

APPLICATION NOTE

Sensing Voltage in DC Powered Installations

DC supplied power has quite a number of advantages over AC power systems in specific applications but not in all, which is the primary reason both types are in use around the world. Both have their uses. The national grid is designed to carry AC and most equipment, as well as machinery, is designed to run on AC. Because of this, converting alternating current to DC is very common when the application works best using DC current.

An example of heavy DC current usage is in shunt wound electric motors which produce full torque at zero speed and are used for heavy lifting and positioning. Shunt wound and compound DC motors are often used to power lifting cranes on docks and in the wood processing industry.

Many DC motors can be reversed by changing the polarity of the field windings. By swapping the connections to the motor field (but not the power to the armature) the direction of rotation changes. By measuring the voltage applied to the field, the direction of rotation can be determined before the motor is spinning, or while it is rotating if that direction cannot be determined visually.

Arc welding operations also utilize DC power. They can be adjusted to perform light to heavy welding, but reversing the polarity of the welder leads can create gaps in the weld bead and extra weld splatter, resulting in scrap or rework.

The latest version of NK Technologies VTD series of DC voltage transducers will provide a voltage signal representing the polarity of the input voltage.



VTD-BD Series Voltage Transducers for Sensing DC Voltage

VTD-BD Series Voltage Transducers are high-performance transducers for sensing voltage in DC powered installations. Applicable for use on circuits to 600 VDC, VTD-BD voltage transducers provide a fully isolated +/-5 VDC or +/-10 VDC, to detect and measure DC voltages which change polarity. Housed in an easy-to-install DIN rail or panel mount case, the VTD-BD Series comes in a variety of ranges to suit many primary voltages.

The VTD-BD measures DC voltage and provides a change in signal when the polarity reverses. Positive on upper right terminal creates a positive output signal; positive on upper left terminal creates a negative output signal.

