REZNOR®

Form CP-MAPS D15/16/17/18 (Version F)
Obsoletes Form CP-MAPSIII D15/D16 (Version E)

Applies to: **MAPS®III Models RCB, RDB, RDCB, RDDB, RECB, REDB manufactured beginning March 2010 and MAPS®IV Models RCC, RDC, RDCC, RDDC, RECC, REDC with Option D15 or D16 and Model MAPS®IV Model RECC with Option D17 or D18**

IQ System Technical Guide

for Control Options D15, D16, D17, and D18

Applies to IQ Controller with Version 2.01 Software

IQ Controller and Unit Interface Module with Display -- Mounted on the Low Voltage Panel

NOTE: We are continuously improving and correcting our documentation. Please check the web site (www.REZSPEC.com) or contact your local Reznor® representative (1-800-695-1901) for the latest version of this manual.

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1.0 Introduction

Important NOTE: This booklet applies ONLY to a controller with Version 2 Software. Version 2 software applies to all MAPS®IV units and to MAPS®III units manufactured beginning March 2010 (Serial No. Date Code BJC). Check the Rating Plate to verify date of manufacture (found to the right of the Model designation).

The date is also identified in the Serial No.

Serial No. Example:

3 BJC 123 BK 08

BJC is the Date Code indicating March 2010

(To identify date codes and all parts of a Serial No., refer to Form P-MAPSIII available at wwwRezSpec.com or call 1-800-695-1901.)

NOTE: The outdoor air volume must be at least 30% or higher for the standard sequences to function correctly. See the detailed sequence of operation in Section 2.2.

1.1 General

The Modular Air Processing System (MAPS®) uses a microprocessor-based control module with a custom application program used to optimize the control of cooling, heating, and dehumidification. The control features of the MAPS®III&IV include:

- Integrated Local Display Unit mounted in the control compartment to provide complete access to the system parameters without the need of additional equipment
- Fully integrated outdoor ambient lockouts based on outdoor dry bulb and enthalpy
- Programmed for high outside air applications
- Up to 8 stages of cooling - MAPS®III
- Cooling modulation - MAPS®IV
- Up to 16:1 gas heating modulation
- Up to 4 stages of electric heat
- Dedicated reheat pump circuit for dehumidification
- Local and remote alarming
- Integrated time clock
- Compressor anti-cycle protection and minimum “on/off” cycle rates
- Multiple protocol support [BACnet (ARCnet and MSTP) and LonWorks]
- Alarm auto reset and alarm shutdown features
- Commissioning and test mode functions
- Heating and cooling changeover based solely on ambient conditions
- Discharge duct air cooling/heating setpoints
- Optional wall temperature sensor accessory providing readouts for space temperature, outdoor air temperature, outdoor air humidity, space humidity, and alarm information
- Energy conscious applications including night setback/setup, optimum start/stop, and discharge air reset.

1.2 Control Applications

The controller is designed for two control applications on MAPS®III&IV units.

Option D15 application is designed to maintain the neutral air/discharge air setpoint based on the sequences in Section 2.1.

Option D16 application is designed to maintain the space temperature by overriding the discharge setpoints based on the sequences in Section 2.2.

Option D17 application is similar to D15 but applies only to a process application using a MAPS®IV Model RECC cooling unit with electric heat.

Option D18 application is similar to D15 but applies only to a process application using a MAPS®IV Model RECC cooling unit with electric heat.

1.3 Control Location

The controller is in the low voltage electrical compartment. The controller is programmed to control all the MAPS®III&IV functions in response to numerous inputs.

1.4 Unit Interface Module (BACview)

An easy-to-use operator display is mounted directly above the controller. This display gives the user access to parameters and alarms. Additionally, it is used to monitor status, adjust setpoints, override points, and edit time schedules. All values are displayed with an explanatory text in the alphanumeric display window. Key features of the display include a backlit LCD that enhances reading even in poor lighting conditions, simple to use menus, password protection for security, and a two line by 16 character display. See Section 2.3 for details on the menus and command functions.

1.5 Related Documents

All related documents are found in the owner’s envelope, including this control instruction sheet, the Installation/Operation Manual; the Maintenance/Service Manual; the Limited Warranty Form; and all other supplier forms unique to the system.

2.0 Sequence of Operation

2.1 Base Sequence of Operation

The following describes the base sequence of operation for a unit with gas-fired heating, cooling, and dehumidification installed. For optional sequences, see Section 2.3. Based on the model ordered, the heating, cooling, and/or dehumidification may not be available.

RCB, RCC are cooling only units.
RDB, RDC are cooling only units with dehumidification.
RDCB, RDCC are cooling units and gas-fired heat.
RDDB, RDDC are cooling units with dehumidification and gas-fired heat.
RECB, RECC are cooling units and electric heat.
REDB, REDC are cooling units with dehumidification and electric heat

2.1.1 Supply Fan Start/Stop Control (Default: Always Occupied)

NOTE: See Section 2.2.4 for how to configure the schedule and for optional sequences based on schedule selection.

The supply fan runs continuously. There is an air proving switch that indicates proof of fan operation. The supply fan is also subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

2.1.2 Damper Control (AR8 Option)

NOTE: If not using Option AR8, see Section 2.3.2 for optional sequences.

On a command to start, the IQ System Controller fully opens the outside air (OA) damper. After sixty seconds, the IQ System Controller issues a command for a fan start. Once the damper is at 80%, the hardwired interlock to the OA damper end switch will allow the supply fan to start.

2.1.3 Temperature Control (Heating/Cooling/Dehumidification Control)

The unit modes are determined by the outside air temperature (OAT).

- If the OAT is below the heating lockout setpoint **(HtgLkout = 62)**, the system is in the **heating mode**.
- If the OAT is above the cooling lockout setpoint temperature **(ClgLkout = 68)**, the system is in the **cooling mode**.
- If the OAT is between the heating and cooling lockouts, the unit is in **vent mode**.
- If the outside air dewpoint is above the dewpoint locking setpoint **(DwPtLkout = 58)**; the outside air temperature is above the OAT low limit lockout setpoint **(OATLoLkout = 60)**; and the outside air temperature is below the OAT high limit lockout setpoint **(OATHiLkout = 120),** the controller starts the reheat pump to maintain the discharge air temperature and humidity. The system is in **dehumidification** mode.

  NOTE: With Option D16, when the space is calling for heating or cooling, the system will disable the dehumidification mode until the space is satisfied. See the dehumidification sequence, page 6, for specific details.

There is a delay of five minutes between a change of heating and cooling mode. On proof of fan status, the unit maintains the user defined temperature setpoints according to the following heating and cooling mode sequences.

Heating Mode

NOTE: Upon a call for heat, there is high fire lightoff of gas burner for 20 seconds.

Gas Heat Section 800 MBH and smaller **-** Upon a call for heat and proof of fan status, heating is enabled. The modulating output then varies the heating output from 0% to 100% command (2 to 10% Vdc to allow an 8:1 turndown on gas) to maintain the active heating control setpoint **(ActHtgSP)**. Heating will remain enabled when all of the following three conditions are met:

1) The modulation valve output is equal to 0%.
2) The active heating control temperature **(ActHtgT)** is above the active heating control setpoint **(ActHtgSP)** by a difference of the heat staging deadband **(HtgStgDB = 5)**.
3) The modulation valve output has been at a minimum position for five minutes according to the minimum position timer **(MinPosTm = 5)**.

NOTE: On the 800 mbh and smaller gas heat units, AO-1 is used to enable heat. The AO outputs 10 Vdc on a call for heat and is connected to a low voltage relay (PAM-4).

NOTE: On the gas heat sections larger than 800 mbh, AO-1 is used to enable each stage of heat. The AO outputs 1.1 Vdc for each stage that is active. Therefore, stage one would equal 1.1 Vdc while stage two would equal 2.2 Vdc. The AO is connected to a digital sequencing band to allow for multiple stages.

Gas Heat Section larger than 800 MBH and units with JHUP option **-** Upon a call for heating and fan status, the first stage of heating is enabled. The modulating output then varies the heating output from 0% to 100% command (2 to 10 Vdc to allow an 8:1 turndown on gas) to maintain the active heating control setpoint **(ActHtgSP)**. Stage two consists of enabling a fixed staged output while continuing to modulate the first stage. Stage two is enabled when the following conditions are met.

1) The modulation valve is at its maximum output position (100%) for the maximum position timer **(MaxPosTm = 5 min)**.
2) The active heating control temperature **(ActHtgT)** is below the active heating control setpoint **(ActHtgSP)** by a difference of the heat staging deadband **(HtgStgDB = 5°F)**.

Stage two will remain enabled until the following conditions are met.

1) The modulation valve is at its minimum output position (0%) for the minimum position timer **(MinPosTm = 5 min)**.
2) The active heating control temperature **(ActHtgT)** is above the active heating control setpoint **(HtgDatSP)** by a difference of the heat staging deadband **(HtgStgDB = 5°F)**.

Stage one will remain enabled until the following conditions are met.

1) The modulation valve is at its minimum output position (0%) for the minimum position timer **(MinPosTm = 5 min)**.
2) The active heating control temperature **(ActHtgT)** is above the active heating control setpoint **(ActHtgSP)** by a difference of the heat staging deadband **(HtgStgDB = 5°F)**.

Electric Staged Heat - There is an intra-stage delay of 60 seconds between staging up and down of electric stages to prevent short cycling. Upon a call for heating and proof of fan status, the system enables the first stage of heating. Each consecutive stage is then added after its intra-stage delay has been satisfied and the heating control temperature **(ActHtgT)** (discharge air temperature) is still above the active heating setpoint **(HtgDatSP)** by its associated heat staging deadband **(HtgStgDB = 5°F)**.

Each consecutive stage is removed after its intra-stage delay has been satisfied, and the heating control temperature **(ActHtgT)** (discharge air temperature) is below the heating setpoint by its associated heat staging deadband **(HtgStgDB = 5°F)**.

The table below shows the available stages for each size of electric heat.

NOTE: AO-1 is used to enable electric heating. For single stage units, AO-1 is connected to a low voltage relay and outputs 10 Vdc on a call for heat. For three stage electric units, AO-1 and AO-2 are connected to low voltage relays. Each AO outputs 10 Vdc upon a call for the associated heat stage. For four stage units, AO-1 is connected to a digital sequencer board and outputs 1.1 Vdc for each active stage. Therefore, stage one equals an output of 1.1 Vdc while stage two equals 2.2 Vdc.

