

# SCM7B22



## Isolated Bipolar Voltage Output Modules

### Description

SCM7B22 voltage output modules accept input signals in the  $\pm 10V$  range from the process control system. The signal is isolated, buffered, and filtered to provide a unity gain field voltage output (Figure 1).

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" max) 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  $\pm 10V$
- Provides High Level Output to  $\pm 10V$
- 1500Vrms Transformer Isolation
- Accuracy,  $\pm 0.03\%$  of Span Typical,  $\pm 0.1\%$  Max
- ANSI/IEEE C37.90.1 Transient Protection
- Output Protected to 120Vrms Continuous
- Input Protected to  $\pm 35VDC$
- Noise, 2mV Peak (5MHz), 1mV RMS (100kHz)
- CMRR, 100dB
- 80dB Per Decade of Attenuation Above 400Hz
- Easy DIN Rail Mounting
- CSA Certified, FM Approved
- CE and ATEX Compliant

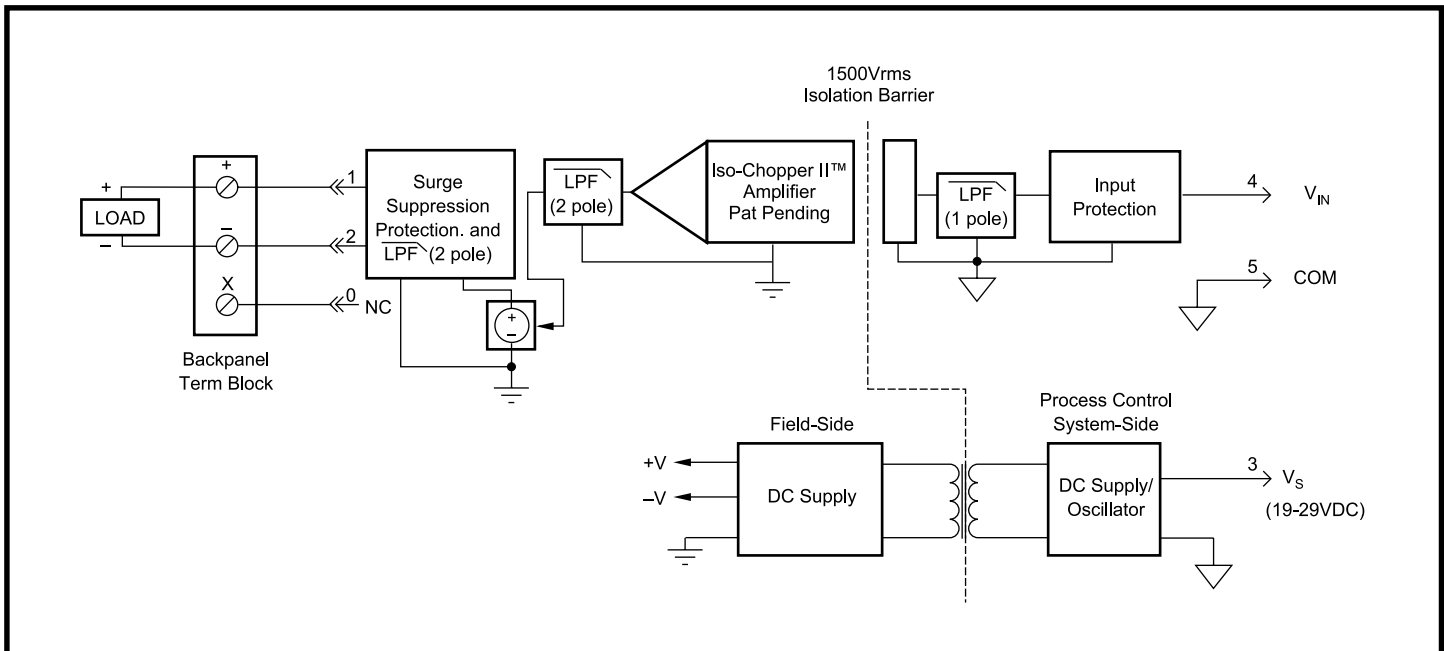


Figure 1: SCM7B22 Block Diagram

**Specifications** Typical at 25°C and +24VDC

| Module                                   | SCM7B22   |
|--|---|
| Output                                   |   |
| Signal Range <sup>(1)</sup>              | ±10V  |
| Effective Available Power <sup>(1)</sup> | 20mW  |
| 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 <sup>(2)</sup>                  | ±0.03% Span typical,<br>±0.1% Span max                      |
| Nonlinearity <sup>(3)</sup>              | ±0.01% Span typical,<br>±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  |
| Frequency and Time Response              |   |
| Bandwidth, -3dB                          | 400Hz   |
| NMR (-3dB at 400Hz)                      | 80dB per decade above 400Hz                                 |
| Step Response, 90% Span                  | 1ms   |
| Supply Voltage                           | 19 to 29VDC   |
| Current <sup>(1)</sup>                   | 16mA  |
| Sensitivity                              | ±0.0001%/V <sub>s</sub>                                     |
| Mechanical Dimensions<br>(h)(w)(d)       | 2.13" x 1.705" x 0.605" max<br>54.1mm x 43.3mm x 15.4mm max |
| Environmental                            |   |
| Operating Temperature Range              | -40°C to +85°C  |
| ATEX Group II, Category 3                | -20°C to +40°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, Surge, Voltage Dips            | Performance B   |

**NOTES:**

(1) Output Range and Supply Current specifications are based on minimum output load resistance. Minimum output load resistance is calculated by  $V_{OUT}^2/P_E$ , where  $P_E$  is the Output Effective Available Power that guarantees output range, accuracy, and linearity specifications.

(2) Accuracy includes the effects of repeatability, hysteresis, and linearity.

(3) Nonlinearity is calculated using the best-fit straight line method.

**Ordering Information**

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