SEZ7656E1045B

Installation Guide for BACnet MS/TP RTU Terminal with IAQ Control



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NOTICE

IMPORTANT NOTICE RELATED TO PRODUCT PART NUMBERS

For the latest model and part numbers, please refer to "SE8000 and SE7000 Series Room Controllers Catalog, version 10" (028-6155-10), which can be found on https://ecobuilding.schneider-electric.com.

The installation instructions provided in this document contain information on active and retired products. The latter are no longer sold by Schneider Electric or its partners.

Refer to the "7000 Series Room Controllers and Historical Offer Product Withdrawal Process (PWP) Project Product Announcement" (PA-00723) for a list of replacement part numbers, which can also be found on https://ecobuilding.schneider-electric.com.

Failure to follow these instructions can result in confusion or order delays.

Schneider Electric

SAFETY INFORMATION

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

BEFORE YOU BEGIN

Loss of Control

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and over travel stop.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of anticipated transmission delays or failures of the link.[1]
- Each implementation of equipment utilizing communication links must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

California Proposition 65

⚠ WARNING

CALIFORNIA PROPOSITION 65

This product can expose you to chemicals including Lead and Bisphenol A (BPA), which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

Failure to follow these instructions can result in birth defects or other reproductive harm.

Electrostatic Discharge

NOTICE

STATIC SENSITIVE COMPONENTS

Circuit boards and option cards can be damaged by static electricity. Observe the electrostatic precautions below when handling controller circuit boards or testing components.

Failure to follow these instructions can result in equipment damage.

Observe the following precautions for handling static-sensitive components:

- Keep static-producing material such as plastic, upholstery, and carpeting out of the immediate work area.
- Store static-sensitive components in protective packaging when they are not installed in the drive.
- When handling a static-sensitive component, wear a conductive wrist strap connected to the component or drive through a minimum of 1 megohm resistance.
- Avoid touching exposed conductors and components leads with skin or clothing.

1 For additional information about anticipated transmission delays or failures of the link, refer to NEMA ICS 1.1 (latest edition), *Safety Guidelines for the Application , Installation, and Maintenance of Solid State Control* or its equivalent

Installation

NOTICE

INSTALLATION

- The system must be installed correctly by a qualified technician.
- If replacing an existing Room Controller, label wires before removal of Controller.
- Electronic controls are static sensitive devices. Discharge yourself correctly before manipulating and installing Room Controller.
- A short circuit or wrong wiring may permanently damage Room Controller or equipment.
- All Room Controllers are designed for use as operating controls only and are not safety devices. These instruments have undergone rigorous tests and verification prior to shipping to ensure proper and reliable operation in the field. Whenever a control failure could lead to personal injury and/or loss of property, it becomes the responsibility of the user/installer/electrical system designer to incorporate safety devices (such as relays, flow switch, thermal protections, etc.) and/or an alarm system to protect the entire system against such catastrophic failures. Tampering with the devices or unintended application of the devices will result in a void of warranty.
- This device must be installed to provide a separation distance of at least 8in (20cm) from all persons and must not be located or operating in conjunction with any other antenna or transmitter.
- Refer to the Room Controller User Interface Guide for information on how to configure the Room Controller.

Failure to follow these instructions can result in equipment damage.

Location

NOTICE

LOCATION

- Do not install on an exterior wall.
- Do not install behind a door.
- Do not install in areas with direct heat source.
- Do not install near any air discharge grill.
- Do not install in areas exposed to direct sunlight.
- Ensure Room Controller has sufficient natural air circulation.
- Ensure wall surface is flat and clean.
- Ensure external thermal sensor wirings are away from noisy electrical sources.
- Install 1.3 to 1.5 meter (52 to 60 inches) above the floor.
- Perform preventive maintenance on the damper and Variable Air Volume (VAV) box, according to the supplier documentation.

Failure to follow these instructions can result in equipment damage.

Cleaning the Room Controller

NOTICE

CLEANING THE ROOM CONTROLLER

- Use a soft, pre-moistened lint-free cloth for cleaning.
- Avoid getting moisture in openings.
- Do not spray anything directly on the Room Controller or use compressed air.
- Do not use caustic/corrosive products, ammonia, solvents or any cleaning product containing alcohol or grit.
- Never use tools directly on the touchscreen.
- Never use paint on the Room Controller.
- Do not drop or crush the Room Controller, or allow it to come into contact with liquids.
- Do not use a damaged device (such as one with a cracked screen).

