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 4-20mA output**
- **Factory calibrated (1 to 1 ratio)**

APPLICATIONS

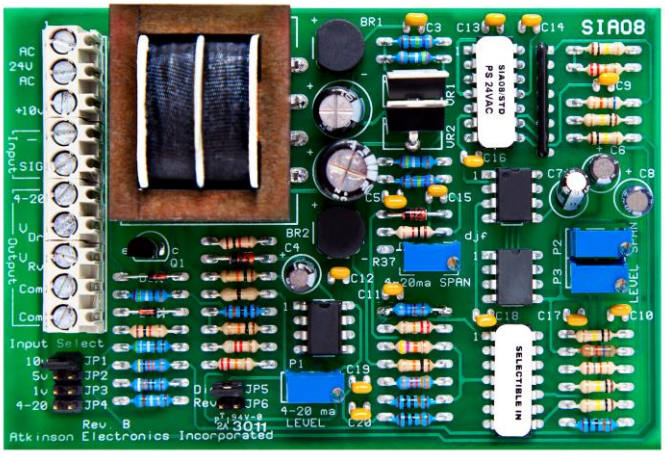
- **Precision signal isolation for EMS systems**
- **VFD signal isolation**
- **Ground loop isolation**
- **General signal input/ output isolation**

DESCRIPTION & OPERATION

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 secondary 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.

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 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 4 standard signal types (0-10VDC, 0-5VDC, 0-1VDC, 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.

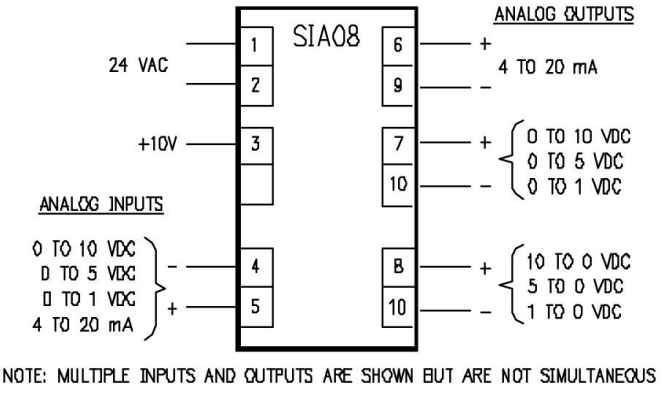
The output amplifier section rescaled and inverts the signal for reverse or direct operation. These signals are fed to voltage output terminals 8 and 9 respectfully. The voltage signal is also fed to the 4-20mA output section. The 4-20mA output signal is generated by a constant current source. The SIA08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



SPECIFICATIONS

SIZE:	4.5”L x 3”W x 1.5”H
MOUNTING:	3” RDI Snap Track (supplied)
POWER:	24VAC, ± 10%, 50/60Hz, 2VA
INPUTS:	Jumper selectable between: 0-1VDC 100KΩ IMP. 0-5VDC 5KΩ IMP. 0-10VDC 10KΩ IMP. 4-20mA 62KΩ IMP. Custom input available upon request Optical isolation on all signals with 2.5KV input/ output isolation
OUTPUT CAPACITY:	Jumper selectable between: 4-20mA DC, 600Ω ± 15% maximum
LINEARITY:	Better than 1% with linear input
ADJUSTMENTS:	LEVEL & SPAN ± 20%
AMBIENT TEMP:	0 to 50ºC

WIRING CONFIGURATION



NOTE: MULTIPLE INPUTS AND OUTPUTS ARE SHOWN BUT ARE NOT SIMULTANEOUS

ORDERING INFORMATION

SIA08/SEL/XXX

- XXX — Voltage Output Option Code
- SEL — Onboard Selectable Input

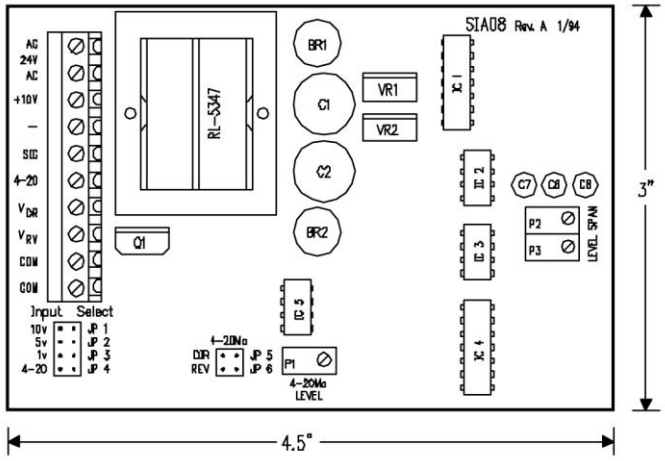
ONBOARD SELECTABLE INPUT SIGNALS

0-10VDC	Jumper #1
0-5VDC	Jumper #2
0-1VDC	Jumper #3
4-20mA	Jumper #4

VOLTAGE OUTPUT CODES

5V	1-5VDC inputs
10V	0-5VDC inputs
VDC	0-10VDC inputs

PHYSICAL CONFIGURATION



DIRECT/ REVERSE JUMPER OPTION

Direct	Jumper #5
Reverse	Jumper #5

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 1: Set JP1-JP4 to the desired input signal.

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 4-20mA 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 0VDC signal output on the direct voltage output.

