SIEMENS

SEZ220

Signal Converter

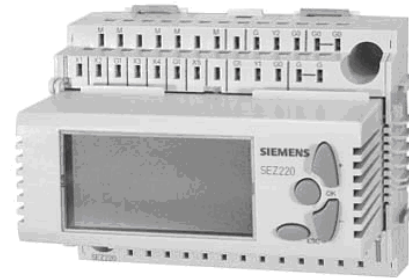|	
Description	The SEZ220 is a 24 Vac powered signal converter that can receive up to five universal inputs and convert them into one or two modulating outputs of various types.
Features	• Pre-programmed standard applications • Menu-driven operation • Configurable
Application	The signal converter is used in HVAC applications to: • provide minimum/maximum selection or averaging of up to five passive or active input signals. • calculate enthalpy, enthalpy differentials, absolute humidity or dew points from passive temperature and active humidity signals. • convert one passive input signal into two active signals. • double signals for the sequential control of pumps, valves and fans.
Product Number	SEZ220
Accessories	ARG62.201 Mounting frame for flush panel mounting (includes one small frame, one large frame, two hexagonal spacers, four mounting screws and Installation Instructions).
Functions **Universal Inputs**	Universal inputs for five passive or active analog input signals of various measured values (°C, °F, %, ---).

Function Modes	• Minimum/maximum/average (MIN-MAX-AVR)
	
	  – Selection of maximum input signal from inputs IN 1 to IN 5
	
	  – Selection of minimum input signal from inputs IN 1 to IN 5
	
	  – Calculation of average value of inputs IN 1 to IN 5
	
	  – For calculating the average value, input IN1 can be weighted. This means that, for making the calculation, the number of input signals can be increased several times over.

**Function Modes,
Continued**

If, in addition, configuration parameter SPLIT is activated, the functions will be assigned to the inputs X1 to X2 and X3 to X5. This means, for example:

- Selection of maximum input signal from inputs IN 1 to IN 2
- Selection of maximum input signal from inputs IN 3 to IN 5
- Selection of minimum input signal from inputs IN 1 to IN 2
- Selection of minimum input signal from inputs IN 3 to IN 5
- Calculation of average value of inputs IN 1 to IN 2
- Calculation of average value of inputs IN 3 to IN 5

- Enthalpy processor (ENTHALPY)
  - Calculation of enthalpy from one passive temperature signal and one active humidity signal.
  - Calculation of absolute humidity from one passive temperature signal and one active humidity signal.
  - Calculation of enthalpy differential from two signal groups each delivering one passive temperature signal and one active humidity signal.
  - Calculation of dew point temperature from one passive temperature signal and one active humidity signal.

- Signal doubling/signal inversion (2X-INV)
  - Signal doubling for the sequential control of pumps, valves and fans.
  - Signal conversion from one passive temperature signal into two active temperature signals.

Functions can be combined as required by the application.

Ordering

Accessories must be ordered separately.

**Product
Documentation**

Document Type	**Document Number**
Basic Documentation	CE1P5146en
Installation and Operating Instructions (included with unit)	74 319 0425 0

Technical Design

The signal converter is pre-programmed with 13 applications. When commissioning an application, the relevant basic type must be entered. All associated functions, terminal assignments, settings and displays will then automatically be activated, and any parameters that are not required will be deactivated. In addition, one empty application (basic type M) is loaded.
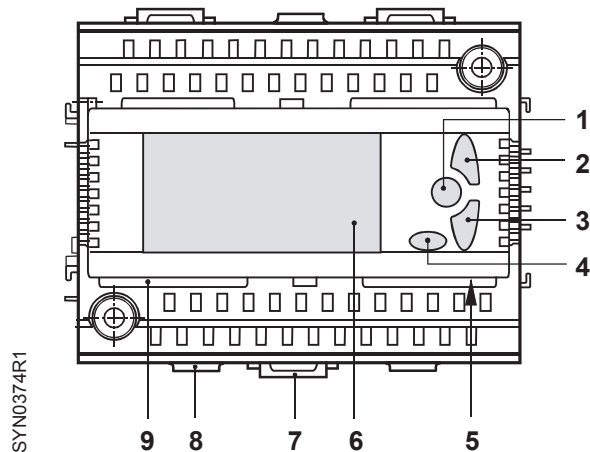
The signal converter offers the following choices:

- Activation of a pre-programmed application (see *Pre-programmed Standard Application*).
- Modification of a pre-programmed application.
- Free configuration of applications.

