



SCI-121 - NEMA 1, DIN Case
 SCI-122 - NEMA 4X, Plastic Enclosure
 SCI-123 - Explosion Proof Enclosure

Description:

The SCI is a two wire frequency to analog converter that converts a pulse rate input into a 4-20 mA output signal proportional to frequency or rate.

The input pulse rate is amplified and filtered by the input signal conditioning circuitry. Two forms of input signal conditioning are provided, one for magnetic pickups or contact closure inputs and the other is an isolated pulse input (depending on order code).

The amplified frequency signal is then converted to an analog signal using a precision frequency to analog converter.

The output stage derives its power from the output current loop. The output stage converts the analog input signal into the desired output range. Multi-turn potentiometers provide for the necessary trimming of span and zero.

Specifications:**Operating Temperature**

32° F (0° C) to 158° F (70° C)

High Level Pulse Input

Type: Opto-Isolated
 Input Impedance: 3.3 kOhm
 Logic 1: 4-30 VDC
 Logic 0: 0-1 VDC
 Frequency Range: 0-10 kHz
 Fault Protection: Reverse Polarity Protection
 Over Voltage Protection
 Isolation Voltage: 500 V
 Fast Transient Immunity: 500 V
 Maximum Rise Time: No Limit
 Maximum Fall Time: No Limit

Magnetic Pickup Input

Differential Input
 Input Impedance: 10 kOhm
 Frequency Response: 0-3500 Hz
 Trigger Sensitivity: 30 mV p-p
 Over Voltage Protection: ± 30 VDC

Contact Closure Input "L"

Sensor Compatibility- Requires an isolated, contact closure
 Maximum Contact Voltage- 5 V
 Maximum Contact Current- 0.12 mA
 Nominal Pullup Resistance - 47 Kohm to 5 Vdc
 Frequency Range - 0-100 Hz

Frequency to Current Signal Conditioner

Features:

- Magnetic Pickup or Contact Closure Input
- Optically Isolated Input
- 10 kHz Maximum Input Frequency
- Standard, 2-Wire, 4-20 mA Output
- One Year Warranty
- Loop Powered
- Various Mounting Styles
- LED Indicator

Frequency to Current Conversion

Range Selection: DIP Switch Selectable

Available Ranges:

Standard

150 Hz, 300 Hz, 600 Hz, 1200 Hz,
 2500 Hz, 5000 Hz, 10,000 Hz

Factory Default: 1000 Hz

Contact Closure Option "L"

30 Hz, 60 Hz, 120 Hz, 240 Hz,
 480 Hz, 960 Hz, 1920 Hz

Factory Default: 100 Hz

Analog Output

Accuracy: ± 0.1% Span (@ 20° C)
 Output Type: Two Wire, Loop Powered
 Range: 4-20 mA
 Compliance Voltage: 10 to 40 VDC
 Loop Burden: < 10 VDC
 Trim Controls: Zero & Span, non-interacting
 Span (20 mA) Trim Range: 50% to 100% of full scale
 Linearity: < ±0.1% Span
 Output Voltage Effect: < ± 0.002% Span/Volt
 Temperature Effect: < 200 PPM/C°
 Reverse Polarity Protected
 Noise Content: < 0.2% Span
 Response Time: 0.1 second (1 sec. jumper selectable)
 Overcurrent Limiting: 35 mA
 Output Loop Indicator: LED illuminates when output loop is powered by proper polarity and blinks proportionally to the input frequency.

Mounting Styles

DIN Rail Mount: Plastic enclosure with a snap fastener for fitting to DIN 46 277 and DIN EN 50 022 assembly rails.
 NEMA 4X: 4.92" x 4.92" NEMA 4X Enclosure for wall mounting.
 Explosion Proof: Aluminum enclosure for:
 Class I, Division 1, Groups B, C & D
 Class II, Division I, Groups E, F & G.

Listing: CE Compliant

INPUT & OUTPUT SETTINGS

REMOVING THE CASE:

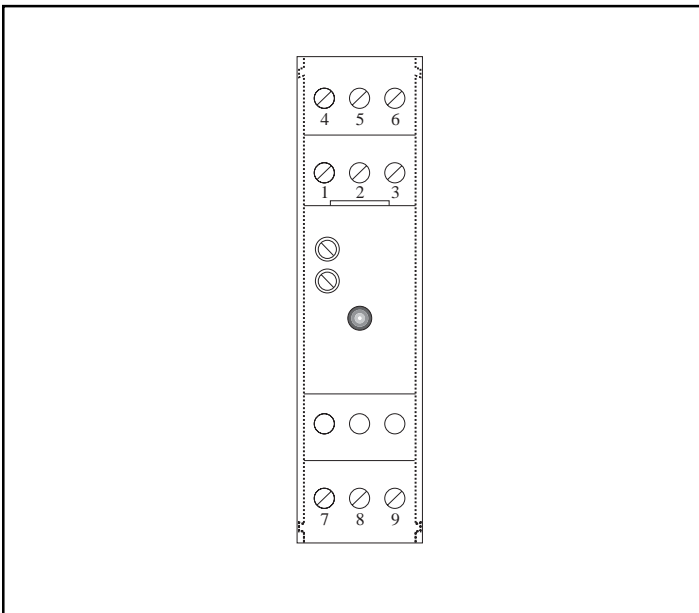
The case must be removed to change switch settings. To remove the case proceed as follows:

Refer to FIGURE 1. Using finger tips, carefully pry the case away from the terminal blocks (as shown with dotted lines).

Pry far enough to release the restraining clips on both sides of the case.

Press up on terminal block with thumbs. The assembly will pop out allowing it to be removed from case.

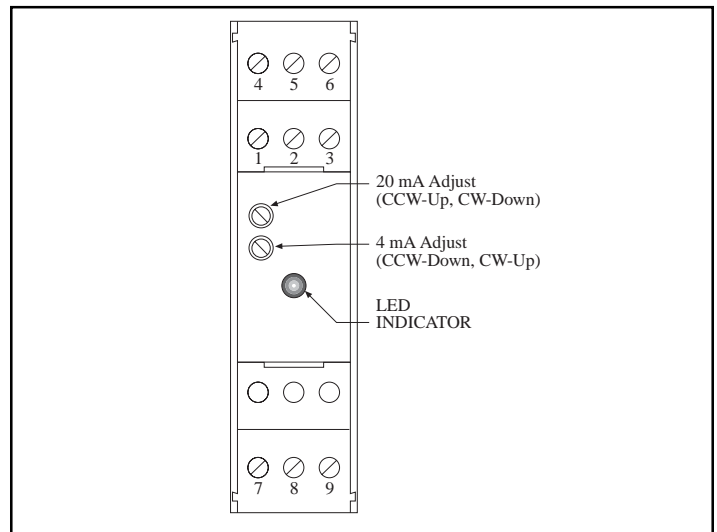
FIGURE 1:



OUTPUT ADJUSTMENTS:

The unit has two potentiometers for adjustment. The upper potentiometer controls the 20mA setpoint and the lower potentiometer controls the 4mA setpoint (see Figure 2). The 4mA output range can be adjusted from 3mA to 5mA. The 20mA output range can be trimmed from 50% to 100% of the selected range. To adjust the output, initially turn the 20mA adjust 20 turns CW for starting position. Input 0 frequency and adjust the 4 mA pot. Connect your maximum frequency and adjust the 20 mA pot.

FIGURE 2:



RESPONSE TIME SETTING:

Switch #8 controls the output response time.

<u>Switch #8</u>	<u>Response Time</u>
OFF	0.1 second
ON	1 second

Turn switch #8 ON to provide damping of the output resulting in a 1 second response time.

INPUT FREQUENCY RANGE SETTINGS:

The appropriate range is selected by turning "ON" the corresponding switch.

<u>Range:</u>	<u>Switch # "ON"</u>
0-150Hz	1
0-300Hz	2
0-600Hz	3
0-1200Hz	4*
0-2500Hz	5
0-5000Hz	6
0-10000Hz	7

* Factory Default. The unit is setup at the factory for the range 0-1000Hz.

LED INDICATOR:

The SCI has a LED which indicates the status of the unit. The table below describes the 3 states for the LED.

<u>LED STATUS:</u>	<u>MEANING:</u>
OFF	The unit is off.
ON (constant)	The unit is loop powered.

BLINKING The unit is receiving an input frequency. The LED will blink at a rate proportional to the input frequency. (The LED may appear to be constant at high input frequencies)

"L" Option SPECIFICATIONS

Description:

The SCI with option "L" is a two wire frequency to analog converter that converts a pulse rate input into a 4-20 mA output signal proportional to frequency or rate.

The SCI with option "L" is intended for use with lower full scale input frequencies. Full scale frequencies of 15 Hz to 2000 Hz are possible. The unit includes both a contact closure input and an opto-isolated input. Output response time is selectable 1 or 10 seconds.

The amplified frequency signal is then converted to an analog signal using a precision frequency to analog converter.

The output stage derives it's power from the output current loop. The output stage converts the input signal into the desired output range. Multi-turn potentiometers provide for the necessary trimming of span and zero.

