FEATURES

- **Second power supply for sensors, etc.**
- **6 simultaneous signal inputs**
- **EMI noise filtering on outputs**
- **ZERO and SPAN adjustments**
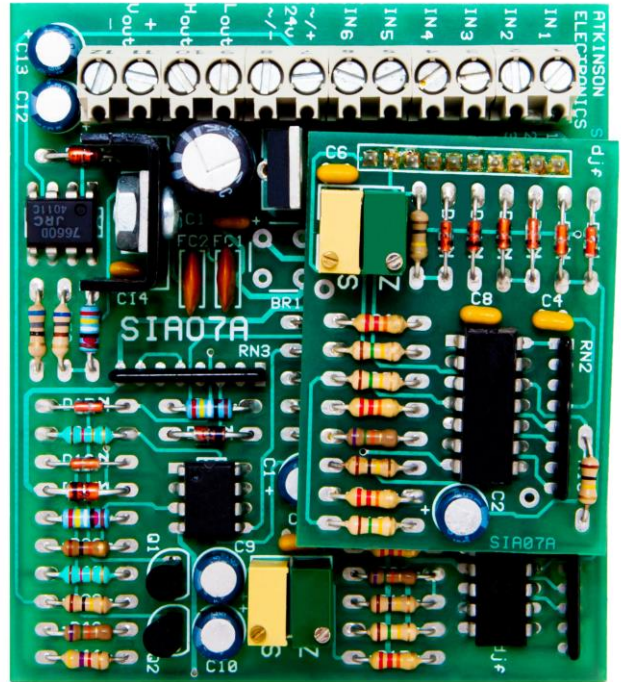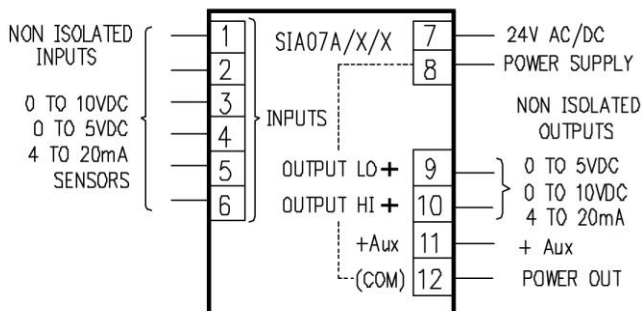
APPLICATIONS

- **High/ Low signal selection**
- **Signal summing**
- **Sensor averaging**
- **Custom signal scaling**

DESCRIPTION & OPERATION

The SIA07A is a multiple input, special function interface module. It is designed to perform high or low signal selection, averaging, summing, or signal scaling. The SIA07A can be configured to accept up to six like analog signals. It will provide a standard or custom voltage signal or 4-20mA signal output. It has an AUX 24VDC @ 150mA power supply option for powering six current loops.

The SIA07A is configured to be powered by either 24VAC (full-wave bridge rectifier) or 24VAC/DC (half-wave rectifier) on terminals 7& 8. The 24VAC is rectified, filtered, and fed to two regulators one for internal use and the other for external use. The input signal connections are made on terminals 1 through 6 with terminal 12 representing the input common. These signals pass through diodes or resistors which perform either high or low select, averaging, or summing of up to 6 like signals, the result is fed into the amplifier section where it is scaled to the desired output. ZERO and SPAN potentiometers provide field calibration of the output signal.
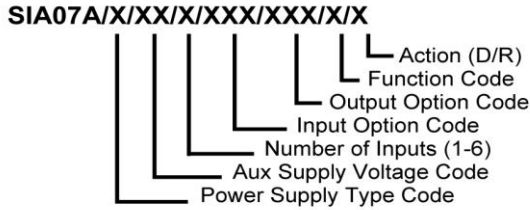
WIRING CONFIGURATION

SPECIFICATIONS

SIZE:	3.4"L x 3"W x 1.5"H
MOUNTING:	3" RDI Snap Track (supplied)
POWER:	24VAC, ± 10%, 50/60Hz, 2VA 24VDC, ± 15% @ 85mA
AUX VOLTAGE REF:	+5-24VDC @ 150mA
INPUT SIGNALS:	Sensor signals, 0-135 ohm 0-1V through 0-10VDC, 4-20mA 6 non-isolated inputs
INPUT IMPEDANCE:	>100KΩ for voltage inputs 250Ω for 4 to 20mA inputs
FUNCTION:	High select, low select, high & low select Custom: Any other voltages Minimum output load 1KΩ
OUTPUT SIGNALS:	0-5VDC or 0-10VDC Custom DC voltages 4-20mA output
ACTION:	Direct/ reverse factory set
ADJUSTMENT:	ZERO & SPAN ± 20%
AMBIENT TEMP:	0 to 50°C