Size (Model)	Staging Sequence				Notes
	Stage 1	Stage 2	Stage 3	Stage 4	
05S	5				AO1=Stage 1
10S	10				AO1=Stage 1
15S	15				AO1=Stage 1
20S	20				AO1=Stage 1
24S	24				AO1=Stage 1
15	5	10	5 + 10		AO1=Stage 1, AO2=Stage 2, AO1+AO2=Stage3
20	5	15	5 + 15		AO1=Stage 1, AO2=Stage2, AO1+AO2=Stage3
25	10	15	10 + 15		AO1=Stage 1, AO2=Stage2, AO1+AO2=Stage3
30	10	20	10 + 20		AO1=Stage 1, AO2=Stage2, AO1+AO2=Stage3
35	15	20	15 + 20		AO1=Stage 1, AO2=Stage2, AO1+AO2=Stage3
39	15	24	15 + 24		AO1=Stage 1, AO2=Stage2, AO1+AO2=Stage3
50	10	10 + 10	10 + 10 + 15	10 + 10 + 15 + 15	AO-1 connect to Digital Sequencer
60	10	10 + 10	10 + 10 + 20	10 + 10 + 20 + 20	AO-1 connect to Digital Sequencer
75	15	15 + 20	15 + 20 + 20	15 + 20 + 20 + 20	AO-1 connect to Digital Sequencer
88	20	20 + 20	20 + 20 + 24	20 + 20 + 24 + 24	AO-1 connect to Digital Sequencer

Heating Mode Controls

Option D15: There is a call for heating from the system when the discharge air temperature (DAT) is less than the Active Neutral Air Heating Setpoint by a difference of the Heating Enable Deadband **(HtgEnDb = 4)** for more than 60 seconds.

Option D16: There is a call for heating from the system when the DAT is less than the Active DAT Heating Setpoint **(HtgDatSP)** by a difference of the Heating Enable

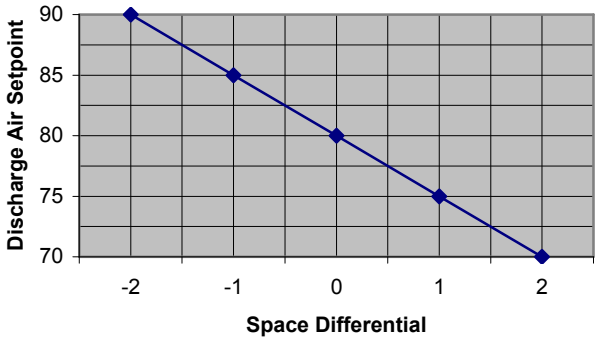
2.0 Sequence of Operation (cont'd)

Heating Mode Controls **(cont'd)**

Deadband **(HtgEnDb = 4)** for more than 30 seconds. The Active DAT Heating Setpoint **(HtgDatSP)** for Option D16 is calculated using a reset table.

Discharge Air Reset allows for the system to automatically adjust the discharge temperature to help maintain space setpoints.

Space Differential	Discharge Air Setpoint
-2 (SpcLoSP)	90 (DatHiSp)
2 (SpcHiSp)	70 (DatLoSp)



NOTE: *See the operations manual for the specific number of cooling stages available for each cooling size.*

Cooling Mode

There is an intra-stage delay of 240 seconds between staging up and down of compressors to prevent short cycling. Upon a call for cooling and proof of fan status, the system enables the first stage of cooling. Each consecutive stage is then added after its intra-stage delay has been satisfied and the cooling control temperature (space or discharge air temperature) is still above the cooling setpoint by its associated cooling deadband. Each consecutive stage is removed after its intra-stage delay has been satisfied and the cooling control temperature (space or discharge air temperature) is below the cooling setpoint by its associated cooling deadband.

Cooling Mode Controls

Option D15: There is a call for cooling from the system when the Discharge Air Temperature is greater than the Active Cooling Coil Discharge Air Temperature Setpoint by a difference of the Cooling Enable Deadband **(ClgEnDB = 5)** for more than 60 seconds and the outside air temperature is above the outside air temperature lockout.

Option D16: There is a call for cooling from the system when the Space Temperature is greater than the Active Space Cooling Setpoint by a difference of the Cooling Enable Deadband **(ClgEnDB = 2)** for more than 60 seconds and the outside air temperature is above the outside air temperature lockout.

Dehumidification Mode (Reheat Pump)

Option D15: On proof of fan status and when the Outside Air Dewpoint is above the Dewpoint Lockout Setpoint **(DwPtLkout = 58)**, the Outside Air Temperature is above the OAT Low Limit Lockout Setpoint **(OATLoLkout = 60)** and below the OAT High Limit Lockout 120°F Setpoint **(OATHiLkout = 120),** the IQ System Controller starts the reheat pump to maintain the discharge air temperature and humidity.

Option D16: On proof of fan status and when the Outside Air Dewpoint is above the Dewpoint Lockout Setpoint **(DwPtLkout= 58)**, the Outside Air Temperature is above the OAT Low Limit Lockout Setpoint **(OATLoLkout = 60)** and below the OAT High Limit Lockout Setpoint **(OATHiLkout = 120),** the IQ System Controller starts the reheat pump to maintain the discharge air temperature and humidity. With Option D16, the system overrides the reheat pump to allow the system to maintain the space conditions according to the following conditions.

- If the Space is calling for cooling, the IQ System Controller disables the reheat pump and maintains the Room Override Cooling Setpoint **(RmOvdClg = 55)**. The unit will remain in this mode until the space temperature equals the space cooling setpoint. The IQ System Controller then returns to humidity control.
- If the Space is calling for heating, the IQ System Controller disables the reheat pump and maintains the Room Override Heating Setpoint **(RmOvdHtg = 90)**. The unit will remain in this mode until the space temperature equals the space heating setpoint. The IQ System Controller then returns to humidity control.

NOTE: *The ability to enable the dehumidification sequence by the humidity sensor was added in software version 2.01.*

Option D15 or D16 with Option DT7: If an optional space humidity sensor (Option DT7) is installed, the IQ system has the ability to either stop or start the dehumidification sequence based on the space humidity condition. If the Humidity sensor is set to "Disable dH", the IQ controller disables the dehumidification sequence when the space humidity is below the space humidity setpoint **(SpcHumSP = 60)**. If the Humidity sensor is set to "Enable dH", the IQ controller enables the dehumidification sequence when the space humidity is above the space humidity setpoint **(SpcHumSP = 60)** and the outside air temperature is within the low and high limits.

2.1.4 Safeties, Alarms, and Lockouts

Auto Restart Mode

Any time a critical alarm occurs, the system will initiate the restart sequence. During the restart sequence the unit mode shows **SysRestart.** Also, on the main screen on the unit interface module (BACview) under the unit mode, the remaining time before unit startup will be shown.

The restart sequence is as follows: The unit shuts down for **60 minutes**. After the restart timer has expired, the system restarts in normal mode. Resetting the alarm through the unit interface module (BACview), or power cycling the unit will clear the system restart mode, and the unit will then restart in normal mode. The alarm(s) that caused the system shutdown will be logged in the alarm screen under the return to normal section. See Menu 3.5.46.

Shutdown Mode

The shutdown sequence allows the system to go through the restart sequence a fixed number of times over a 24 hour period. Once the unit has gone though the auto restart limit **(Auto Restart = 3),** the system controller locks the system out. The unit mode will show **SysShutdwn**. Once the unit is in this mode the unit must be manually restarted. This can be done by cycling power to the unit, by resetting the system shutdown alarm from the unit interface module (BACview) or through the owner's building automation system. The alarm(s) that caused the system shutdown will be logged in the alarm screen under the return to normal section. See Menu 3.5.46.

Supply Air Fan (Critical Alarm)

If, at any time after two minutes **(Fan Failure Timer = 2)** from a start command, fan operation does not prove via air flow switch, the IQ System Controller shuts down the system and starts the auto restart program.

Low Limit (Critical Alarm)

If the Discharge Air Temperature (DAT) falls below the Low Limit (Freezestat) Setpoint **(LoLimitSP = 36)** for more than the Low Limit Timer **(LoLimitTmr = 10 min)**, the IQ System Controller shuts down the system, closes the outside air damper, and starts the auto restart program.

The low limit sequence can be disabled by setting the Low Limit enable setpoint to "No" **(LoLimitEn = Yes)**. **NOTE: This disables the low limit sequence, and the unit will no longer shutdown on low discharge air temperature.**

Sensor Failure

A specific alarm shall be initiated when any of the sensors indicate failure. If the sensor is used for control, the IQ Controller will shut down the system.

Alarm Text	Alarm Description	Alarm Priority
Space Temp Bad	Space sensor not reading correctly.	Critical (D16)
OA Temp Bad	OA Temp sensor not reading correctly. (-60 open circuit, 255 shorted circuit)	Critical
ClgCoil DAT Bad	Cooling Coil DAT sensor nor reading correctly. (-60 open circuit, 255 shorted circuit)	Non-critical
DA Temp Bad	DA Temp sensor not reading correctly. (-60 open circuit, 255 shorted circuit)	Critical
OA Hum Bad	OA Hum sensor not reading correctly.	Non-critical
MA Temp Bad	MA Temp sensor not reading correctly. (-60 open circuit, 255 shorted circuit)	Non-critical
Space Hum Bad	Space Humidity sensor not reading correctly.	Non-critical
CO2 Bad	CO2 sensor not reading correctly.	Non-critical
Pressure	Pressure sensor not reading correctly.	Non-critical

2.0 Sequence of Operation (cont'd)

NOTE: See the operations manual for the additional information on the gas heating alarms.

NOTE: The gas modulation alarms on page 10 apply to MAPS® Cabinets A, B, and C. For MAPS®III D Cabinet unit, refer to Form O-MAPSIII Cabinet D for heating modulation alarms.

Mechanical Heating Lockouts and Alarms - Gas Heat ONLY

If the outside air temperature (OAT) is above the Heating Lockout 62°F Setpoint **(HtgLkout = 62)**, the IQ System Controller locks out heating. The IQ System Controller communicates with the deep modulation heating board. The deep modulation heating board sends the current condition and alarm condition for the heating system. A list of alarms from the deep modulation heating board is on page 10. All alarms are logged into the alarm log menu.

