

## Voltage Sensor with Four separate isolated channels

### OVERVIEW

The IsoCap V-4c module has been designed to provide high-quality isolated differential voltage measurements for applications requiring scaling of high voltages, as well as superior isolation. Each IsoCap V-4c unit hosts four separate isolated channels, each of which can be connected to separate measurement sources while providing a range of functional coverage up to 1500V. The input of each specific IsoCap channel has its own isolated reference, and can be configured to suit user needs. All processed signals output from the IsoCap unit are referenced in respect to the ground channel of the user's data acquisition system. Designs its IsoCap V-4c modules with consideration for user great flexibility, high channel density and low power consumption.

### PERFORMANCE

Input-Output non-linearity	< ±0.04%
Integrated channel noise (Referenced to output)	< 1.2mV
Common mode rejection at 50Hz	112 dB
Output voltage	±10V, ±5V
Gain temperature drift	±50 ppm/°C
Power Supply Voltage	12V to 36V
Output type	Differential pair
Output Offset Voltage	2σ < ±500μV (typical) 4σ < ±1mV (limit)
Output impedance	100Ω
Common mode impedance	> 10GΩ    2pF
Differential Input impedance	>8MΩ

### ELECTRICAL

Accuracy (percentage of reading)	±(0.2% of reading + 0.005% range) ±(0.1% of reading + 0.005% range)
Max total phase shift at 50Hz	< 0.05°
Max Input delay	< 2.8μs
Isolation voltage from primary to secondary	> ±1500VAC
Withstanding common mode surge voltage (1min)	±5000V
Withstanding differential mode surge voltage	±2500V

### BANDWIDTH

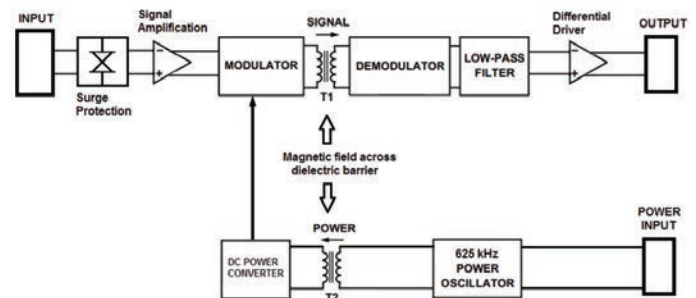
Differential input dynamic range	50V	100V	200V	300V	500V	750V	1000V	1500V
Bandwidth (-3dB point)	100kHz							

### HARDWARE DESCRIPTION

The IsoCap V module is designed to isolate and scale down high voltages found in industrial environments. 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 IsoCap 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.



IsoCap V single channel block diagram

### MECHANICAL

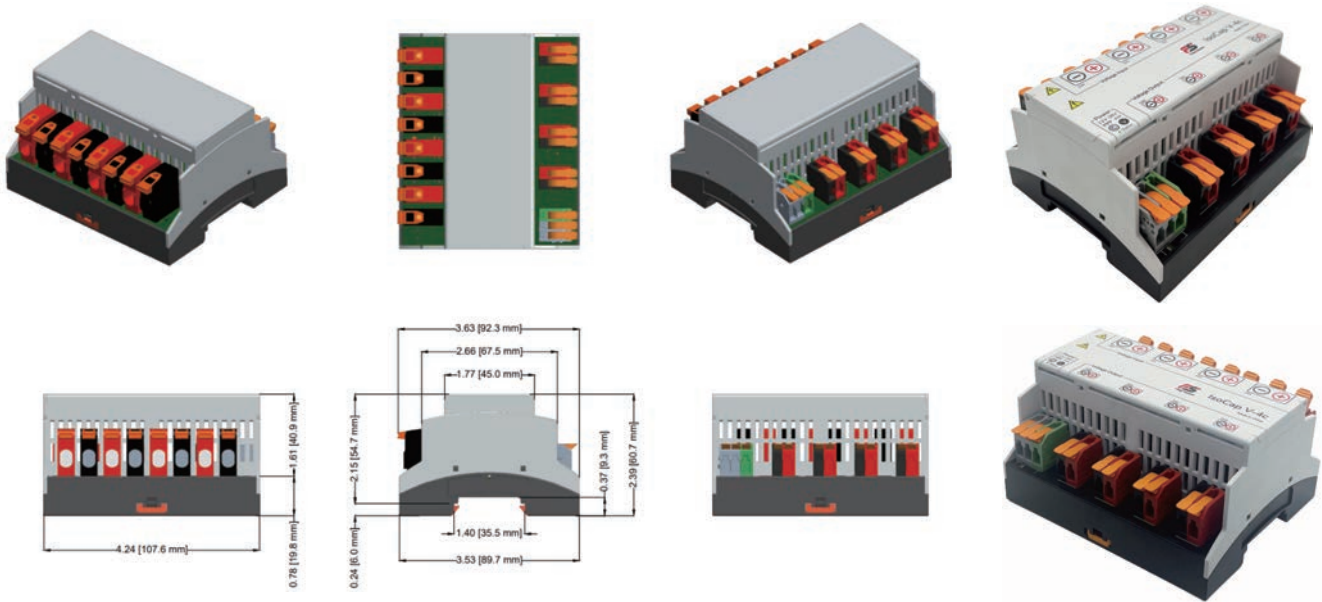
Mounting Type	DIN Rail
Channels	4 channels
Connectivity (Connector for power in and signal out to/from the sensor)	Spring Cage connector
Outer Dimensions	3.9" x 3.5" x 2.5"
Weight	198 g (7.0 oz)

### ENVIRONMENTAL

Operating temperature	- 25 to 70 °C
Storage temperature	- 40 to 80 °C

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.

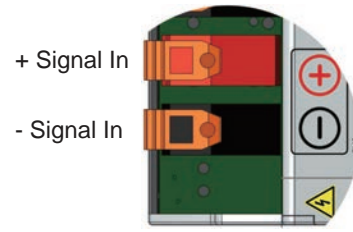
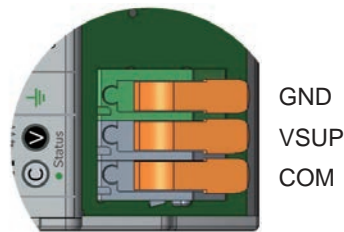
## MERCHANICAL DIMENSIONS



## HARDWARE CONFIGURATION

**I** Connect external power source to power the unit. For proper functioning the power supply should provide a voltage between 12V and 36V with at least 4W continuous and three times surge during module start-up. (10ms)

**II** Securely connect wire in the 20-6 AWG range between the source of measurement and an available IsoCap's input spring cage terminal.



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

