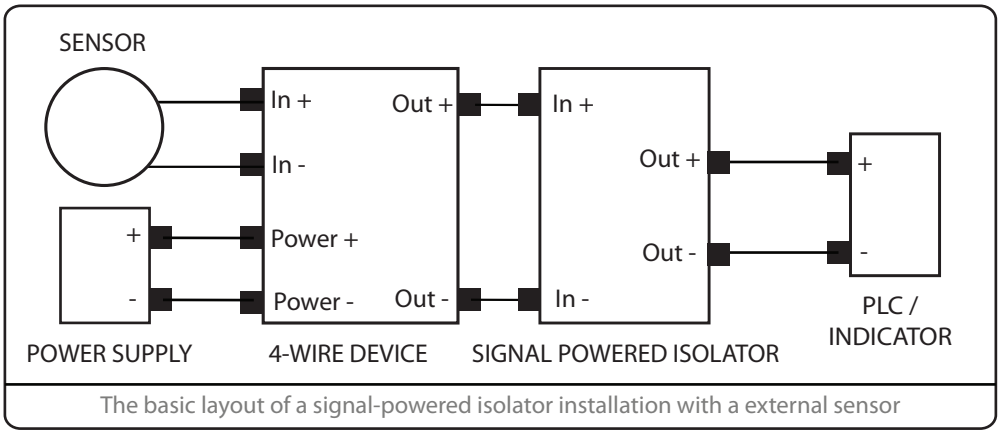
Signal powered isolators are uncommon - they are usually only used as temporary fixes. They allow you to install an isolator on a 4-wire device without needing to add any additional wiring.

Signal powered devices take the power directly from the 4-20mA signal, but unlike loop powered devices they don't simply take two wires in - they have seperate input and output terminals.

These devices are only suitable for 4-20mA signals, and there can be very little load on impedance on the output side of the isolator. Consideration should be given to both the input impedance of the PLC and the driving capacity of the 4-wire device.



The basic layout of a signal-powered isolator installation



The basic layout of a signal-powered isolator installation with a external sensor