The IQ system monitors the deep modulation board. When an error code E01 to E09 is received from the deep modulation heating board, the IQ system has the ability to shutdown the unit. Shutting down of the unit due to heat failure can be disabled by adjusting the Heating feedback Shutdown setpoint **(Shtdn = Disabled)**. This can be found under the configuration menu.

Mechanical Cooling Lockouts

If the outside air temperature (OAT) is below the Cooling Lockout Setpoint **(ClgLkout = 68)**, the IQ System Controller locks out cooling. There are three enthalpy/dry bulb temperature lockouts for staging of compressors based on the inlet conditions.

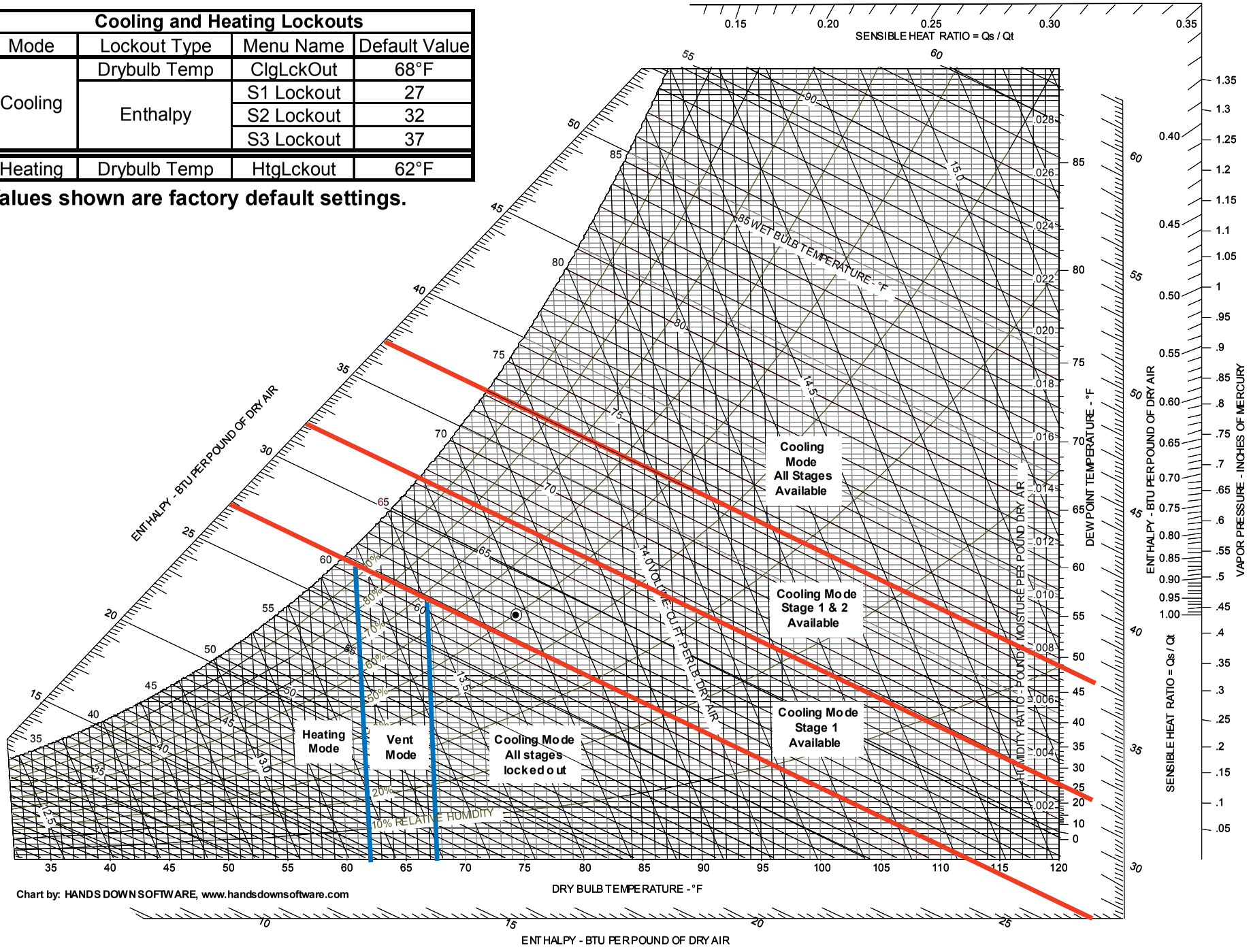
- If the inlet air enthalpy is below the Enthalpy Stage One Lockout **(S1Lkout = 27)**, stages 1-7 are disabled.
- If the inlet air enthalpy is below Enthalpy Stage One Lockout plus Enthalpy Stage Two Lockout Differential **(S2DiffSP = 5)**, stages 2-7 are disabled. Enthalpy stage two lockout equals 27 + 5 = 32 btu/lb.
- If the inlet air enthalpy is below Enthalpy Stage Two Lockout plus Enthalpy Stage Three Lockout Differential **(S3Diff SP = 5)**, stages 3-7 are disabled. Enthalpy Stage Three Lockout equals 32 + 5 = 37 btu/lb.
- Once the enthalpy is above the Enthalpy Stage Three Lockout Point of 37 btu/lb, all stages are allowed to run.

Dehumidification Lockout

If the Outside Air Dewpoint is below the Reheat Dewpoint Lockout Setpoint **(DwPtLkout = 58)**, below the Reheat Low Limit Lockout **(OATLoLkout = 60)**, or above the Reheat High Limit Lockout **(OATHiLkout = 120)**, the IQ System Controller locks out the dehumidification circuit.

Cooling and Heating Lockouts			
Mode	Lockout Type	Menu Name	Default Value
Cooling	Drybulb Temp	ClgLckOut	68°F
	Enthalpy	S1 Lockout	27
		S2 Lockout	32
		S3 Lockout	37
Heating	Drybulb Temp	HtgLckout	62°F

Values shown are factory default settings.



2.0 Sequence of Operation (cont'd)

NOTE: The phase loss monitor detects a single phasing, low voltage, high voltage, phase reversal, or voltage unbalance condition. The IQ system shuts down the unit.

Safety Input Alarm

If at any time an Open Safety Input condition is detected by the IQ system, the unit shuts down. This could include smoke, firestat, phase monitor alarm, or other field-supplied alarm. The IQ system monitors the Safety Input condition using a digital input on the IQ control board. The unit remains off until the Open Safety Input condition is corrected. Resetting of unit operation occurs automatically once the Open Safety Input condition has been corrected.

Alarm List

The following table lists all alarms that are available to the unit interface module (BACview) and also the building automation system.

Software Version 1.05 and Below	Software Version 1.06 and Above	Alarm Code on Room Interface Module	Alarm Description
Alarm Text on the BACview			
ID = sf_fail	Supply Fan Fail	12	Unit is commanded on but no feedback shown from pressure switch.
ID = shutdown_f	Unit Shutdown	3	Unit has cycled thru automatic restarts and IQ System has shutdown unit. Unit requires manual reset. Look at alarm history to see cause of unit shutdown.
ID = saf_runtime	SA Fan Runtime	81	Supply air fan (blower) has passed runtime alarm setpoint.
ID = reht_runti	ReHeat Runtime	82	Reheat pump has passed runtime alarm setpoint.
ID = compa_runt	Comp A Runtime	84	Compressor A has passed runtime alarm setpoint.
ID = compd_runt	Comp B Runtime	85	Compressor B has passed runtime alarm setpoint.
ID = compc_runt	Comp C Runtime	86	Compressor C has passed runtime alarm setpoint.
ID = compd_runt	Comp D Runtime	87	Compressor D has passed runtime alarm setpoint.
ID = hi_datsp_a	HiDAT Setpt Alm	92	Discharge air temperature heating setpoint is more than 100° above inlet air conditions.
ID = filter_alm	Filter Dirty	69	Filter is dirty (Contact closed)
ID = freeze_sta	Freeze Protect	18	IQ System Freeze protection is active.
Space Temp Bad	Space Temp Bad	27	Space sensor not reading correctly (communication error).
OA Temp Bad	OA Temp Bad	39	Outside air temperature sensor not reading correctly. (-60 open circuit, 255 shorted circuit)
ClgCoil DAT Bad	ClgCoil DAT Bad	45	Cooling Coil discharge air temperature sensor not reading correctly. (-60 open circuit, 255 shorted circuit)
DA Temp Bad	DA Temp Bad	24	Discharge air temperature sensor not reading correctly. (-60 open circuit, 255 shorted circuit)
OA Hum Bad	OA Hum Bad	42	Outside air humidity sensor not reading correctly.
MA Temp Bad	MA Temp Bad	48	Mixed air temperature sensor not reading correctly. (-60 open circuit, 255 shorted circuit)
CO2 Bad	CO2 Bad	54	CO2 sensor not reading correctly.
Pressure	Pressure	51	Pressure sensor not reading correctly.
ID = spchum_bad	Space Hum Bad	57	Space humidity sensor not reading correctly.
ID = smoke_dete	Smoke Alarm	6	Smoke alarm is active. (DI contact is open)
ID = phase_loss	Phase Alarm	9	Phase alarm is active. (DI contact is open)
ID = htg_alm_fi	A01-Ign Retry	15	*Alert: Failed Ignition Attempt (maximum number of retries not met; will light or lockout)
ID = htg_alm_lf	A02-Lost Flame	15	*Alert: Lost Flame (flame is established but flame sensor signal is lost during call for heat)
ID = htg_alm_ic	A03-Insuff Comb	15	*Alert: Insufficient Combustion Air (furnace functional; combustion airflow problem)
ID = htg_alm_ll	A04-LimitLoFire	15	*Alert: Limited Low Fire (to avoid flame loss at minimum fire; reset by cycling power)
ID = htg_alm_wf	A05-Weak Flame	15	*Alert: Weak Flame Signal (flame signal less than optimal; service is required)
ID = htg_alm_ce	A99-Slave Error	15	*Alert: Slave Error
ID = htg_alm_co	No Communication Heating	-	*Deep modulation board monitoring is enabled, but no feedback is available (0 VDC from board)
ID = htg_alm_fi	E01-Failed Ign	15	*Error: Failed Ignition (maximum retries exceeded; service is required).
ID = htg_alm_pl	E02-Limit Fail	15	*Error: Primary Limit/Fuse Failure (board fuse blown or temperature limit exceeded)
ID = htg_alm_mv	E03-Mod Valve	15	*Error: Modulation Valve Failure (gas valve actuator control lost; check wiring & control)
ID = htg_alm_as	E04-LoCombAir	15	*Error: Air Sensor Failure (pressure too low or pressure switch erroneously closed)
ID = htg_alm_as	E05-HiCombAir	15	*Error: Air Sensor Failure (pressure too high or pressure switch erroneously open)
ID = htg_alm_gs	E06-LoGasPress	15	*Error: Gas Sensor Failure (transducer reading too low manifold pressure; 1.4" w.c.required)
ID = htg_alm_gs	E07-HiGasPress	15	*Error: Gas Sensor Failure (transducer reading too high manifold pressure; 2.8" w.c. max)
ID = htg_alm_if	E08-ImpropFlame	15	*Error: Improper Flame Signal (flame sensed in "off" cycle; check gas valve)
ID = htg_alm_nf	E09-NoFireRate	15	*Error: No Firing Rate Input (requires 1.5 VDC input voltage; check wiring and components)
ID = htg_alm_sf	A20-Slave Miss	15	*Alert: Slave Miss
ID = htg_alm_sf	A21-Slave Lock	15	*Alert: Slave Lock
ID = htg_alm_li	Eid-Invalid ID	15	*Error: Invalid Plug (check id plug label for compatibility & proper insertion)
* See operation/maintenance Form O-MAPS Cabinets A/B/C for additional information. These Alarms DO NOT apply to MAPS®III Cabinet D.			