ORDERING INFORMATION

SIA07A/X/XX/X/XXX/XXX/X/X

- Action (D/R)
- Function Code
- Output Option Code
- Input Option Code
- Number of Inputs (1-6)
- Aux Supply Voltage Code
- Power Supply Type Code

PHYSICAL CONFIGURATION

POWER SUPPLY TYPE CODE OPTIONS

F	Full-wave bridge rectifier, Terminal 12 floating in reference to 24VAC
H	Half-wave rectifier, Terminal 12 floating in reference to 24VAC

INPUT CODE OPTIONS

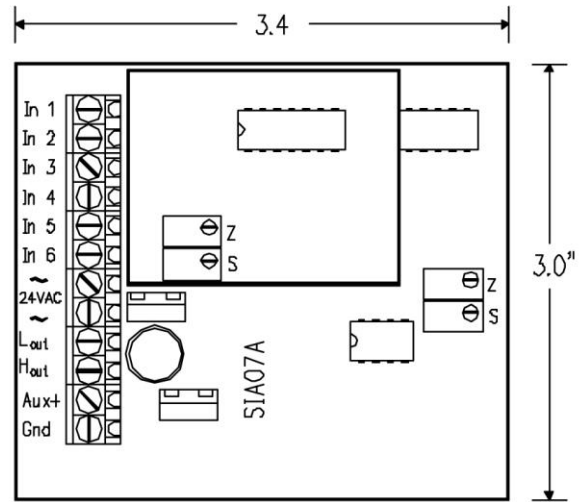|	
0-135	0 to 135 ohm input
5V	0 to 5VDC inputs
10V	0 to 10VDC inputs
mA	4 to 20mA with 249Ω load
VDC	Custom voltage input

OUTPUT CODE OPTIONS

5V	0 to 5VDC, 2KΩ minutes
10V	0 to 10VDC, 2KΩ minutes
VDC	Custom voltage output, specify voltage
mA	4 to 20mA with 600Ω maximum

FUNCTION CODE OPERATION

H	High select of 2 to 6 input signals
L	Low select of 2 to 6 input signals
HL	High & low elect of 2 to 6 input signals
A	Average of 2 to 6 input signals
S	Summing of 2 to 6 input signals
C	Custom signal scaling to 1 input

OPERATION ACTION CODE OPTIONS

R	Reverse action Leave blank for direct action operation

ORDERING CODE EXAMPLES

SIA07A/F//4/10V/10V/S	SIA07A with full-wave bridge rectifier, no auxiliary supply, 4) 0 to 10VDC input signals, summing with a direct acting 0 to 10VDC output signal
SIA07A/F//6/MA/mA/H	SIAO7A with full-wave bridge rectifier, no auxiliary supply, 6) 4 to 20mA input signals, high select with a direct acting 4 to 20mA output signal
SIA07A/H//1/135ohm/mA/C	SIA07A with half wave rectifier, no auxiliary power supply, 1) 0 to 135ohm input signal, direct acting 4-20mA output signals
SIA07A/H/5V/3/RTD-1K/5V/A	SIA07A with half-wave rectifier, 5V auxiliary supply, 3) stand-a-lone 1000V RTD sensor inputs with pull-ups, average with a direct acting 0 to 5VDC output signal
SIA07A/H//2/SCS-T30/5V/A/R	SIA07A with half-wave rectifier, no auxiliary supply, 2) STAEFA T-30 sensors voltages, average with a reverse acting 0 to 5VDC output signal
SIA07A/F//5/CVI/CVO/H	SIA07A with full-wave bridge rectifier, no auxiliary supply, 5) custom voltage input signals, high select with a direct acting custom DC voltage output signal