For operating actions of the functions, see the *Basic Documentation*.

Mechanical Design

Operating, Display and Connecting Elements

1   OK button for confirming the selected menu line or the value entered
2   Navigation button, upward (+) for selecting the menu line or changing the value
3   Navigation button, downward (–) for selecting the menu line or changing the value
4   ESC button for returning to the previous menu or rejecting the value entered
5   Connection port for the service tool (RJ45 connector)
6   Display
7   Catch for fitting the signal converter to a DIN rail
8   Loop for a cable tie (cable strain relief)
9   Rest for the terminal cover

Figure 1.

Engineering Notes

- The signal converter operates on 24 Vac. Operating voltage must conform to the requirements of NEC Class II.

- The transformers used must be 100% duty rated.

- Observe all local safety regulations.

- Sensor wires should not be run parallel to wires that power fans, actuators, pumps, etc.

- It is recommended to use the standard applications provided (see *Pre-programmed Standard Applications*). Specific application requirements may require adjustments.

Mounting and Installation Notes	• The signal converter is designed for:
	– Mounting in a standard cabinet via DIN rail or directly screwed onto a mounting surface.
	– Wall mounting on an existing top hat rail, or directly with two mounting screws.
	– Flush panel mounting with an ARG62.201 mounting frame
	• Do not mount in wet or damp spaces. Observe all permissible environmental conditions.
	• Disconnect the system from power supply prior to mounting the signal converter.
	NOTE: Do not remove the insert from the terminal base.
	• Each terminal (spring cage terminal) can accommodate only one solid wire or one stranded wire. For making the connections, the cables must be stripped for 0.27 to 0.31 inch (7 to 8 mm). To introduce the cables into the spring cage terminals and to remove them, use a flat-blade screwdriver size 1. Cable ties can be used for cable strain relief.
	• Installation and Operating Instructions are included with the unit.

Commissioning Notes	• The configuration and parameters of the standard applications offered by the converter can be changed by qualified personnel who have the required access rights.
	• During the commissioning process, the application is deactivated and the outputs are in a defined off state.
	• When commissioning is complete, the signal converter automatically restarts.
	• During the commissioning process, the peripheral devices connected to the universal inputs can be automatically tested and identified. If a peripheral device is missing, a fault status message will be delivered.
	• If adaptations to specific applications are required, they must be recorded and the documentation kept inside the control panel.
	• For the procedure to be followed when starting up the application for the first time, see the *Installation Instructions.*

Disposal Notes	This device includes electrical and electronic components and must not be disposed of as domestic waste. Current local legislation must be observed.

Specifications Power Supply	Voltage	24 Vac $\pm$ 20%, Class 2
	Frequency	50/60Hz
	Power consumption	5 VA

Universal Inputs Measured value inputs (X1 to X5)	Number	5
	Signal sources	
	Passive	Ni 1000, T1, Pt 1000, 0 to 1000 ohm 2 × Ni 1000 (averaging)
	Active	0 to 10 Vdc

Outputs Positioning outputs (Y1, Y2)	Number	2
	Output voltage	0 to 10 Vdc
	Output current	$\pm$ 1 mA
	Maximum load	Continuous short-circuit

Power supply external devices (G1)	Voltage	24 Vac
	Current	4A, maximum
Interfaces	Service tool connection port	RJ45 connector
Maximum cable lengths	For passive measuring and positioning signals Type of signal:	(measuring errors can be corrected)
	Ni 1000, T1, Pt 1000, 0 to 1000 Ω	985 feet (300 m)
	For 0 to 10V measuring and control signals	See the *Technical Instructions* of the signal delivering device
Electrical connections	Connection terminals	Spring cage terminals for 22 to 14 gauge wire
Agency approvals	UL	UL 916 (PAZX)
	cUL	Canadian Standard C22.2, No. 24-93
	Safety Class II	Device suited for use with safety Class II equipment

