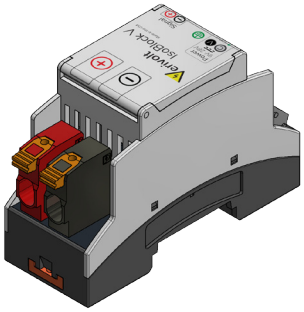
IsoBlock V

Galvanicaly Isolated Differential Voltage Sensor



OVERVIEW

The IsoBlock V-1c has been designed to provide high-quality isolated differential voltage measurements for aplications requiring scaling of high voltages, as well as superior isolation.
Each IsoBlock V unit hosts an isolated channel that can be connected to separate measurement sources while providing a range of functional coverage up to 1500V. The input has its own isolated reference, and can be configured to suit user needs. The output signal from the IsoBlock unit is referenced in respect to the ground channel of the user's data acquisition system.
Verivolt designs its IsoBlock V modules with consideration for user great flexibility, and low power consumption.

SPECIFICATION

Eletrical	
Accuracy	±(0.2% of reading + 0.005% range) or ±(0.1% of reading + 0.005% range)
Max total phase shift at 60Hz	< 0.05°
Max Input delay (100kHz versions)	< 3 µs
Isolation voltage from primary to secondary	> ±1500 V
Withstanding common mode surge voltage	±5000 V
Withstanding differential surge voltage	±2500 V

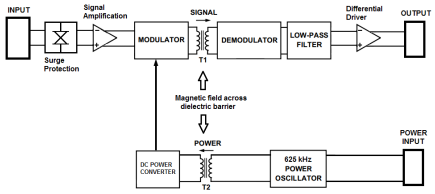
Mechanical	
Mounting Type	DIN Rail
Connectivity	Spring Cage connector
Outer Dimensions	1.4" x 3.5" x 2.5"
Channels	1 channel

Performance	
Input ranges	±50V, ±100V, 150VAC, ±300V, ±500V, 500VAC, ±750V, ±1000V, ±1500V, Custom
Bandwidth (-3dB point)	100kHz (1MHz option)
Input-Output non-linearity	< 0.04%
Output voltage	±10 V, 7VAC, ±5V
Gain temperature drift	±50 ppm/°C
Common mode rejection at 60Hz	112 dB
Power Supply Voltage	12V to 28 V
Output type	Differential pair
Output Offset Voltage (Referenced to output)	2σ < ±500 µV (typical) 4σ < ±1 mV (limit)
Differential Input impedance	> 10 MΩ
Insulation impedance	> 10 GΩ || 2pF
Output impedance	100Ω

Environmental	
Operating temperature	– 25 to 70 °C

HARDWARE DESCRIPTION

The IsoBlock V module is designed to isolate and scale down high voltages found in industrial enviroments. The end result is a signal ready to connect to any data acquisition system, while galvanically isolating the source from it.
Each channel of the IsoBlock module has a galvanic isolation from the input to the output that can eliminate large common mode voltages. In addition to that, each channel also has a protection stage at the input that guards it from surges.
Following the input surge protection stage, there is an amplification stage that brings the input signal to a ±10V range. This signal is modulated into a magnetic field, and then transferred across a galvanic barrier. A demodulating stage recovers the original signal, followed by an anti-aliasing filter and a conditioning stage to output a ±10V differential pair. The figure below shows a block diagram of the process decribed above.



IsoBlock V single channel block diagram.

- The isolation barrier of every device is tested with a 5 second partial discharge of 1800V for 5 seconds, with a detection threshold of 150pC.
- Withstanding common mode surge voltage is 2 seconds half sinewave.
- Withstanding differential mode surge voltage is 4 seconds half sinewave.

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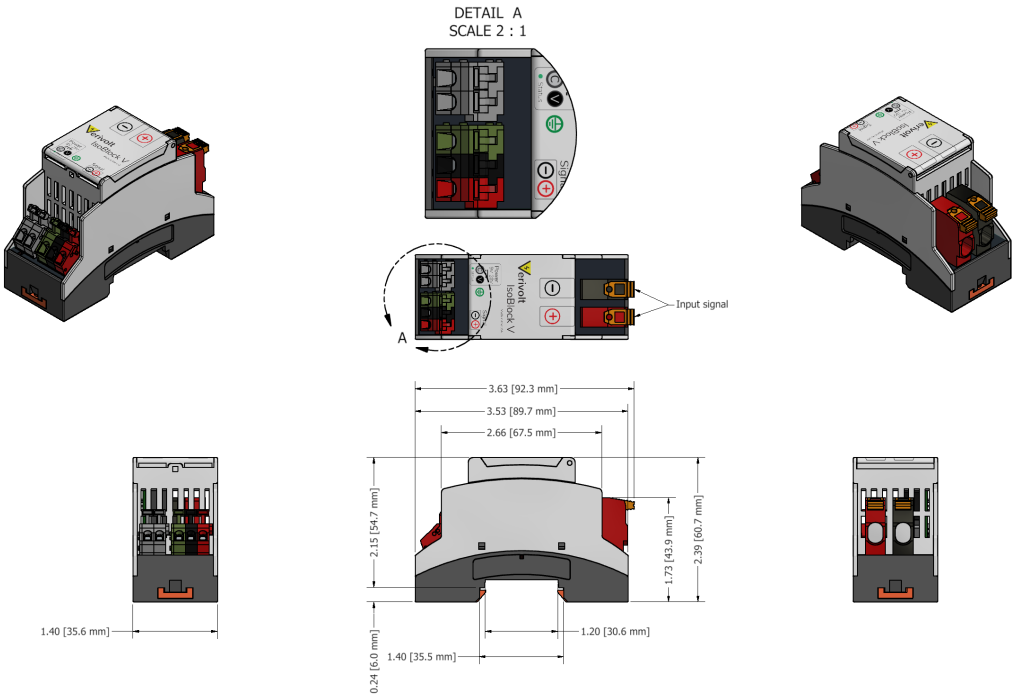
MERCHANICAL DIMENSIONS



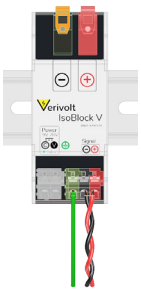
HARDWARE CONFIGURATION

A. Securely connect Ground wire to a solid Ground. Then, one end of a twisted pair to the output terminals, and the other end to the inputs of your data acquisition unit.

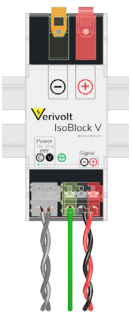
B. Connect external power source to power the unit. For proper functioning the power supply should provide a voltage between 12V and 28V with at least 1W of continuous and 2W surge (<2ms) during module start-up.

C. Securely connect wire in the 20-6 AWG range between the source of measurement and an available IsoBlock's input screw terminal.

A



B



C

Standards and Certifications

- CE

CE

⚠ WARNING

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.