SCM5B392

Matched-pair Servo/Motor Controller Modules

DESCRIPTION

The SCM5B392 servo/motor controller module set is designed to solve the problem of extending a servo- or motor-controller signal a long distance with the possibility for noise pickup and/or contacting hazardous voltages. Each SCM5B392 module set is made up of two modules: a voltage input/current output module and a current input/voltage output module (Figure below).

The voltage-input module connects to the servo- or motor-controller voltage output and provides an isolated 4-20mA output which connects to the input of the current-input module. The current-input module isolates and provides an output voltage identical to that of the servo or motor controller. Thus, the original control signal has been isolated (twice) and extended via a 4-20mA current loop.

Several mounting options are available for the SCM5B392 module set. If a large number of channels are required, the SCMPB01 16-channel backpanel and SCMPB05 8-channel backpanel are available. Smaller channel numbers can be accommodated with the SCMPB03 single-channel mounting panel and SCMPB04 dual-channel mounting panel. These can be mounted on a DIN rail.

FEATURES

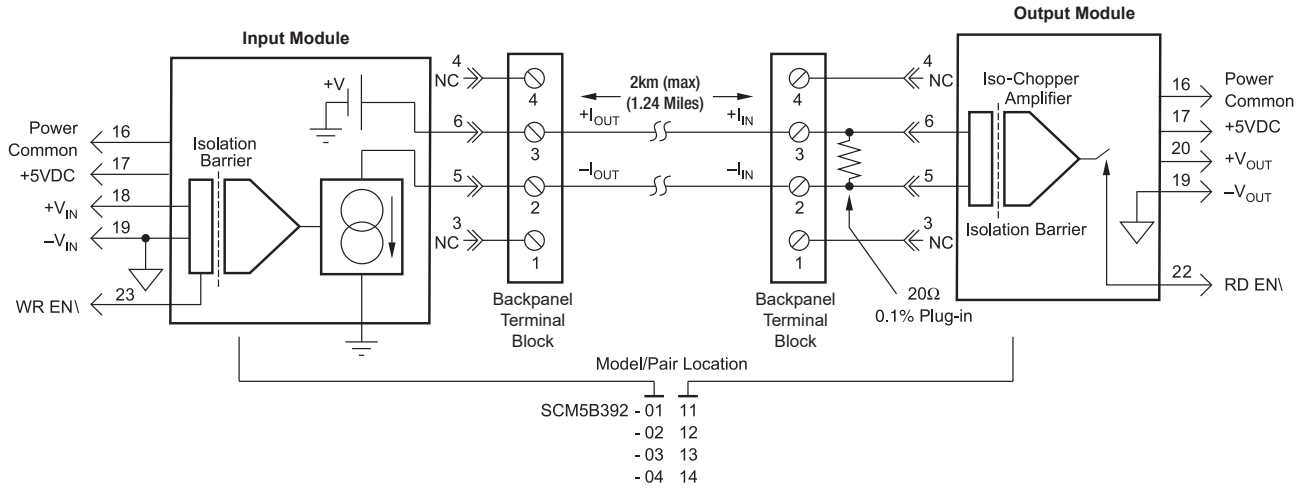
- Extends the Distance and Isolates Servo/Motor Controller Signals
- Provides Isolated Current Loop Interface Between Controller and Motor or Actuator
- Accepts High-level Voltage Inputs up to ±10V
- Provides High-level Voltage Outputs up to ±10V
- 1500Vrms Transformer Isolation (3000Vrms Total Loop)
- ANSI/IEEE C37.90.1 Transient Protection
- Current Loop is Protected to 240VAC Continuous
- 1kHz Signal Bandwidth
- 100dB CMR
- ±0.06% Total Loop Accuracy
- ±0.01% Total Loop Linearity
- 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
- Motor Control
- System and Signal Monitoring



