

Measuring and Monitoring Voltage

Measuring voltage of a circuit is an important component to a predictive maintenance program. Voltage transducers can help to identify loose electrical connections, loss of a phase, under voltage conditions or misbehaving power sources whether it's a generator, utility power or an alternative source like photovoltaic panels.

Measuring circuit voltage and converting this value to a panel meter, controller or data acquisition system is quite a complicated process. To achieve good measurement accuracy, the circuit voltage must be physically connected to the transducer, with adequate spacing between the primary conductors and circuit board traces for the best reliability and safety. This is quite different from measuring current as most current transducer designs do not touch the live conductor but only detect the magnitude of the magnetic flux field.

One of the main causes of equipment failure in the electrical power supply is voltage lower than the equipment was designed to handle. The reduced voltage creates over current, which in turn creates excess heating. With squirrel cage motors driving the majority of loads in industry, a loss of a phase will keep the rotor turning and may cause the current sensitive overload protection to trip, but that can happen only when the overload protection is sized properly. Even then, there is a good chance that the heat created will damage insulation. After multiple overloads, that insulation will certainly fail.

Measuring circuits which are neither sinusoidal AC nor pure DC are the most difficult to measure accurately. Sawtooth, square, or pulse width modulated wave shapes can cause some types of transducers to produce inaccurate output signals. The design of NK Technologies new VTU-DIN series allows for the best accuracy regardless of the voltage wave shape.

Our new smaller series allows for full sensor output at voltages from 0–15 to 0–600 AC or DC. This compliments the original VTU series with ranges from 0–800 to 0–1200 volts.

Applications

- Monitoring Electric Motors (Pumps, Fans, Drives): Whether AC or DC, be certain that the power supply is providing enough voltage to keep the equipment from failing prematurely.
- Monitoring Power Sources (Generators, PV Panels, Wind Power): Critical loads must be kept running at all times, and checking the output voltage of the source will prove to be very important to achieve maximum reliability.



VTU-DIN Series, AC or DC Current Transducers

VTU-DIN Series Voltage Transducers are high-performance True RMS transducers for sensing voltage in single, three-phase or DC installations. Housed in a slim, compact, easy-to-install DIN rail mount enclosure, these transducers come in a variety of voltage ranges.

The VTU-DIN measures AC or DC voltage from 0–15 to 0–600 volts and provides an industry standard output proportional to connected voltage in alternating current circuits with sinusoidal or non-sinusoidal (variable frequency) applications, or direct current circuits.

