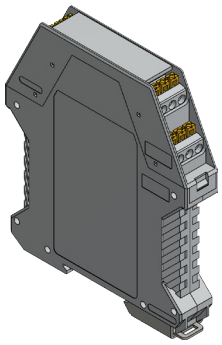
IsoBand V

Galvanicaly Isolated High Bandwidth Voltage Sensor



OVERVIEW

The IsoBand V is a measurement device designed to isolate and scale differential voltages, while keeping a bandwidth that spans from DC to 8MHz. It covers a large set of possible input ranges, from ±5V to ±2000V, which are isolated and linearly scaled to a standard ±10V output signal. The IsoBand V also provides isolation between primary and secondary, consisting of a galvanic barrier with 5kV surge protection, and 1.5kV working voltage. This combination of high-isolation, high-voltage measurement and high-bandwidth, makes the IsoBand V a unique choice in the industry for measuring fast transients, PWM switching, high-frequency signals, VFDs, surge voltages, sharp transitions, etc. The input of the device has its own isolated reference, which can be at a high potential, while its output is referenced to the ground of the user's data acquisition system. The IsoBand V is also mechanically designed to allow great flexibility in terms of usability, mounting and cable routing.

SPECIFICATION

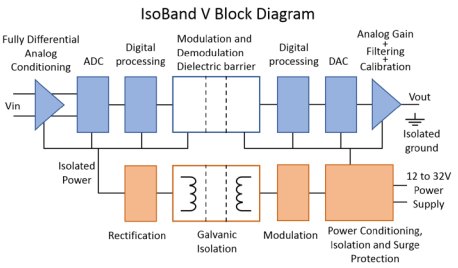
Eletrical	
Accuracy	±(0.2% of reading + 0.005% range)
Max total phase shift at 60Hz	< 0.004°
Max latency	325 ns
Isolation voltage from primary to secondary	> ±1500 V
Withstanding common mode surge voltage	±5000 V
Withstanding differential surge voltage	±2500 V
Mechanical	
Mounting Type	DIN Rail
Connectivity	Spring Cage connector
Outer Dimensions	114 x 99 x 17.6 mm
Channels	1 channel
Weight	238 g

Performance	
Input ranges	±5, ±10, ±15, ±20 V ±50, ±100, ±150, ±200 V ±500, ±1000, ±1500, ±2000 V
Bandwidth (-3dB point)	8MHz
Input-Output non-linearity	< 0.04%
Output voltage	±10 V, ±5V
Gain temperature drift	±50 ppm/°C
Common mode rejection at 60Hz	112 dB
Power Supply Voltage	12V to 32 V
Output type	Single Ended
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
Storage temperature	– 40 to 80 °C

HARDWARE DESCRIPTION

The IsoBand V module is designed to isolate and scale down high voltages found in industrial environments, while allowing to measure them with 8MHz bandwidth. This is achieved through a patented architecture that scales down voltages in a fully differential manner, with surge protection and outstanding linearity. The scaled-down input signal is then digitized, packaged, and isolated in the digital domain. This front-end electronics floats at a potential mid-point between the positive and negative input terminals. After the digital isolation, the isolated bits are then reconstructed into an analog signal, and scaled into a ±10V single-ended output signal. An anti-aliasing filter at the output takes care of filtering out any digital noise. The output signal can then be connected to any data-acquisition system or scope with a matching input range and bandwidth.

Each unit is calibrated to zero-out offset and adjust the scaling factor to the target value. This is done under a controlled environment, by using high precision sources and DMMs. Potting material is added to increase the electrical separation between primary and secondary. Before being shipped, each unit goes through a final test procedure that guarantees excellent product quality.



IsoBand V block diagram.

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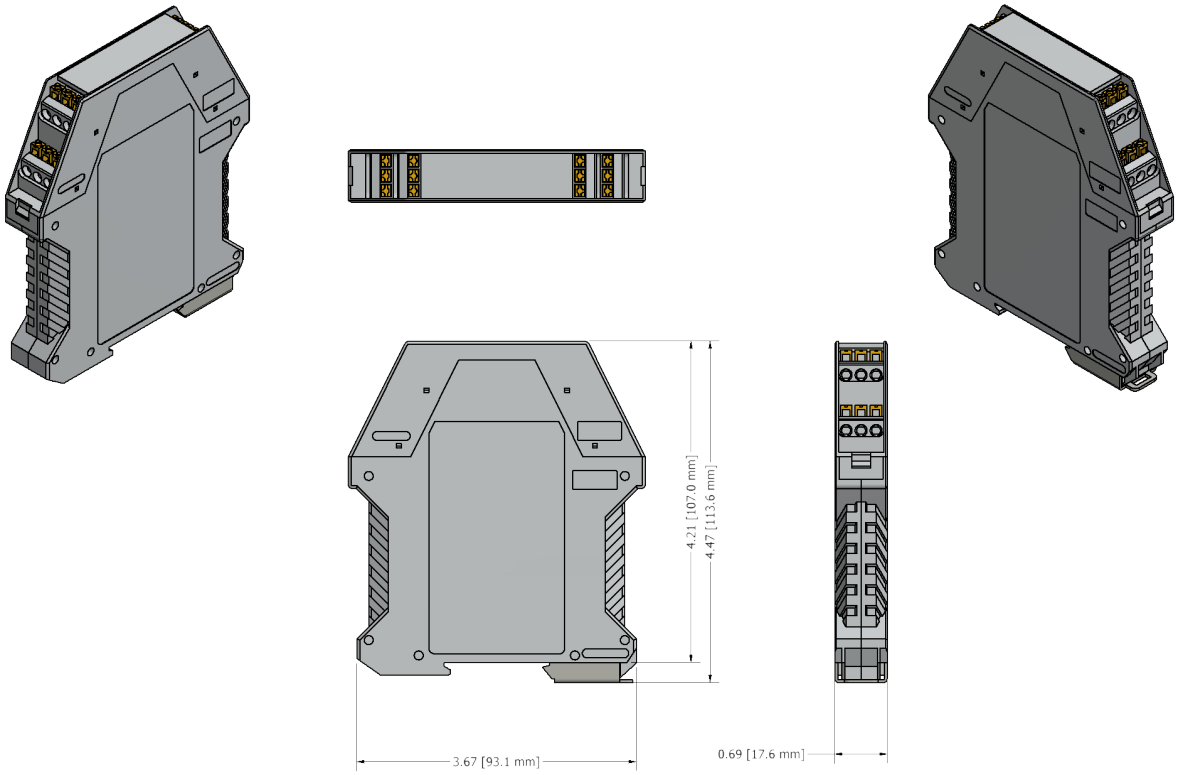
MERCHANICAL DIMENSIONS



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 32V with at least 2W of continuous and 3W 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.

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.