FEATURES

- Jumper selectable voltage / current input
- On-board isolation transformer
- Simultaneous direct / reverse 0-10V outputs
- 4-20mA output will source a 750Ω impedance
- Direct/Reverse jumper for 4-20 mA output
- Factory calibrated (1 to 1 ratio)

APPLICATIONS

- Precision signal isolation for EMS systems
- VFD signal isolation
- Ground loop isolation
- General signal input / output isolation

DESCRIPTION

The SIA08 is a precision, optically coupled isolator board. It will isolate voltage and current signals from input to output as well as perform signal conversion. The SIA08 was specifically designed to interface existing stand-alone analog control systems to DDC and data acquisition panels. The SIA08 uses an on-board transformer with two independent secondaries to power the input and output sections. Current or voltage output signals can be adjusted to the proper range by adjusting the LEVEL and SPAN potentiometers on the SIA08.

OPERATION

The SIA08 employs a dual output isolation transformer that powers the on-board circuitry. The input circuitry is powered with one secondary of the transformer and the output is powered by the other. Both input and output sections use (LM317T) voltage regulators to provide an independent power supply for each section. The input signal is connected to terminals 4 & 5. Terminal 4 is signal common. The input section is then configured for one of four standard signal types (0 -10V DC, 0 - 5V DC, 0 - 1V DC, 4 - 20 mA) by one of four jumper selections. Input signals other than the four standard are considered to be custom. The input signal is buffered and scaled using an operational amplifier. This signal is isolated by a linear optical coupler and sent to the output amplifier section. There is no electrical connection between the input and output circuitry.

The output amplifier section rescaled and inverts the signal for reverse or direct operation. These signals are fed to voltage output terminals 8 and 9 respectfully. The voltage signal is also fed to the 4 to 20mA output section. The 4 to 20mA output signal is generated by a constant current source. The SIA08 will provide a reliable 4 to 20mA into loads from 0 to 750Ω. Separate LEVEL and SPAN potentiometers are provided for scaling capability. Jumpers 5 & 6 select direct or reverse action for the 4 to 20 mA output.

SPECIFICATIONS

- SIZE: 4.5" L x 3" W x 1.5" H
- MOUNTING: 3" RDI snap-track (supplied)
- POWER: 24V AC, ± 10%, 50/60Hz, 2VA
- INPUTS: Jumper selectable between:
  - 0 - 1 V DC 100ΚΩ IMP.
  - 0 - 5 V DC 5ΚΩ IMP.
  - 0 - 10V DC 10ΚΩ IMP.
  - 4 - 20mA 62ΚΩ IMP.
  Custom input available upon request
  Optical isolation on all signals with 2.5KV input/output isolation.
- OUTPUT: Jumper selectable between:
  - 4 - 20mA DC, 600Ω ± 15%Max.
  - 0 - 10V DC or 0-5V DC, 1KΩ min.
- LINEARITY: Better than 1% with linear input
- ADJUSTMENTS: LEVEL & SPAN ± 20%
- AMBIENT TEMP: 0 to 50°C

WIRING CONFIGURATION
ORDERING INFORMATION

SIA08/SEL/XXX

Voltage Output Option Code
Onboard Selectable Input

ONBOARD SELECTABLE INPUT SIGNALS

0 TO 10V DC - JUMPER # 1
0 TO 5V DC - JUMPER # 2
0 TO 1V DC - JUMPER # 3
4 TO 20mA - JUMPER # 4

VOLTAGE OUTPUT CODES

5V - 0 TO 5V, 5 TO 0V DC, & 4 TO 20mA
10V - 0 TO 10V, 10 TO 0V DC, & 4-20mA
VDC - Custom voltage output (Specify voltage)

* FOR CUSTOM INPUTS & OUTPUTS CALL FACTORY.

DIRECT / REVERSE JUMPER OPTION

DIRECT - JUMPER # 5  4 to 20mA
REVERSE - JUMPER # 6  20 to 4mA

FIELD SETUP & CALIBRATION

The following is step-by-step instructions for calibration of the SIA08. Calibration of the SIA08 can be set up using any one of the user selectable inputs. For wiring information, see wiring diagram on the first page of this cut sheet.