SCM5B392 Block Diagram - For Module Dimensions and Pinouts, See Page 1-44

Specifications

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

Module	SCM5B392-01,-02,-03,-04 (Input)	SCM5B392-11,-12,-13,-14 (Output)
Input Range	See Ordering Information	4-20mA
Input Resistance	50MΩ (-01,-02) 2MΩ (-03,-04)	20Ω
Accuracy	N/A	±0.1%
Stability	N/A	±10ppm/°C
Input Protection		
Continuous	±36V (no damage)	240Vrms (max)
Transient	N/A	ANSI/IEEE C37.90.1
Output Range	4-20mA	See Ordering Information
Over Range Capability	10%	N/A
Output Compliance Voltage (Open Circuit)	22VDC	N/A
Loop Resistance Range	0 to 600Ω (0 to 700Ω for Power Supply Voltage Greater than 4.95VDC)	N/A
Output Resistance	N/A	50Ω
Output Selection Time (to ±1mV of V_{OUT})	N/A	6µs at C_{LOAD} = 0 to 2000pF
Output Current Limit	26mA	+8mA
Output Protection		
Continuous	240Vrms (max)	Short to Ground
Transient	ANSI/IEEE C37.90.1	N/A
CMV		
Continuous	1500Vrms (max), Output to Input	1500Vrms (max), Output to Input
Transient	ANSI/IEEE C37.90.1	ANSI/IEEE C37.90.1
CMR (50Hz or 60Hz)	100dB	100dB
NMR (–3dB at 1KHz)	80dB per Decade Above 1kHz	120dB per Decade Above 1kHz
Accuracy	±0.03% Span	±0.03% Span
Linearity	±0.005% Span	±0.005% Span
Stability		
Offset	±0.5µA/°C	±50µV/°C
Gain	±20ppm/°C	±25ppm/°C
Noise		
Output, 100kHz	10µAp-p	200µVrms
Bandwidth, –3dB	1kHz	1kHz
Rise Time, 10 to 90% Span	340µs	750µs
Sample and Hold		
Output Droop Rate	40µA/s	N/A
Acquisition Time	50µs	N/A
Enable Control		
Max Logic "0"	+0.8V	+0.8V
Min Logic "1"	+2.4V	+2.4V
Max Logic "1"	+36V	+36V
Input Current "0"	0.5µA	0.5µA
Power Supply Voltage	+5VDC ±5%	+5VDC ±5%
Power Supply Current	170mA	30mA
Power Supply Sensitivity	±0.5µA/% (typ)	±1µA/% RTI(1)
Mechanical Dimensions (h)x(w)x(d)	2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm)	2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm)
Environmental		
Operating Temp. Range	–40°C to +85°C	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing	0 to 95% Noncondensing
Emissions EN61000-6-4	ISM, Group 1	ISM, Group 1
Radiated, Conducted	Class A	Class A
Immunity EN61000-6-2	ISM, Group 1	ISM, Group 1
RF	Performance A ±0.5% Span Error	Performance A ±0.5% Span Error
ESD, EFT	Performance B	Performance B

NOTES:
*Contact factory for maximum values.
(1) RTI = Referenced to input.

Ordering Information (for single modules)

Model	Input Range	Output Range	Bandwidth
SCM5B392-01	0V to +5V	4-20mA	1kHz
SCM5B392-02	–5V to +5V	4-20mA	1kHz
SCM5B392-03	0V to +10V	4-20mA	1kHz
SCM5B392-04	–10V to +10V	4-20mA	1kHz
SCM5B392-11	4-20mA	0V to +5V	1kHz
SCM5B392-12	4-20mA	–5V to +5V	1kHz
SCM5B392-13	4-20mA	0V to +10V	1kHz
SCM5B392-14	4-20mA	–10V to +10V	1kHz

Ordering Information (for module pairs)

Model	Input Range	Interface	Output Range
SCM5B392-0111	0V to +5V	4-20mA	0V to +5V
SCM5B392-0212	–5V to +5V	4-20mA	–5V to +5V
SCM5B392-0313	0V to +10V	4-20mA	0V to +10V
SCM5B392-0414	–10V to +10V	4-20mA	–10V to +10V