SCM5B43

General-purpose Input Modules with DC Excitation

DESCRIPTION

Each SCM5B43 general-purpose input module provides a single channel of transducer input which is filtered, isolated, scaled, and converted to a high-level analog voltage output (Figure below). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The SCM5B module family is designed with a completely isolated computer-side circuit which can be floated to ±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.

The SCM5B43 can interface to devices which require a precision 10VDC excitation supply. The 1kHz bandwidth significantly reduces ripple and noise inherent in these devices.

Transducer excitation is provided from the module by a very stable 10V source. The excitation supply is fully isolated, allowing the amplifier inputs to operate over the full range of the excitation voltage. This feature offers significant flexibility in real-world applications. Ten full-scale input ranges are provided, from ±1V to ±10V, producing ±5V full-scale output.

The input signal is processed through a pre-amplifier on the field side of the isolation barrier. This pre-amplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 1kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common-mode spikes or surges. The module is powered from +5VDC, ±5%.

Special input circuits on the SCM5B43 module provide protection of the signal inputs and the isolated excitation supply up to 240VAC.

FEATURES

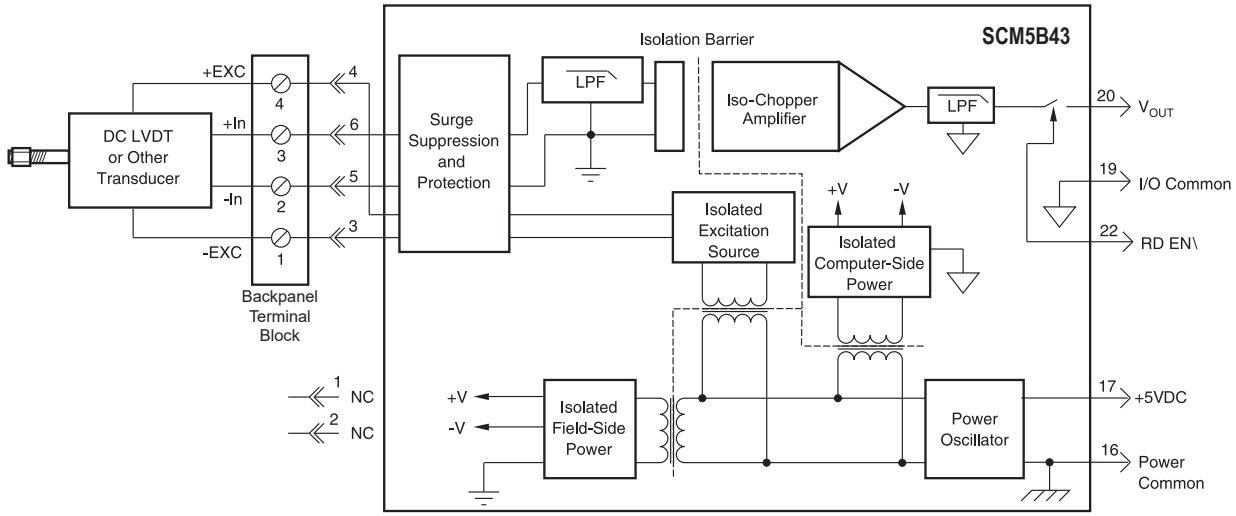
- Interfaces to DC Displacement Transducers and Other Devices Requiring a Stable DC Supply
- High-level Voltage Outputs
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 240VAC, Continuous
- Fully Isolated Excitation Supply
- 100dB CMR
- 1kHz Signal Bandwidth
- ±0.03% Accuracy
- ±0.005% Linearity
- ±20µV/°C Drift
- CSA C/US Certified
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863
- Mix and Match SCM5B Types on Backpanel

BENEFITS

- Protects User Equipment from Lightning and Heavy Equipment Power-line Voltage
- Reduces EMC Concerns and Electrical Noise in Measured Signals
- Convenient System Expansion and Repair
- Signal Filtering in Noisy Environments
- Simplifies Sensor Interface and Signal Conditioning Design
- Provides Isolation of External Sensors
- Breaks Ground Loops

