Practical Methods to Compensate Wire Resistance for Temperature Transducers

Vlad BANDE

Abstract

This paper presents a theoretical approach to overcome the parasitic resistance induced by the temperature transducer's wiring used in hydro-energetic buildings (dams). The transducers are based on a resistive variation equation and from the constructive point of view are realized by one or two resistances in serial connection. The measurement process will use a "three (four) wire" algorithm also known as Wheatstone Bridge and also an ADC compensation algorithm, using an Analog-Digital Converter for precision reasons. The final purpose of this article is to find a solution to eliminate the additional parasitic resistance, which occurs when a transducer converts, into electrical terms, the information acquired from sensors with very long connectivity wires spread on a vast surface.