SPECIFICATIONS:

Operating Temperature

32° F (0°C) to 158°F (70°C)

High Level Pulse Input

- Type: Opto-Isolated
- Logic 1: 4-30 VDC
- Logic 0: 0-1 VDC
- Frequency Range: 0-10 kHz
- Fault Protection: Reverse Polarity Protection
Over Voltage Protection
- Isolation Voltage: 500 V
- Fast Transient Immunity: 500 V
- Maximum Rise Time: No Limit
- Maximum Fall Time: No Limit

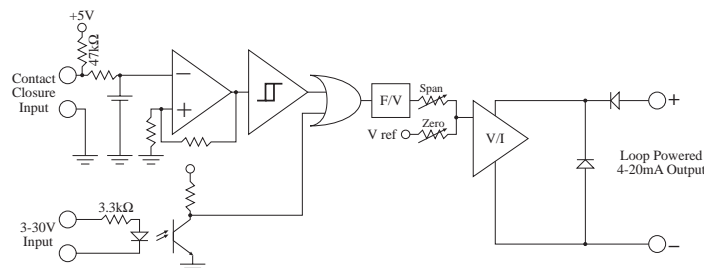
Contact Closure Input

- Sensor Compatibility- Requires an isolated, contact closure
- Maximum Contact Voltage- 5 V
- Maximum Contact Current- 0.12 mA
- Nominal Pullup Resistance - 47 Kohm to 5 Vdc
- Frequency Range - 0-100 Hz

Frequency to Current Conversion

- Range Selection: DIP Switch Selectable
- Available Ranges: 30 Hz, 60 Hz, 120 Hz, 240 Hz,
480 Hz, 960 Hz, 1920 Hz
- Factory Default: 100 Hz

Simplified Block Diagram



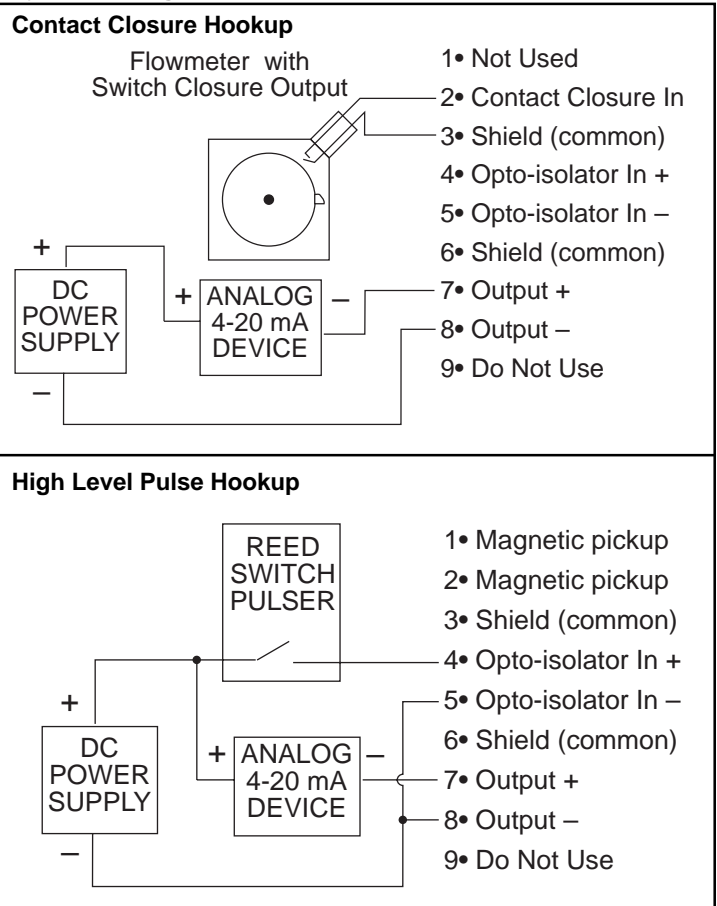
Analog Output

- Accuracy: $\pm 0.1\%$ Span (@ 20° C)
- Output Type: Two Wire, Loop Powered
- Range: 4-20 mA (10 - 50 mA optional)
- Compliance Voltage: 10 to 40 VDC
- Loop Burden: < 10 VDC (less than 500 Ω)
- Trim Controls: Zero & Span, non-interacting
- Span (20 mA) Trim Range: 50% to 100% of full scale
- Linearity: < $\pm 0.1\%$ Span
- Output Voltage Effect: < $\pm 0.002\%$ Span/Volt
- Temperature Effect: < 200 PPM/C°
- Reverse Polarity Protected
- Noise Content: < 0.2% Span
- Response Time: 1 second (10 sec. jumper selectable)
- Over-current Limiting: 35 mA
- Output Loop Indicator: LED illuminates when output loop is powered by proper polarity and blinks proportionally to the input frequency.

