## Specifications

| | |
|---|---|
| Power Supply | 24 VAC/VDC External Power<br>A fuse rated maximum 5 A shall be placed in series with the main input, 24 VAC/VDC, power terminal.<br>(22-26 VAC/VDC) |
| Power Consumption | <2 VA @ 24 VDC; <5 VA @ 24 VAC |
| *Power and output are not isolated. Do not connect together.* | |
| Input Range: Input Impedance | 15 V: 25 KΩ, 25 V: 42 KΩ,<br>50 V: 82 KΩ, 150 V: 250 KΩ,<br>300 V: 500 KΩ, 600 VDC: 1.00 MΩ |
| Output Signal | 4-20 mA (capped at 24 mA max)<br>0-5 VDC (capped at 5.75 VDC)<br>0-10 VDC (capped at 11.5 VDC) |
| Response Time | 250 ms (to 90% of step change) |
| Accuracy | < 1% Full Scale |
| Linearity | < 0.5% |
| Output Loading | 4-20 mA: < 500 ohm<br>0-5/10 V: > 10 K ohm |
| Isolation Voltage | 2200 VAC |
| Frequency Range | DC |
| Enclosure | UL94 V-0 Rated |
| Environmental | Operating Temp.<br>-4 to 140°F (-20 to 60°C)<br>0–95% RH, Non-condensing<br>Pollution Degree 2<br>Altitude to 6561 ft (2000 meters) |
| Listings | UL/cUL listed, CE |

**For products intended for the EU market, the following is applicable to the CE compliance of the product:**
The VTD series comply with EN 61010-1 CAT III 600 V max measurement category. 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 for which it was designed 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 may carry hazardous live voltage (e.g. primary conductors, power supply). The transducer should not be put into operation if the installation is not complete.

## Model Number Key

**VTD 1 - 420 - 24U - DIN**

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

**POWER SUPPLY:**
24U - Nominal 24 VAC/VDC

**OUTPUT:**
420 - 4-20 mA
005 - 0-5 VDC
010 - 0-10 VDC

**VOLTAGE INPUT RANGE:**
0 - 15 VDC
1 - 25 VDC
2 - 50 VDC
3 - 150 VDC
4 - 300 VDC
5 - 600 VDC

**SENSOR TYPE:**
VTD - DC Voltage Transducers

## Know Your Power



**Other NK Technologies Products Include:**
AC & DC Current Transducers and Switches
1ϕ & 3ϕ Power Transducers
Current Transformers (CTs)
Ground Fault Protection Relays

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# INSTRUCTIONS




## VTD SERIES

**DC Voltage Transducers**
**Ranges 15, 25, 50, 150, 300 and 600 Volts**
**4-20 mA, 0-5/10 VDC Outputs**

## 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 -(5) & +(6) and output wiring using up to 22-12 AWG copper conductors only insulated to 75°C minmum and tighten to 6-in lbs. Refer to "Output Wiring" section for voltage and impedance recommendations.
4. Connect 24 VAC or VDC power supply fused to 5 A to terminals 3-4.

Do not connect power supply and signal circuits together. There is no isolation.

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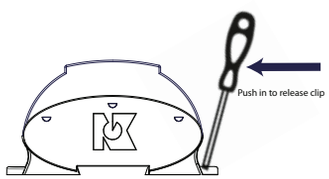
## Description

VTD Series Voltage Transducers are designed to monitor DC 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, brownouts and conductor failure or poor connections. The VTD is available with 4-20 mA, 0-5 or 0-10 VDC output options.

## Installation

VTD 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 5 and 6 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.**

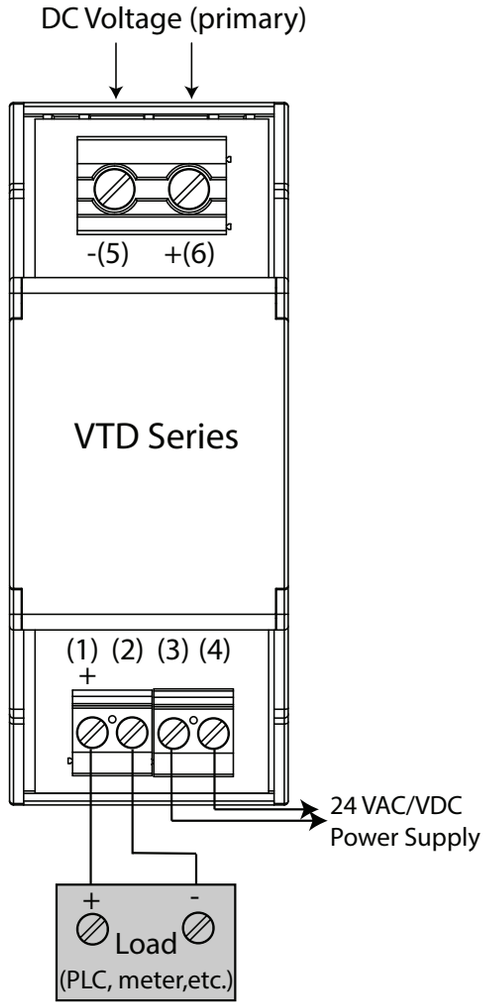
Connect input voltage to be monitored to terminals -(5) and +(6) on transducer using up to 22-12 AWG copper conductors only and tighten terminals to 6 inch-pounds torque.

**Do not connect the power supply and output signal together. There is no isolation.**

**Use twisted pair for signal output conductors for full compliance with CE directives.**

## Output Wiring

Connect control or monitoring wires to the sensor. Use up to 22-12 AWG copper conductor only insulated to 75°C minimum and tighten terminals to 6 inch-pounds torque.




Note: No isolation between power supply and output signal connections.

## Troubleshooting Tips

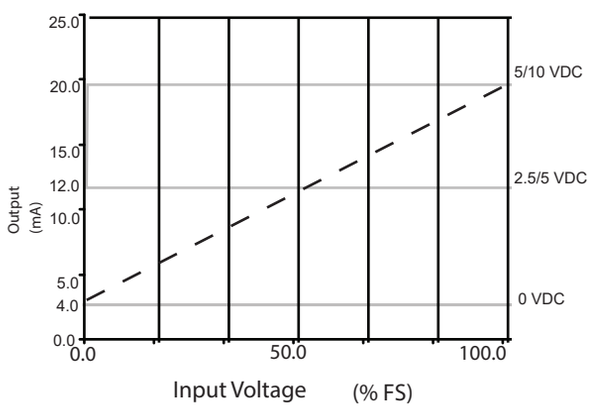
1. **Transducer has no output**
   A. Power supply is not properly sized. *Check power supply voltage and output rating. Each transducer requires less than 2 VA to operate.*
   B. Polarity is not properly matched. *Check and correct wiring polarity.*

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 (or zero voltage)**
   Primary circuit is not DC or is not on. *Check that the monitored load is DC and that it is actually on.*

4. **Sensor is always at 20 mA (or 5/10 VDC)**
   Voltage is higher than transducer range. *Select a higher range product.*

### Transducer Output vs. Input Voltage




Note: Voltage output will be linear in the same manner, with zero at zero primary voltage and 5 or 10 VDC at the full range measured voltage.

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