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

Step 5: Repeat steps 3 and 4 until the 0-10VDC 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 4-20mA LEVEL (P1) until the output reads 4mA

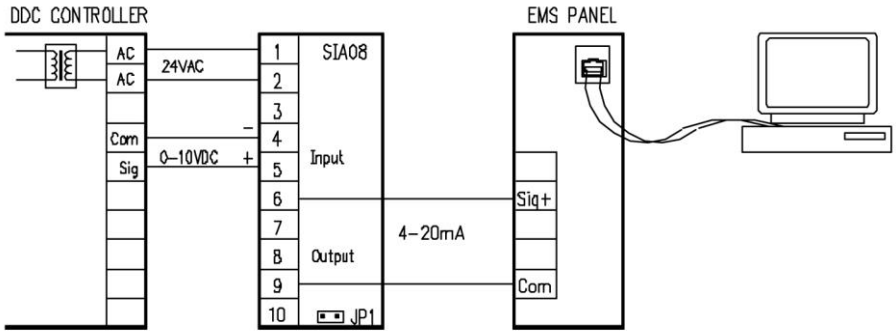
Step 8: Set the signal input to maximum. Adjust the 4-20mA SPAN until the output is 20mA.

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

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

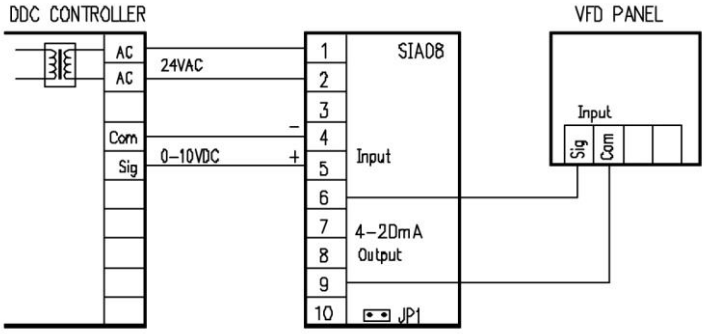
PRECISION SIGNAL ISOLATOR/ CONVERTER
SIA08A

APPLICATION 1
PRECISION SIGNAL ISOLATION FOR EMS SYSTEMS



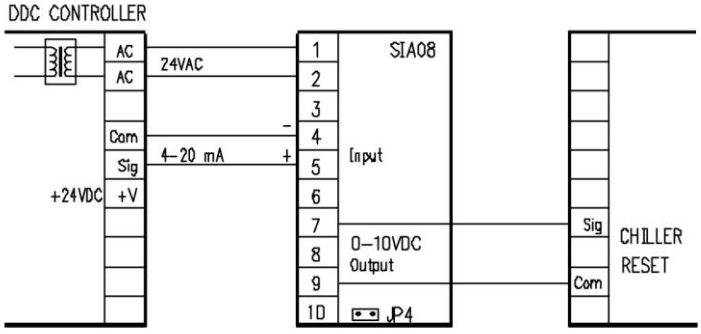
The SIA08 was specifically designed to interface existing stand-alone analog control systems to EMS, DDC, and data acquisition panels where ISOLATION, LINEARITY & ACCURACY are required. The SIA08 uses an isolation transformer and a linear optical coupler to provide input to output signal and power supply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

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: 0-10VDC, 0-5VDC, 0-1VDC, and 4-20mA. The SIA08 4-20mA output is found between terminals 6 and 9 (com).

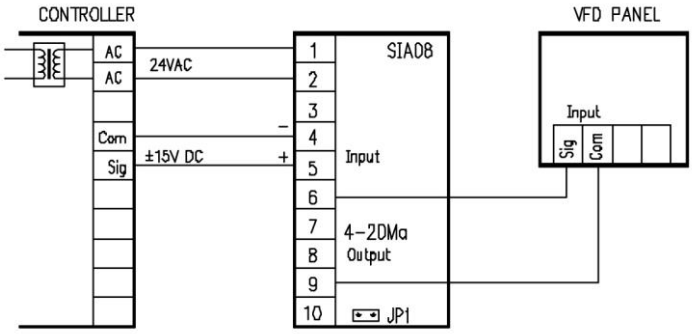
APPLICATION 3
GENERAL SIGNAL ISOLATION



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 24VAC source and other ground loop potentials.

APPLICATION 4

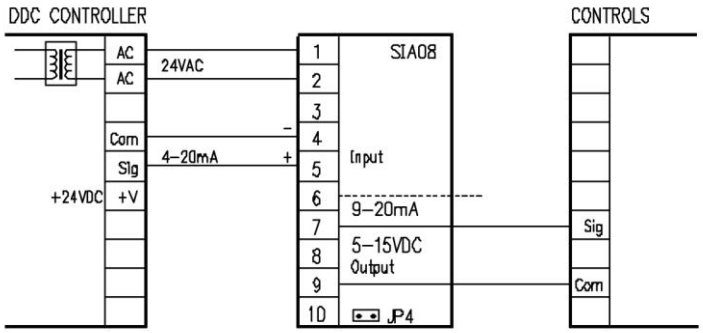
CUSTOM INPUT SIGNAL CONVERSION



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

APPLICATION 5

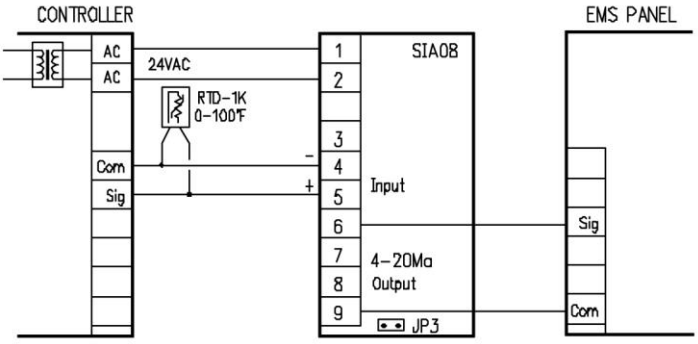
SIGNAL CONVERSION TO CUSTOM OUTPUT SIGNAL



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.