Failure to comply with these recommendations will result in damage to the unit and void the manufacturer's warranty.

INSTALLATION

- Remove security screw on bottom of Room Controller cover.
- Open unit by pulling on bottom side of Room Controller (Figure 1).
- Remove wiring terminals from sticker.
- Read the FCC ID and IC label installed in the cover.

Location

1. Should not be installed on outside wall.
2. Must be installed away from any direct heat source.
3. Should not be installed near air discharge grill.
4. Should not be affected by direct sun radiation.
5. Nothing should restrict vertical air circulation to Room Controller.

Installation

1. Swing open Room Controller PCB to left by pressing PCB locking tabs (Figure 2).
2. Pull out cables 6” out from wall. Ensure wall surface is flat and clean.
4. Insert cable in central hole of base.
5. Align base and mark location of two mounting holes on wall ensuring proper side of base is up.
6. Install anchors in wall.
7. Insert screws in mounting holes on each side of base (Figure 2).
8. Gently swing back circuit board on base and push until tabs lock.
9. Strip each wire 1/4 inch from end.
10. Insert each wire according to wiring diagram.
11. Gently push excess wiring back into hole (Figure 3).
12. Re-Install wiring terminals in correct locations (fig. 3).
13. Re-install cover (top side first) and gently push extra wire length back into hole in wall.
14. Install security screw.

