FEATURES

- Four simultaneous signal inputs
- Operates on Klimo’s bridge voltage
- ZERO and SPAN adjustments

APPLICATIONS

- Signal conversions
- Signal summing
- Signal averaging
- Custom signal scaling

DESCRIPTION

The SIA02K is powered by +6V DC from the Klimo controller bridge circuit and serves to convert standard input DC signals to the Klimo input voltages of 3.75 to 2.25 volts DC. It has separate ZERO and SPAN potentiometers with only minimum interaction allowing the ZERO to be field adjusted for the final signal calibration.

The SIA02K circuit board has spaces for multiple input resistors, diodes or capacitors for up to four inputs. It is tailored to the specific application by the proper resistor value being inserted in these locations. At the time of shipment the SIA02K is a dedicated amplifier performing the signal conversion per the ordering specifications. It is not practical to be converted in the field to perform signal scaling of another range.

OPERATION

The LM324 amplifier chip has multiple stages with either the inverted or direct amplified signal output connected to the output terminal block. Signal inversion is necessary to convert standard positive coefficient input signals such as 4-20mA to a negative coefficient of 3.75 to 2.25 volts. The standard inputs of 4-20mA, 0-10V DC or 0-1V DC are converted on the board to an equivalent of a 0-1V range which is then amplified to the required output levels. The output amplifier of the SIA02K has spaces for blocking diodes on the inputs thus permitting it to be used for highest or lowest signal selection for up to 4 input signals. When fabricated for the signal selection feature the amplifier acts as a unitary amplifier with the output having the same slope as the input signal.

SPECIFICATIONS

SIZE: 2.5" L x 3.0" W x 1.0" H
MOUNTING: 3" RDI snap-track, horizontal
POWER: +6V DC @ 20mA DC
INPUTS SIGNALS: 4 - 20mA DC
0 - 10V DC, 0 - 1V DC
3.75 - 2.25V DC
0 - 20 V phase cut
mV from RTD’s, AD590K
or other Temperature sensors
0 - 135Ω, 0 - 1000Ω pot
INPUT IMPEDANCE: 250Ω - 4 - 20mA
10 KΩ - 0 - 10V DC
100 KΩ - for other inputs
OUTPUT: 3.75 - 2.25 V DC
0 - 1 V DC
mV range for digital indicators, CUSTOM output
CAPACITY: Up to 5 Klimo controllers with or without pin pad resistors
ACTION: Up to 4 inputs summing, averaging, hi or lo selection. Direct or inverting amplification, variable scaling ratio.
FILTERING: Attenuates over 2 Hz
ADJUSTMENTS: ZERO & SPAN ± 20%
AMBIENT TEMP: 0 - 50°C
UNIVERSAL DC SIGNAL INTERFACE MODULE (KLIMO) SIA02K

**ORDERING INFORMATION**

SIA02K/XXX/XXX/X

- Function Option Code
- Output Option Code
- Input Option Code

**INPUT CODE OPTIONS**

- **PC** - 2 - 20V phase cut
- **MA** - 4 - 20mA non-isolated
- **VDC** - Analog DC voltage (specify)
- **OHMS** - 3 wire 0 - 135Ω or larger pots.
- **AD590** - Linear temperature sensor (specify temperature range)
- **RTD-1K** - RTD 100/1000Ω temperature sensor (specify temperature range)

**OUTPUT CODE OPTIONS**

- **KL-VDC** - KL - 3.75 to 2.25V DC
- **SM2-VDC** - SM2 - 3.12 to 1.87V DC

**FUNCTION CODE OPERATION**

- **D** - Direct Operating
- **R** - Reverse 3.75 to 2.25, 2.25 to 3.75
- **H** - High Select of two, three, four inputs
- **L** - Low Select of two, three, four inputs
- **A** - Average two, three, four inputs
- **S** - Summing of two, three, four inputs
- **SC** - Scaling input signal

**TYPICAL APPLICATION**

**ORDERING CODE EXAMPLES**

- SIA02K/MA/KL-VDC - 4 to 20mA non-isolated input 3.75 to 2.25V DC
- SIA02K/135V/KL-VDC - 0 to 135Ω 3-wire potentiometer, 3.75 to 2.25V DC output
- SIA02K/KL-VDC/KL-VDC/2H - Two, 3.75 to 2.25V DC input signals, high select, 3.75 to 2.25V DC output
- SIA02K/AD590 0-100°/KL-VDC - AD590 temperature sensor INPUT 0 - 100°F, 3.75 to 2.25V DC output
- SIA02K/T-30/SM2-VDC/4A - Four T-30 sensors averaged, 3.12 to 1.87V DC output to SM2 controller

Note: Multiple inputs and outputs are shown but are not simultaneous.

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.

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APPLICATION 1 - DC VOLTAGE INPUT

The SIA02K is configured to receive a 4-20mA signal, invert it, and scale it to 3.75 to 2.25 volts for the Klimo input. The SIA02K is powered from the Klimo’s 6V DC supply and the DWYER 4-20mA transmitter should be powered from a separate transformer.

APPLICATION 2 - DC VOLTAGE INPUT

The SIA02K is configured for a specific voltage input signal such as a 0 to 10V DC signal. The SIA02K inverts and scales the input signal to a Klimo voltage signal of 3.75 to 2.25V DC. The SIA02K is powered from the Klimo’s 6V DC supply.

APPLICATION 3 - SPECIAL TEMPERATURE RANGE

The SIA02K input can be configured for various sensors. This allows the Klimo controller to use different sensors, and temperature ranges for its control, other than the standard Staefa Thermistor sensors. The SIA02K and AD590 sensor are powered from the Klimo’s 6V DC supply, and in the case of RTD sensors the SIA02K provides the pull-up resistor referenced to the 6V DC supply.

Call for other calibration ranges and versions.

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APPLICATION 4 - RESET FROM 0 TO 20V DC PANEL CUT

The SIA02K is configured to accept an 0 to 20 volt phase cut input signal, and to convert it to 3.75 to 2.25 volts to drive a Klimo input. An example would be a WSA1 output being used to reset a hot deck controller.

APPLICATION 5 - SIGNAL AVERAGING/SUMMING

The SIA02K can be configured to accept multiple input signals and sum or average the input signals and provide an output signal to a Klimo controller. In this application two humidity or temperature inputs are averaged and the SIA02K output is 3.75 to 2.25 volts corresponding to the average of the inputs. When multiple sensors are used that draw more than 1VA each, an addition 6 V DC power supply is needed to power the sensors.

APPLICATION 6 - HI OR LO SELECTION

The SIA02K can be configured to accept multiple input signals and select the highest or lowest input signal and provide an output signal to a Klimo controller. Within the SIA02K a diode network selects the highest or lowest input signal and then op-amp stages scale the signal to the desired output signal. An example would be select the highest humidity level for humidity control.

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.