

Specifications

Power Supply	24 VDC loop-powered. Use Class 2 power supply only.
Input Range: Input Impedance	50-150 V: 73 KΩ, 240-300 V: 146 KΩ, 400-500 V: 300 KΩ, 600 VAC: 365 KΩ
Output Signal	4–20 mA proportional; capped at 24 mA max
Response Time	250 ms (to 90% of step change)
Accuracy	1.0% FS @ 60 Hz (25-100% of range) 2.5% FS @ 50 Hz
Linearity	< 0.5% FS
Output Loading	< 500 ohm loop impedance
Isolation Voltage	2200 VAC
Frequency Range	40 Hz – 100 Hz
Case	UL94 V-0 Rated
Environmental	Operating Temp. Range -4 to 122°F (-20 to 50°C) Storage Temp. Range -22 to 140°F (-30 to 60°C) 0-95% RH, Non-condensing Pollution Degree 2 Altitude to 6561 ft (2000 meters)
Listings	UL/cUL, 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.



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 - 4-20 mA
								VOLTAGE INPUT RANGE: 1 - 120 VAC 2 - 150 VAC 3 - 240 VAC 4 - 480 VAC 5 - 500 VAC 6 - 600 VAC 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)



NK Technologies



INSTRUCTIONS



VTR SERIES
AC Voltage Transducers
Ranges 120 to 600 Volts
4-20 mA 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 30-12 AWG copper conductors only rated 75°C minimum. Tighten to 6 in-lbs torque. Refer to “Output Wiring” section for loop voltage and impedance recommendations.

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

Description

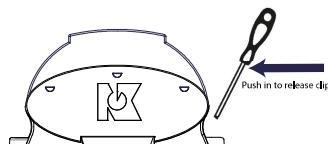
VTR Series Voltage Transducers are designed to monitor AC voltage and detect conditions where supply voltage is above or below normal. Detecting such conditions helps users to avoid problems commonly associated with voltage irregularities such as motor overheating, damage to drives due to regeneration,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

The VTR is available with a 4-20 mA “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 slim 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

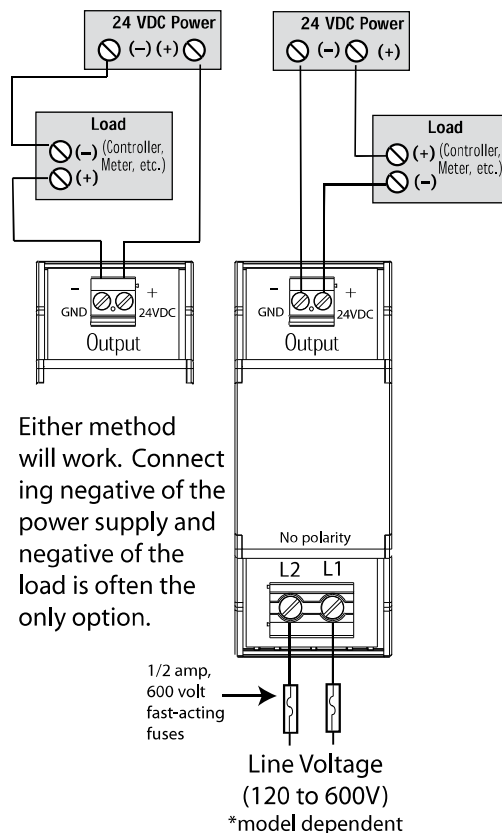
CAUTION: TO AVOID ANY POTENTIAL FOR SHOCK OR SAFETY HAZARD, ENSURE LINE VOLTAGE IS DISCONNECTED AT SOURCE BEFORE WIRING TO UNIT.

Connect input voltage to be monitored to terminals L1 and L2 on transducer using 30-12 AWG copper wires and tighten terminals to 6 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 30-12 AWG copper wire, insulated to 75°C minimum and tighten terminals to 6 inch-pounds torque. Be sure the output load or loop power requirements are met (see diagram below).



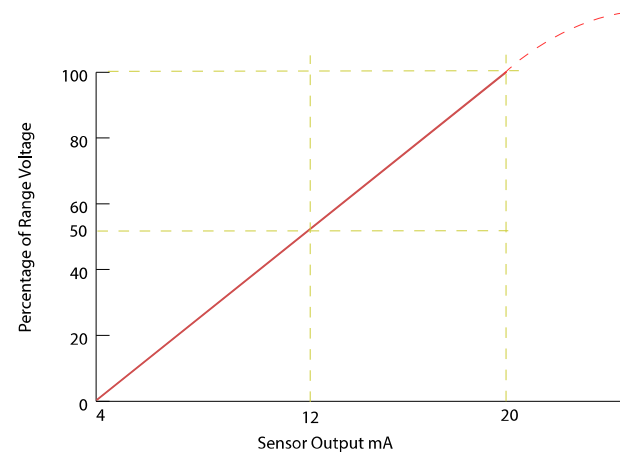
Either method will work. Connecting negative of the power supply and negative of the load is often the only option.

Loop Voltage Requirements:

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

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 4 mA

Monitored load is not AC or is not on. *Check that the monitored load is AC and that it is actually on.*