

April 15, 2024

ADDENDUM #1

TO ALL PROSPECTIVE BIDDERS:

SUBJECT: Automatic Temperature Control System Replacement at Quander Road Center
(MMB-064-24)

BID OPENING DATE: (ORIGINAL DATE) April 23, 2024, at 10:00 AM

THE SUBJECT INVITATION FOR BID IS AMENDED AS FOLLOWS:

THIS ADDENDUM IS SUPPLEMENTARY TO THE PLANS AND SPECIFICATIONS FOR THE ABOVE SUBJECT REQUIREMENT. ALL CHANGES, ADDITIONS AND DELETIONS SHALL BECOME PART OF THE CONTRACT.

CLARIFICATIONS: The following items are provided as clarification:

Main three-way hot water valve:

Both valve body and actuator shall be replaced. One specific brand is not required. In the conflict between the Note 2 on FCPS drawing M-1 and the related note on FCPS drawing M-4, the former shall supersede the latter.

Missing terminal unit space sensors:

For UVs and FCs, which are missing space sensors on floor plans, both space temperature and humidity sensors shall be installed.

RTU-6:

1. Frezestat shall be installed for this unit.
2. Economizer sequence has been clarified and made consistent between the text and logic diagram.

Corrected FCPS drawing M-7 is attached.

All other terms and conditions remain unchanged.


Angela C. Mylechraine, Contracts Administrator
Office of Administrative Services

THIS ADDENDUM IS ACKNOWLEDGED AND IS CONSIDERED A PART OF THE SUBJECT INVITATION FOR BID.

SIGNATURE: _____ DATE: _____

NAME OF FIRM: _____

A SIGNED COPY MAY BE RETURNED PRIOR TO BID OPENING OR MAY ACCOMPANY YOUR BID.

PROJECT TITLE

AUTOMATIC TEMPERATURE CONTROL SYSTEM REPLACEMENT

QUANDER ROAD CENTER

6400 Quander Road
Alexandria, VA 22307

DRAWN SM

CHECKED

DATE 3/19/2024

PROJECT # MMB-064-24

REVISIONS

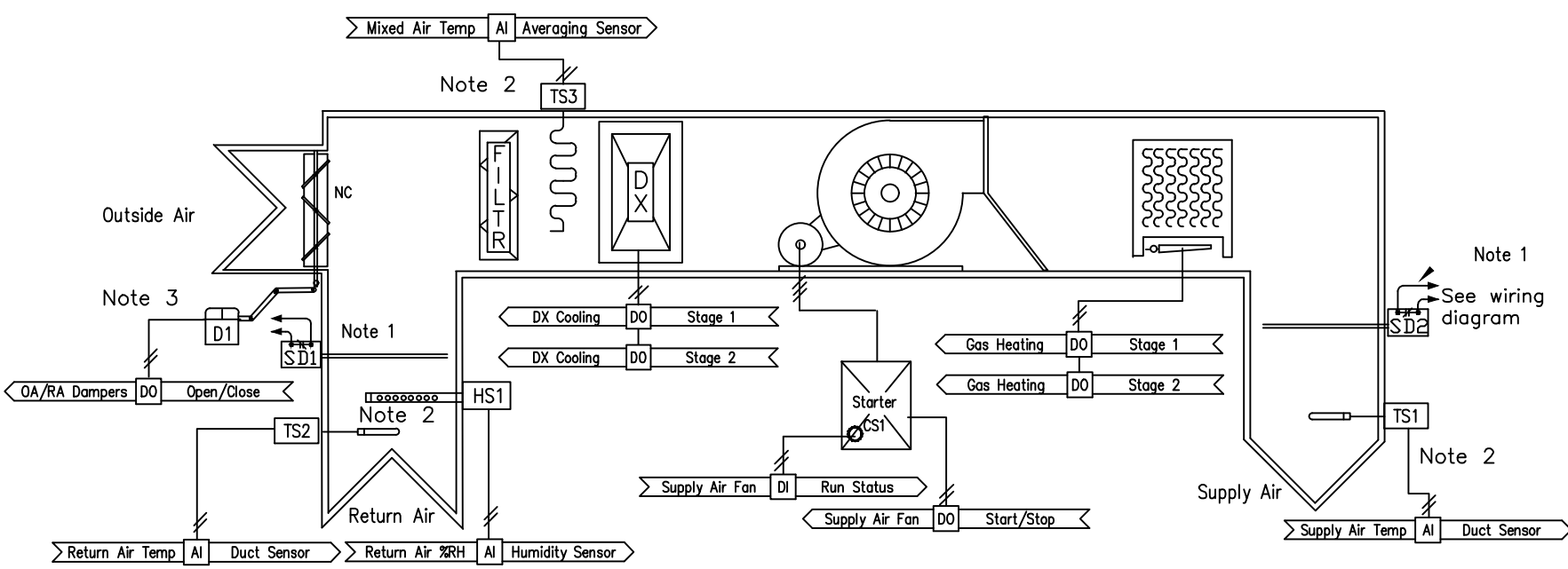
NO.	DATE	DESCRIPTION
1	4/4/2024	Added freestzat
2	4/9/2024	Correct Econo sequence
3	4/9/2024	Deleted second stage

