
Uses for Model 1511 in Hydroelectric Applications

THE APPLICATION

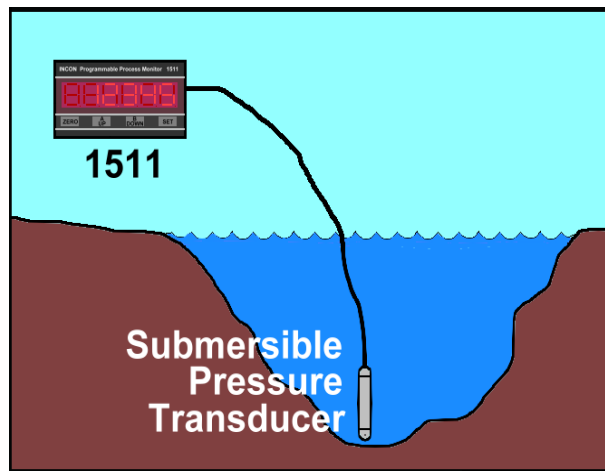
Hydroelectric sites contain many operational monitoring and measurement systems that can benefit from remote monitoring and automation. In some cases transducers are wired directly to an RTU without local or remote displays. In these cases the INCON model 1511 can be used to provide local or remote display in meaningful units of measure, signal conditioning or conversion, and alarm assertion as a stand-alone system or as part of a complete automation system.

POSSIBLE SOLUTIONS

The Model 1511 Programmable Process Monitor is a very versatile and accurate panel instrument that has many uses in hydroelectric monitoring and automation applications including:

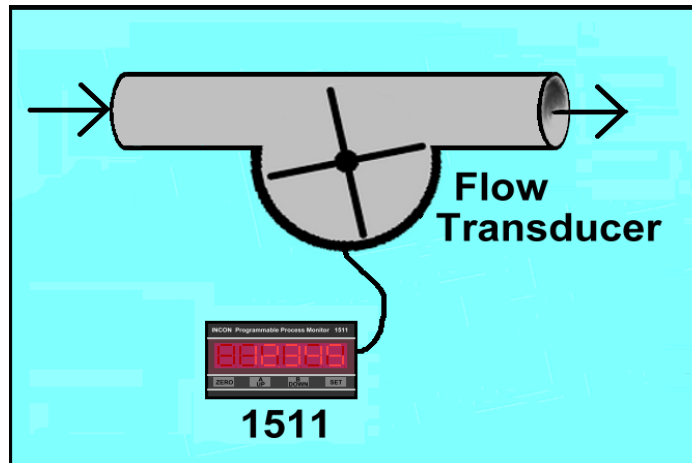
A) Level; B) Flow; C) Volume; D) Signal Conditioning.

A. LEVEL



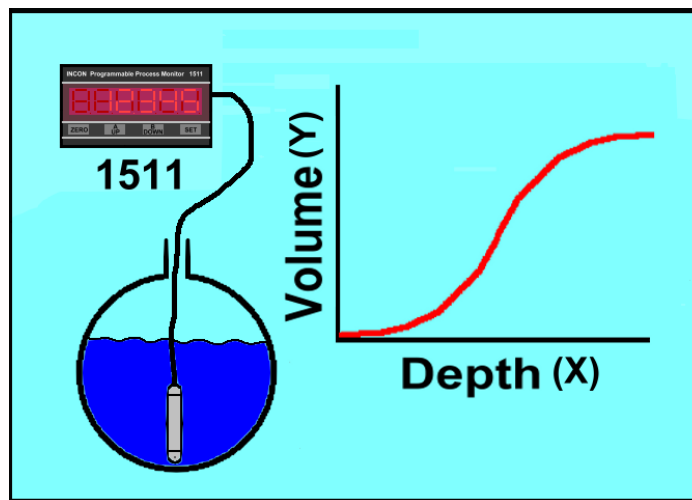
The 1511 can be programmed to monitor pond level or reservoir volume. A pressure / depth transducer (such as the INCON model 1890 or 1891) is dropped into the pond. A stilling well may or may not be used. The transducer may or may not be dropped to the bottom of the pond. Setting up and programming the 1511 is easy, using the System Calibration mode (SYCAL), the input signal relating to the depth of the pond can be easily "learned" by the 1511. As the depth of the pond changes, the water pressure on the transducer changes, causing the output signal (typically 4-20 mA) of the transducer to change. The 1511 calculates the pond depth based upon the analog signal from the transducer. The 1511 will display the pond height in any desired units of measure, inches, feet, feet above sea level, etc... From this calculated depth the 1511 can derive reservoir volume using its non-linear conversion table. Volume can also be displayed in any desired units of measure. The 1511 could display either at the push of a button.

B. FLOW



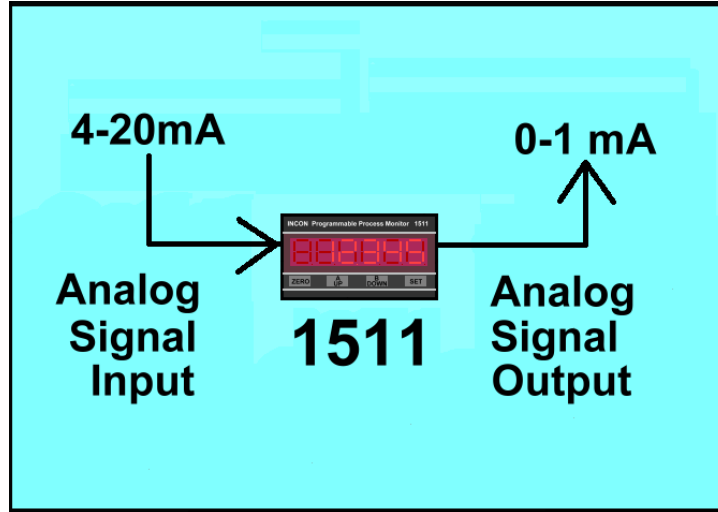
The 1511 can be programmed to monitor flow. Any type of flow transducer (such as Ultrasonic, Aqua-sonic, Turbine, Vane, etc..) with an analog signal output can be wired to the input of the 1511. The minimum flow value is programmed for the minimum input signal and the maximum flow value is programmed for the maximum input signal. As the flow changes, the input signal changes proportionally. The 1511 will calculate the flow and display it in any desired unit of measure.

C. VOLUME



In cases where the desired readout is not in a linear relationship with the input signal, such as the volume in a cylindrical tank, the 1511 can be programmed to do non-linear conversion. The non-linear conversion table can be programmed with up to 100 data point pairs, X and Y. As the input signal (X) varies continuously between data points, the 1511 will interpolate the displayed value (Y) based upon the slope between adjacent data point pairs.

D. SIGNAL CONDITIONING



The 1511 can be used as a signal converter with 12 bit resolution. As the 1511 calculates a display value for any of the above applications, it can drive an analog output signal relative to programmable minimum and maximum values. This output signal may be the same or different from the input signal. Not only can the 1511 convert the signal from one format to another, it can scale and offset the signals from one another using its powerful mathematic capabilities. A multiplication factor (scale) and an arithmetic (offset) value can be programmed in addition to a non-linear conversion function.

