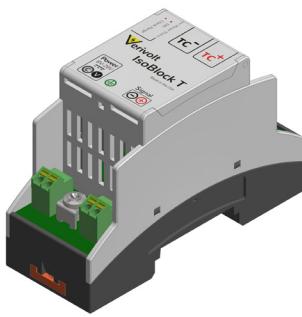


# IsoBlock T

Galvanically Isolated Isolation Amplifier for J or K Thermocouples  
with 5kV Insulation Voltage



## OVERVIEW

The IsoBlock T-1c is a high performance isolated amplifier with thermocouple cold junction compensation. It produces a low impedance isolated output voltage signal. Each IsoBlock V unit hosts an isolated channel that can be connected to a K or J thermocouple and is isolated to 5kV (1min) or 1.8kV indefinitely. The output signal from the IsoBlock unit is referenced in respect to the ground channel of the user's data acquisition system.

## SPECIFICATION

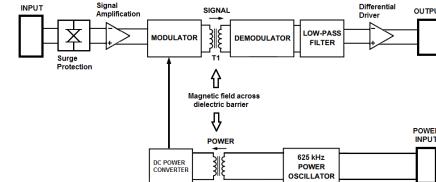
IsoBlock V	J	K
Bandwidth (-3dB point)	30kHz	
Gain	5 mV/°C	6 mV/°C
Optimized Temperature range	+55°C to +565°C	-25°C to +400°C
Full Temperature range	-180°C to +1200°C	-260°C to +1380°C
Channels per module	1	

Electrical	
Accuracy (without correction algorithm)	<±2°C (within nominal range)
Settling Time to 0.1%	< 40 µs
Isolation voltage from primary side to secondary side	±5 kV / 1 min.
Withstanding common mode surge voltage (sustained)	±1800 V
Rated voltage	±1000 V
Surge Voltage Category	CAT-III
Mechanical	
Mounting Type	DIN Rail
Connectivity (Connector for power in and signal out to/ from the sensor)	Spring Cage connector
Outer Dimensions	1.4" x 3.5" x 2.5"
Weight	198 g (7.0 oz)

Performance	
Output voltage	±10 V
Common mode rejection at 60Hz	112 dB
Power Supply Voltage	8V to 28 V
Output type	Differential pair
Output Offset Voltage (Referenced to output)	< ±900 µV
Insulation impedance	> 10 GΩ    2pF
Output impedance	100Ω
Environmental	
Operating temperature	- 25 to 70 °C
Storage temperature	- 40 to 85 °C

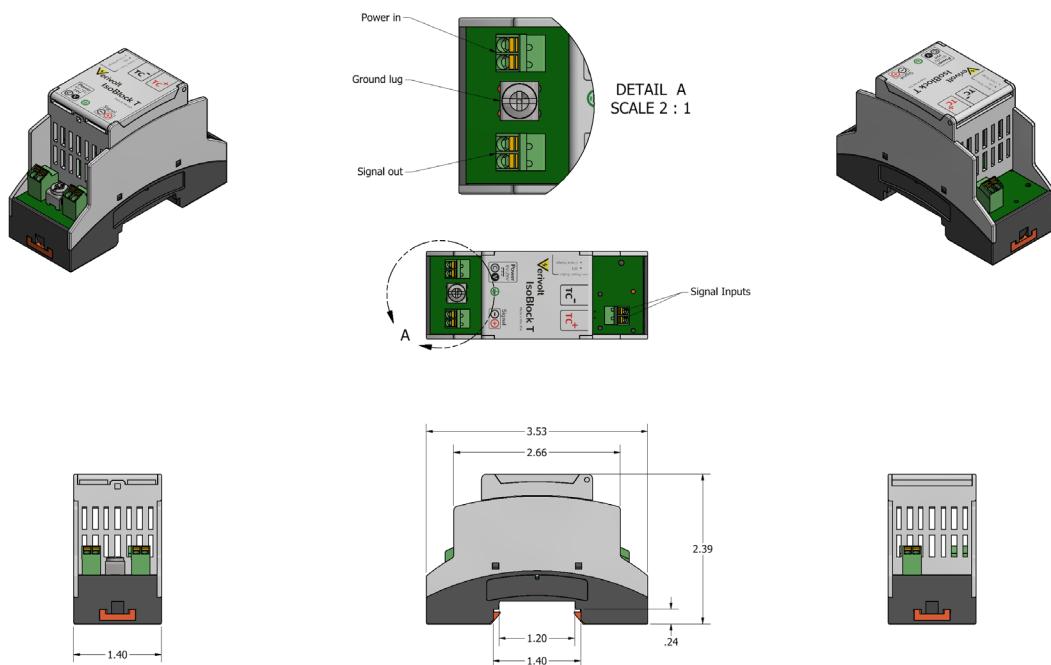
## HARDWARE DESCRIPTION

The IsoBlock T module is designed to isolate, amplify signals from a Thermocouple and provide cold junction compensation. 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 described above.



IsoBlock T single channel block diagram.

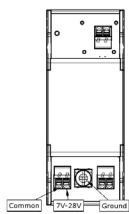
## Mechanical Dimensions



## Hardware Configuration

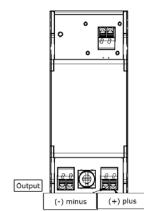
A. Connect external power source to power the unit. For proper functioning the power supply should provide a voltage between 8V and 28V with at least 0.25A of continuous current and 0.5A surge during module start-up.

**A**



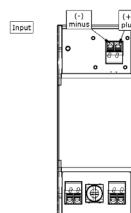
B. Securely connect thermocouple to input screw terminal.

**B**



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

**C**



## Standards and Certifications

- CE



**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 safety-related 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.