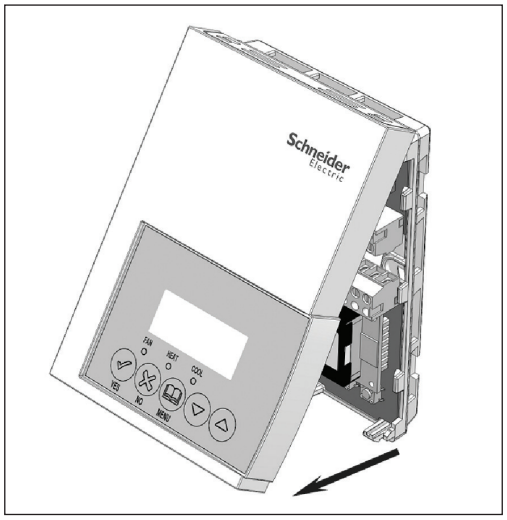


Figure-1 Opening the Cover

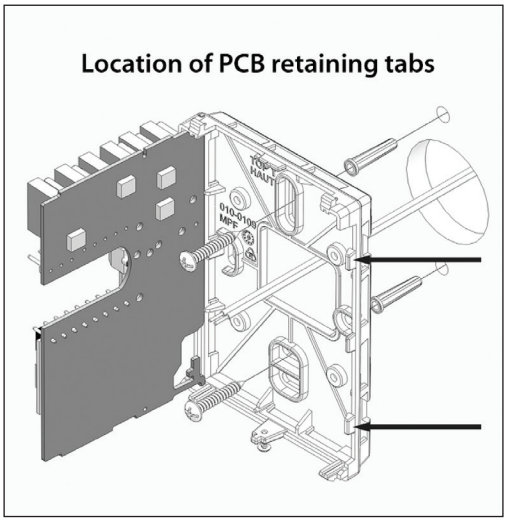


Figure-2 Opening the PCB

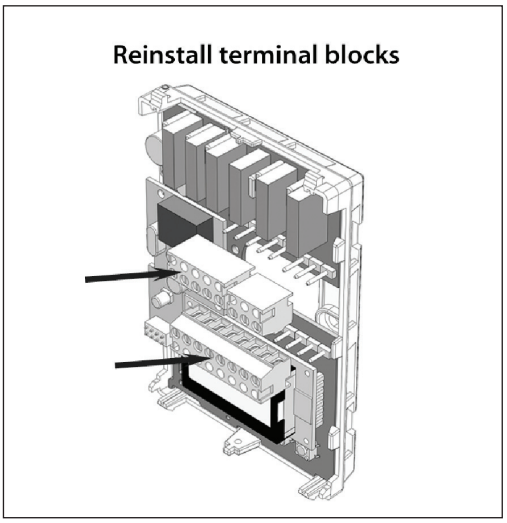
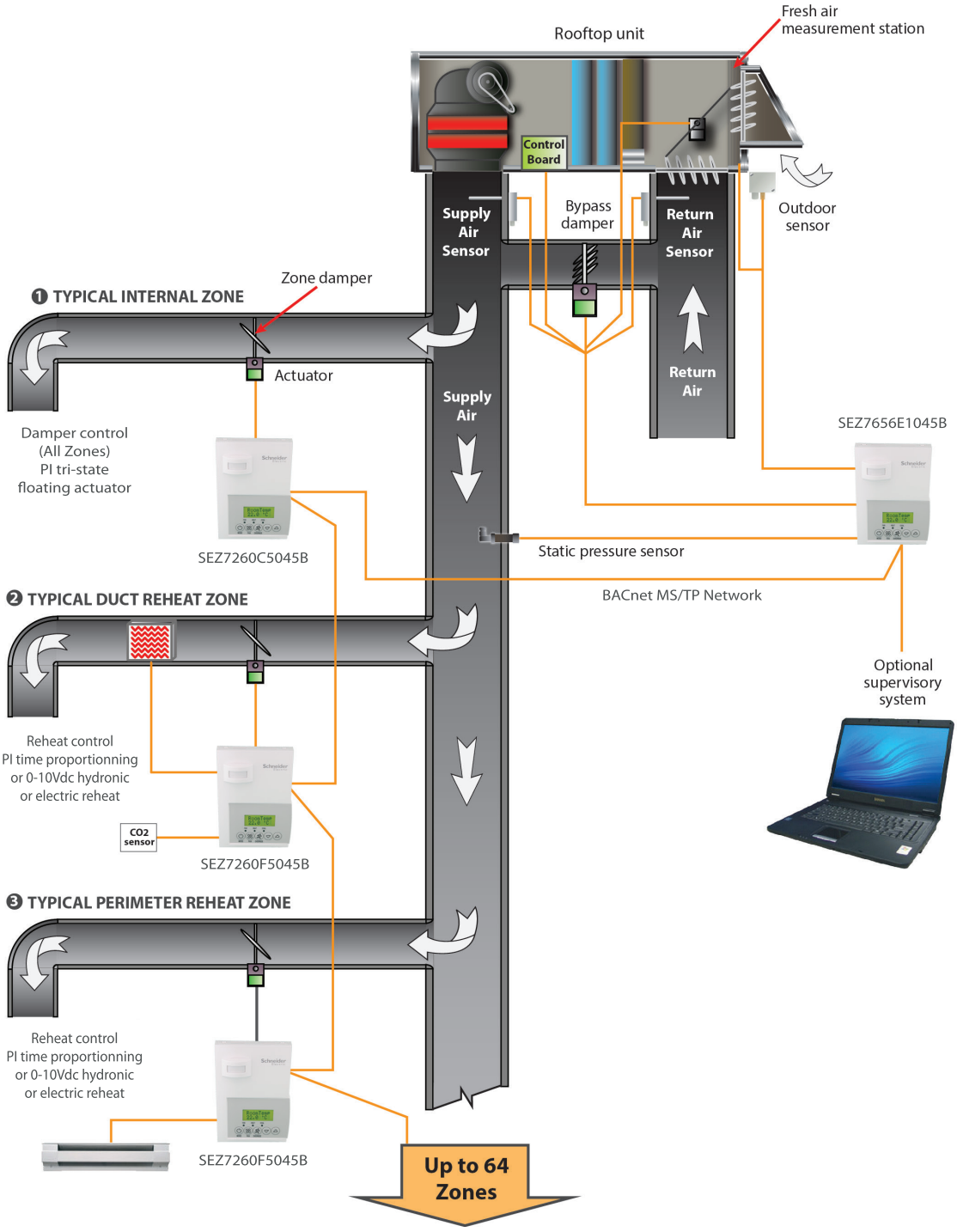


Figure-3 Terminal Block Reinstall

BACNET SYSTEM OVERVIEW

Schneider Electric SEZ7260X5x45B Zone controllers are used in conjunction with the SEZ7656X1045B roof top controllers. Combined, they are designed for operating typical; single or multistage RTU's and their associated local zones. For example, a typical job layout system may feature 3 RTU controllers and a total of 31 zones. This would bring to total number of nodes (individual Com addresses) to 34. RTU 1 would have 10 zones under its command, RTU 2 would have 10 zones under its command and RTU 3 would have 11 zones under its command.



