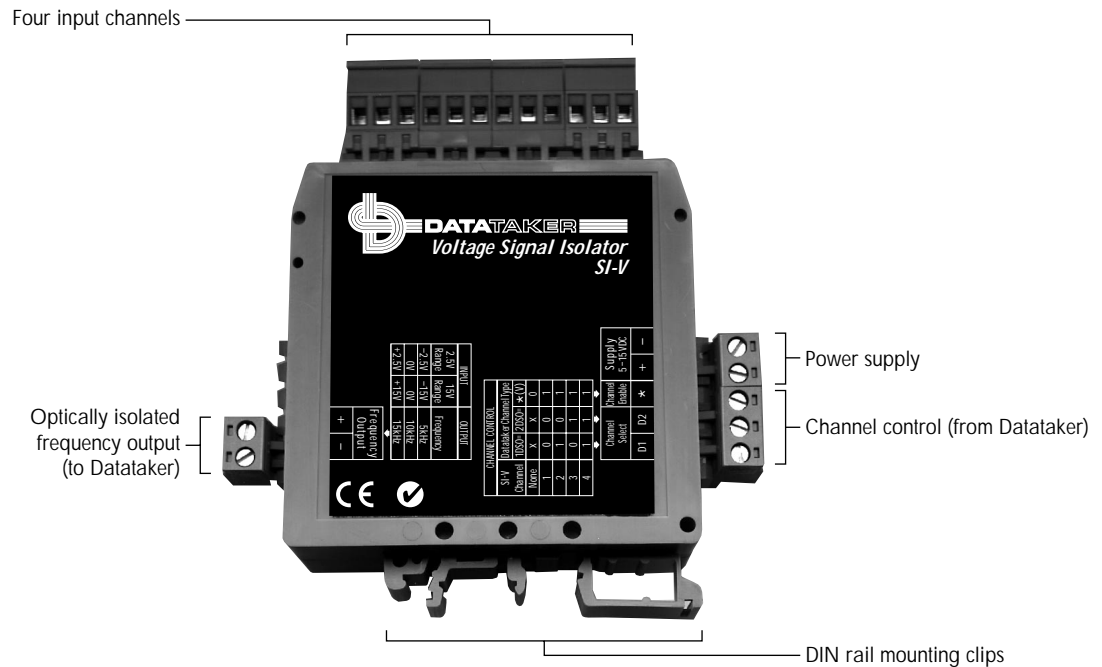


# Datataker SI-V & SI-C

INPUT ISOLATION for DATATAKER



Data Electronics' signal isolators are used with Datataker data loggers in applications where the sensors must be electrically isolated from the logger.

The isolators are used where the direct connection of sensors to the Datataker may result in the Datataker's common mode input voltage (CMV) being exceeded, which can result in inaccurate measurements and, in extreme cases, damage to the Datataker.

Two models are available; the Voltage Signal Isolator (SI-V) and the Current Signal Isolator (SI-C):

## Model SI-V

The SI-V provides a solution in the following situations:

- Where the direct connection to the Datataker of sensors with a voltage signal may result in the input voltage exceeding the logger's CMV. This can occur, for example, when monitoring the voltage of individual cells within a large battery: connecting several of the cells directly to logger inputs may result in the Datataker's CMV being exceeded (the logger's internal common ground causes the total voltage of the connected cells to be applied to the logger).
- Where a sensor-to-Datataker ground loop results in a sensor voltage that exceeds the logger's CMV. This can occur when the Datataker ground and any sensor ground are at different potentials and a current path exists between them.

## Model SI-C

The SI-C provides a solution in the following situations:

- In a 4-20mA current loop where the offset in the loop exceeds the logger's CMV. This can occur when more than one current sensor/device is in the current loop, causing the total voltage across the devices to exceed the CMV.

- Where multiple or noisy ground loops generate a voltage across a current sensor that exceeds the logger's CMV. This can occur in large or excessively noisy environments.

## Operation

The SI-V or SI-C is connected between the Datataker and its sensors (see figures overleaf). Its internal opto-isolator provides 500V electrical isolation between input and output, thereby eliminating the CMV and ground loop situations previously described.

The isolators convert the sensor voltage (SI-V) or sensor current (SI-C) to a proportional digital frequency output in the 5 to 15kHz range. This output is suitable for direct connection to any analog channel of the Datataker, which is programmed to convert the frequency values to engineering units (using the span and polynomial functions) and to log the data.

Each isolator has four input channels that can be individually multiplexed (switched) to its output, then passed to a Datataker analog channel. The isolators therefore provide 4-into-1 channel expansion for the Datataker. Multiplexing is controlled by the Datataker via the isolator Channel Select and Channel Enable terminals (see figures overleaf). Sample Datataker programs that control the multiplexer are included with each isolator and explained in the manual. These programs can be easily modified to suit the user's applications.

Up to two isolators can be connected to a Datataker analog channel (using single-ended connections to the Datataker's +, - and R terminals; see Figure 1).

Screw terminal blocks are provided with each isolator. The blocks can be unplugged from the body of the unit for easy access and quick connection or disconnection of the wires.

