

SCIM7B21/30/31

Isolated Analog Voltage Input Modules

Description

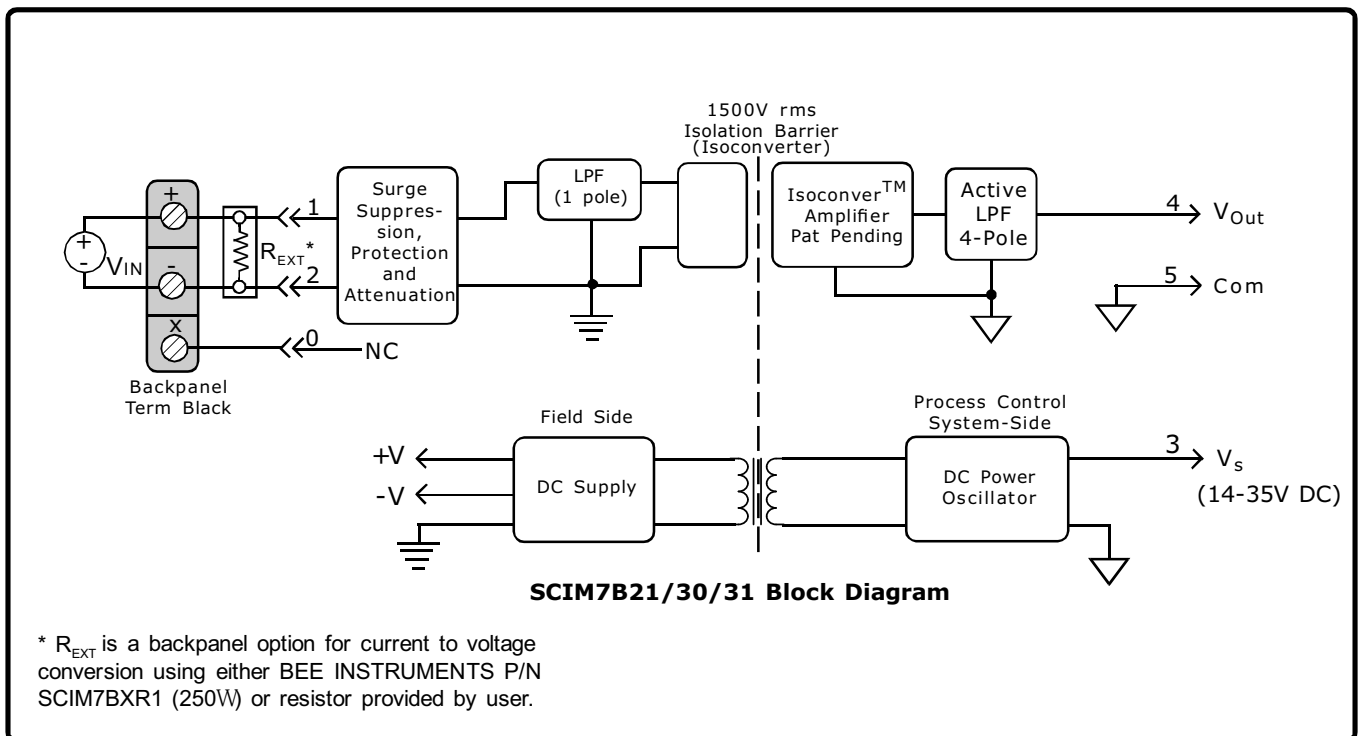
SCIM7B21/30/31 voltage input modules is a single channel analog input which is filtered, isolated, amplified, and converted to standard-level voltage output. A five pole filter is provided with signal filtering which provides upto 80dB NMR at 50/60Hz

The input signal is chopped by a proprietary converter circuit. After initial filter stage isolation is provided by transformer coupling which eliminates common mode spikes and surges. The signal is then reconstructed and filtered for process control system output.

These modules accept a wide 14 - 35VDC power supply range (+24VDC nominal). The mechanical size (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

- Wide range of millivolt and Voltage input Signals
- Standard Output of either 0 to 10V/+10V, 0 to 5V, 1 to 5V.
- 1.5KV Isolation
- Accuracy $\pm 0.03\%$ of span typical, $\pm 0.1\%$ max
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protected to 120V rms Continuous
- Noise 500uV Peak (5MHz), 250uV rms (100KHz)
- 120dB CMR
- 85dB NMR
- Easy DIN Rail Mounting
- CSA, FM, CE and ATEX Compliant