Typical BACnet™ Zoning System Installation

TERMINAL, IDENTIFICATION AND FUNCTION

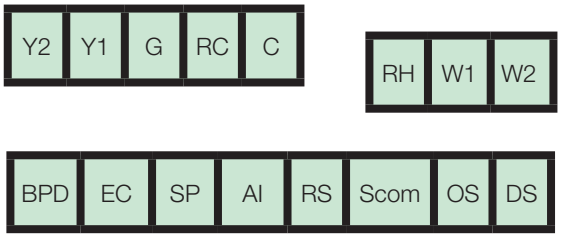
Terminal Use	Terminal Identification	Description
1 – Cool 2	Y2	Output for cooling / compressor stage number 2.
2 – Cool 1	Y1	Output for cooling / compressor stage number 1.
3 - Fan	G	Output for the fan.
4 - 24 V ~ Hot	RC	Power supply of controller, hot side (Delivered from the RTU).
5 - 0 V ~ Com	C	Power supply of controller, common side. Also used as reference for the analog BPD output when used (Delivered from the RTU).
6- Heat Switch Leg	RH	• 24 VAC switched leg for the heating stages. • If heating stages are part or RTU, install a jumper across RC & RH. • If heating stages are part of separate equipment with a different power supply, feed external switched power leg through RH without installing a jumper across RC & RH.
7 – Heat 1	W1	Output for heating stage number 1.
8- Heat 2	W2	Output for heating stage number 2.
9 – By-pass damper	BPD	Local analog 0 - 10 VDC by-pass damper / VFD output.
10 – Economizer Output	EC	0-10 VDC analog fresh air damper / economizer output.
11 – Static pressure	SP	Local analog 0 – 5 VDC static pressure input.
12 – AI	AI	0-10 VDC analog input for airflow transmitter
13 - RS	RS	Return air temperature sensor input. If sensor fails, controller will use the on-board thermistor sensor to control if the communication is lost.
14 - Scom	Scom	Reference input for DI 1, RS, OS & DS.
15 - OS	OS	Outside air temperature sensor input.
16 - DS	DS	Discharge air temperature sensor input.

BACnet™ Network Connections

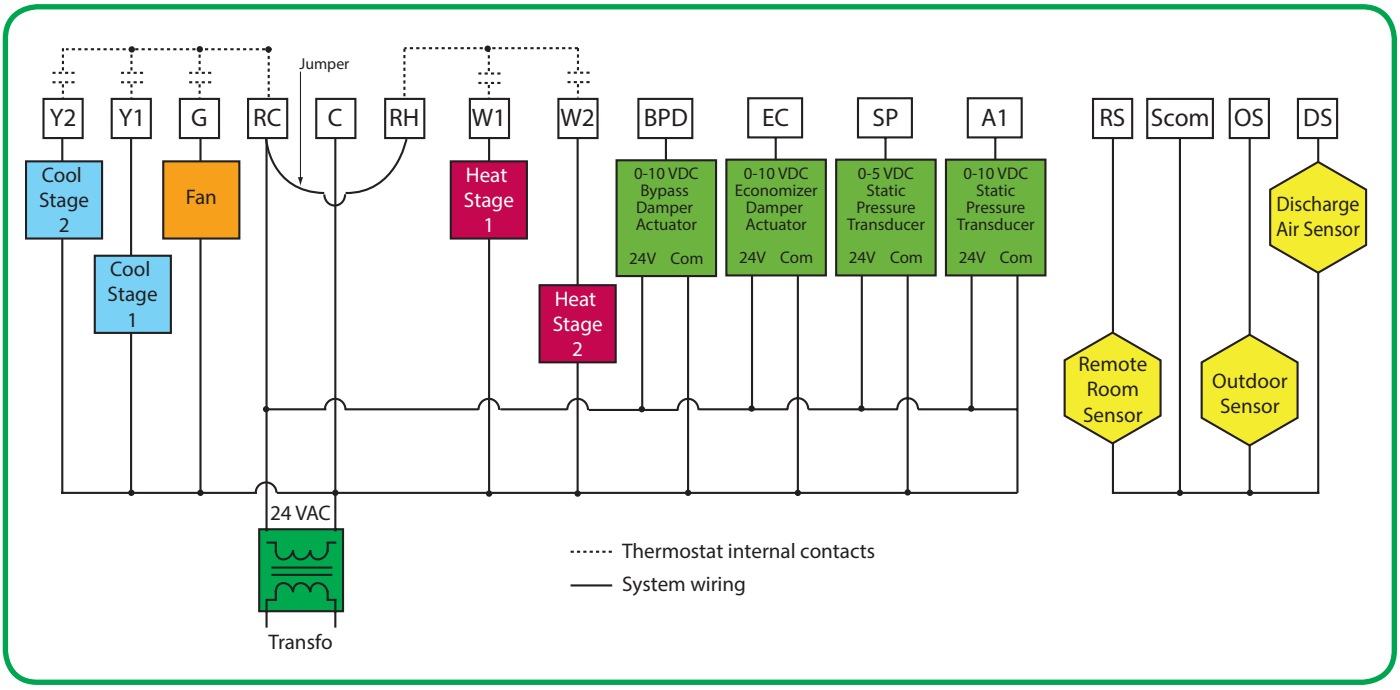
BACnet™ Network Connections		
BACnet™ Com	**Com +**	BACnet™ communication bus + connection.
BACnet™ Com	**Com -**	BACnet™ communication bus – connection.
Ref	**Ref**	Communication bus reference terminal. **• DO NOT USE FOR OTHER THAN SERVICING ISSUES** **• DO NOT WIRE SHIELD TO THIS TERMINAL**