Mounting Styles

- DIN Rail Mount: Plastic enclosure with a snap fastener for fitting to DIN 46 277 and DIN EN 50 022 assembly rails.
- NEMA 4X: 4.92" x 4.92" NEMA 4X Enclosure for wall mounting.
- Explosion Proof: Aluminum enclosure for:
Class I, Division 1, Groups B, C & D
Class II, Division I, Groups E, F & G.

Typical Wiring Hookup (option "L")



"L" Option INPUT & OUTPUT SETTINGS

REMOVING THE CASE:

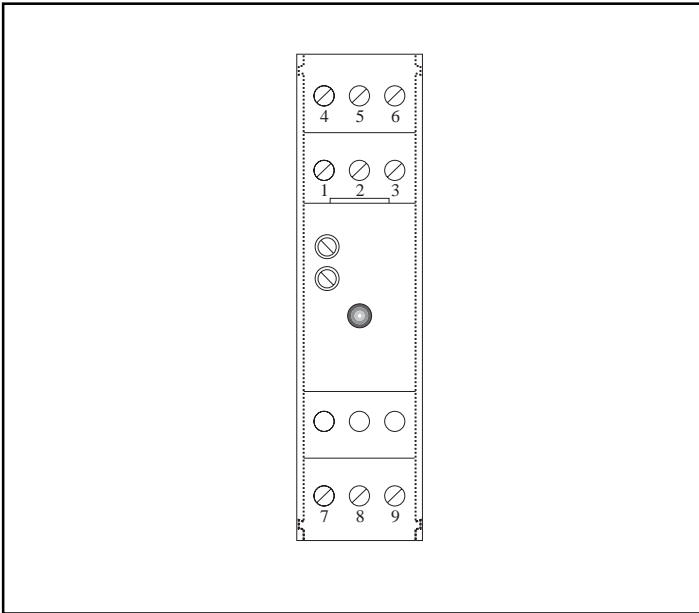
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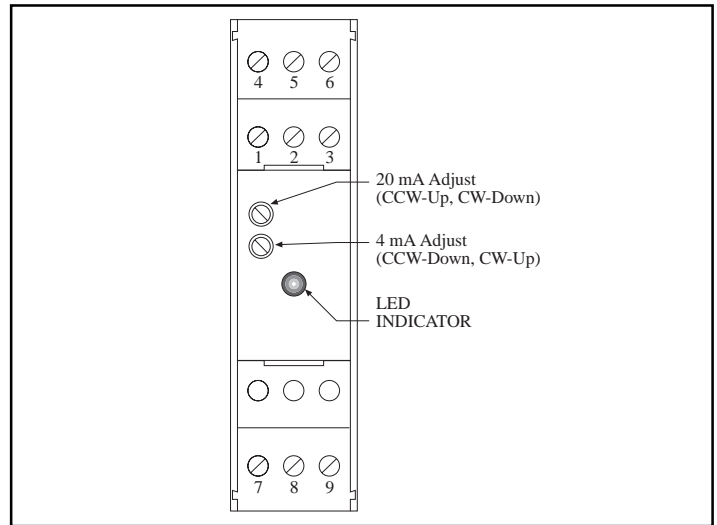
FIGURE 1:



OUTPUT ADJUSTMENTS:

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FIGURE 2:



RESPONSE TIME SETTING:

Switch #8 controls the output response time.

<u>Switch #8</u>	<u>Response Time</u>
OFF	1 second
ON	10 seconds

Turn switch #8 ON to provide damping of the output resulting in a 10 second response time.

INPUT FREQUENCY RANGE SETTINGS:

The appropriate range is selected by turning "ON" the corresponding switch.

<u>Range:</u>	<u>Switch # "ON"</u>
0-30Hz	1
0-60Hz	2
0-120Hz	3*
0-240Hz	4
0-480Hz	5
0-960Hz	6
0-1920Hz	7

* Factory Default. The unit is setup at the factory for the range 0-100Hz.

LED INDICATOR:

The SCI-L has a LED which indicates the status of the unit. The table below describes the 3 states for the LED.

<u>LED STATUS:</u>	<u>MEANING:</u>
OFF	The unit is off.
ON (constant)	The unit is loop powered.

BLINKING The unit is receiving an input frequency. The LED will blink at a rate proportional to the input frequency. (The LED may appear to be constant at high input frequencies)