Step 2. It is recommended that two DMMs be used during calibration. One meter should be used to monitor the input signal. The other meter should be used to measure the output signal. If you are using 4 to 20mA as your input signal, the input meter should be connected in series with the SIA08.

Step 3. The voltage output must be calibrated before the current output. Begin with your signal input at minimum. Adjust the LEVEL pot (P3) for a 0V DC signal output on the direct voltage output.

Step 4. Set your signal input to maximum. Adjust SPAN (P2) for a 10V DC SIGNAL output.

Step 5. Repeat steps 3 and 4 until the 0 to 10V DC output needs no further adjustment.

Step 6. The current output can now be calibrated. set JP5 and JP6 to the direct position.

Step 7. Set the signal input to minimum. Adjust the 4 to 20mA LEVEL (P1) until the output reads 4mA

Step 8. Set the signal input to maximum. Adjust the 4 to 20mA SPAN until the output is 20mA.

Step 9. Repeat steps 7 and 8 until no further adjustments are needed.

Note: If R37 is installed rather than the 4 to 20mA SPAN potentiometer, then steps 8 and 9 may be omitted.

Call for other calibration ranges and versions.

If you have a different application or need, please call 1-800-261-3602 and discuss your needs with our Sales Engineers.
APPLICATION 1 - PRECISION SIGNAL ISOLATION FOR EMS SYSTEMS

The SIA08 was specifically designed to interface existing stand-alone analog control systems to EMS, DDC, and data acquisition panels where ISOLATION, LINEARITY & ACCURACY are required. The SIA08 uses an isolation transformer and a linear optical coupler to provide input to output signal and power supply isolation. The SIA08's input is on terminal 4 & 5, with JP1-4 jumper to select between: 0 to 10V DC, 0 to 5V DC, 0 to 1V DC, and 4 to 20mA. The SIA08 outputs are terminals 6, 7, 8, & 9 (com): 4 to 20mA, 0 to 10V DC, and 10 to 0V DC.

APPLICATION 2 - VFD SIGNAL ISOLATION

The SIA08 was designed to provide signal isolation for interfacing between DDC analog control systems to Variable Frequency Drives. The SIA08 uses an on-board isolation transformer and linear optical coupler to provide input to output signal and power supply. The SIA08's input is on terminal 4 & 5, with JP1-4 jumper to select between: 0 to 10V DC, 0 to 5V DC, 0 to 1V DC, and 4 to 20mA. The SIA08 4 to 20mA output is found between terminals 6 & 9 (com).

APPLICATION 3 - GENERAL SIGNAL ISOLATION

The SIA08 was designed to provide signal isolation for interfacing between VFDs, Chillers, Humidifiers, EMS systems, Valves, etc. to DDC analog control systems. The SIA08 uses an on-board isolation transformer to avoid ground loops due to half and full-wave power supply sections powered from a grounded 24V AC source and other ground loop potentials.

Call for other calibration ranges and versions.

If you have a different application or need, Please call 1-800-261-3602 and discuss your needs with our Sales Engineers.
APPLICATION 4 - CUSTOM INPUT SIGNAL CONVERSION

The SIA08 can be customized to accept custom (±15V DC) input signals and output a standard output signals. Other custom input and output configurations are available upon request.

APPLICATION 5 - SIGNAL CONVERSION TO CUSTOM OUTPUT SIGNAL

The SIA08 can be customized for a custom voltage or current output signals from a standard input signal. Other custom input and output configurations are available upon request.

APPLICATION 6 - SIGNAL ISOLATION AND CONVERSION TO STD OUTPUT SIGNAL

The SIA08 can be customized for a custom voltage or current input signals. The SIA08s input can be customized to have a high input impedance so that it will not cause any loading of the original circuit. The sensor signal is isolated from the output and scaled to the desired voltage or current range.

Call for other calibration ranges and versions.

If you have a different application or need, please call 1-801-261-3600 and discuss your needs with our Sales Engineers.

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