DRAWING TITLE

RTU- 5, 6 CONTROL DIAGRAMS

DRAWING NUMBER

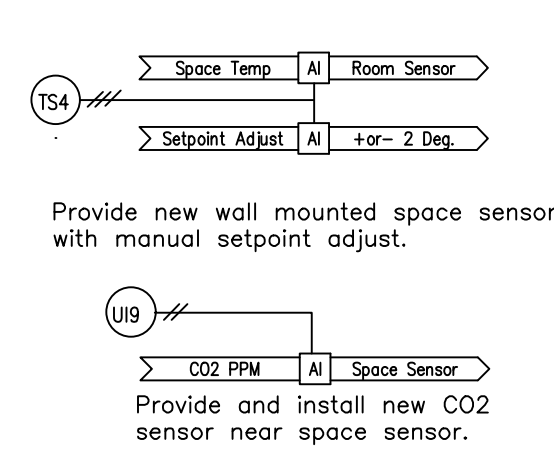
M-7



Note 3: Replace damper actuators with new electronic actuators. Clean & lubricate damper linkage, set minimum position and verify proper operation of dampers.

Note 2: Provide and install new Return & Supply Air temperature & Return Air humidity duct sensors and Mixed Air averaging sensor.

Note 1: Confirm (or rewire) interlock through existing Safety devices to shut down unit Fan(s). Wire associated unit control devices such as actuators & relays to go to their setback (or FAIL) positions whenever the Supply Fan is Off - OA damper closed, DX cooling off & gas heat off.



Note 4: Replace existing HW 3-way valve and actuator with new 3-way valve & electronic actuator.

Note 3: Replace damper actuators with new electronic actuators. Clean & lubricate damper linkage, set minimum position and verify proper operation of dampers.

Note 2: Provide and install new Return & Supply Air temperature & Return Air humidity duct sensors and Mixed Air averaging sensor.

Note 1: Confirm (or rewire) interlock through existing Safety devices to shut down unit Fan(s). Wire associated unit control devices such as actuators & relays to go to their setback (or FAIL) positions whenever the Supply Fan is Off - OA damper closed, DX cooling off, etc.

RTU w/DX, Gas Heat Min OA & CO2 Control Sequence

General: This unit shall have its own Control Module and be fully controlled by the BAS. The unit control logic strategies shall include:

- a) Scheduled Occupancy
- b) Sequenced heating and cooling control
- c) Outside air intake control based on CO2 levels
- d) Night (unoccupied) setback

Supply Air Fan Control: The BAS shall control the starting and stopping of the supply air fan as follows:

- 1 - During the scheduled Occupied period the unit fan shall be commanded to run continuously.
- 2 - BAS shall monitor fan status and generate an alarm if the fan fails to start as commanded after a 30 second delay or fails anytime thereafter. However the request for the failed fan shall remain active until the unit can be serviced. The BAS shall use the fan status to accumulate resettable runtime.
- 3 - The unit fan shall be commanded Off when:
 - a) the Occupied period is over AND the unit is not heating or cooling to maintain night Setup/Setback setpoints
 - 4 - Once the Fan is shut down it must remain off for at least 3 minutes (Adj) prior to being restarted (note: Minimum Off, Not Delay Start).
 - 5 - The unit may be overridden On or Off via operator command from a remote central location or by the BAS controller on site or BAS graphics.

Min OA Damper control: BAS shall control OA damper as follows:

- 1 - When the Unit is de-energized the OA damper shall be commanded to its closed position.
- 2 - When the Unit is energized to maintain unoccupied setpoints, the damper shall remain closed.
- 3 - During the occupied period AND when the space CO2 level rises above the setpoint of 500ppm (adj), the OA damper shall be commanded open to its preset minimum position.
- 4 - The RA and RF dampers shall track the OA damper proportionately.
- 5 - The OA Damper shall close if the mixed air temperature falls below 48F.

