DATAFORTH[®]

SCM5B42

2-Wire Transmitter Interface Modules

Description

Each SCM5B42 2-wire transmitter interface module provides a single channel which accepts a 4 to 20mA process current input and provides a standard +1 to +5V or +2 to +10V output signal (Figure 1). An isolated +20VDC regulated power supply is provided to power the current transmitter. This allows a 2-wire loop powered transmitter to be directly connected to the SCM5B42 without requiring an external power supply. The regulated supply will provide a nominal +20VDC at a loop current of 4mA to 20mA.

The SCM5B42 will provide a 1500V isolation barrier for non-isolated 2-wire field transmitters. It can also be used when additional isolation is required between an isolated 2-wire transmitter and the input stage of the control room computer.

The voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The SCM5B modules are designed with a completely isolated computer side circuit which can be floated to \pm 50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin, to I/O Common, pin 19.

A precision 20Ω current conversion resistor is supplied with the module. Sockets are provided on the SCMPB01/02/03/04/05/06/07 backpanels to allow installation of this resistor. Extra resistors are available under part number SCMXR1. All field inputs are fully protected from accidental connection of power-line voltages up to 240VAC. The module has a 3dB bandwidth of 100Hz. Signal filtering is accomplished with a six-pole filter, with two poles on the field side of the isolation barrier, and the other four on the computer side.

Features

- Isolated +20VDC Current Loop Supply
- Provides Isolation for Non-Isolated 2-Wire Transmitters
- High-Level Voltage Output +1V to +5V or +2V to +10V
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 240VAC Continuous
- 100dB CMR
- 100Hz Signal Bandwidth
- ±0.03% Accuracy
- ±0.005% Linearity
- CSA C/US Certified
- CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

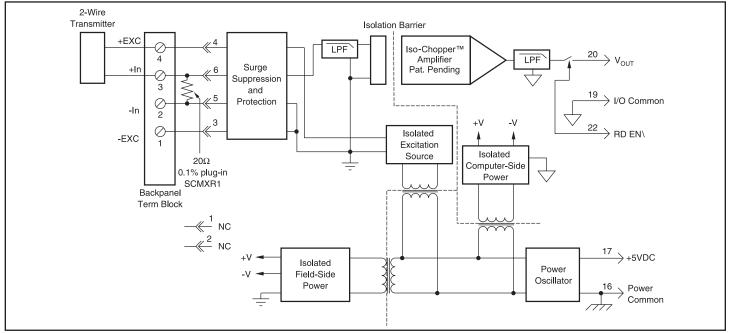


Figure 1: SCM5B42 Blok Diagram

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SCM5B

Specifications Typical* at T₄ = +25°C and +5VDC power

Specifications Typical* at $T_A = +25^{\circ}C$ and +5VDC power		
Module	SCM5B42	
Input Range Input Resistor	4mA to 20mA	
Value	20.00Ω	
Accuracy Stability	±0.1% ±10ppm/°C	
Loop Supply Voltage	Nominal 20V at 4mA to 20mA	
Isolated Excitation Protection Continuous Transient Input Protection	240Vrms max ANSI/IEEE C37.90.1 240Vrms max	
Continuous Transient CMV, Input to Output	ANSI/IEEE C37.90.1	
Continuous Transient	1500Vrms max ANSI/IEEE C37.90.1	
CMR (50 or 60Hz) NMR (–3dB at 100Hz)	100dB 120dB per Decade above 100Hz	
Accuracy ⁽¹⁾ Linearity Stability	±0.03% Span ±0.005% Span	
Input Offset	±1µV/°C	
Output Offset Gain Noise	±40µV/°C ±25ppm/°C of Reading	
Input, 0.1 to 10Hz	10nArms	
Output, 100kHz Bandwidth, –3dB	500µVrms 100Hz	
Response Time, 90% Span	4mS	
Output Range	+1V to +5V or +2V to +10V 50Ω	
Output Resistance Output Protection	Continuous Short to Ground	
Output Selection Time (to ±1mV of V _{OUT)}	6µs at C _{load} = 0 to 2000pF	
Output Current Limit	+8mA	
Output Enable Control Max Logic "0" Min Logic "1"	+0.8V +2.4V	
Max Logic "1" Input Current "0,1"	+36V 0.5µA	
Power Supply Voltage Power Supply Current	+5VDC ±5% 180mA at Transmitter Load of 20mA 100mA at Transmitter Load of 4mA	
Power Supply Sensitivity	$\pm 10 \mu V/\% RTI^{(2)}$	
Mechanical Dimensions (h)(w)(d)	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)	
Environmental Operating Temp. Range Storage Temp. Range Relative Humidity Emissions EN61000-6-4 Radiated, Conducted Immunity EN61000-6-2 RF	-40°C to +85°C -40°C to +85°C 0 to 95% Noncondensing ISM, Group 1 Class A ISM, Group 1 Performance A ±0.5% Span Error	
ESD,EFT	Performance B	
NOTES		

NOTES:

*Contact factory or your local Dataforth sales office for maximum values. (1) Includes linearity, hysteresis and repeatability. Does not include SCMXR1 accuracy. (2) RTI = Referenced to input.

Model	Input Range	Output Range
SCM5B42-01	4mA to 20mA	+1V to +5V
SCM5B42-02	4mA to 20mA	+2V to +10V