2.2 Configurable Sequences

There are several factory-supplied configurable sequences that are available within the IQ system controller that are shipped with a factory default of “disabled”. All configurable sequences can be field enabled and simply accomplished by following the steps list below.

2.2.1 Neutral Air Control / Space Override Control

All IQ system controllers are shipped with the ability to run both the Neutral Air Control sequence (D15) and Space Override Control Sequence (D16). The system will be factory set to the option specified in the order. To change the current temperature control sequence from one control to the other, go to the Edit Configuration Menu (Section 3.5.44) and modify the control sequence setpoint **(CtrlType: Set at Factory)**. To enable the desired temperature control sequence, set the setpoint to either “Neutral Air” which is Option D15 or “Space Ctrl” which is Option D16. If changing from D15 to D16 sequence, the Room Interface Module must be enabled. See Section 3.1.

2.2.2 Neutral Air Reset (Only available on Option D15)

The neutral air setpoint can be reset by the outside air temperature. The reset enable setpoint **(AllwTempRst = N)** is located under the Neutral Air Setpoints Menu (Section 3.5.13). To enable the reset sequence change the setpoint from “N” to “Y”. All associated menus are now available.

The neutral air (NA) setpoint is calculated using a reset table as follows.

- If the OAT equals the OAT Low Limit Reset Setpoint **(OATLoSP = 20),** the NA setpoint equals the NA Temperature High Reset Setpoint **(NatHiSP = 90)**.
- If the OAT equals the OAT High Limit Reset Setpoint **(OATHiSP = 65)**, the NA heating setpoint is equal to NA Temperature Low Limit Reset Setpoint **(NatLoSP = 70)**.

The NA Temperature is reset linearly from the NA Temperature Low Limit Reset Setpoint and NA Temperature High Reset Setpoint.

Neutral Air Temperature (NAT) Reset Table	
Outside Air or Mixed Air Temperature (°F)	NAT Setpoint (°F)
20	90
44	80
65	70

2.2.3 Night Setback/Setup

Night Setback/Setup sequence can be enabled by adjusting the Enable NSB setpoint **(AllwNSB = N)** which is located under the Neutral Air Setpoints Menu (Section 3.5.13) or the Space Setpoints Menu (Section 3.5.15). This will depend on what application is activated (D15 or D16). To enable the Night Setback/Setup sequence change the setpoint from “N” to “Y”. All associated menus are now available.

NOTE: If D15 was ordered from the factory, the Room Interface Module (CL77) must be activated through the Unit Interface Module before any associated setpoint will be available. See Section 3.1 for how to enable the Room Interface Module (CL77).

Night Setback - Cooling Mode

When the space temperature rises above the unoccupied cooling setpoint **(UnocClgSP = 85)**, the unit is indexed to the occupied mode, and the Neutral Air Setpoint is overridden to the Cooldown Discharge Air Temperature Setpoint **(ClDnDATSP = 55)**. The system remains in this mode until the space temperature is less than or equal to the unoccupied cooling setpoint minus the Cooling Disable Deadband **(ClgDisDb = 3)** or the system runs into the occupied times.

Night Setback - Heating Mode

When the space temperature falls below the unoccupied heating setpoint **(UnocHtgSP = 60)**, the unit is indexed to the occupied mode and the Neutral Air Setpoint is overridden to Warmup Discharge Air Temperature Setpoint **(WUpDATSP = 90)**. The system remains in this mode until the space temperature is greater than or equal to the unoccupied heating setpoint plus the Heating Disable Deadband **(HtgDisDb = 3)** or the system runs into the occupied times.

Night Setback - All Modes with Option DT7

When a space humidity sensor is installed (Option DT7), if the space humidity rises above the Unoccupied Space Humidity Setpoint **(UnocHumSP = 70)** and the dehumidification is allowed to run, the unit is indexed to the occupied mode; and the Discharge Air Temperature (DAT) is set to provide 70°F at 50% RH. The system remains in this mode until the space humidity is less than or equal to the unoccupied space humidity setpoint **(UnocHumOffDb = 3)** or the system runs into the occupied times. The night setback for humidity control overrides the night setback/setup temperature control.

2.0 Sequence of Operation (cont'd)

Controls for Night Setup/Setback

Option D15: There must be a Wall Temperature Sensor (Option CL77) installed and enabled before night setback/setup can be enabled. During the night setback/setup, the unit reverts to a space override unit until the system becomes occupied.

Option D16: The Wall Temperature Sensor must be enabled before night setback/setup can be enabled.

2.2.4 Schedule Options

There are several options available for scheduling the unit. The desired schedule configuration must be selected by adjusting the occupancy configuration (Occ Config = Always Occ) which is located under the Schedules Menu (Section 3.5.45). To enable the desired Occupancy configuration, change the setpoint to the desired selection. Once enabled the unit shall use the associated sequence below to operate the unit schedule. There can only be one active schedule used. These schedules include **Always Occupied** (the default described in the standard sequence in Section 2.1), **Always Unoccupied, BAS On/Off, BI Occ/Unocc, BAS Occ/Unocc, BACnet schedule, and local schedule.**

Schedule Type	Point Type	Requirements
Always Occupied	Virtual*	Interface via BACview
Always UnOccupied	Virtual*	Interface via BACview
BAS On/Off	Virtual*	Interface via Building Automation System
DI Occ/Unocc	Hardware	Require BHB3 expansion Board. Interface via physical connection.
BAS Occ/Unocc	Virtual*	Interface via Building Automation System
Internal Sch	Virtual*	Interface via BACview
BACnet Sch	Virtual*	Interface via Building Automation System

*Virtual Points are points that are within the software and require no additional equipment other than a way to interface to the point.

Always Unoccupied - The supply fan is always off.

BAS On/Off

This is a virtual (software) binary point that allows the system to be scheduled through the Building Automation System (BAS). Under this mode, the system cannot run the night setback or night setup routines. The BAS starts and stops the unit. There is an air proving switch that indicates proof of fan operation. The supply fan is subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

DI Occ/Unocc (This option requires option BHB6)

NOTE: The hardware binary input for a remote device that controls occupied/unoccupied resides on the optional expansion board (BHB6). The remote device will not function correctly if Option BHB6 is not installed.

This is a hardware (physical closure) binary point that allows the system to be scheduled via a contact closure. During the occupied mode the supply fan runs continuously. During the unoccupied mode the supply fan is disabled unless the night setback/setup routine is enabled. See night setback/setup sequence for fan operation conditions. There is an air proving switch that indicates proof of fan operation. The supply fan is subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

BAS Occ/Unocc

This is a virtual (software) binary point that allows the system to be scheduled through the BAS. During the occupied mode, the supply fan runs continuously. During the unoccupied mode, the supply fan is disabled unless the night setback/setup routine is enabled. See night setback/setup sequence for fan operation conditions. There is an air proving switch that indicates proof of fan operation. The supply fan is subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

Internal (local) Schedule

See Section 2.4 for details on configuring the local schedule.

The supply fan starts/stops automatically though a local time of day schedule. During the occupied mode, the supply fan runs continuously. During the unoccupied mode, the supply fan is disabled unless the night setback/setup routine is enabled. There is an air proving switch that indicates proof of fan operation. The supply fan is subject to

all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

BACnet Schedule

This is a virtual (software) BACnet schedule that resides in the IQ system controller that allows the system to be scheduled through the BAS. The BAS writes directly to the schedule located on the unit. During the occupied mode, the supply fan runs continuously. During the unoccupied mode, the supply fan is disabled unless the night setback/setup routine is enabled. See night setback/setup sequence for fan operation conditions. There is an air proving switch that indicates proof of fan operation. The supply fan is subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

2.3 Optional Sequences

NOTE: All sequences described under Section 2.3 Optional Sequences are not installed in the IQ system controller unless ordered with the original unit order.

The paragraphs in this section describe modifications to the standard sequence based on available options. When a specific option is ordered, it replaces the standard sequence for the specified section or is an addition to the standard sequence if the section is not defined in the base. All of the optional sequences described here require an option selection which includes a factory software change. Most also require an optional control expansion board, Option BHB6.

2.3.1 Supply Air Fan VFD Control Options

The VFD is soft start to a preselected setting. There are several VFD control options to choose from. The following describes the sequence for each choice. A system can have only one VFC control option selection.

CAUTION: Running the supply fan under default minimum will void the warranty.

Option VFC2, External 0-5vdc Input

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller modulates the supply fan speed based on the external input. The IQ System Controller modulates the fan speed up on an increase on the external input and down on a decrease. The control application scales the 0-5vdc signal between the minimum and maximum setpoints. The IQ System Controller limits the adjustable drive speed between a minimum setpoint **(SaFminPos = 50)** and a maximum setpoint **(SaFmaxPos = 100)**.