Screw terminal arrangement and wiring

SE7656E Controller Terminals



TYPICAL APPLICATIONS



Main outputs wiring

Wiring notes:

Note 1
If the same power source is used for the heating stages, install jumper across RC & RH. Maximum current is 2.0 amps.

Note 2
If auxiliary output is used to toggle occupancy of the electronic control card inside the equipment, configure the relay parameter (Aux cont) to the N.O. setting. A second relay can be added for additional functionality of the occupancy output.

Note 3
Analog outputs and inputs use a half bridge rectifier. Reference of the control signal is the common of the power supply of the Room Controller. (Terminal C)

Note 4
Electromechanical contacts are to be used with the digital inputs. Electronic triacs cannot be used as mean of switching for the input. The switched leg to the input for the input to activate is terminal C (common)

Note 5
The transformer of the unit provides power to the Room Controller and the additional loads that will be wired to the Room Controller.

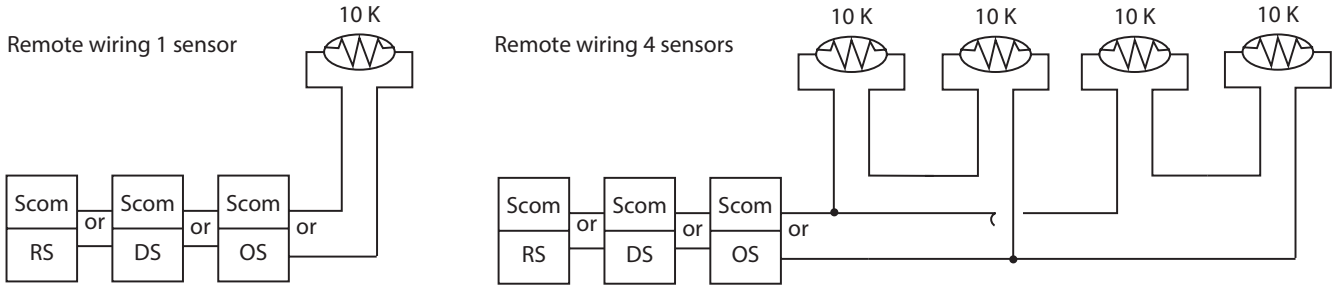
Note 6
10K Type 2 NTC sensors are required.