Environmental conditions	Operation climatic conditions
	    Temperature (housing and electronics)
	    Humidity
		32°F to 122°F (0°C to 50°C)
		5 to 95% rh (non-condensing)

	Transport climatic conditions
	    Temperature
	    Humidity
		-13°F to 158°F (-25°C to 70°C)
		<95% rh

Materials and colors	Terminal base	Polycarbonate, RAL 7035 (light gray)
	Controller insert	Polycarbonate, RAL 7035 (light gray)
Weight	Excluding packaging	0.65 lb (0.293 kg)

Wiring Terminals
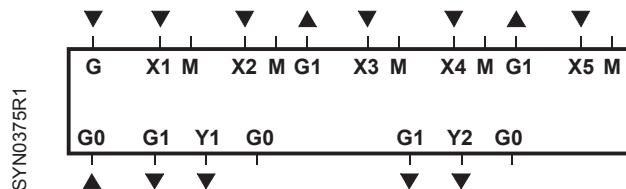
G, G0	Rated voltage 24 Vac
G1	Output voltage 24 Vac for powering external active sensors
M	Measuring neutral for signal input
G0	System neutral for signal output
X...	Universal signal inputs (analog signals only) for Ni 1000, 2× Ni 1000 (averaging), T1, Pt 1000, 0 to 10 Vdc , 0 to 1000 Ω
Y...	Control or status outputs, analog 0 to 10 Vdc

Figure 2.

NOTE: Each terminal (spring cage terminal) can only accommodate one solid wire or one stranded wire. Double terminals are internally connected.
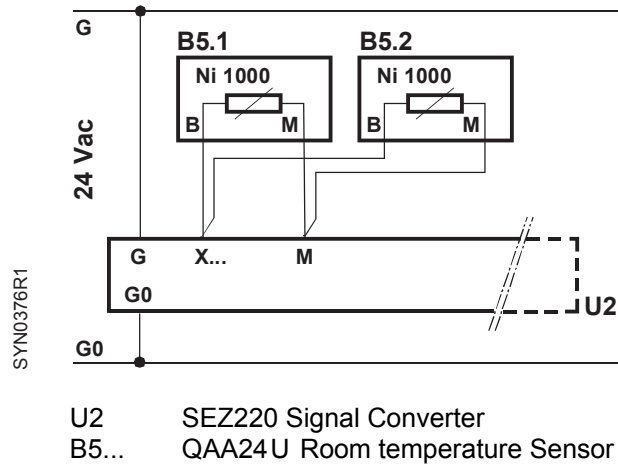
Wiring Diagrams

U2   SEZ220 Signal Converter
B5...   QAA24U Room temperature Sensor

Figure 3.

NOTE: For other input and output connections, see *Pre-programmed Standard Applications*.
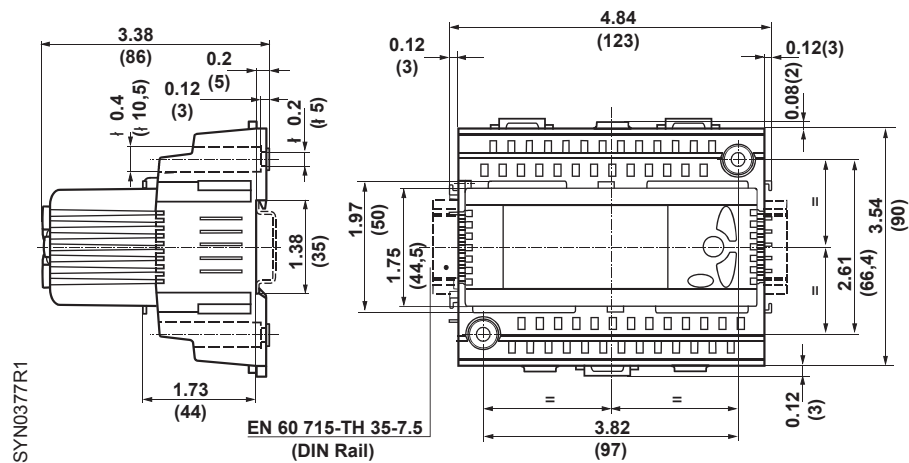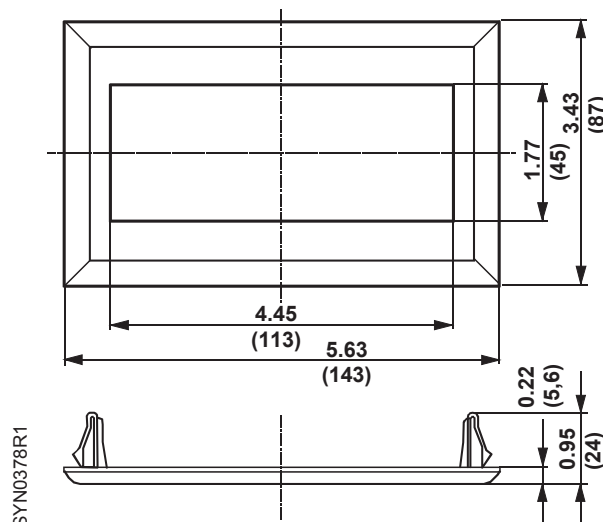
Dimensions
In Inches (mm)