Space Temperature Control: Control space temperature by cycling the heating/cooling on the unit as needed. Three operator adjustable setpoints shall apply. Occupied Cooling (74F), unoccupied setback heating (55F), and unoccupied setup cooling (85F). These three values shall be the only values changed by the operator to adjust space temperatures. The Occupied Heating setpoint shall be the Cooling Setpoint minus 3F.

Heating Section: On a fall in space temperature below the heating setpoint, the BAS shall activate the 1st stage of gas heat. When the temperature rises to above the heating setpoint plus 1F the heat shall de-activate. If the space temp falls to 1F below the heating setpoint the BAS shall activate the 2nd stage of gas heat. On a rise in space temp to above the heating setpoint the 2nd stage heat shall de-activate. There shall be a minimum of five minute intervals between activating and de-activating the heating stages.

Cooling Section: On a rise in space temperature above the cooling setpoint and the outside air temperature is above the DX cooling lockout setpoint (55F OA (adj)), the BAS shall activate the 1st stage compressor. When the temperature falls one degree below the cooling setpoint the cooling shall be de-activated. If the temperature rises to above 1F of the cooling setpoint the 2nd stage shall be activated. On a fall in space temp to below the cooling setpoint the 2nd stage shall be de-activated. There shall be a minimum of five minute intervals between activating and de-activating the cooling stages.

Unoccupied Setback: During the Unoccupied period:

- 1 - Heating and cooling shall be commanded off and the OA damper shall close.
- 2 - After a two minute delay the supply fan shall be commanded off.
- 3 - The unit fan, heating and cooling shall be cycled as needed to maintain unoccupied setpoints. Above heat/cool sequences shall apply.

Associated Exhaust Fans: BAS shall command associated Exhaust Fans to run continuously during the Occupied period.

Hardwired Points

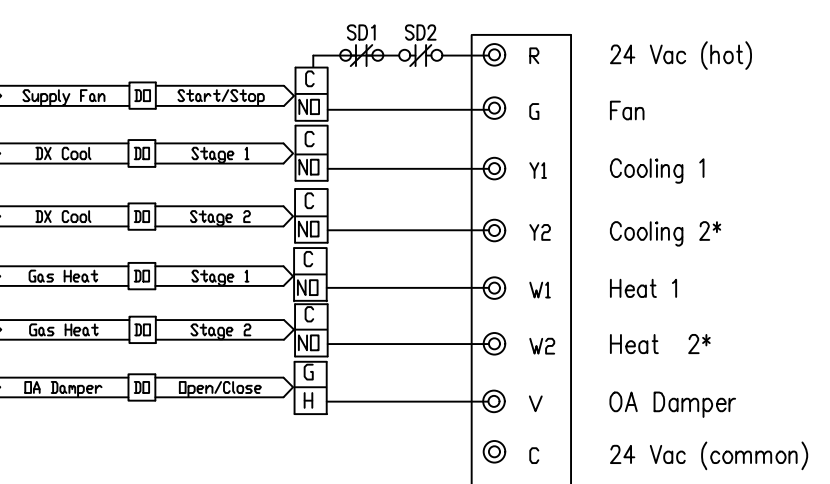
Universal Inputs (Sensors):

- 1. Supply Fan Status
- 2. Space Temp
- 3. Setpoint Adjust
- 4. Supply Air Temperature
- 5. Return Air Temperature
- 6. Mixed Air Temperature
- 7. Return Air Humidity
- 8. CO2 Sensor

Virtual Points

- 1. Unit Start Signal
- 2. Occupied Mode (Sched)
- 3. Clg Setpoint (74F Adj)
- 4. Htg Setp (Clg Setp-3)
- 5. Adjusted Space Setpoint
- 6. Night Setback (55F Adj)
- 7. Night Setup (85F Adj)

Above Points to be Displayed on RTU Graphic
All Above Points Shall be Accessible by User
All Above Points Shall be Trended



RTU TERMINAL STRIP
Interface board terminal strip by unit manufacturer
* Provide number of stages as required

WIRING DIAGRAMS

RTU w/DX, Gas Heat Economizer Control Sequence

General: This unit shall have its own Control Module and be fully controlled by the BAS. The unit control logic strategies shall include:

- a) Scheduled Occupancy
- b) Sequenced heating and cooling control
- c) Night (unoccupied) setback

Supply Air Fan Control: The BAS shall control the starting and stopping of the supply air fan as follows:

