8B45

Frequency Input Modules

DESCRIPTION

The 8B45 module family is an optimal solution for monitoring real-world process signals and providing high-level signals to a data acquisition system. Each 8B45 module isolates and conditions a frequency input signal and provides an analog voltage output (Figure below).

The frequency input signal can be either a TTL level or zero crossing with as little as ±100mV amplitude. Input circuitry for each signal type has built-in hysteresis to prevent spurious noise from corrupting the module output. TTL signals are applied to the + and – terminals while zero crossing signals are applied to the +EXC and – terminals. Reference the block diagram below.

A 5V excitation is available for use with magnetic pick-up or contact closure type sensors. The excitation is available on the –EXC terminal with return on the – terminal.

A special input circuit on the 8B45 module provides protection against accidental connection of power-line voltages up to 240VAC. Clamp circuits on the I/O and power terminals protect against harmful transients.

Isolation is provided by optical coupling to suppress transmission of common-mode spikes or surges. The module is powered from +5VDC, ±5%.

The modules are designed for installation in Class I, Division 2 hazardous locations and have a high level of immunity to environmental noise.

FEATURES

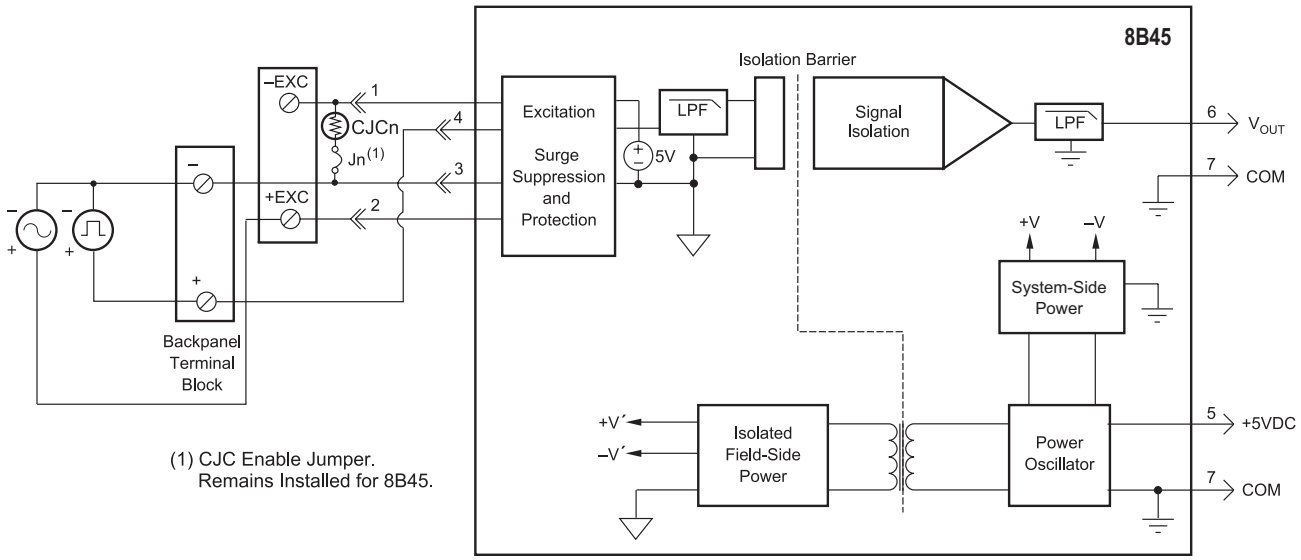
- Accepts Frequency Input Signals 0 to 100kHz
- TTL or Zero-crossing Signal Inputs
- High-level Voltage Outputs
- 1500Vrms Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Input Protection to 240VAC Continuous
- 100dB CMR
- ±0.05% Accuracy
- ±0.02% Linearity
- Low Drift with Ambient Temperature
- UL/cUL Listed
- CE Compliant
- ATEX Compliance Pending
- Manufactured per RoHS III Directive 2015/863
- Mix and Match Module Types on Backpanel

BENEFITS

- Protects User Equipment from Lightning and Industrial Equipment Power-line Voltage
- Reduces Electrical Noise in Measured Signals
- Convenient System Expansion and Repair

APPLICATIONS

- Designed for Embedded Applications
  - PC/104 Embedded Solutions
  - Compact PCI Systems
  - VMEbus Systems
  - PXI Systems
- Designed for Industrial Plant Environments
- High-vibration Environments



(1) CJC Enable Jumper. Remains Installed for 8B45.

8B45 Block Diagram - For Module Dimensions and Pinouts, See Page 3-40

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Specifications

Typical* at T_A = +25°C and +5VDC Power

Module	8B45
Input Range	0Hz to 100kHz
Input Threshold	Zero Crossing
Minimum Input	100mVp-p
Maximum Input	350Vp-p TTL, 170Vp-p Zero Crossing
Minimum Pulse Width	4µs
TTL Input Low	0.8V (max)
TTL Input High	2.4V (min)
Input Hysteresis	
Zero Crossing	±50mV
TTL	1.5V
Input Resistance	
Normal	68kΩ
Power Off	68kΩ
Overload	68kΩ
Input Protection	
Continuous(1)	240Vrms (max)
Transient	ANSI/IEEE C37.90.1
Excitation	+5V at 8mA (max)
CMV, Input to Output	
Continuous	1500Vrms (max)
Transient	ANSI/IEEE C37.90.1
CMR (50 or 60Hz)	100dB
Accuracy(2)	±0.05% Span
Linearity	±0.02% Span
Stability	
Offset	±25ppm/°C
Gain	±100ppm/°C
Noise	
Output Ripple	<10mVp-p at Input >2% Span
Response Time (0 to 90%)	
8B45-01, -02, -03	160ms, 80ms, 35ms
8B45-04, -05, -06	16ms, 8.5ms, 3.4ms
8B45-07, -08	1.6ms, 0.8ms
Output Range	0 to +5V
Output Protection	Continuous Short-to-Ground
Transient	ANSI/IEEE C37.90.1
Power Supply Voltage	+5VDC ±5%
Power Supply Current	45mA
Power Supply Sensitivity	±75ppm/%
Mechanical Dimensions (h)x(w)x(d)	1.11" x 1.65" x 0.40" (28.1mm x 41.9mm x 10.2mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. 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) 240VAC between +Input terminal and –Input, +EXC, or –EXC terminals.
120VAC between –Input and +EXC or –EXC terminals.
120VAC between +EXC and –EXC terminals.
(2) Includes linearity, hysteresis and repeatability.

Ordering Information

Model	Input Range	Output Range
8B45-01	0Hz to 500Hz	0V to +5V
8B45-02	0Hz to 1kHz	0V to +5V
8B45-03	0Hz to 2.5kHz	0V to +5V
8B45-04	0Hz to 5kHz	0V to +5V
8B45-05	0Hz to 10kHz	0V to +5V
8B45-06	0Hz to 25kHz	0V to +5V
8B45-07	0Hz to 50kHz	0V to +5V
8B45-08	0Hz to 100kHz	0V to +5V

Installation Notes

1) This Equipment is Suitable for Use in Class I, Division 2, Groups A, B,C, D, or Non-hazardous Locations Only.

2) WARNING - Explosion Hazard - Substitution of Any Components May ImpairSuitability for Class I, Division 2.

3) WARNING - Explosion Hazard - Do Not Disconnect Equipment Unless Power Has Been Switched Off or the Area is Known to be Non-hazardous.

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