Option VFC3, Duct Static Pressure Control (Range 0 to 2.5” w.c.)

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller modulates the supply fan speed to maintain the static pressure setpoint **(Press SP = 1)**. The IQ System Controller modulates the fan speed up on a drop in static pressure and down on a rise. The control application uses a proprietary control loop to maintain the pressure setpoint. The IQ System Controller limits the adjustable drive speed between a minimum setpoint **(SaFminPos = 50)** and a maximum setpoint **(SaFmaxPos = 100)**.

Option VFC4, Building Pressure Control (Range -0.5 to 0.5” w.c.)

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller modulates the supply fan speed to maintain the building pressure setpoint **(PressSP = 0.1)**. The IQ System Controller modulates the fan speed up on a drop in building pressure and down on a rise. The control application uses a proprietary control loop to maintain the pressure setpoint. The IQ System Controller limits the adjustable drive speed between a minimum setpoint **(SaFminPos = 50)** and a maximum setpoint **(SaFmaxPos = 100)**.

Option VFC5, Space CO2 Control (Range 0 to 2000 ppm)

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller modulates the supply fan speed to maintain the CO2 setpoint level **(CO2SP = 800)**. The IQ System Controller modulates the fan speed up on a rise in the CO2 level and down on a decrease. The control application uses a proprietary control loop to maintain the pressure setpoint. The IQ System Controller

2.0 Sequence of Operation (cont'd)

limits the adjustable drive speed between a minimum setpoint **(SaFminPos = 50)** and a maximum setpoint **(SaFmaxPos = 100)**.

Option VFC7, Wall Temperature Sensor 3 Speed Fan Control

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller indexes the VFD to one of three fixed positions based on Wall Temperature Sensor selection.

- When the Wall Temperature Sensor is set on Low Speed, the VFD speed is set to the low speed setpoint **(LowSpeed = 50).**
- When the Wall Temperature Sensor is on Medium Speed, the VFD speed is set to the medium speed setpoint **(MedSpeed = 75)**.
- When the Wall Temperature Sensor is at high speed, the VFD speed is set to the high speed setpoint **(HiSpeed = 100)**.

Option VFC8, Four Speeds based on 2 Digital Inputs

On a command to start, the IQ System Controller enables the VFD and indexes the VFD drive speed to a fixed position based on two hardware inputs.

- If both input one and input two are open, the IQ System Controller indexes the system to the open speed setpoint **(Open = 50)**.
- If hardware input one is closed, the IQ System Controller indexes the system to the input one closed setpoint **(In1Closed = 60)**.
- If hardware input two is closed, the IQ System Controller indexes the system to the input two closed setpoint **(In2Closed = 75)**.
- If both input one and input two are closed, the IQ System Controller indexes the system to the closed reference setpoint **(Closed = 100)**.

Option VFC9, Adjustable Constant Volume

On a command to start, the IQ System Controller enables the VFD. On proof of fan status, the IQ System Controller indexes the VFD drive speed to a fixed position based on the Supply Air Fan VFD Setpoint **(VFDSetPt = 100)** available via the Local Control Display and the BAS.

2.3.2 Damper Control Options for Modulating Dampers, Options AR25, AR2G, AR2H, and AR2K (available only with GF2 or GF7)

When Option AR25, AR2G, or AR2H is ordered, there are several damper control options to choose from. The following describes the sequence for each choice. There can only be one selection made from the damper control options. If there is a return air damper in the configuration, it is interlocked with the Outside Air (OA) damper so that when the OA damper is commanded to a fixed position, the return air (RA) damper will be at its corresponding required position.

Option GF1, External 0-5vdc Input

On a command to start, the IQ System Controller enables the damper and modulates the damper based on the external input. The IQ System Controller modulates the damper open on an increase on the external input and closed on a decrease. The control application scales the 0-5vdc signal between the minimum and maximum setpoints. The IQ System Controller limits the adjustable outside air damper between a minimum setpint **(MinPos = 25)** and a maximum setpoint **(MaxPos = 100)**.

Option GF2, Two Position Dampers

When the unit is off, the Outside air damper is fully closed and the return air damper is fully open. On a command to start, the IQ System Controller enables the Damper and indexes the damper to a fixed position based on an adjustable setpoint **(MaxPos = 100)** available via the Local Control Display.

Option GF4, Four Positions based on 2 Digital Inputs

On a command to start, the IQ System Controller enables the damper and indexes the damper to a fixed position based on two hardware inputs.

- If both input one and input two are open, the IQ System Controller indexes the system to the Open Position Setpoint **(Open = 50)**.
- If hardware input one is closed, the IQ System Controller indexes the system to the Input 1 Position Setpoint. **(In1Closed = 60)**.

- If hardware input two is closed, the IQ System Controller indexes the system to the input 2 Position Setpoint **(In2Closed = 75)**.
- If both input one and input two are closed, the IQ System Controller indexes the system to the closed reference setpoint **(Closed = 100)**.

Option GF5, Building Pressure Control (Range -0.5 to 2.5" w.c.)

On a command to start, the IQ System Controller enables the damper and modulates the damper to maintain the Building Pressure Setpoint **(PressSP = 0.5)**. The IQ System Controller modulates the damper open on a drop in building pressure and closed on a rise. The control application uses a proprietary control loop to maintain the pressure setpoint. The IQ System Controller limits the adjustable outside air damper between a minimum setpoint **(MinPos = 25)** and a maximum setpoint **(MaxPos = 100)**.

Option GF6, Mixed Air Control by CO2 (Range 200 to 2000 ppm)

On a command to start, the IQ System Controller enables the damper and modulates the damper to maintain the CO2 Level Setpoint **(CO2SP = 800)**. The IQ System Controller modulates the fan speed up on a rise in the CO2 level and down on a decrease. The control application uses a proprietary control loop to maintain the pressure setpoint. The IQ System Controller limits the adjustable outside air damper between a minimum setpoint **(MinPos = 25)** and a maximum setpoint **(MaxPos = 100)**.

Option GF7, Two Position Outside Air Enthalpy Control (Range 15 to 40 btu/lb of dry air)

On a command to start, the IQ System Controller enables the damper and indexes the damper to a fixed position based on the outside air (OA) enthalpy changeover setpoint **(OAE Chgover = 28)**. When the OA enthalpy is above the changeover setpoint, the IQ System Controller indexes the damper to the High OA Enthalpy Damper Setpoint **(HiDAE Pos = 50)**. When the OA enthalpy is below the changeover setpoint, the IQ System Controller indexes the damper to the Low OA Enthalpy Damper Setpoint **(LoOAS Pos = 100)**.

Option GF8, Dual Reference Enthalpy Control

Option D15: The mixed air temperature (MAT) setpoint is the discharge air temperature setpoint **(NA SP = 70)** minus the Mixed Air Temperature Offset **(MAT Offset = 1)**.

Option D16: The mixed air temperature setpoint is a constant value. Default setpoint is 55°F **(MAT SP = 55).** Setpoint can be adjusted.

Application of Option GF8 - applies to Options D15 and D16: The dual reference enthalpy control sequence will be enabled upon proof of fan. The dampers will be modulated by the IQ System Controller between the required position open and 100% under the ventilation/recirculation and economizer application program as follows:

Condition 1: Outside air temperature < the mixed air temperature setpoint and the return air enthalpy > the outside air enthalpy plus 2. Under this condition, the IQ System Controller modulates the dampers to maintain the mixed air temperature (MAT) setpoint.

Condition 2: Outside air temperature > mixed air temperature setpoint and outside air enthalpy < return air enthalpy minus 2. Under this condition, the OA dampers will be 100% open and the RA damper shall be fully closed.

Condition 3: Outside air enthalpy > return air enthalpy minus 2. Under this condition, the outside air damper will be at its required position for minimum flow and the return air damper will be at its corresponding position open.

Option GF9, Dry Bulb Economizer Control

Option D15: The mixed air temperature (MAT) setpoint is the discharge air temperature setpoint **(NA SP = 70)** minus the Mixed Air Temperature Offset **(MAT Offset = 1)**.

Option D16: The mixed air temperature setpoint is a constant value. Default setpoint is 55°F **(MAT SP = 55).** Setpoint can be adjusted.

Application of Option GF9 - applies to Options D15 and D16: The dual reference enthalpy control sequence will be enabled upon proof of fan. The dampers will be modulated by the IQ System Controller between the required position open and 100% under the ventilation/recirculation and economizer application program as follows:

2.0 Sequence of Operation (cont'd)

Condition 1: Outside air temperature < the mixed air temperature setpoint and the return air temperature > the outside air temperature plus 2. Under this condition, the IQ System Controller modulates the dampers to maintain the mixed air temperature (MAT) setpoint.

Condition 2: Outside air temperature > mixed air temperature setpoint and outside air temperature < return air temperature minus 2. Under this condition, the outside air damper will be 100% open and the return air damper shall be fully closed.

Condition 3: Outside air temperature > return air temperature minus 2. Under this condition, the outside air damper will be at its required position for minimum flow and the return air damper will be at its corresponding position open.

2.3.3 Dehumidification Mode

Option AUR1, Reheat Pump Modulation

On proof of fan status and when the Outside Air Dewpoint is above the Reheat Dewpoint Lockout Setpoint **(DwPtLkout = 58)**, the Outside Air Temperature is above the Reheat Low Limit Lockout Setpoint **(OATLoLkout = 60)** and below the Reheat High Limit Lockout Setpoint **(OATHiLkout = 120)**, the IQ System Controller starts the reheat pump to maintain the discharge air temperature and humidity.

Option D15: The dehumidification control changes the cooling control from the Active Neutral Air Cooling Setpoint to the Cooling Coil Discharge Air Temperature Setpoint **(CC DAT SP = 55)**. The IQ System Controller then modulates the reheat pump to maintain the Active Neutral Air Cooling/Heating Setpoint based on the system mode.

Option D16: The dehumidification control changes the cooling control from the Active Neutral Air Cooling Setpoint to the Cooling Coil Discharge Air Temperature Setpoint **(CC DAT SP = 55)**. The IQ System Controller then modulates the Reheat pump to maintain the Active Space Cooling/Heating Setpoint based on the system mode.

