

## Specifications

Power Supply	24VDC Loop-powered (12-35 VDC)
Input	120V, 150V, 240V, 480V and 500V
Input Over-range	+15% of nominal range (20mA at range maximum)
Output	4–20mA Proportional; capped at 24mA max
Response Time	250 ms (to 90% value)
Accuracy	< 1%
Linearity	< 0.5%
Loading	< 500 ohm
Isolation Voltage	2500 VAC
Frequency Range	40 Hz – 5 KHZ
Operating Temp.	-30 deg C to 60 deg C
Enclosure	UL94 V0 Rated
Environmental	14 -- 122 deg F (-10 to 50 deg C),0–95% RH
EMC/Immunity	EN50081-1, EN50082-2
Ripple	< 1% (peak to peak)
Listings	UL/CUL E129625 CE Pending

## Model Number Key

VTR 1 - 420 - 24L - DIN

**CASE STYLE:**  
DIN - DIN rail compatible

**POWER SUPPLY:**  
24L - Nominal 24 VDC Loop Pwr

**OUTPUT:**  
420 - 4-20mA

### VOLTAGE INPUT RANGE:

1 - 120V  
2 - 150V  
3 - 240V  
4 - 480V  
5 - 500V

### SENSOR TYPE:

VTR - AC Voltage Transducers, True RMS Output

## Know Your Power



### Other NK Technologies Products Include:

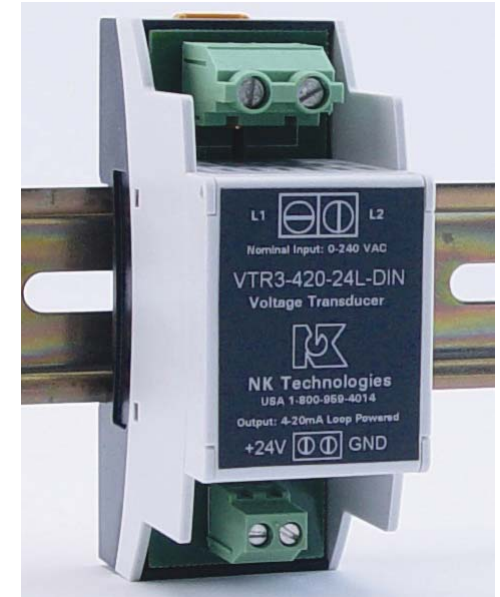
AC & DC Current Transducers  
AC & DC Current Operated Switches  
1 $\phi$  & 3 $\phi$  Power Transducers  
Current & Potential Transformers (CTs & PTs)



## NK Technologies

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# INSTRUCTIONS



## VTR SERIES

AC Voltage Transducers  
Nominal Ranges 120, 240 & 480 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 up to 14 AWG copper wires. Refer to “Output Wiring” section for loop voltage and impedance recommendations.

## 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 waveform of the monitored voltage is distorted (e.g., noisy environments, variable speed applications or SCR controlled loads).

## 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 depression on top of unit and pry orange mounting tab up until unit dislodges from DIN rail.

**To mount using screws:** Insert small screwdriver into depression in top of unit and pry orange mounting tab up to reveal mounting hole. Continue to pry tab up until it extends and snaps into place, about 0.25”. Insert screws and mount to back plane or other suitably flat surface.

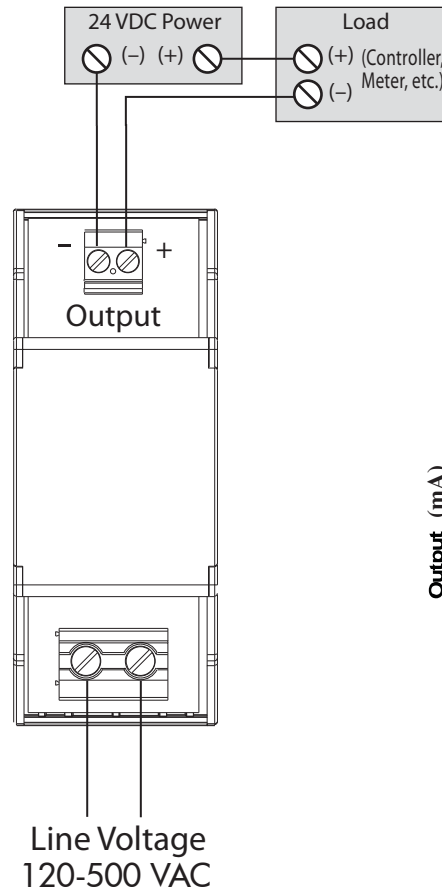
## Line Voltage Wiring Connection

**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 up to 10 AWG copper wires and tighten terminals to 7 inch-pounds torque.

## Output Wiring

Connect control or monitoring wires to the sensor. Use up to 14 AWG copper wire and tighten terminals to 7 inch-pounds torque. Be sure the output load or loop power requirements are met (see diagram below).



\*model dependent

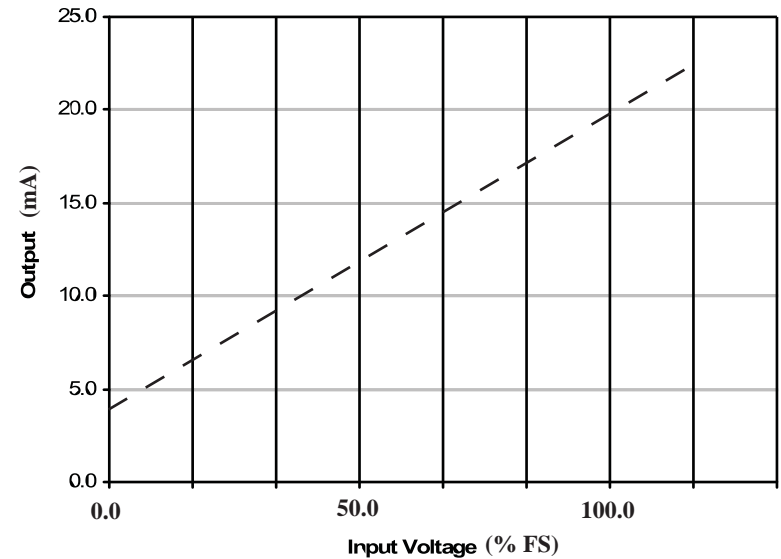
### Loop Voltage Requirements:

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

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

500Ω maximum for output load.

## Transducer Output vs. Nominal Input Voltage



## Troubleshooting Tips

### 1. Transducer has no output

- Power supply is not properly sized. Check power supply voltage and current rating.
- Polarity is not properly matched. Check and correct wiring polarity.

### 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.

### 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.