Temperature vs. Resistance Chart for 10 Kohm NTC Thermistor

($R_{25°C}$ = 10KΩ±3% - $B_{25/85°C}$ = 3975K±1.5%)

°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm	°C	°F	Kohm
-40	-40	324.3197	-20	-4	94.5149	0	32	32.1910	20	68	12.4601	40	104	5.3467
-39	-38	303.6427	-19	-2	89.2521	1	34	30.6120	21	70	11.9177	41	106	5.1373
-38	-36	284.4189	-18	0	84.3147	2	36	29.1197	22	72	11.4018	42	108	4.9373
-37	-35	266.5373	-17	1	79.6808	3	37	27.7088	23	73	10.9112	43	109	4.7460
-36	-33	249.8958	-16	3	75.3299	4	39	26.3744	24	75	10.4443	44	111	4.5631
-35	-31	234.4009	-15	5	71.2430	5	41	25.1119	25	77	10.0000	45	113	4.3881
-34	-29	219.9666	-14	7	67.4028	6	43	23.9172	26	79	9.5754	46	115	4.2208
-33	-27	206.5140	-13	9	63.7928	7	45	22.7861	27	81	9.1711	47	117	4.0607
-32	-26	193.9703	-12	10	60.3980	8	46	21.7151	28	82	8.7860	48	118	3.9074
-31	-24	182.2686	-11	12	57.2044	9	48	20.7004	29	84	8.4190	49	120	3.7607
-30	-22	171.3474	-10	14	54.1988	10	50	19.7390	30	86	8.0694	50	122	3.6202
-29	-20	161.1499	-9	16	51.3692	11	52	18.8277	31	88	7.7360	51	124	3.4857
-28	-18	151.6239	-8	18	48.7042	12	54	17.9636	32	90	7.4182	52	126	3.3568
-27	-17	142.7211	-7	19	46.1933	13	55	17.1440	33	91	7.1150	53	127	3.2333
-26	-15	134.3971	-6	21	43.8268	14	57	16.3665	34	93	6.8259	54	129	3.1150
-25	-13	126.6109	-5	23	41.5956	15	59	15.6286	35	95	6.5499	55	131	3.0016
-24	-11	119.3244	-4	25	39.4921	16	61	14.9280	36	97	6.2866	56	133	2.8928
-23	-9	112.5028	-3	27	37.5056	17	63	14.2629	37	99	6.0351	57	135	2.7886
-22	-8	106.1135	-2	28	35.6316	18	64	13.6310	38	100	5.7950	58	136	2.6886
-21	-6	100.1268	-1	30	33.8622	19	66	13.0307	39	102	5.5657	59	138	2.5926

Wiring for 10K Type 2 NTC Thermistor Sensors



CONFIGURING AND STATUS DISPLAY INSTRUCTIONS

Status display

The Room Controller features a two-line, eight-character display. There is a low backlight level that is always active and can only be seen at night.

When left unattended, the Room Controller has an auto scrolling display that shows the current status of the system.

Each item is scrolled sequentially with the back lighting in low level mode. Pressing any key will cause the back lighting to come on to high level. Manual scrolling of each menu item is achieved by pressing the Yes (scroll) key repetitively. The last item viewed will be shown on the display for 30 seconds before returning to automatic scrolling. Temperature is automatically updated when scrolling is held.

Sequence of auto-scroll status display

CLOCK STATUS	SYSTEM MODE	SCHEDULE STATUS	OUTDOOR TEMP.	ALARMS
Monday 12:00 AM	Sys Mode Auto	Occupied	Outdoor x.x °C or °F	DAS Alarm
	Sys Mode Auto	Unoccupied		FA Alrm
	Sys Mode Heat	Override		SetClock
	Sys Mode Cool			High CO2
				Com lost

Outdoor air temperature

Outdoor air temperature display is only enabled when outdoor air temperature sensor is connected.

- A maximum range status display of 50 °C (122 °F) indicates a shorted sensor. Associated functions, such as mode lockouts and economizer function are automatically disabled.
- A minimum range status -40 °C (-40 °F) is not displayed and indicates a opened sensor or a sensor not connected. Associated functions, such as mode lockouts and economizer function are automatically disabled.

Alarms

- If alarms are detected, they will automatically be displayed at the end of the status display scroll.
- During an alarm message display, the back lit screen will light up at the same time as the message and shut off during the rest of the status display.
- Two alarms maximum can appear at any given time.
- The priority for the alarms is as follows:

Sequence of manual-scroll status display:

Manual scroll of each menu item is achieved by pressing the Yes (scroll) key repetitively. The last item viewed will be shown on the display for 30 seconds before returning to automatic scrolling. Temperature is automatically updated when scrolling is held.