APPLICATION 1
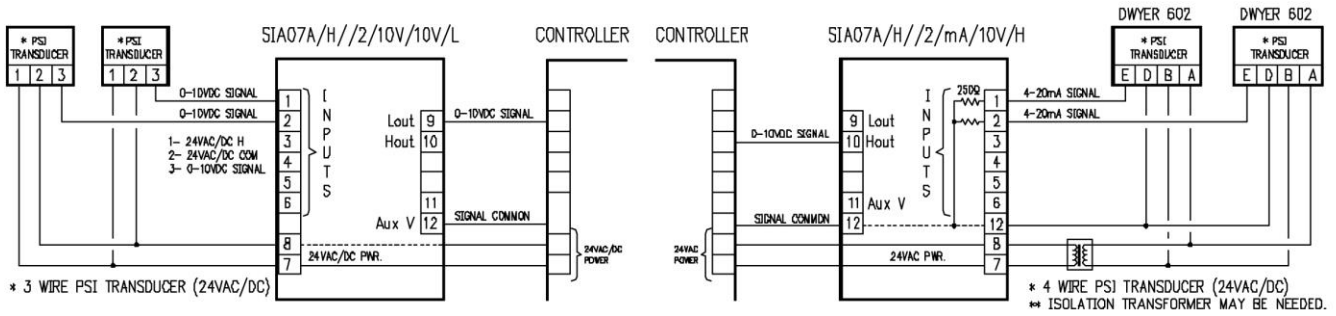## LOWEST AND/ OR HIGHEST INPUT SELECTION

The SIA07A///2/10V/10V/L or SIA07A///2/mA/10V/H selects the lowest or highest of two duct pressure signals. The SIA07A///2/10V/10V/HL can select both the highest and lowest signal and output both. The output signal is scaled for a 0 to 10VDC output over the pressure range for input into the DDC controller. See SIA07A for input, output, and function selection, ALL choices are factory configured.

**APPLICATION 2**
TEMPERATURE SENSOR AVERAGING
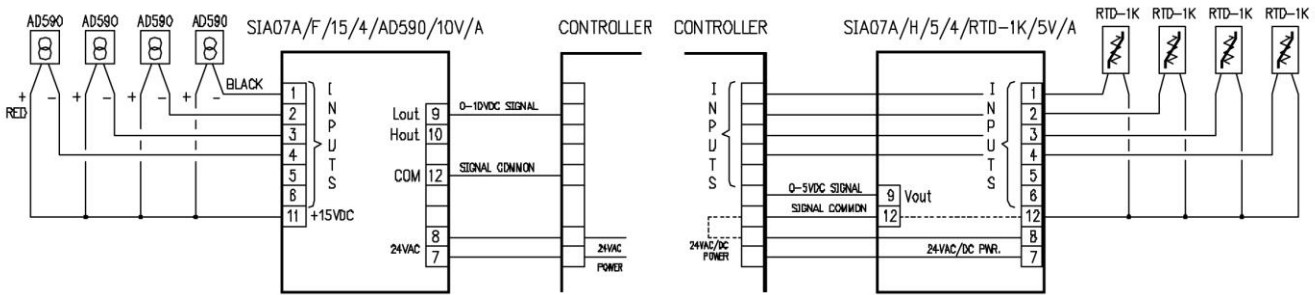
The SIA07A//4/AD590/10V/A averages the temperature signals from four stand-alone AD590 sensors and provides the average as a 0 to 10VDC signal to input into the zone controller. This application is often used where large work spaces require multiple temperature sensors for zone control. The SIA07A/H//4/RTD-1K/5V/A averages the temperature signals from four existing RTD-1K sensors and provides the average as an 0 to 5VDC signal to the zone controller. The output can be scaled to match the voltage per temperature range of the controllers input.

