



APPLICATION NOTE

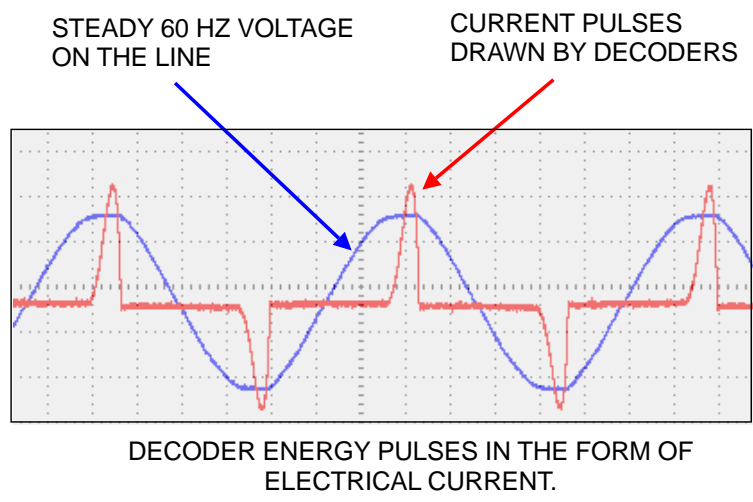
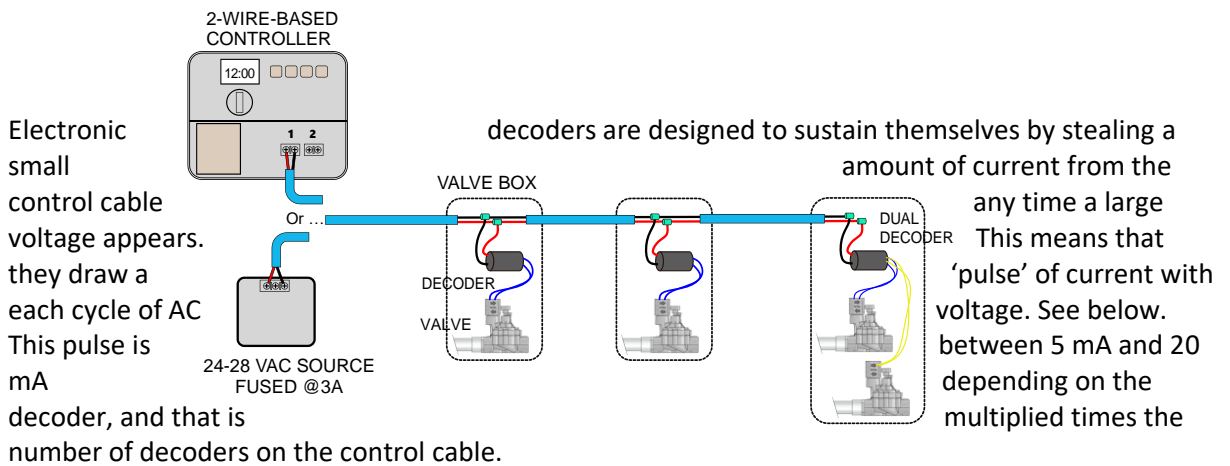
February 2018

Background: Measuring Decoder Current in 2-wire Irrigation Systems

Sensitive milliamp clamp-meters are commonly used to isolate faults in 2-wire decoder systems. They should be "True RMS reading" meters to make meaningful measurements of the transient signals used in such systems.

Troubleshooting Decoders with 60 Hz at 24 to 30 Volts

The simplest way to isolate faults in 2-wire decoder systems is with line current supplied by a steady 60 Hz, 24 – 28 Vac source. This can be a controller that is capable of supplying that voltage or a separate 24 Vac-type power unit. In testing we used an ELK-TRG2440 with an internal resettable fuse in case of near-short circuit faults.





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(continued)

How a TRMS Clamp-meter Will Respond to These Current Pulses

A TRMS meter is accurate no matter whether the current is steady, pulsing or changing polarity. The meter looks at the pulses and calculates the total current, i.e. pulses of 30 mA that last for 1/8 of the time will read about 4 mA. A single pulse of 30 mA may read just 1 mA.

The TRMS clamp-meter will include any signals it finds, including high frequencies, so it is best for accuracy and consistency to operate the meter with its 60 Hz filter engaged. In the Armada Pro93 this is "50/60 Hz" mode and in the Pro95 it is "LPF". These modes need to be manually selected each time the unit is turned on.