SCM7B22

Isolated Bipolar Voltage-output Modules

DESCRIPTION

SCM7B22 voltage-output modules accept input signals in the ±10V range from the process control system. The signal is isolated, buffered, and filtered to provide a unity gain field voltage output.

These modules incorporate a five-pole filtering approach to maximize both time and frequency response by taking advantage of both Thomson (Bessel) and Butterworth characteristics. One pole of the filter is on the process control system side of the isolation barrier; four are on the field side.

After the initial process control system-side filtering, the input signal is chopped by a proprietary chopper circuit and transferred across the transformer isolation barrier, suppressing transmission of common-mode spikes and surges. The signal is then reconstructed and filtered for field-side output.

Modules accept a wide 19-29VDC power supply range (+24VDC nominal). Their compact packages (2.13"x1.705"x0.605") save space and are ideal for high channel density applications. They are designed for easy DIN-rail mounting using any of the DIN backpanels.

FEATURES

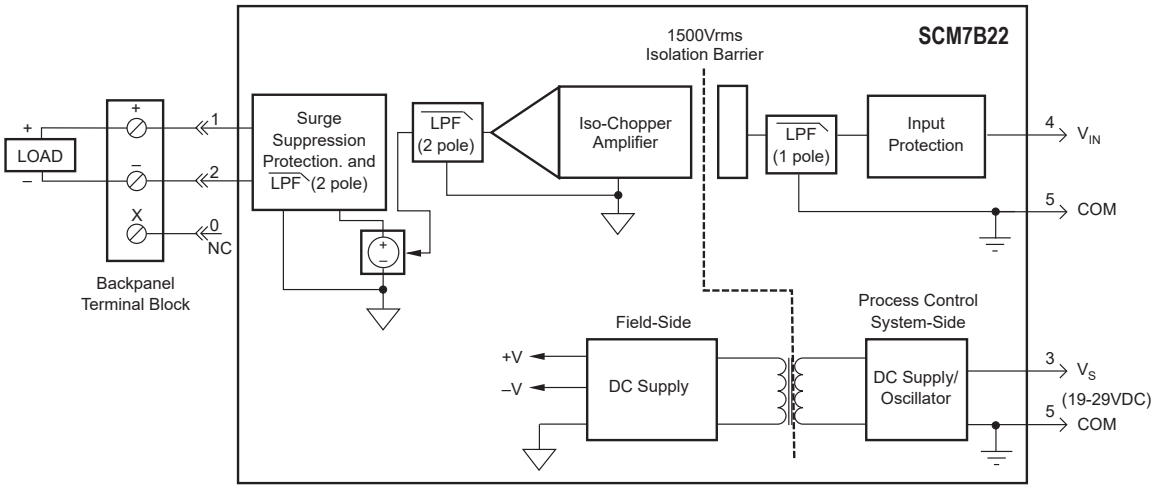
- Accepts High-level Input to ±10V
- Provides High-level Output to ±10V
- 1500Vrms Transformer Isolation
- Accuracy, ±0.03% of Span (typ), ±0.1% (max)
- ANSI/IEEE C37.90.1 Transient Protection
- Output Protected to 120Vrms, Continuous
- Input Protected to ±35VDC
- Noise, 2mVp-p (5MHz), 1mVrms (100kHz)
- 100dB CMRR
- Easy DIN-rail Mounting
- CSA C/US Certified
- CE and ATEX Compliant
- Manufactured per RoHS III Directive 2015/863

BENEFITS

- Small Form-factor for High-density Applications
- Protects User Equipment from Lightning and Heavy Equipment Power-line Voltage
- Reduces 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
- Reduces EMC Concerns

APPLICATIONS

- Analog Signal Conditioning
- Industrial Process Control
- Test and Measurement
- System and Signal Monitoring
- Temperature Measurement
- Torque Measurement
- Civil Engineering
- Geotechnical Monitoring



SCM7B22 Block Diagram - For Module Dimensions and Pinouts, See Page 2-26

Specifications

Typical* at T_A = +25°C and +24VDC

Module	SCM7B22
Output	
Signal Range	±10V
Drive Capability	±20mA
Resistance	<1Ω
Protection	
Continuous	120Vrms
Transient	ANSI/IEEE C37.90.1
Voltage/Current Limit	±12.5V, ±40mA
Input	
Signal Range	±10V
Bias Current	±0.5nA
Resistance	2MΩ (min)
Protection	±35VDC (no damage)
CMV (Input-to-Output)	
Continuous	1500Vrms
Transient	ANSI/IEEE C37.90.1
CMRR (50 or 60Hz)	100dB
Accuracy(1)	±0.03% Span (typ) ±0.1% Span (max)
Linearity(2)	±0.01% Span (typ) ±0.02% Span (max)
Stability (–40°C to +85°C)	
Gain	±35ppm/°C
Output Offset	±0.001% Span/°C
Noise	
Peak at 5MHz B/W	2mV
RMS at 10Hz to 100kHz B/W	1mV
Peak at 0.1Hz to 10Hz B/W	10µV RTI(3)
Frequency and Time Response	
Bandwidth, –3dB	400Hz
NMR (–3dB at 400Hz)	100dB per Decade above 400Hz
Step Response, 90% Span	1ms
Supply Voltage	19-29VDC
Current	16mA
Sensitivity	±0.0001%/%V_S
Mechanical Dimensions (h)x(w)x(d)	2.13" x 1.705" x 0.605" (54.1mm x 43.3mm x 15.4mm)
Environmental	
Operating Temperature Range	–40°C to +85°C
Storage Temperature 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

NOTES:
*Contact factory or your local Dataforth sales office for maximum values.
(1) Accuracy includes the effects of repeatability, hysteresis, and linearity.
(2) Linearity is calculated using the best-fit straight line method.
(3) RTI = Referenced to Input.

Ordering Information

Model	Input Range	Output Range
SCM7B22	±10V	±10V