

Pribusin Inc.

Section 4

Two-Wire Instruments

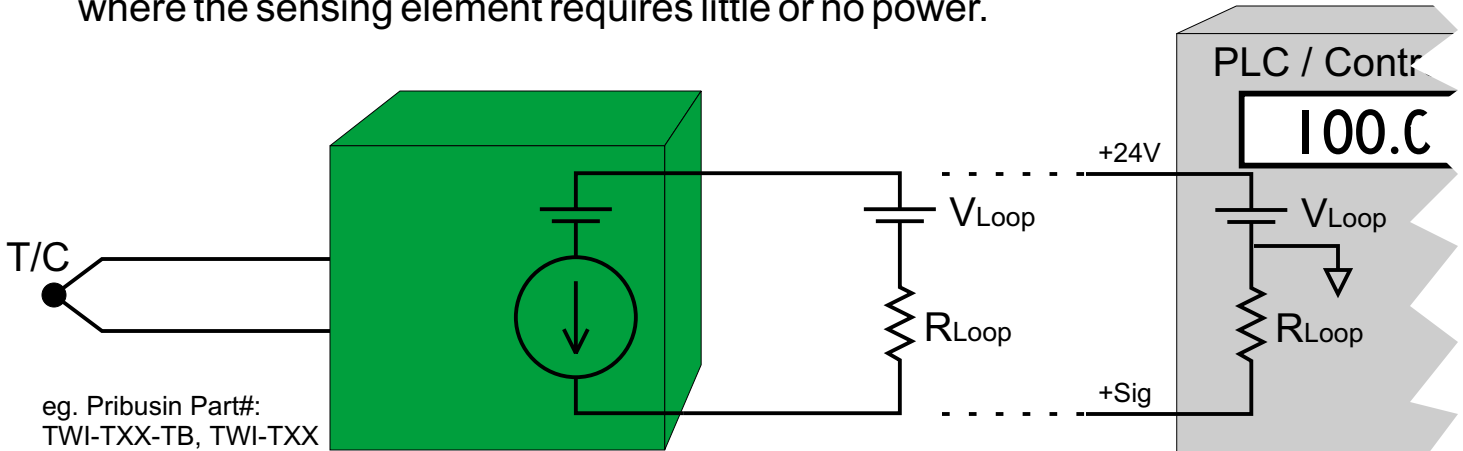
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Two-Wire Instruments - Theory of Operation

Two-Wire Instruments get their name from the 2 wires they use to get both power from a controller and deliver a signal back to it. Other instruments typically use 4 wires: 2 for power and 2 for the signal.

2-Wire Instruments work on 4-20mA loops ONLY !! They accomplish their task by taking a small amount of power from the loop to run themselves and then modulate the current running through them to represent a signal proportional to what they are measuring.

Typical 2-Wire Instruments are used for RTD, T/C, mV and isolation applications where the sensing element requires little or no power.



Because 2-wire instruments take some power from the loop, the amount of loop drive remaining depends on the power supply of the loop. The graph on the right shows the maximum loop load (R_{Load}) for given power supplies. If the maximum load is exceeded there will not be enough power for the 2-wire instrument. This graph is for Pribusin's TWI-XXX-TB series of instruments

2-wire instruments come in isolated and non-isolated types. Isolated types are preferred as they reduce the risk of ground loops and noise interference. Non-isolated types must be used with caution and only when the sensor is absolutely isolated itself.

