Specifications

Power Supply	24VDC Loop-powered 500Ω max. loop impedance Use class 2 power supply only
Voltage Measurement	50,120, 150, 240,300,400, 480,500 and 600V
Output	4–20mA Proportional; capped at 24mA max
Response Time	250 ms (to 90% value)
Accuracy @ 60 hZ	< 1% (10-100% of range)
@50 hZ	+/-2 to 2.5%
Linearity	< 0.5%
Loading	< 500 ohm
Isolation Voltage	2500 VAC
Frequency Range	40 Hz – 100Hz
Enclosure	UL94 V0 Rated
Environmental	*Operating range* -4 to 122° F (-20 to 50° C),0–95% RH Storage Temp. Range -22 to 140°F (-30 to 60°C) Pollution Degree 2 Altitude to 2000 meters
Approvals	UL/cUL listed and CE

For products intended for the EU market, the following is applicable to the CE compliance of the product:
The VTR Series comply with EN 61010-1 CAT III 600Vrms max line-to-neutral measurement category. Use 24 V input power and fuse at 5 amps. Power source overvoltage category I as defined per EN 61010-1.

Warning! Risk of danger

Safe operation can only be guaranteed if the transducer is used for the purpose it has been designed for and within the limits of the technical specifications When this symbol is used, it means you must consult all documentation to understand the nature of potential hazards and the action required to avoid them.

Warning! Risk of electrical shock

When operating the transducer, certain parts of the module may carry hazardous live voltage (e.g. primary conductor, power supply)
The transducer should not be put into operation if the installation is not complete.

Model Number Key

VTR 1 - 420 - 24L - DIN

CASE STYLE:
DIN - DIN rail compatible

POWER SUPPLY:
24L - Nominal 24 VDC Loop Power

OUTPUT:
420 - 4-20mA

VOLTAGE INPUT RANGE:
1 - 120V
2 - 150V
3 - 240V
4 - 480V
5 - 500V
6 - 600V
Special: suffix Y66: Range 0-50 VAC
suffix Y87: Range 0-400 VAC
suffix Y96: Range 0-300 VAC

SENSOR TYPE:
VTR - AC Voltage Transducers, True RMS Output

Know Your Power

Other NK Technologies Products Include:
AC & DC Current Transducers
AC & DC Current Operated Switches
1ϕ & 3ϕ Power Transducers
Current & Potential Transformers (CTs & PTs)

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NK Technologies

INSTRUCTIONS

VTR SERIES

AC Voltage Transducers
Ranges 120 to 600 Volts
4-20mA True RMS Output

Quick "How To" Guide

1. Ensure correct sensor model was chosen for Input Voltage of application.
2. Mount the sensor to a DIN rail using integrated mounting clip on backside of transducer.
3. Connect input voltage L1 & L2 and output wiring (24V + & –) using 24-10 AWG copper wires, rated 75/90°C. Tighten to 5-7 in/lbs torque. Refer to "Output Wiring" section for loop voltage and impedance recommendations.

   Recommend 1/2A, 600V fast acting fuses in the primary circuit.

VTR Instruction Sheet Rev 5 3/19 P/N 292180001

Description

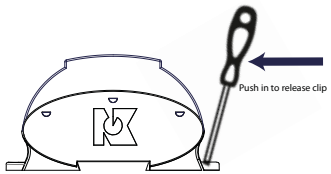
VTR Series Voltage Transducers are designed to monitor AC voltage and detect conditions where supply voltage is above or below normal. Detecting such conditions helps users to avoid problems commonly associated with voltage irregularities such as motor overheating, damage to drives due to regeneration, loss of phase and the like.

The VTR is available with a 4-20mA "True RMS" output as standard, making them suitable for use in applications where the monitored voltage is laden with harmonic current components.

Installation

VTR transducers feature a 35mm wide DIN rail compatible enclosure and are typically located in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

To mount on DIN rail: Orient transducer so that line voltage terminals L1 and L2 are upright/on top of unit and snap securely onto DIN rail. To remove, insert small screwdriver into the lower mounting hole of the spring loaded clip, and push the handle end of the screwdriver toward the sensor base to release the tension on the rail.