APPLICATION 3
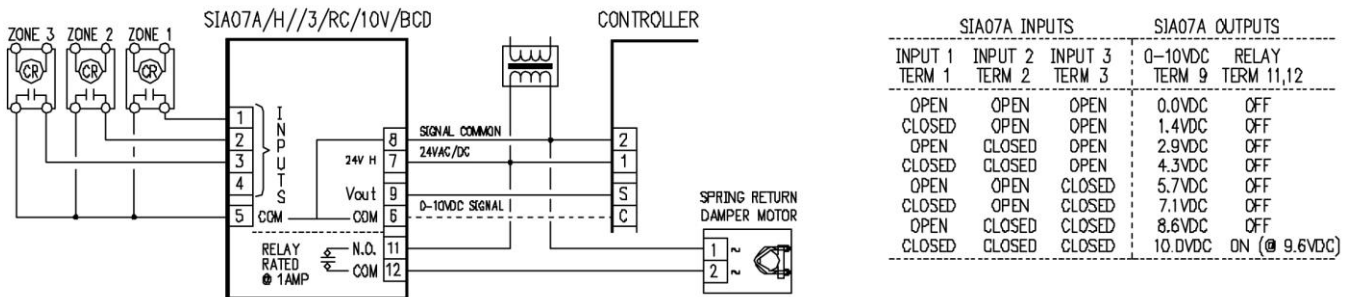## SUMMING OR AVERAGING AIR FLOWS USING STAEFA'S VELOCITY SENSOR
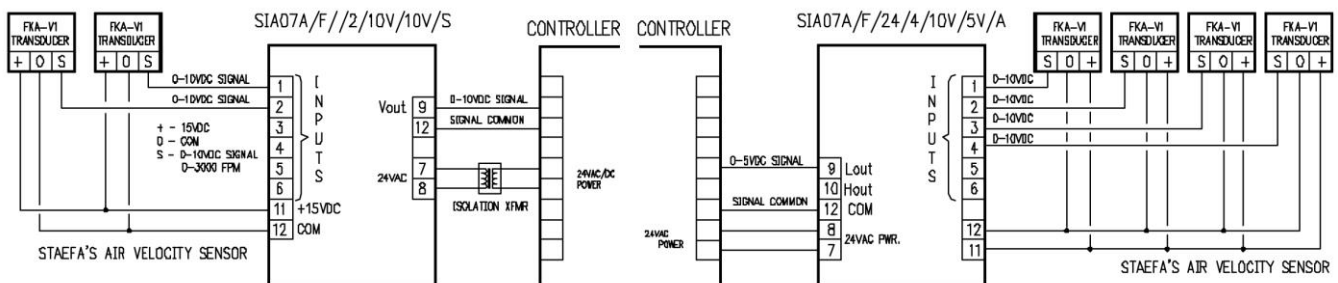
The SIA07A/F//2/10V/10V/S sums the flow signals from two STAEFA FKA-V1 velocity sensors and provides a 0 to 10VDC signal to the DDC controller. The SIA07A can power only four FKA-V1 sensors (max load on 15VDC supply 250mA). The SIA07A/F//4/10V/10V/A averages the flows from four velocity sensors and provides an average signal to the DDC controller. See FKA-V1 product sheet for specifications.

APPLICATION 4
## SUMMING DRY CONTACTS FOR ZONE REHEAT VALVE CONTROL
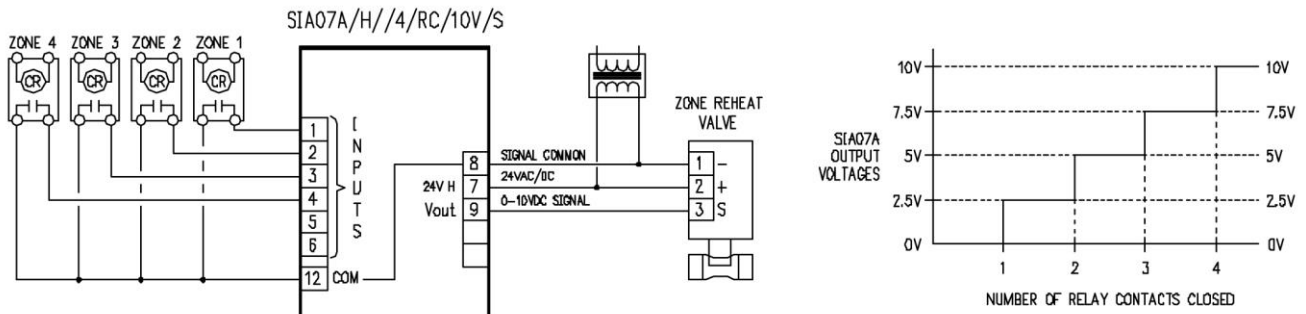
The SIA07A/H//4/RC/10V/S sums four relay dry contacts and provides a stepped 0-10VDC output based on the number of contacts. This is accomplished through resistor network on the SIA07A board. The output signal is stepped in 1/4 increments of the 0 to 10VDC output.

