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Programmable Output, Isolated Voltage-to-Current Converter

2B23

FEATURES

Wide Input Range, Resistor Programmable Pin Programmable Output: 4 to 20mA or 0 to 20mA High CMV Input/Output Isolation: $\pm 1500\text{V}$ pk Continuous Low Nonlinearity: $\pm 0.05\%$ max (2B23K) Low Span Drift: $\pm 0.005\%/\text{^\circ C}$ max (2B23K) Single Supply Operation: +14V to +28V Small Size: 1.8" x 2.4" x 0.6" Meets IEEE Std. 472: Transient Protection (SWC) Meets ISA Std. 50.1: Isolated Current Loop Transmitters

APPLICATIONS

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Industrial Instrumentation and Process Control
Ground Loop Elimination
Transient Voltage Protection
Analog Transmitters and Controllers
Remote Data Acquisition Systems

GENERAL DESCRIPTION

The model 2B23 is a high performance, low cost voltage to current converter featuring $\pm 1500\text{V}$ pk input to output isolation for interfacing with standard process signals. The input stage of the 2B23 may be single resistor programmed to accept voltages within a 0 to $+10\text{V}$ range ($+0.1\text{V}$ to $+10\text{V}$ full scale). The isolated output is pin programmable to provide current in the range of 4 to 20mA or 0 to 20mA and can be operated with 0 to 800Ω grounded or floating loads.

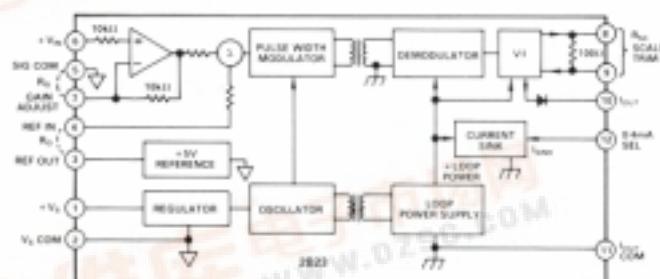
The 2B23 uses reliable transformer isolation techniques and is available in two accuracy selections offering guaranteed non-linearity error (2B23K: $\pm 0.05\%$ max, 2B23J: $\pm 0.1\%$ max) and guaranteed low span drift (2B23K: $\pm 0.005\%/\text{ }^\circ\text{C}$ max, 2B23J: $\pm 0.01\%/\text{ }^\circ\text{C}$ max). The internally trimmed span and offset errors are $\pm 0.1\%$ for the 2B23K and $\pm 0.25\%$ for the 2B23J. Both span and offset may be adjusted using optional external potentiometers.

Featuring wide range, single supply operation (+14V to + 28V dc), the 2B23 provides isolated loop power, thus eliminating the need for an external dc/dc converter.

APPLICATIONS

Model 2B23 has been designed to provide high accuracy, versatility and low cost in industrial and laboratory system applications requiring isolated current transmission. The 2B23 meets the requirements of the Instrument Society of America Std. 50.1 "Compatibility of Analog Signals for Electronic Industrial Process Instruments" and may serve as a transmission link between such system elements as computers, controllers, actuators, recorders and indicators.

FUNCTIONAL BLOCK DIAGRAM



In data acquisition and control systems, the 2B23 may act as an isolated interface between the D/A converter output of a microcomputer analog I/O and standard 4 to 20mA or 0 to 20mA analog loops. In process control systems, the 2B23 may be used as a current output stage of a proportional controller to interface devices such as current-to-position converters and current-to-pneumatic transducers.

DESIGN FEATURES AND USER BENEFITS

High CMV Isolation: The 2B23 features high input to output galvanic isolation to eliminate ground loops and offer protection against damage from transients and fault voltages. Its isolation barrier will withstand continuous CMV of $\pm 1500\text{V}$ pk and 1500V rms @ 60Hz for 60 seconds.

High Reliability: To assure high reliability in harsh industrial environments, reliable magnetic isolation is used. The 2B23 meets the IEEE Standard for Transient Voltage Protection (472-1974: Surge Withstand Capability) and offers reliable operation over -25°C to +85°C temperature range.

Versatility: The 2B23 can be easily tailored to the user's application, accommodating a wide range of input voltages, providing pin programmable, standard current outputs and offering wide range, single supply operation.

Small Size: To conserve board space, the 2B23 is packaged in a compact, 1.8' x 2.4' x 0.6" module.



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