

DSCIA45

Frequency Input Signal Conditioners

Description

DSCIA45 Frequency input module is single channel frequency input, which is conditioned, isolated, amplified & converted to standard level output.

The frequency input signal can be a TTL level or zero-crossing signal. Terminal 7 (-IN) is "common" or ground connection for input signals. Signal input has a input protection for 240V AC accidental connection and transient protection as per ANSI/IEEE C37.90.1 A TTL signal is connected between 6 (+IN) to terminal 7 (-IN), where as zero-crossing signal must be connected from terminal 5 (+EXC) to terminal 7 (-IN). Input signal must cross through the hysteresis region in order to be recognised and triggered by threshold comparator.

An excitation voltage of +5.1V is made available for the use of magnetic pick-up or contact-closure type of pickup sensors. It is available on terminal 8 (-EXC) with return at terminal 7 (-IN).

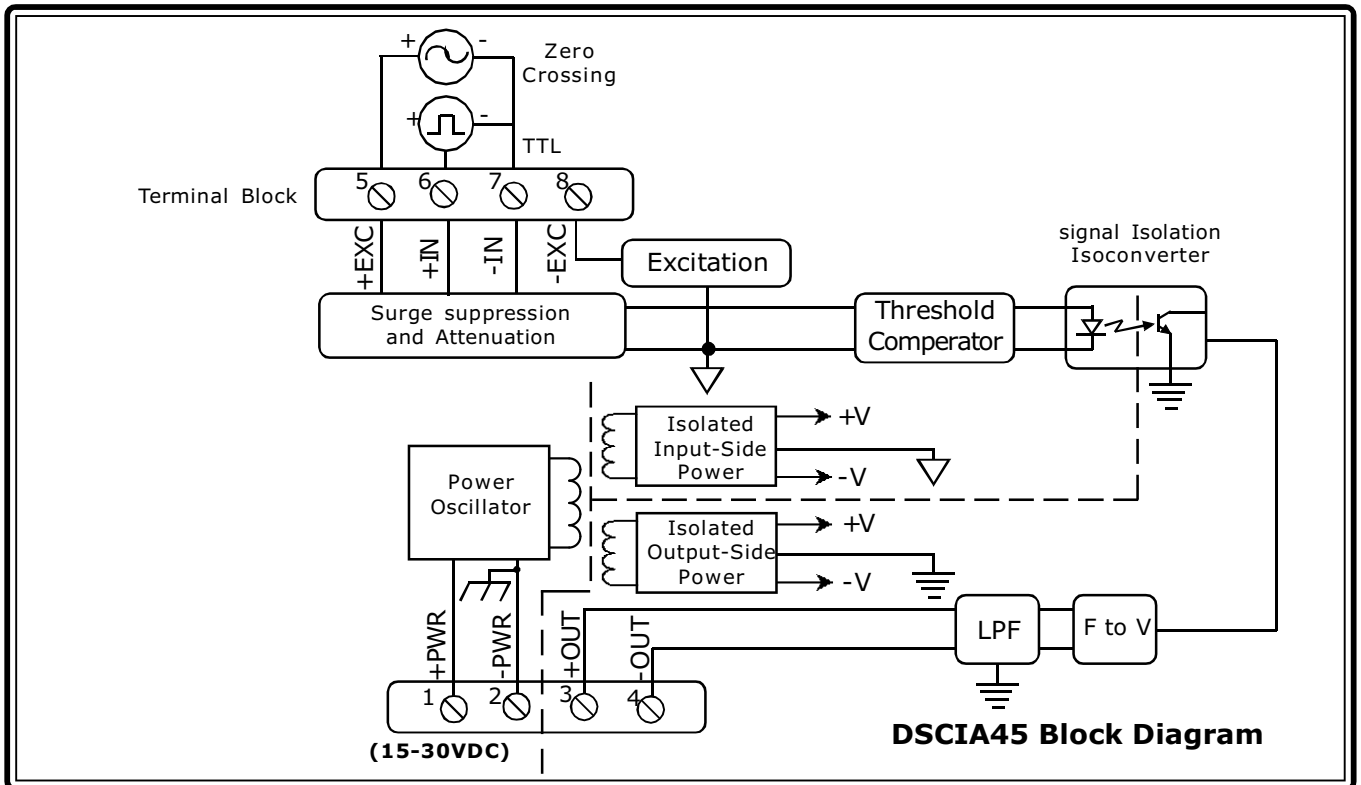
A five pole filter is provided with signal filtering which provides up to 85dB NMR at 60Hz and 80dB 50Hz. The input signal is chopped by a proprietary converter circuit. After initial filter stage isolation is provided by transformer coupling which eliminates common mode spikes and surges.

The output of this module is either voltage or current. In the case of current module a dedicated loop supply is provided at the output side. The output signal is isolated from power and input signal, hence it can be either floating or grounded. Output is also protected against short circuit, power supply input is protected against terminal reversal and transients. The signal and power wires can be connected directly on to heavy duty screw terminals provided.

