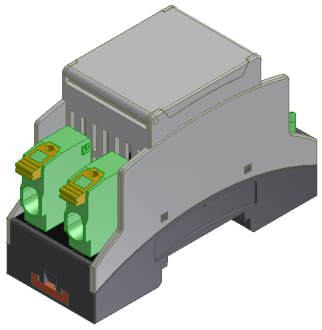
Entube DE

Double Ended - Line to Line Voltage Sensor



OVERVIEW

The Entube-de series is a family of voltage transducers designed for high quality differential measurements in a very compact form factor, and without need for power supplies. This series covers the ranges of ±50V to ±1500V with up to 50kHz bandwidth and up to 0.2% of signal accuracy.
The Entube-de sensor operates as a differential divider RC-network with an anti-aliasing filter on its output. It generates a ±5V or ±10V scaled down version of the difference between the two input voltages, which can then be processed by a computer based measurement system.
The Entube-de is part of Verivolt's sensing platform, which is aimed at allowing users to laid out multiple distributed sensors with a minimum of cabling required and no power supplies. This platform together with the Entube-de ultra-compact form factor, allows for very high channel densities, while delivering high performance for a low cost.

SPECIFICATION

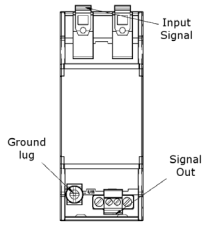
Entube DE	100V	200V	300V	400V	500V	750V	1000V	1500V
Bandwidth (-3dB point)	85kHz		50kHz			25kHz		
Integrated sensor noise (Referenced to input)	< 30 µV	< 60µV	< 100 µV	< 130 µV	< 170 µV	< 220 µV	< 290 µV	< 400 µV
Gain (Using 10V standard output voltage)	10	20	30	40	50	75	100	150
Input Impedance	> 1 MΩ		> 2 MΩ			> 3 MΩ		
Line Output Impedance	50kΩ	25kΩ	33kΩ	25kΩ	20kΩ	20kΩ	15kΩ	10kΩ

Eletrical	
Accuracy (percentage of reading)	±0.2% (±0.05% Typical)
Gain (Using 10V standard output voltage)	
Max total phase shift at 60Hz	< 0.25°
Common mode rejection	±2000V
Withstanding differential mode surge voltage	±1000V
Mechanical	
Mounting Type	DIN Rail
Connectivity In	Clamp cage
Connedtivity Out	Spring cage
Outer Dimensions	1.4" x 1.4" x 4.5"
Weight	198 g (7.0 oz)

Integrated sensor noise (Referenced to input)	
Input-Output non-linearity	< 250 ppm
Output voltage	±5V (±10V optional)
Gain temperature drift	±50 ppm/°C
Differential input dynamic range	
Common mode rejection	52 dB
Power Supply Voltage	None
Output type	Double-ended signal
Output Offset Voltage	< ± 10µV (on ±10V signal)
Environmental	
Operating temperature	– 25 to 70 °C
Storage temperature	– 40 to 80 °C

HARDWARE DESCRIPTION

The Entube-TE is a differential voltage down-converter designed for 3-phase systems. It outputs all line-to-line and line-to-ground signal pairs. Delta or Wye measurements can be made depending on the input configuration of the digitizer being used (NRSE or Differential).

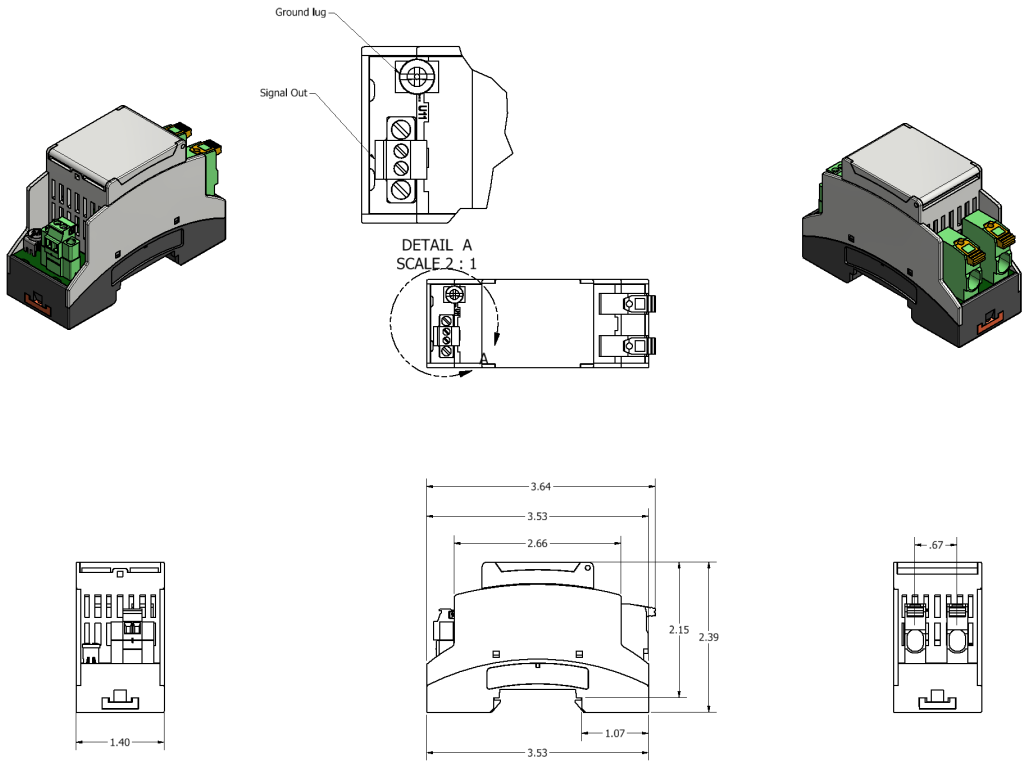


Signal Layout

The two input phases connect to the sensor via a Spring-cage, while the conditioned signals from the sensor come out on a standard screw terminals. The Entube DE can be mounted anywhere between the signal source and the data acquisition system. A female-screw on the low voltage side of the sensor allows for DIN rail mounting, and serves as a safety ground.

A twisted pair should be used to carry the conditioned signals from the sensor. This will keep good resolution beyond the 10th harmonic on a typical 60Hz system.

MERCHANICAL DIMENSIONS



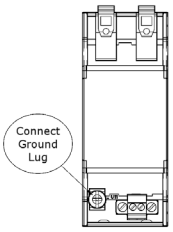
HARDWARE CONFIGURATION

A. Safely connect Data Acquistion ground to ground of sensor.

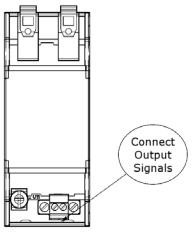
B. Securely connect one end of a twisted pair to the output terminals, and the other end to the inputs of your breakout board or data acquisition unit

C. Securely connect wire between the source of measurement and an available Entube DE's input clamp cage.

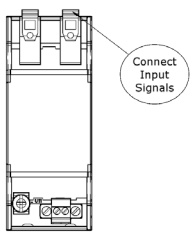
A



B



C



Standards and Certifications

- CE
- RoHS Compliant

DANGER

THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE. This sensor is designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safetyrelated use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.