NOTE: *The ability to enable the dehumidification sequence by the humidity sensor was added in software version 2.01.*

Options D15 and D16: If an optional space humidity sensor (Option DT7) is installed, the IQ system has the ability to either stop or start the dehumidification sequence based on the space humidity condition. If the Humidity sensor is set to "Disable dH", the IQ controller disables the dehumidification sequence when the space humidity is below the space humidity setpoint **(SpcHumSP = 60)**. If the Humidity sensor is set to "Enable dH", the IQ controller enables the dehumidification sequence when the space humidity is above the space humidity setpoint **(SpcHumSP = 60)** and the outside air temperature are within the low and high limits.

Options D17 and D18, Modulating Electric Reheat

Options D17 and D18 use the electric heating elements for both heating and reheat. Control Ooption D17 follows the same sequence as D15 while Option D18 follows the same sequence as D16. On proof of fan status and when the Outside Air Dewpoint is above the Reheat Dewpoint Lockout Setpoint **(DwPtLkout = 58)**, the Outside Air Temperature is above the Reheat Low Limit Lockout Setpoint **(OATLoLkout = 60)** and below the Reheat High Limit Lockout Setpoint **(OATHiLkout = 120)**, the IQ System Controller starts the elect reheat to maintain the discharge air temperature and humidity.

Option D17: The dehumidification control changes the cooling control from the Active Neutral Air Cooling Setpoint to the Cooling Coil Discharge Air Temperature Setpoint **(CC DAT SP = 55)**. The IQ System Controller then modulates the electric reheat to maintain the Active Neutral Air Cooling/Heating Setpoint based on the system mode.

Option D18: The dehumidification control changes the cooling control from the Active Neutral Air Cooling Setpoint to the Cooling Coil Discharge Air Temperature Setpoint **(CC DAT SP = 55)**. The IQ System Controller then modulates the electric reheat to maintain the Active Space Cooling/Heating Setpoint based on the system mode.

NOTE: *The ability to enable the dehumidification sequence by the humidity sensor was added in software version 2.01.*

Option D17 or D18 with Option DT7: If an optional space humidity sensor (Option DT7) is installed, the IQ system has the ability to either stop or start the dehumidification sequence based on the space humidity condition. If the Humidity sensor is set to "Disable dH", the IQ controller disables the dehumidification sequence when the space humidity is below the space humidity setpoint **(SpcHumSP = 60)**. If the Humidity sensor is set to "Enable dH", the IQ controller enables the dehumidification sequence

when the space humidity is above the space humidity setpoint **(SpcHumSP = 60)** and the outside air temperature are within the low and high limits.

2.3.4 Miscellaneous Optional Sensors

All sensors send a signal to the IQ controller. Wiring of field-installed sensors should be according to the guidelines in Section 5.1.

Option BE9, Evaporative Coil Temperature Sensor

Optional factory installed sensor used with either control Option D15 or D16 to monitor the discharge temperature of the air as it exits the main evaporative coil.

Option BE10, Mixed Air Temperature Sensor

Optional factory installed sensor used with either control Option D15 or D16 to monitor the temperature of the “mixed air” as it enters from both the outside air and return air openings.

Option BE11, Duct Static Pressure Sensor (0 to 2.5” w.c.)

Includes a factory installed transducer to monitor duct pressure. Field installation of the pressure pickup and field-supplied tubing is required, Follow the instructions in Section 5.4.

Option BE12, Building Static Pressure Sensor (-0.5 to 0.5” w.c.)

Includes a factory installed transducer to monitor building pressure. Field installation of the field-supplied pressure pickups and tubing is required, Follow the instructions in Section 5.4.

Option BE13, Return Air Temperature Sensor

A duct temperature sensor is factory installed in the return air opening.

Option BE14, Return Air Humidity Sensor

A humidity sensor is shipped separately or loose for field installation in the return air duct. Follow the instructions in Section 5.6.

Option BE15, Space CO2 Sensor (0 to 2000 ppm)

A CO2 sensor is factory installed in the return air opening

Option BE16, Photohelic Dirty Filter Sensor

Includes a factory installed photohelic pressure sensor to monitor air flow through the filters and send a signal to the IQ controller when the filters require maintenance or replacement.

Option BE17, Photoelectric Smoke Detector Sensor

Requires field installation of a smoke detector in the supply ductwork. Follow the manufacturer’s instructions to install. Comply with wiring guidelines in Section 5.1.

Option BE18, On/Off Dirty Filter Switch

Includes a factory installed dirty filter pressure switch that measures a drop in air pressure through the filters and sends a signal to the IQ controller when maintenance is required.

Option BE19, Outside Air/Return Air Override Mode

NOTE: Option BE19 is only available when AR25, AR2G, or AR2E is ordered.

Upon a binary input closure, the IQ System Controller overrides the outside air damper to a 100% output until the binary input opens. When the input opens, the IQ system controller returns to normal control based on the sequence.

Option BE20, Manual Schedule Override

A field-supplied override switch and optional expansion board (Option BHB6) are required. The IQ System controller only allows one active schedule. The manual schedule override allows a binary input to override the current schedule and can be configured to override occupied (Default) or unoccupied. Examples are exhaust fan status, occupancy sensor, etc. See Setpoint Menu 3.5.28.

Option BE21, Contacts for Occupied/Unoccupied Switch

A field-supplied override switch and optional expansion board (Option BHB6) are required. If the binary input is closed, the IQ system controller will set the unit to an

2.0 Sequence of Operation (cont'd)

occupied condition. If the binary input is open, the IQ system controller will set the unit to an unoccupied condition. **NOTE:** The schedule must be configured to use the binary input under the schedule menu.

Option BE22, Contacts for Unit Start/Stop Switch

A field-supplied override switch and optional expansion board (Option BHB6) are required. If the binary input is closed, the IQ system controller will start the system per the defined schedule. If the binary input is open, the IQ system controller will shut down the unit. See Setpoint Menu 3.5.28.

2.3.5 Energy Recovery (Option ER1)

All energy recovery modules have a unit-mounted, IQ controller that is programmed to control all system components located in the energy recovery module. This includes the energy recovery inlet fan, energy recovery exhaust fan, and the enthalpy wheel. The controller is programmed as both an integrated section of the main MAPS® unit a stand-alone unit (when connection to MAPS® unit controller is lost). Once the MAPS® and energy recovery module are connected in the field, the controllers automatically connect and start sharing information between systems. All information from the energy recovery module is shared with the main MAPS® unit IQ controller. This allows for unit to act as a complete system and to respond to all sensors installed in both components. This also allows one access point for all information and operational data.

For the integrated menus see Section 3.5. For the stand-alone menu, see Appendix, page 71. The following is the Integrated ERM sequence of operation.

Energy Recovery Start/Stop Control

The supply and exhaust fan starts/stops automatically through the base unit schedule command. If the Energy recovery start/stop point is closed and the main unit is occupied, the system will run the occupied sequence. If the energy recovery start/stop point is closed and the main unit is unoccupied or the energy recovery start/stop point is open, the system will run the unoccupied sequence. The supply air fan is interlocked to the damper end switch.

There is an air proving switch that indicates proof of fan operation. The energy recovery supply (inlet) fan and exhaust fan are subject to all safety devices, i.e. duct high limit switches, fire alarm relays, smoke detectors, low temperature limits, etc.

Occupied Mode: During the occupied mode the supply fan and exhaust fan runs continuously.

Unoccupied Mode: During the unoccupied mode the supply fan and exhaust fan are disabled and the return air damper is fully open.

Energy Recovery Supply Air and Exhaust Air Fan Control with VFD (Supply Fan Option SFD1 and Exhaust Fan Option EFD1)

Option SFC3: Energy Recovery Supply (inlet) Air Neutral Pressure Control (Range -0.5 to 0.5" w.c.)

On a command to start, the system controller enables the VFD. The system controller then modulates the supply fan speed to maintain the supply air plenum setpoint (SAPressSP = 0.00). The system controller modulates the fan speed up on a drop in building pressure and down on a rise. The control application uses a proprietary control loop to maintain the pressure setpoint. The system controller limits the adjustable drive speed between a minimum setpoint **(SaFminPos = 50)** and a maximum setpoint **(SaFmaxPos = 100)**.

Option SFC9: Energy Recovery Supply (inlet) Air Adjustable Constant Volume Control

On a command to start, the system controller enables the VFD and indexes the VFD drive speed to a fixed position based on the supply air fan VFD setpoint **(SAVFDSetPt = 50)** available via the local control display.

Option EFC4: Energy Recovery Exhaust Air Building Pressure Control (Range -0.5 to 0.5" w.c.)

On a command to start, the system controller enables the VFD. The system controller then modulates the exhaust fan speed to maintain the supply air plenum setpoint

(SAPressSP = 0.00). The system controller modulates the fan speed up on a drop in building pressure and down on a rise. The control application uses a proprietary control loop to maintain the pressure setpoint. The system controller limits the adjustable drive speed between a minimum setpoint **(EaFminPos = 50)** and a maximum setpoint **(EaFmaxPos = 100)**.

Option EFC7: Energy Recovery Exhaust Air Tracking of Main MAPS® Unit Blower

On a command to start, the system controller enables the VFD and indexes the VFD drive speed to a fixed position based on the Main unit blower VFD Setpoint and the exhaust air fan VFD offset setpoint **(EF Offset = 0)** available via the local control display. The system will automatically adjust the exhaust air VFD speed to match the main unit blower VFD speed with the difference of the exhaust air fan VFD offset setpoint.

Option EFC9: Energy Recovery Exhaust Air Adjustable Constant Volume Control

On a command to start, the system controller enables the VFD and indexes the VFD drive speed to a fixed position based on the exhaust air fan VFD setpoint **(EAVFD-SetPt = 50)** available via the local control display.

Enthalpy Wheel Control

Upon proof of the supply and exhaust air fans, the controller will start the enthalpy wheel. There is a current switch to prove wheel operation. The unit controller shall monitor the exchanger DAT temperature. Whenever the main unit goes into economizer mode the unit shall stop the enthalpy wheel. There is a built-in jog application on the wheel to help prevent dirt buildup when wheel is off due to economizer.