Figure 4. SEZ220 Signal Converter.

CAUTION:

The SEZ220 Signal Converter has not been submitted for UL rating in through-the-door (ARG62.201) applications.

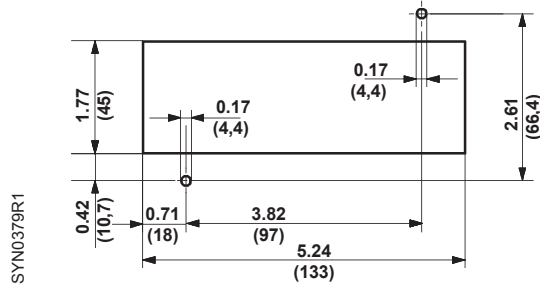**Figure 5. ARG62.201 Through-the-Door Mounting Frame.**

Dimensions, Continued

Figure 6. Panel Cutout if Controller is Wired Prior to Mounting.
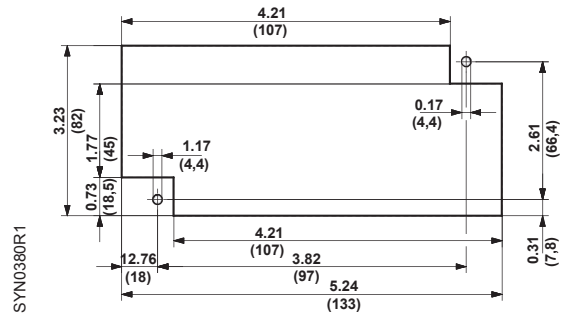
Figure 7. Panel Cutout if Controller is Wired After Mounting.

Table 1. Pre-programmed Standard Applications.

Basic Type	Description	Wiring Diagram
M01	Selection of minimum and maximum input signal from all present passive input signals.	
M02	Selection of maximum input signal and calculation of average of all present passive input signals.	
M03	Selection of maximum input signal and calculation of average of all present active input signals.	
M04	Selection of minimum input signal from two active input signals and three passive input signals.	

Basic Type	Description	Wiring Diagram
M05	Calculation of average of two active input signals and three passive input signals.	
M06	Selection of maximum input signals from two active input signals and three passive input signals.	
E01	Calculation of enthalpy from one passive temperature signal and one active humidity signal.	
E02	Calculation of enthalpy differential from two signal groups each with one passive temperature signal and one active humidity signal.	
E03	Calculation of absolute humidity and enthalpy from one passive temperature signal and one active humidity signal.	

Basic Type	Description	Wiring Diagram
E04	Calculation of absolute humidity from one passive temperature signal and one active humidity signal.	
E05	Calculation of dew point from one passive temperature signal and one active humidity signal.	
D01	Doubling of signal for sequential control of pumps, valves and fans.	
D02	Signal conversion from one passive temperature signal into two active signals.	

Siemens Building Technologies, Inc.
1000 Deerfield Parkway
Buffalo Grove, IL 60089-4513
U.S.A.

Your feedback is important to us. If you have comments about this document, please send them to
SBT_technical.editor.us.sbt@siemens.com

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