- 1 - During the scheduled Occupied period the unit fan shall be commanded to run continuously.
- 2 - BAS shall monitor fan status and generate an alarm if the fan fails to start as commanded after a 30 second delay or fails anytime thereafter. However the request for the failed fan shall remain active until the unit can be serviced. The BAS shall use the fan status to accumulate resettable runtime.
- 3 - The unit fan shall be commanded Off when:
 - a) the Occupied period is over AND the unit is not heating or cooling to maintain night Setup/Setback setpoints
 - 4 - Once the Fan is shut down it must remain off for at least 3 minutes (Adj) prior to being restarted (note: Minimum Off, Not Delay Start).
 - 5 - The unit may be overridden On or Off via operator command from a remote central location or by the BAS controller on site or BAS graphics.

Mixed Air Dampers: BAS shall control OA damper as follows:

- 1 - When the Unit is de-energized the OA damper shall be commanded to its closed position.
- 2 - When the Unit is energized to maintain unoccupied setpoints, the damper shall remain closed.
- 3 - During the occupied period, the OA damper shall be commanded open to its design minimum position (ref. AHU/RTU Data Dwg M-1).
- 4 - On a call for Cooling and enthalpy conditions allow, the OA damper shall be modulated open as needed to satisfy cooling needs (ref. Economizer section).
- 5 - The RA and RF dampers shall track the OA damper proportionately.
- 6 - The OA Damper shall close if the mixed air temperature falls below 48F.

Space Temperature Control: Control space temperature by cycling the heating/cooling on the unit as needed. Three operator adjustable setpoints shall apply. Occupied Cooling (74F), unoccupied setback heating (55F) and unoccupied setup cooling (85F). These three values shall be the only values changed by the operator to adjust space temperatures. The Occupied Heating setpoint shall be the Cooling Setpoint minus 3F.

Heating Section: N.O. heating valve shall modulate simultaneously in a PID loop to maintain applicable space temperature setpoints within a 2F throttling range. No other control loops except those indicated on the logic diagram shall control the valve. In heating mode, the BAS shall maintain the supply air temperature no less than 52F (Adj).

Cooling Section: On a rise in space temperature above the cooling setpoint and the outside air temperature is above the DX cooling lockout setpoint (55F OA (adj)), the BAS shall activate the 1st stage compressor. When the temperature falls one degree below the cooling setpoint the cooling shall be de-activated.

Economizer Section: On a call for Cooling And if the OA Enthalpy is less than 28 btu/lb (adj) And the OA Enthalpy is less than the unit's RA Enthalpy, the OA damper shall be modulated open to maintain a mixed air temp setpoint of 52F based on the needs of the space but not lower than 48F. Compressor shall be disabled while Economizer is on.

Unoccupied Setback: During the Unoccupied period:

- 1 - Heating and cooling shall be commanded off and the OA damper shall close.
- 2 - After a two minute delay the supply fan shall be commanded off.
- 3 - The unit fan, heating and cooling shall be cycled as needed to maintain unoccupied setpoints. Above heat/cool sequences shall apply.

Associated Exhaust Fans: BAS shall command associated Exhaust Fans to run continuously during the Occupied period.

Hardwired Points

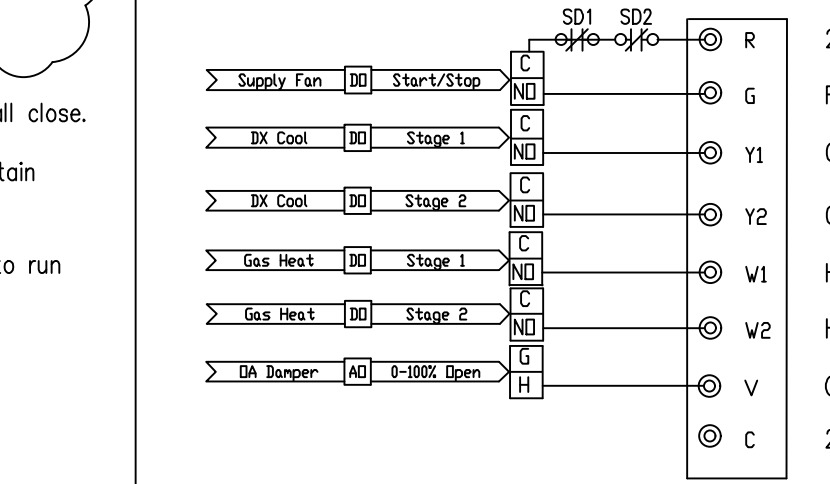
Universal Inputs (Sensors):