Frost Prevention - All Option ER1 energy recovery modules have a built-in frost prevention sequence. The frost prevention sequence monitors the outside air temperature, and when the outside air temperature falls below 7°F (-14°C), the controller implements a wheel start/stop/jog sequence to prevent frost buildup. Frost will not damage the wheel but will plug the wheel reducing airflow. The default setpoint of 7°F (-14°C) assumes a return air design condition with a maximum temperature of 72°F (22°C) at 40% RH as shown in the table below. If making a setpoint adjustment, the user must adjust based on the design conditions shown in the table. Once the outside air is 3 degrees F (2 degrees C) above the setpoint, wheel operation returns to normal.

If Option BE6 was ordered, in addition to monitoring the outside air temperature, a factory installed return air temperature and humidity sensor is used to calculate the frost threshold point and initiates the frost prevention sequence when the outside air falls below the calculated frost threshold temperature. (Frost threshold temperature is the point at which frost begins to accumulate on heat exchanger surfaces. It is a function of both outside air temperature, indoor temperature, and indoor relative humidity.) With Option BE6, the energy recovery wheel controller monitors the return air temperature, return air humidity, and outside air conditions and determines the frost threshold based on the chart below. Frost prevention is not required until outdoor air temperature is below the threshold. When the outside air temperature is below the frost threshold, the controller implements a wheel start/stop/jog sequence to help prevent frost buildup. Once the outside air temperature is 3 degrees F (2 degrees C) above the calculated frost threshold, wheel operation returns to normal.

Frost Threshold Temperatures (°F)				
Indoor Air R.H. %	Indoor Air Dry Bulb Temperature			
	70° F	72° F	75° F	80° F
20	-14	-13	-11	-8
30	-3	-2	-1	3
40	5	7 (default without Option BE6)	9	11
50	12	13	15	18
60	18	19	21	26

Frost Threshold Temperatures (°C)				
Indoor Air R.H. %	Indoor Air Dry Bulb Temperature			
	21° C	22° C	24° C	27° C
20	-26	-25	-24	-22
30	-19	-19	-18	-16
40	-15	-14 (default without Option BE6)	-13	-12
50	-11	-11	-9	-8
60	-8	-7	-6	-3

2.0 Sequence of Operation (cont'd)

2.4 Local (Internal) Schedules

NOTE: The internal schedule is only available when the schedule is configured to use "Local Schedule".

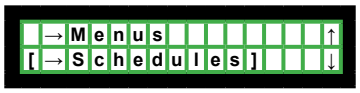
2.4.1 General Information

The local schedule consists of 4 Daily Events, 6 Holiday Events, and 2 Override Events. Each daily event consists of a start and stop time. Each daily event can then be applied to any or all of the weekdays and weekends. Therefore, a schedule of 8:00 am to 5:00 pm Monday through Friday would only use one Daily event. The Holiday Events consist of a start time, stop time, month, and day. The Holiday schedule overrides the daily event schedule. Once the holiday schedule is configured, it applies to all years so that there is no need to adjust every year. There are also two override events. The override events consist of a start time, stop time, month, and day. This schedule will override both the daily event and holiday event schedules. This is a one time override occurrence.

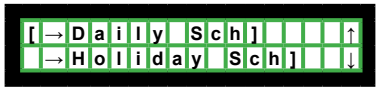
2.4.2 Sample of Configuring a Daily Schedule

NOTE: [ ] Brackets are around the current selection.

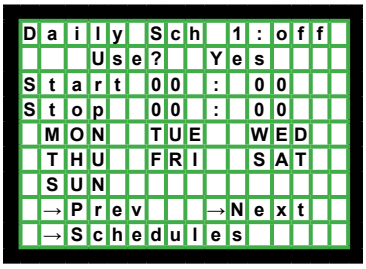
1. First press the ***Home Button***. Now Press the ***Right Arrow Button*** to scroll down until you reach the **Schedule** selection.



2. Once [Schedules] is selected press the ***Enter Button***. (**NOTE:** This moves you to the schedule page.)
3. Once on this page, press the ***Right Arrow Button*** to scroll down until you reach the **Daily Schedule** selection.



4. Once [Daily Sch] is selected, press the ***Enter Button***. (**NOTE**: This moves you to the daily schedule page.)



5. Now press the ***Left Arrow Button*** to scroll down to each selection to setup the schedule as follows.
   a) The first thing is to activate the Daily schedule by changing the use schedule command from "No" to "Yes". The default on the use is "No".
   b) Next is to set the start hours and minutes. The default start time on Daily schedule 1 is 7:30 (7:30 am).
   c) Next set the stop hours and minutes. The default stop time on Daily schedule 1 is 18:30 (5:30 pm).
   d) The last step is to scroll to each day of the week and either activate or deactivate the daily schedule event. If the day is shown, then the daily schedule is active for that day. The default active days on Daily schedule 1 are Mon, Tue, Wed, Thu, and Fri. Sat and Sun are deactivated by default.
6. Once complete you can go to the **Next** Menu link to access Daily Schedule 2 or **Prev** Menu Link to return to the schedules page.

3.0 Dialogs with the Reznor® MAPS® Units

The unit has two available interfaces for interacting with the IQ System controller. All units have a unit interface module (BACview) installed in the unit.

The second interface is the Room Interface Module (Option CL77) field installed in the space. See the sections below for a full description on how to use each interface.

Room Interface Module, Option CL77, P/N 222756

NOTE: The Room Interface Module cannot edit the schedule. Temporary override from the Wall Temperature Sensor does not change the time schedule. Schedule change must be done by the Remote Interface Module or BAS.

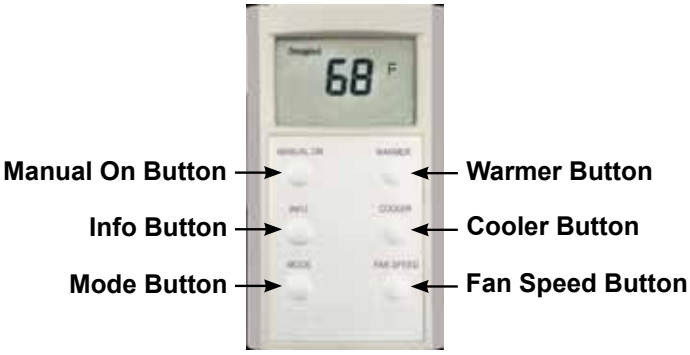
3.1 Remote Interface Module

There are two types of remote interfaces modules available with the IQ system controller. The first is option CL77 which can be purchased separately with control Option D15 but comes standard with Option D16. Option CL77 is the room interface module described in Section 3.1.1. The second is Option RB3 which is a remote unit interface module (BACview). This provides the same access as the unit interface module described in Section 3.2. For installation instructions for the room interface module (Option CL77), see Section 5.3, and for the remote unit interface module (Option RB3), see Section 5.7.

3.1.1 Room Interface Module (Option CL77)

Option D15: The function of the Option CL77 Remote Interface Module when used in a Neutral Air Application (Option D15) is to provide the ability to override occupancy (See **NOTE, next page**.), to display alarm codes from the unit controller, to provide space temperature reading, and to give the ability to modify the neutral air setpoint from the space.

Option D16: The Remote Interface Module is a standard part of the space override application (Option D16). The function when used in a Space override application is to provide the ability to override occupancy (See **NOTE**, left), to display alarm codes from the unit controller, to provide space temperature reading, and to give the ability to modify the space temperature setpoint from the space.



MANUAL ON	**Manual On Button** - This button allows the user to override the system when the unit is in the unoccupied mode. One push of the button allows 60 minutes, two allows 120 minutes, and three allows 180 minutes.
INFO	**Info Button** - This button provides the user with additional data. Each consecutive press shows additional data, as listed below.
	• ***First*** is outside air temperature • ***Second*** is time remaining for Manual On • ***Third*** is heating setpoint • ***Fourth*** is cooling setpoint • **Fifth** shows the Alarm Code • ***The next three*** show the configurable AI data • ***And the last four*** show the configurable BI data.
	Section 3.1.2 explains how to configure the AI and BI data.
MODE	**Mode Button** - This button allows the user to set the unit control mode. This includes **cool only, heat only, fan only, auto mode, and off mode**. (See paragraph following this table for a description on how each mode functions.)
WARMER	**Warmer Button** - This allows the user to increase the controlling setpoint. For Option D15, this is the neutral air setpoint; for Option D16, this is the space Heating/Cooling setpoint. The adjustment range (**SPAdjRng = +/- 2**) is set at the Unit interface module (BACview).
COOLER	**Cooler Button** - This allows the user to decrease the controlling setpoint. For Option D15, this is the neutral air setpoint; for Option D16, this is the space Heating/Cooling setpoint. The adjustment range (**SPAdjRng = +/- 2**) is set at the Unit interface module (BACview).
FAN SPEED	**Fan Speed Button** - This button is only enabled when Option VFC7 is ordered. This allows the user to change the VFD speed (low, medium, and high). See next section for a description on how each speed setting functions.

Both Option D15 and D16: The Remote Interface Module also has a configurable mode selection button which changes system between modes as follows:

- The cool only mode will enable the cooling and disable the heating.
- The heat only mode will enable the heating and disable the cooling.
- The fan only mode will disable the cooling and heating.
- The auto mode allows the system to switch between both heating and cooling automatically.
- The off mode disables the entire system.

In addition, when an optional VFD is ordered with Control Option VFC7, three speed fan control (low, medium, and high) is available from the Remote Interface Module. The actual speed the fan runs at each mode can be set at the Local Control Display mounted in the unit. Default settings are 50%, 75%, and 100%.

3.1.2 Configuring the Room Interface Module (Option CL77)

There are several configurable properties within the Room Interface Module. All parameters can be accessed through the Unit Interface Module (BACview). Before the parameters are available at the Room Interface Module, it must be enabled. When the Room Interface Module (CL77) is purchased with the unit either separately with an Option D15 application or as an integrated component with Option D16, the Room Interface Module is enabled at the factory. If the Module is ordered separately from the unit, follow the instructions below to activate the Room Interface Module.