CLOCK STATUS	SYSTEM MODE	SCHEDULE STATUS	OUTDOOR TEMP.	ALARMS
Monday 12:00 AM	Sys Mode Off	Occupied	Outdoor x.x °C or °F	DAS Alarm
	Sys Mode Auto	Unoccupied		FA Alrm
	Sys Mode Cool	Override		SetClock
	Sys Mode Heat			High CO2
				Com lost

FAN	When any of the fan speeds are **ON**, the **FAN LED will illuminate.**
HEAT	When heating & reheat is **ON**, the **HEAT LED will illuminate.**
COOL	When cooling is **ON,** the C**OOL LED will illuminate.**

CURRENT ZONE SEQUENCE	RETURN AIR TEMP	DISCHARGE AIR TEMP	CURRENT STATIC PRESSURE	FRESH AIR LEVEL
Zone Seq Off	RA Temp xx.x °C or °F	DA Temp xx.x °C or °F	Pressure x.x WC or Pa	FA Level xxxxxCFM
Zone Seq Cool				
Zone Seq Cool				

EFFECTIVE PI HEAT DEMAND AT RTU	EFFECTIVE PI COOL DEMAND AT RTU	EFFECTIVE CO2 LEVEL AT RTU	HIGHEST PI HEAT DEMAND ZONE ADDRESS	HIGHEST PI COOL DEMAND ZONE ADDRESS	HIGHEST CO2 LEVEL ZONE ADDRESS
Heat Out xxx %	Cool Out xxx %	CO2 Lvl xxxx ppm	Heat MAC xxx	Cool MAC xxx	CO2 MAC xxx

DAS Alarm	Indicates that the discharge air temperature is either too low or too high.
FA Alarm	Indicates that the Fresh Air Level is either too low or too high.
SetClock	Indicates that the clock needs to be reset. There has been a power failure which has lasted longer than 6 hours.
High CO2	Indicates that the CO2 Level value is higher than the Max CO2 parameter value.
Com Lost	The communication between devices has been lost (No Communication)

USER INTERFACE



User configuring instructions menu

The SEZ7656X series of controllers feature an intuitive, menu-driven, back-lit LCD display that walks users and installers through the configuring steps, making the configuring process extremely simple. This menu is typically accessed by the user to set the parameters such as the clock time set, the schedule time events and the system mode.

It is possible to bring up the user menu at any time by depressing the MENU key. The status display automatically resumes after exiting the user-configuring menu.

If the user pauses at any given time during configuring, Auto Help text is displayed to help and guide the user through the usage and configuring of the controller.

Ex.: Press yes key to change cooling temperature setpoint
Use the up or down arrow to adjust cooling setpoint

Each of the sections in the menu is accessed and configured using 5 keys on the controller cover. The priority for the alarms is as follows:

Local Keypad Interface

	The **YES** key is used to confirm a selection, to move onto the next menu item and to manually scroll through the displayed information.
	The **NO** key is used when you do not desire a parameter change, and to advance to the next menu item. Can also be used to toggle between heating and cooling setpoints.
	The **MENU** key is used to access the Main User Menu or exit the menu.
	The **DOWN** arrow key is used to decrease temperature setpoint and to adjust the desired values when configuring the Room Controller.
	The **UP** arrow key is used to increase temperature setpoint and to adjust the desired values when configuring the Room Controller.

When left unattended for 45 seconds, the display will resume automatic status display scrolling.

To turn on the back light, press any key on the front panel. The back lit display will turn off automatically after 45 seconds.

Sequence of user menu:

OVERRIDE RESUME	SYSTEM MODE SETTING	SCHEDULE SETTING	CLOCK SETTING
Override schd? Y/N (Appears only in unoccupied mode)	Sys mode set? Y/N	Schedule set? Y/N	Clock set? Y/N
Cancel ovrd? Y/N (Appears only in override mode)			

Sys mode off	**Off mode** Normal cooling or heating operation disabled.
Sys mode auto	**Automatic mode** Automatic changeover mode between heating and cooling operation based on local zone demands voting for RTU system operation.
Sys mode cool	**Cooling mode** Cooling operation mode only.
Sys mode heat	**Heating mode** Heating operation mode only

Technical Support



For any issues with SmartStruxure Solution or SmartStruxure Lite, contact Schneider Electric Technical Support according to your region.

North America (NAM) Product Support
Building Management Systems (BMS): www.nampss.com

Global Product Support
Building Management Systems (BMS): productsupport.BMS@schneider-electric.com

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