To mount using screws: Insert screws and mount to back plane or other suitably flat surface.

Line Voltage Wiring Connection

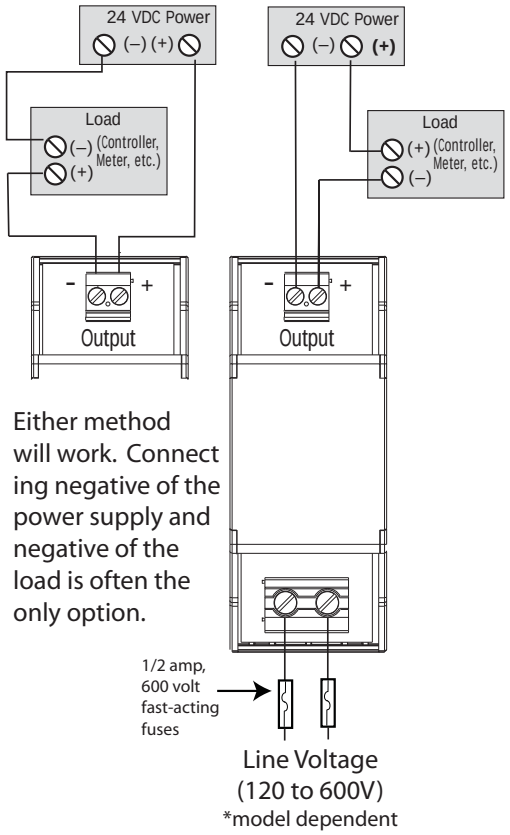
CAUTION: TO AVOID ANY POTENTIAL FOR SHOCK OR SAFETY HAZARD, ENSURE LINE VOLTAGE IS DISCONNECTED AT SOURCE BEFORE WIRING TO UNIT.

Connect input voltage to be monitored to terminals L1 and L2 on transducer using 24-10 AWG copper wires and tighten terminals to 7 inch-pounds torque. For multiple transducer applications on separate phases, ensure all phase relationships between L1 and L2 are consistent.

Fusing of the primary voltage inputs is recommended. Use a 1/2 amp, 600 V rated fast acting fuse.

Output Wiring

Connect control or monitoring wires to the sensor. Use 24-12 AWG copper wire, insulated to 75/90°C and tighten terminals to 5-7 inch-pounds torque. Be sure the output load or loop power requirements are met (see diagram below).

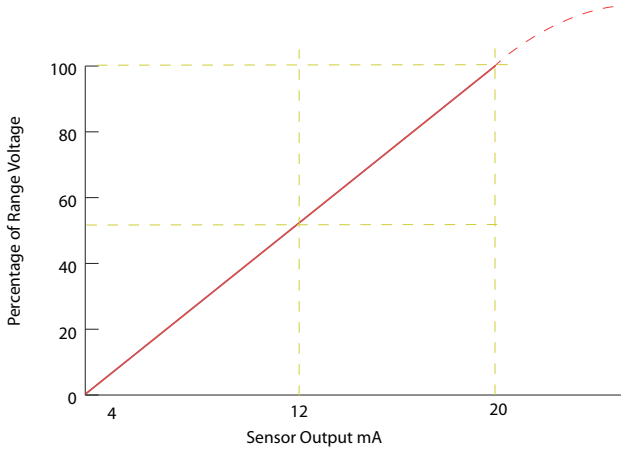


Loop Voltage Requirements:

$L_V = 12V + (L_R \times 20mA)$

Where: L_V = Min. Loop voltage
L_R = Loop Resistance

500 Ω maximum impedance



Troubleshooting Tips

1. **Transducer has no output**
   A. Power supply is not properly sized *Check power supply voltage and current rating.*
   B. Polarity is not properly matched. *Check and correct wiring polarity*

2. **Output Signal Too Low or Too High**
   Transducer model improperly sized for application. *Determine the normal operating voltage of your monitored circuit and ensure transducer selected is equal to or slightly higher than the normal operating voltage.*

3. **Sensor is always at 4mA**
   Monitored load is not AC or is not on. *Check that the monitored load is AC and that it is actually on.*