Specifications Typical at $T_A = +25^{\circ}\text{C}$ and +5V Power supply

Module	SCIM7B21	SCIM7B30	SCIM7B31
Input			
Signal Range	$\pm 10\text{V}$	$\pm 10\text{mV to } \pm 1\text{V}$	$\pm 10\text{mV to } \pm 10\text{V}$
Bias Current	$\pm 0.1\text{nA}$	$\pm 0.5\text{nA}$	$\pm 0.05\text{nA}$
Resistance			
Normal	$2\text{M}\Omega$ min	$50\text{K}\Omega$	$500\text{K}\Omega$ (min)
Power off	$2\text{M}\Omega$ min	$30\text{K}\Omega$ (minimum)	$500\text{K}\Omega$ (min)
Overload	$2\text{M}\Omega$ min	$30\text{K}\Omega$ (minimum)	$500\text{K}\Omega$ (min)
Protection			
Continuous	120V rms max	*	*
Transient	ANSI/IEEE C37.90.1	*	*
Output			
Signal Range ⁽¹⁾	$\pm 10\text{V}$	*	*
Effective available power ⁽¹⁾	$10\text{m}\Omega$	$40\text{m}\Omega$	*
Resistance	$< 1\Omega$	*	*
Protection	Continuous Short to Ground	*	*
Voltage/Current Limit	$\pm 16\text{V}, \pm 14\text{mA}$	*	*
CMV (Input to Output)			
Continuous	1500V rms max	*	*
Transient	ANSI/IEEE C37.90.1	*	*
CMRR (50 or 60Hz)	100dB	160dB	120dB
Accuracy ⁽²⁾	$\pm 0.03\%$ Span typical $\pm 0.1\%$ Span max	*	*
Nonlinearity ⁽³⁾	$\pm 0.01\%$ Span typical $\pm 0.02\%$ Span max	*	*
Stability (-40°C to $+85^{\circ}\text{C}$)			
Gain	$\pm 55\text{ppm}/^{\circ}\text{C}$	$\pm 35\text{ppm}/^{\circ}\text{C}$	$\pm 55\text{ppm}/^{\circ}\text{C}$
Input Offset	N/A ⁽⁴⁾	$\pm 0.5\text{mV}/^{\circ}\text{C}$	$\pm 5\text{mV}/^{\circ}\text{C}$
Zero Suppression	N/A	$\pm 0.005\% (V_Z)^{5)/^{\circ}\text{C}}$	*
Output Offset	$\pm 0.001\%$ Span/ $^{\circ}\text{C}$	$\pm 0.002\%$ Span/ $^{\circ}\text{C}$	*
Noise			
Peak at 5MHz B/W	1mV	500mV	*
RMS at 10Hz to 100KHz B/W	250mV	*	*
Peak at 0.1Hz to 10Hz B/W	1mV RTI	*	*
Frequency and Time Response			
Bandwidth, -3dB	300Hz	3Hz	*
NMR (50/60Hz)	80dB/Decade above 300Hz	80/85dB	*
Step Response, 90% span	1.5ms	165ms	*
Power supply voltage	14 to 35V DC	*	*
Power supply Current ⁽¹⁾	16mA	*	*
Power supply Sensitivity	$\pm 0.0002\%/V_S$	$\pm 0.0001\%/V_S$	*
Mechanical Dimensions (H) (W) (D)	2.13"x1.705"x0.605"max (54.1 x 43.3 x 15.4mm) max	*	*
Environmental			
Operating Temp. Range	-40°C to $+85^{\circ}\text{C}$	*	*
Storage Temp. Range	-40°C to $+85^{\circ}\text{C}$	*	*
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	*	*

Note:

- *. Specifications same as preceding model.
- 1. Output range and supply current specifications are based on minimum output load resistances. 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. Non-linearity is calculated using the best-fit straight line method.
- 4. Input offset term included in output offset specification.
- 5. V_Z is the nominal input voltage that results in a 0V output.

Ordering Information

Model	Input Range	Output Range
SCIM7B21	$\pm 10\text{V}$	1, 2, 3, 4, 5
SCIM7B30-01	0 to +10mV	1, 2, 3, 4, 5
SCIM7B30-02	0 to +100mV	1, 2, 3, 4, 5
SCIM7B30-03	0 to +1V	1, 2, 3, 4, 5
SCIM7B30-05	+1 to +5V	1, 2, 3, 4, 5
SCIM7B30-06	$\pm 10\text{mV}$	1, 2, 3, 4, 5
SCIM7B30-07	$\pm 100\text{mV}$	1, 2, 3, 4, 5
SCIM7B30-08	$\pm 1\text{V}$	1, 2, 3, 4, 5
SCIM7B31-01	0 to +10V	1, 2, 3, 4, 5
SCIM7B31-02	$\pm 5\text{V}$	1, 2, 3, 4, 5
SCIM7B31-03	$\pm 10\text{V}$	1, 2, 3, 4, 5
SCIM7B31-04	0 to +5V	1, 2, 3, 4, 5

Output Ranges Available

Output Range	Part No. Suffix	Example
1. 1 to +5V	NONE	SCIM7B30-01
2. 0 to +5V	A	SCIM7B30-01A
3. 0 to +10V	D	SCIM7B30-01D
4. -5V to +5V	C	SCIM7B30-01C
5. -10V to +10V	B	SCIM7B30-01B