

# 0-20mA Input SCM

## Introduction

This application note will assist you in using the 0-20mA current input SCM (Signal Conditioning Module) to interface a 0-20mA or 4-20mA analog current output from an instrument or sensor to the Symphonie logger.

## Description

The 0-20mA current input SCM measures current from a regulated source. This SCM could be used for any device that provides a current source as a means of conveying a signal level. A common application is to connect a sensor that outputs 4-20mA with respect to its entire range of operation. A current less than 4mA, or greater than 20mA, is typically considered an error signal. The Symphonie logger will record the entire range of allowable signal and does not perform any integrity checks related to 4-20mA signal processing.

## Installation and Settings

It is important to note that the current source being monitored must be connected to the "Sig" terminal of the Symphonie's input channel, and the current return be connected to the "+" terminal. The "+" terminal voltage should not be allowed to be more than 5VDC below the "-" terminal.

In summary:

Current in: "Sig"  
Current out: "+"

The user will also need to input slope, offset, and units as follows:

Slope = 0.0244 (be sure to enter all 4 decimal places, on re-display the logger may show only 3 places)  
Offset = 0  
Units = mA (25mA full scale)

If the logger was not programmed in the field, this information can be entered in the Symphonie Data Retriever software by going to the site information editor (Site> Edit Site). Select the appropriate site and click 'OK'. Scroll through the sensor channels until you reach the one that has the 0-20mA input SCM. Click the 'Load Defaults' button, and choose 'Unknown Analog'. Data files will include the current average, standard deviation, maximum and minimum for each 10 minute interval.

The resolution of the Symphonie Logger is 1023 counts. The allowable current range is 0-25mA. Therefore, for a 4-20mA input, the counts from 164 – 818 are the intended range of operation. Counts above or below should be considered an error signal from either the sensor or damage to the wiring. To see counts directly you can program the Scale to 1.000.

## Specifications

Description	Instrument type	signal conditioning module (SCM)
	Applications	interface one current output sensor to one NRG Symphonie logger
	Instrument compatibility	NRG Symphonie logger (Note that logger can only use one 0-20 mA SCM at a time)
	Sensor compatibility - analog channels	<ul style="list-style-type: none"> <li>• any DC current signal (0-25mA)</li> <li>• current input impedance 50 Ohms</li> </ul>
	Functions	Provides input channel electronics to monitor and log a current signal of up to 25mA DC full scale (accuracy is +/- 1% of applied signal)
Power requirements	Other	from any Symphonie logger
Physical	Connections	<ul style="list-style-type: none"> <li>• installs in Analog 9, Analog 10, Analog 11, or Analog 12 SCM slot</li> <li>• note that current in is connected to "Sig" terminal, return is "+" terminal</li> </ul>
	Dimensions	41 mm x 27 mm x 5 mm (1.6 inches x 1.07 inches x 0.2 inches)