- 1. Supply Fan Status
- 2. Space Temp
- 3. Setpoint Adjust
- 4. Supply Air Temperature
- 5. Return Air Temperature
- 6. Mixed Air Temperature
- 7. Return Air Humidity
- 8. Freeze Stat Alarm

Virtual Points

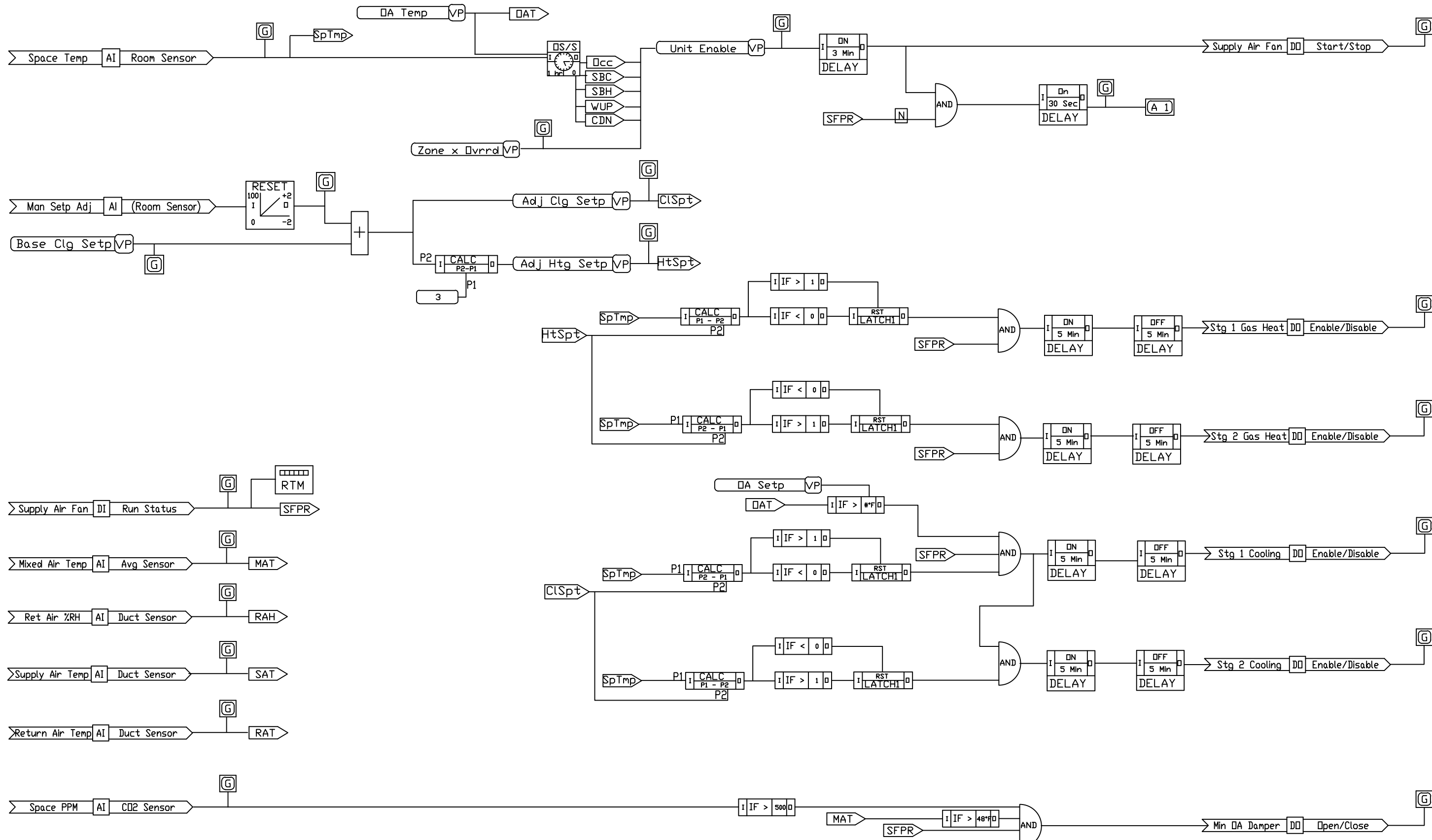
- 1. Unit Start Signal
- 2. Occupied Mode (Sched)
- 3. Clg Setpoint (74F Adj)
- 4. Htg Setp (Clg Setp-3)
- 5. Adjusted Space Setpoint
- 6. Night Setback (55F Adj)
- 7. Night Setup (85F Adj)