The isolators require 5–15VDC power. The Datataker's 6V battery is a suitable power source.

## Datataker Resources Required

The following Datataker resources are required when using signal isolators with the Datataker:

- Analog channel one per isolator (to read isolator Frequency Output)
- Excite output one per isolator, or one per isolator pair if connected as in Figure 1 (to control isolator Channel Enable)
- Digital channel two only, shared by all isolators (to control isolator Channel Select)

In addition, if “zero offset” compensation is used (gives best measurement accuracy; described in the user’s manual), the following Datataker resources are also required:

- Channel variable one only, shared by all isolators (to store the zero offset measurement)
- Channel variable two per isolator channel read by the Datataker

## Ordering

- Datataker Voltage Signal Isolator SI-V SI-V
- Datataker Current Signal Isolator SI-C SI-C

## More Information

For further information, please contact Data Electronics or our representatives. Our application engineers are happy to talk over your requirements at any time.

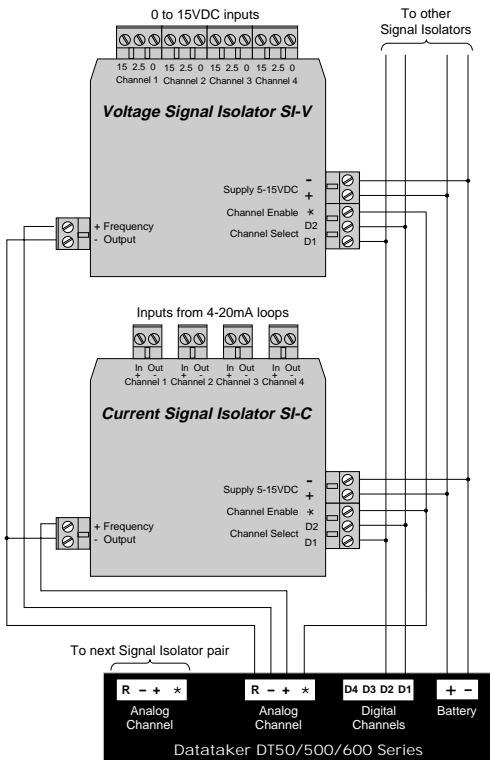


Fig. 1: Typical Single-Ended Connection  
One or two signal isolators per Datataker channel

## Specifications

Conversion ranges

Model SI-V			Model SI-C	
INPUT	OUTPUT		INPUT	OUTPUT
Range	Range	Frequency	Range	Frequency
2.5V	15V	5kHz	4-20mA	10.8kHz
-2.5V	-15V		4mA	
0V	0V	10kHz	12mA	12.4kHz
+2.5V	+15V	15kHz	20mA	14.0kHz

- Maximum input voltage (SI-V) 25V
- Maximum input current (SI-C) 50mA
- Inter-channel isolation 250VDC or 175VAC maximum common mode between channels
- System isolation 500VDC or 350VAC maximum series mode between inputs and output, or inputs and power supply
- Accuracy\*
  - ±2.5V range Better than 0.025% of reading plus offset of less than 0.25mV (input impedance 150K, 0.1% 15ppm/°C)
  - ±15V range Better than 0.2% of reading (input impedance 900K, attenuator is 750K and 150K, 0.1% 10ppm/°C)
  - 4-20mA range Better than 0.1% of reading (current shunt 100R, 0.1% 10ppm/°C)
- Temperature coefficient Better than ±75ppm/°C from -20 to +60°C
- Output Output frequency is related to voltage input by the relationship  $F_{out}(kHz) = 10 + 2V_{in}$
- Power supply 5-15VDC
- Current drain 30mA standby, 70mA at measurement
- Case material KRILEN-F polyamide 6 (fibreglass-reinforced) thermoplastic, IP40
- Mounting DIN rail clips incorporated in case
- Terminals Screw-type, mounted in plug-in terminal blocks
- Dimensions Body only: 80mm x 74mm x 25mm  
Inc. terminals and mounting clips: 106mm x 107mm x 25mm
- Operating temperature -10 to 50°C
- Weight 140g

\* Readings taken at 20°C using zero-offset channel compensation, Datataker on frequency range

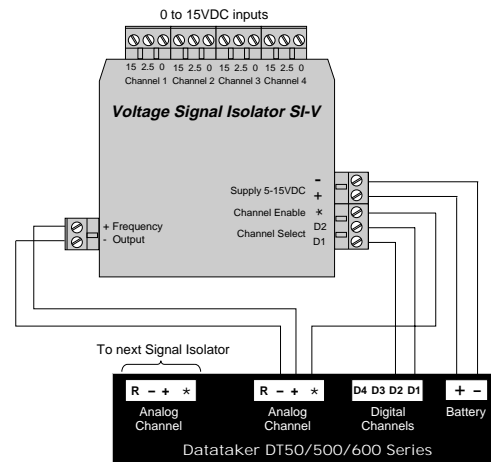


Fig. 2: Typical Differential Connection  
One Signal Isolator per Datataker channel

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