APPLICATION 5
THREE DRY CONTACTS INPUT TO ANALOG & DIGITAL OUTPUT

SIA07A INPUTS			SIA07A OUTPUTS	
INPUT 1 TERM 1	INPUT 2 TERM 2	INPUT 3 TERM 3	0-10VDC TERM 9	RELAY TERM 11,12
OPEN	OPEN	OPEN	0.0VDC	OFF
CLOSED	OPEN	OPEN	1.4VDC	OFF
OPEN	CLOSED	OPEN	2.9VDC	OFF
CLOSED	CLOSED	OPEN	4.3VDC	OFF
OPEN	OPEN	CLOSED	5.7VDC	OFF
CLOSED	OPEN	CLOSED	7.1VDC	OFF
OPEN	CLOSED	CLOSED	8.6VDC	OFF
CLOSED	CLOSED	CLOSED	10.0VDC	ON (@ 9.6VDC)

The SIA07A/H//3/RC/10V/BCD looks at the three relay dry contact inputs and provides a stepped 0-10VDC output based on which relay contacts are closed. LEDs indicate which are closed. The stepped analog 0-10VDC output is accomplished through resistor network on the SIA07A board. When all three relay contacts are closed the SIA07A's dry contact closes to provide power to a 2 wire damper motor or other low current device.

**APPLICATION 6**
CUSTOM SUMMING OF WATER FLOWS
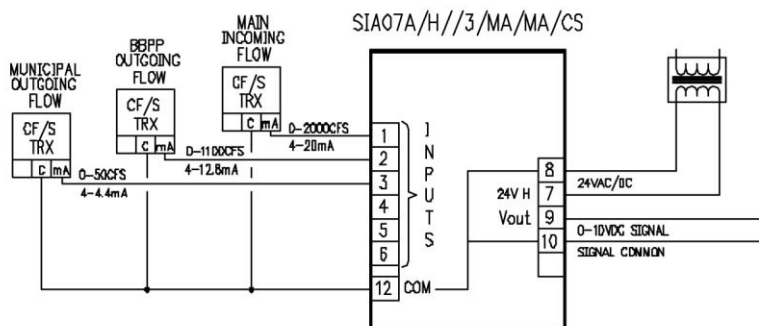
The SIA07A/H//3/MA/MA/C accepts a 0-135 ohm two wire resistance signal to 1 and 3) 4-20mA flow signals, main flow connects to terminal 1, the two outgoing flows connects to terminals 2 & 3. The SIA07A sums the two outgoing flow signals and then subtracts them from the main incoming flow signal resulting in a 4-20mA signal that represents the remaining outgoing flow rate. The 3 flow rates must all be scaled to the same max flow rate - 0-2000 CFS/4-20mA signal. Signal common for the 3 input signals is terminal 12, signal common for the outgoing 4-20mA signal is terminal 10. The SIA07A can be powered by either 24VAC or DC, input and out commons are connected to power supply input common, terminal 8.
APPLICATION 6

APPLICATION 7
CUSTOM 0-135OHM TWO WIRE SIGNAL CONVERSION TO 4-20MA
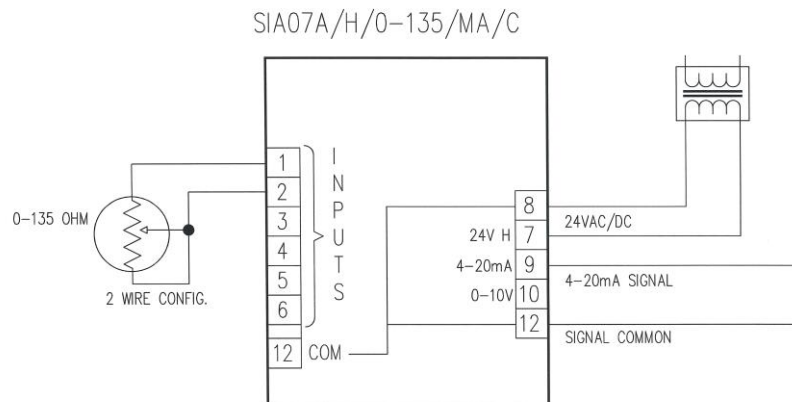
The SIA07A/H//1/135ohm/mA/CS accepts 3) 4-20mA flow signals, main flow connects to terminals 1and 3. The SIA07A is powered by 24VAC on terminals 7 & 8. You have a choice when ordering to have the power supply section configure for a half wave (one leg is signal common or a full wave rectifier (board common is floating referenced to either AC leg) recommend a half wave rectifier to be compliant with 99% of today's controllers. The SIA07A amplifies the voltage produced across the 135 ohm pot, then scales it to drive the 0-10vdc and 4-20ma output sections. The 0-10vdc output terminal #9, and the 4-20ma output terminal # 10 with terminal 12 and 8 being common.