APPLICATIONS

- Analog Signal Conditioning
- Analog Signal Isolation
- Analog Signal Filtering
- Industrial Process Control
- Test and Measurement
- System and Signal Monitoring



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

SCM5B43 Block Diagram - For Module Dimensions and Pinouts, See Page 1-44

©1984-2024 Dataforth Corporation, All Rights Reserved ISO9001:2015-Registered QMS

Specifications

Typical* at T_A = +25°C and +5VDC Power

Module	SCM5B43
Input Range	±1V to ±10V
Input Bias Current	±0.05nA
Input Resistance	
Normal	2MΩ (min)
Power Off	2MΩ (min)
Overload	2MΩ (min)
Input Protection	
Continuous	240Vrms (max)
Transient	ANSI/IEEE C37.90.1 (formerly IEEE-472)
Excitation Voltage, V_{EXC}	+10.0VDC ±2mV
Excitation Current	40mA (max)
Excitation Load Regulation	±5ppm/mA
Excitation Stability	±15ppm/°C
Isolated Excitation Protection	
Continuous	240Vrms (max)
Transient	ANSI/IEEE C37.90.1 (formerly IEEE-472)
CMV, Input to Output	
Continuous	1500Vrms (max)
Transient	ANSI/IEEE C37.90.1 (formerly IEEE-472)
CMR (50 or 60Hz)	100dB
NMR (–3dB at 1kHz)	120dB per Decade Above 1kHz
Accuracy(1)	±0.03% Span
Linearity	±0.005% Span
Stability	
Input Offset	±20µV/°C
Output Offset	±40µV/°C
Gain	±50ppm/°C
Noise	
Input, 0.1 to 10Hz	0.4µVrms
Output, 100kHz	5mVp-p
Bandwidth, –3dB	1kHz
Response Time (to 90% final value)	750µs
Output Range	See Ordering Information
Output Resistance	50Ω
Output Protection	Continuous Short-to-Ground
Output Selection Time (to ±1mV of V_{OUT})	6.0µs at C_{LOAD} = 0 to 2000pF
Output Current Limit	±8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	200mA at Full Exc. Load, 100mA at No Exc. Load
Power Supply Sensitivity	±200µV/% RTI(2)
Mechanical Dimensions (h)x(w)x(d)	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions EN61000-6-4	ISM, Group 1
Radiated, Conducted	Class A
Immunity EN61000-6-2	ISM, Group 1
RF	Performance A ±0.5% Span Error
ESD,EFT	Performance B

Ordering Information

Model	Input Range	Output Range
SCM5B43-01 SCM5B43-01D	±1V	–5V to +5V –10V to +10V
SCM5B43-02 SCM5B43-02D	±2V	–5V to +5V –10V to +10V
SCM5B43-03 SCM5B43-03D	±3V	–5V to +5V –10V to +10V
SCM5B43-04 SCM5B43-04D	±4V	–5V to +5V –10V to +10V
SCM5B43-05 SCM5B43-05D	±5V	–5V to +5V –10V to +10V
SCM5B43-06 SCM5B43-06D	±6V	–5V to +5V –10V to +10V
SCM5B43-07 SCM5B43-07D	±7V	–5V to +5V –10V to +10V
SCM5B43-08 SCM5B43-08D	±8V	–5V to +5V –10V to +10V
SCM5B43-09 SCM5B43-09D	±9V	–5V to +5V –10V to +10V
SCM5B43-10 SCM5B43-10D	±10V	–5V to +5V –10V to +10V

NOTES:
*Contact factory for maximum values.
(1) Includes excitation error, linearity, hysteresis and repeatability.
(2) RTI = Referenced to input.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

©1984-2024 Dataforth Corporation, All Rights Reserved ISO9001:2015-Registered QMS