These modules are most rugged, reliable and stable over long time and do not require frequent recalibration. However $\pm 5\%$ zero & span adjustment provides flexibility where fine tuning is warranted.

Features

- Wide range Frequency Inputs of 0 to 100KHz
- Standard Output of either 0 to 10V/ $\pm 10V$, 0 to 5V, 1 to 5V, 0 to 20mA, or 4 to 20mA
- 1.5KV Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- 240VAC Continuous Protection on Input
- True 3-Way Isolation
- Wide range of supply voltage(15 to 30V DC)
- 85dB NMR at 60Hz, 80dB at 50Hz
- 120dB CMR
- $\pm 0.03\%$ Accuracy
- $\pm 0.01\%$ NonLinearity
- Standard DIN Rail Mountable
- CSA , FM , CE and ATEX Compliant



Specifications Typical at $T_A = +25^{\circ}\text{C}$ and +24V supply voltage

| Module | DSCIA45 |
|---------------------------------|---|
| Input Range | 0 to 100KHz max |
| Threshold | Zero Crossing |
| Minimum Input | 60mV p-p |
| Maximum Input | 350V p-p |
| Minimum pulse Width | 4 μ s |
| TTL Input Low | 0.8V max |
| TTL Input High | 2.4V max |
| Hysteresis | |
| Zero Crossing | 40mV |
| TTL | 1.5V |
| Resistance | 100K Ω |
| Protection | |
| Continuous | 250Vrms max |
| Transient | ANSI/IEEE C37.90.1 |
| Output Range | See Ordering Information |
| Adjustability | $\pm 5\%$ Zero & Span |
| Load Resistance (I_{OUT}) | 600W max |
| Current Limit | 8mA (V_{OUT}), 30mA (I_{OUT}) |
| Output Protection | |
| Short to Ground | Continuous |
| Transient | ANSI/IEEE C37.90.1 |
| Ripple | <0.20% Span at input >2% Span |
| Accuracy ⁽¹⁾ | $\pm 0.05\%$ Span |
| Vs. Temperature | $\pm 40\text{ppm}/^{\circ}\text{C}$ (Zero & Span) |
| Nonlinearity | $\pm 0.02\%$ Span |
| Isolation (Common Mode) | |
| Input to Output, Input to power | 1500V rms max |
| Continuous | ANSI/IEEE C37.90.1 |
| Transient | |
| Output to power | 50V DC max |
| Continuous | |
| Rejection (50-60Hz Common Mode) | 120dB |
| Response Time (0 to 90%) | |
| DSCIA45-01,-02,-03 | 310ms, 175ms, 50ms |
| DSCIA45-04,-05,-06 | 30ms, 30ms, 15ms |
| DSCIA45-07, -08 | 15ms, 1.5ms |
| Field Excitation | +5.1V $\pm 5\%$ at 8mA max |
| Power Supply Typical Voltage | 24V DC (15 to 30VDC) |
| Power Supply Current | 60mA (V_{OUT}), 80mA (I_{OUT}) |
| Power Supply Sensitivity | $\pm 0.0002\%/%$ |
| power Supply Protection | |
| Reverse Polarity | Continuous |
| Transient | ANSI/IEEE C37.90.1 |
| Environmental | |
| Operating Temp. Range | -40 $^{\circ}\text{C}$ to +80 $^{\circ}\text{C}$ |
| Storage Temp. Range | -40 $^{\circ}\text{C}$ to +80 $^{\circ}\text{C}$ |
| 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 $\pm 0.05\%$ Span Error |
| ESD,EFT, Surge, Voltage Dips | Performance B |
| Mechanical Dimensions | 2.95" x 0.89" x 4.13" |
| (h) (w) (d) | (75mm x 22.5mm x 105mm) |
| Mounting | DIN EN 50022-35x7.5 or -35x15 rail |

NOTES:

(1) Includes non-linearity, hysteresis and repeatability.

Ordering Information

| Model | Input Range | Output Range |
|------------|-------------|--------------|
| DSCIA45-01 | 0 to 500Hz | 2,3,4,5,7 |
| DSCIA45-02 | 0 to 1KHz | 2,3,4,5,7 |
| DSCIA45-03 | 0 to 2.5KHz | 2,3,4,5,7 |
| DSCIA45-04 | 0 to 5KHz | 2,3,4,5,7 |
| DSCIA45-05 | 0 to 10KHz | 2,3,4,5,7 |
| DSCIA45-06 | 0 to 25KHz | 2,3,4,5,7 |
| DSCIA45-07 | 0 to 50KHz | 2,3,4,5,7 |
| DSCIA45-08 | 0 to 100KHz | 2,3,4,5,7 |

Output Ranges Available

| Output Range | Part No. Suffix | Example |
|---------------|-----------------|-------------|
| 2. 0V to +10V | NONE | DSCIA45-04 |
| 3. 4 to 20mA | C | DSCIA45-04C |
| 4. 0 to 20mA | E | DSCIA45-04E |
| 5. 0 to 5V | A | DSCIA45-04A |
| 7. 1 to 5V | F | DSCIA45-04F |

Dimensioned drawing

