

# DI-5B45 Frequency Input Modules

## FEATURES

- Accepts Frequency Inputs of 0 to 100kHz
- Provides High Level Voltage Outputs
- TTL Level Inputs
- 1500 Volt Transformer Isolation
- ANSI/IEEE C37.90.1-1989 Transient Protection
- Input Protected to 240VAC Continuous
- $\pm 0.05\%$  Accuracy
- CSA Certified
- Mix and Match DI-5B Types

## DESCRIPTION

Each DI-5B45 frequency input module provides a single channel of frequency input which is isolated and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers (see block diagram).

The frequency input signal can be a TTL level signal or a zero-crossing signal. Terminal 3 (+In) on the field side terminal block is the "common" or ground connection for input signals. A TTL signal is connected from terminal 2 (-In) to terminal 3 (+In), while a zero crossing signal is connected from terminal 4 (+EXC) to terminal 3 (+In). Input circuitry for each of the signal types has hysteresis built in. An input signal must cross entirely through the hysteresis region in order to trigger the threshold comparator.

A 5.1V excitation is available for use with magnetic pickup or contact-closure type sensors. The excitation is available on pin 1 (-EXC) and the excitation common is pin 3 (+In). The DI-5B modules are designed with a completely isolated computer side circuit which can be floated to  $\pm 50V$  from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A special circuit in the input stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.

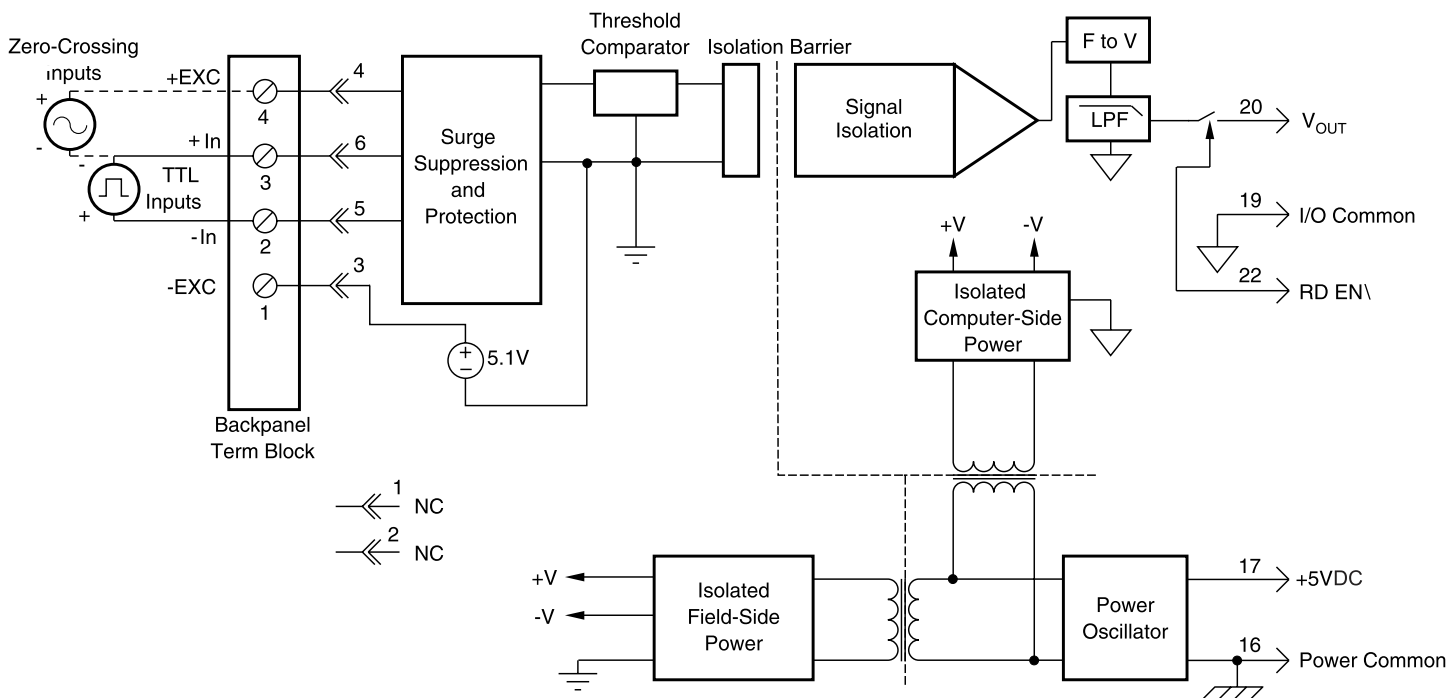
## SPECIFICATIONS

Typical at  $T_A = +25^\circ C$  and +5V Power

		<b>DI-5B45</b>
Input Range		0 to 100kHz
Input Threshold		Zero Crossing
	Minimum Input	60mVp-p
	Maximum Input	350Vp-p
	Minimum Pulse Width	4 $\mu$ s
	TTL Input Low	0.8V max
	TTL Input High	2.4V min
Input Hysteresis:	Zero Crossing	0.04V
	TTL	1.5V
Input Resistance:	Normal	100k $\Omega$
	Power Off	100k $\Omega$
	Overload	100k $\Omega$
Input Protection:	Continuous	240Vrms max
	Transient	ANSI/IEEE C37.90.1-1989
Excitation		+5.1V @ 8mA max
CMV, Input to Output:	Continuous	1500Vrms max
	Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)		120dB
Accuracy*		$\pm 0.05\%$ Span
Nonlinearity		$\pm 0.02\%$ Span
Stability:	Offset	$\pm 40$ ppm/ $^\circ C$
	Gain	$\pm 40$ ppm/ $^\circ C$
Noise	Output Ripple	<10mVp-p @ Input >2% span
Response Time:	DI-5B45-01, -02	300ms
	DI-5B45-03	170ms
	DI-5B45-04, -05	90ms
	DI-5B45-06, -07, -08	20ms
Output Range		0V to +5V
Output Resistance		50 $\Omega$
Output Protection		Continuous Short to Ground
Output Selection Time (to $\pm 1mV$ of $V_{OUT}$ )		6 $\mu$ s at $C_{load} = 0$ to 2000pF
Output Enable Control		
	Max Logic "0"	+0.8V
	Min Logic "1"	+2.4V
	Max Logic "1"	+36V
	Input Current, "0", "1"	0.5 $\mu$ A
Power Supply Voltage		+5VDC $\pm 5\%$
Power Supply Current		110mA
Power Supply Sensitivity		$\pm 150\mu V/\%RTO^{**}$
Mechanical Dimensions		2.28" $\times$ 2.26" $\times$ 0.60" (58mm $\times$ 57mm $\times$ 15mm)
Environmental		
	Operating Temperature	-40 $^\circ C$ to +85 $^\circ C$
	Storage Temperature	-40 $^\circ C$ to +85 $^\circ C$
	Relative Humidity	0 to 95% Noncondensing
	RFI Susceptibility	$\pm 0.5\%$ Span Error at 400MHz, 5W, 3ft
*Includes nonlinearity, hysteresis and repeatability. **RTO=Referenced to Output.		

# DI-5B45 Frequency Input Modules

## Block Diagram



## Ordering Information

Model Number	Input Range	Output Range	Excitation
DI-5B45-01	0 to 500Hz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-02	0 to 1kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-03	0 to 3kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-04	0 to 5kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-05	0 to 10kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-06	0 to 25kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-07	0 to 50kHz	0 to +5V	+5.1Vdc @ 8mA
DI-5B45-08	0 to 100kHz	0 to +5V	+5.1Vdc @ 8mA



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