Above Points to be Displayed on RTU Graphic
All Above Points Shall be Accessible by User
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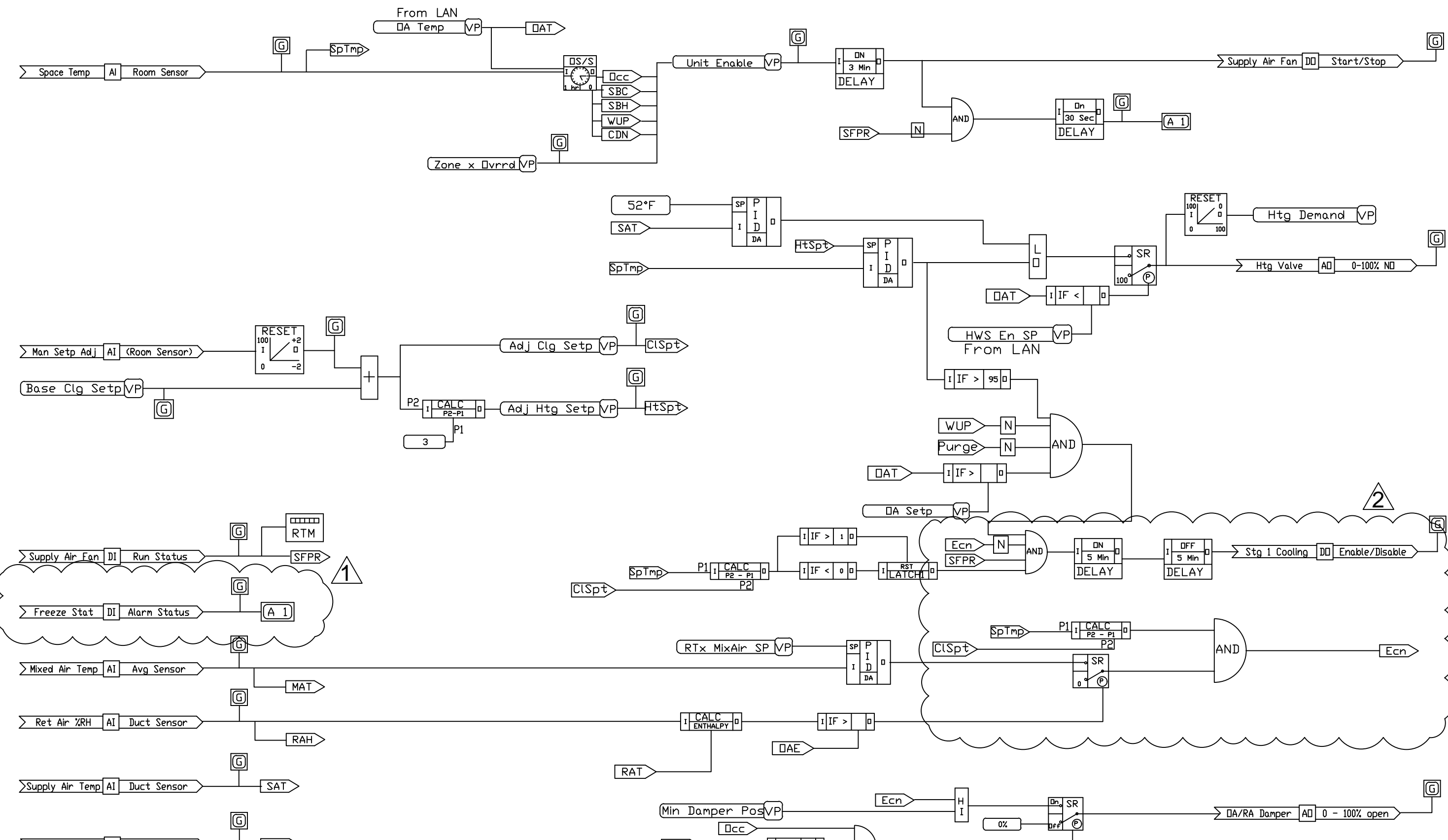
RTU TERMINAL STRIP
Interface board terminal strip by unit manufacturer
* Provide number of stages as required

WIRING DIAGRAMS



RTU-5

ROOFTOP UNIT W /DX CLG/GAS HEAT/MIN OA/CO2



RTU-6

ROOFTOP UNIT W /DX CLG/HYDRONIC HEAT/ECONOMIZER