1. Go to the Edit Configuration Menu (Section 3.5.44) and modify the two following setpoints based on the desired operating condition.
   a) The first setpoint is the Room Module Installed setpoint. Set this to "Yes". This will activate the Room Interface Module and enable the information button.
   b) The second setpoint is Room Module Enabled. Set this to "Yes" to enable the manual-on button, warmer and cooler buttons, mode button, and fan button (if applicable).
2. After the Room Interface Module is installed and enabled, the Room Interface Module Menu **(Rm IM Menu)** will be available. The Menu will allow you to do the following:
   a) Enable/disable the mode button, control night setback/setup, and control Optimum Start/Stop.
   b) Set the adjustment range of the warmer and cooler buttons.
   c) The Room Interface Module can display up to four additional analog values and four binary values. The first analog value is not adjustable and is set to the alarm code. See the alarm list in Section 2.1.4. The information can be customized under the Room Interface Module Menu.

Analog Value Display Choices (Alarm Code plus three others):

- Alarm Code (not adjustable; see list on page 10.)
- Discharge Air temperature **(DA Temp)**
- Carbon Dioxide Level **(CO2)**
- Pressure, Modulating Heat Output **(Mod Heat %)**
- Outside Air Damper Command percentage **(OA Dmpr %)**
- Supply Fan VFD command percentage **(SF VFD %)**
- Mixed Air Temperature **(MA Temp)**
- Cooling Coil Discharge Air Temperature **(CLCoilDAT)**
- Outside Air Humidity **(OA Hum)**
- Space Humidity **(Space Hum)**

The analog value default settings:

AV1 = Alarm Code **AV2 = DA Temp**
AV3 = Space Hum **AV4 = OA Hum**

Binary Value Display Choices:

- Filter Status **(FiltrStat)**
- Expansion Board Binary Input 1 Status **(Exp1 Inp1)**
- Expansion Board Binary Input 2 Status **(Exp1 Inp2)**
- Reheat Pump Command **(ReheatPmp)**

- Compressor A Command **(Comp A)**
- Compressor B Command **(Comp B)**
- Compressor C Command **(Comp C)**
- Compressor D Command **(Comp D)**
- Heat 1 Command **(Heat 1)**.

The binary value default settings:

BV1 = FiltrStat **BV2 = Heat 1**
BV3 = Comp A **BV4 = Comp B**.

3.2 Unit Interface Module (BACview)

All MAPS® units are equipped with a Unit Interface Module mounted inside the control panel. The Unit Interface Module has a display that is 2 lines by 16 characters, seven push buttons, and an alarm LED. The Unit Interface Module provides full access to the unit. A modular terminal with four screw terminals is used for communicating to the IQ System Controller and also provides power to the Unit Interface Module. The Unit Interface Module is used to monitor status, adjust setpoints, override points, and edit time schedules. It also makes it possible to list the alarms without communicating with a central system. The IQ System Controller holds the menu and information for the Unit Interface Module, thus the operator panel acts as a dumb terminal.

Unit Interface Module showing Display, Buttons, and LED Light

3.2.1 Push Buttons

The Unit Interface Module in the unit is equipped with seven push buttons as shown in the illustration. The function of each **button** is described below.

HOME ●	**HOME Button** is used to bring the user back to the starting menu page
CANCEL ●	**CANCEL Button** is used to cancel a setpoint change ***before*** the Enter button is used to accept the change.
INC ●	**INC Button** is used to increase values.
● DEC	**DEC Button** is used to decrease values.
◁●	**LEFT ARROW Button** is used to move the cursor upwards in a menu list or to move to previous alarm or logged record. This is also used when a numerical setpoint is selected to move between the ones, tens, and hundreds digits. (X X X °F)
●▷	**RIGHT ARROW Button** is used to move the cursor downwards in a menu list or to move to previous alarm or logged record. This is also used when a numerical setpoint is selected to move between the ones, tens, and hundreds digits. (X X X °F)
ENTER ●	**ENTER Button** is used to select a line, indicated by the brackets [ ]. This button also makes changes effective.

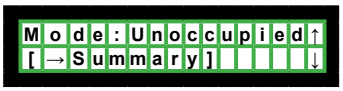
3.0 Dialogs with the Reznor® MAPS® Units (cont'd)

3.2 Unit Interface Module (BACview) (cont'd)

3.2.2 Using the Display

Th lowing section describes in detail how to accomplish viewing status information, changing a setpoint, and using the test mode.

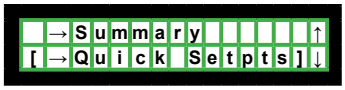
EXAMPLE 1: <u>Viewing the Summary Page</u>



NOTE: Brackets [ ] are around the current selection.

1) First, press the **Home Button**. Now, press the **Right Arrow Button** to scroll down until you reach the **Summary** selection.
2) With **[Summary]** on the display, press the **Enter Button**. (**NOTE:** This moves you to the summary menu page.)
3) Press the **Right Arrow Button** to scroll down through the summary menu to view the setpoints. **(NOTE:** You can press the **Left Arrow Button** to scroll back up the summary menu.)
4) To return to the previous menu page, scroll down to the bottom, select **[Prev]**, and press the **Enter Button**.

EXAMPLE 2: <u>Changing a Setpoint</u>



1) Press the **Home Button**.
2) Press the **Right Arrow Button** to scroll down to **[Quick Setpts]**. With **[Quick Setpts]** on the display, press the **Enter Button** (**NOTE:** This moves you to the quick setpoints page.)
3) Press the **Right Arrow Button** to scroll down to see each setpoint name and value. **NOTE:** You can press the **Left Arrow Button** to scroll back up the summary menu. Stop at the setpoint to be changed and press the **Enter Button**. The setpoint will begin to flash.
4) Use the **INC Button** to increase the setpoint number or the **DEC Button** to decrease the setpoint number. **NOTE:** Once a numerical setpoint is selected, use the **Right Arrow Button** and **Left Arrow Button** to move between the ones, tens, and hundreds digits to increase/decrease the number faster. If you try to increase or decrease the number outside of the setpoint range, the display will show a warning and will display the high and low limits for the setpoint.
5) Press the **Enter Button** to accept the new setpoint. **NOTE**: To revert back to the original setting without accepting the new setpoint, press the **Cancel Button**.
6) Press the **Right Arrow Button** to scroll down to the bottom of the menu; select either **[Prev]** and press the **Enter Button** to return to the previous menu page *or* press the **Home Button** to return to the beginning page.

3.3 Handheld Display, Option RB4, P/N 258452

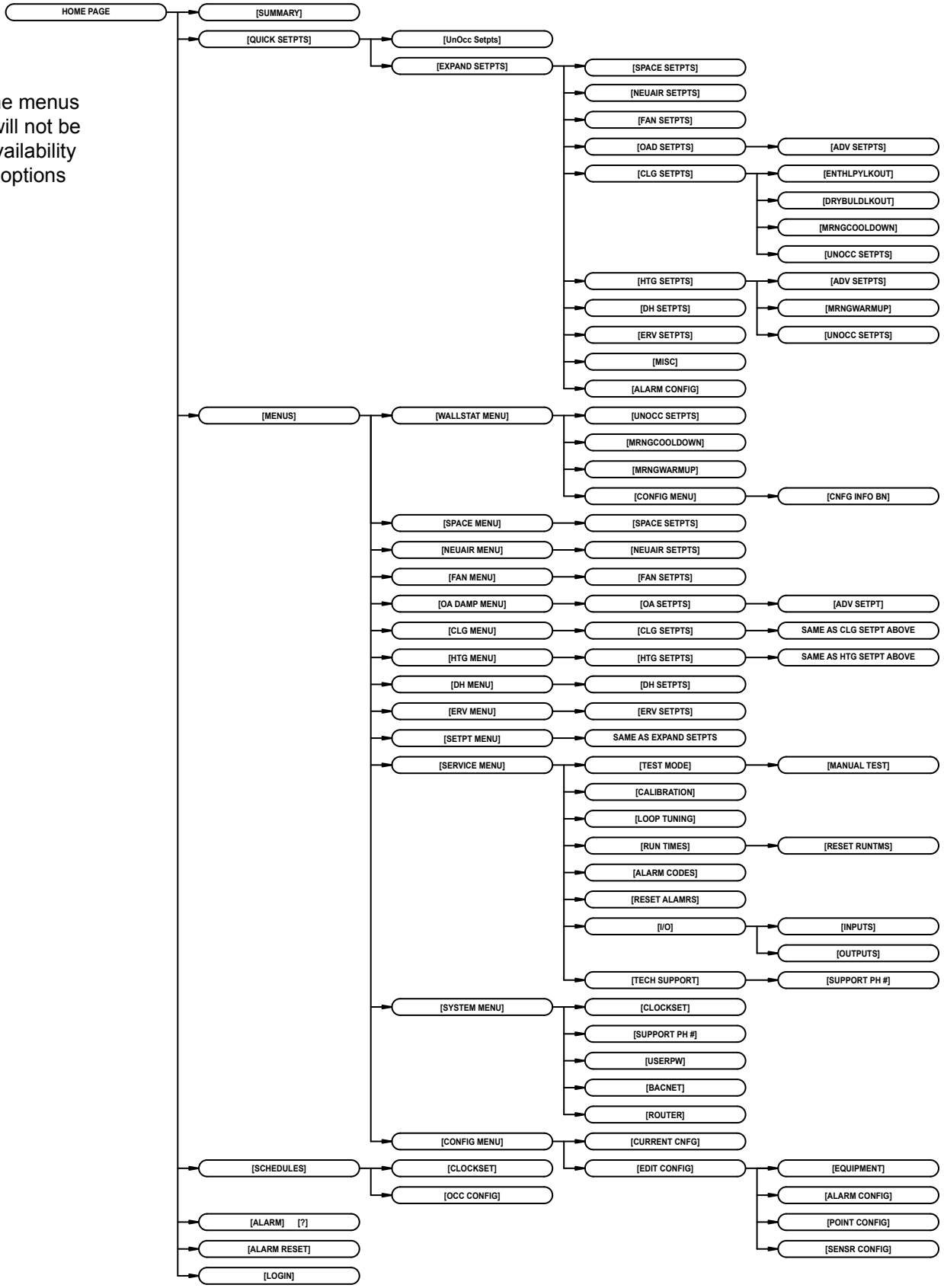
In addition, the Room Interface Module has a communication port located on the bottom that will allow the handheld service tool (Option RB4) to connect to the unit and modify the same parameters as available at the display mounted in the unit.

3.4 Menus

Menu Layout

The following diagram shows the menu layout for the Local Control Display in the MAPS® unit. See the individual sections for details on each menu.

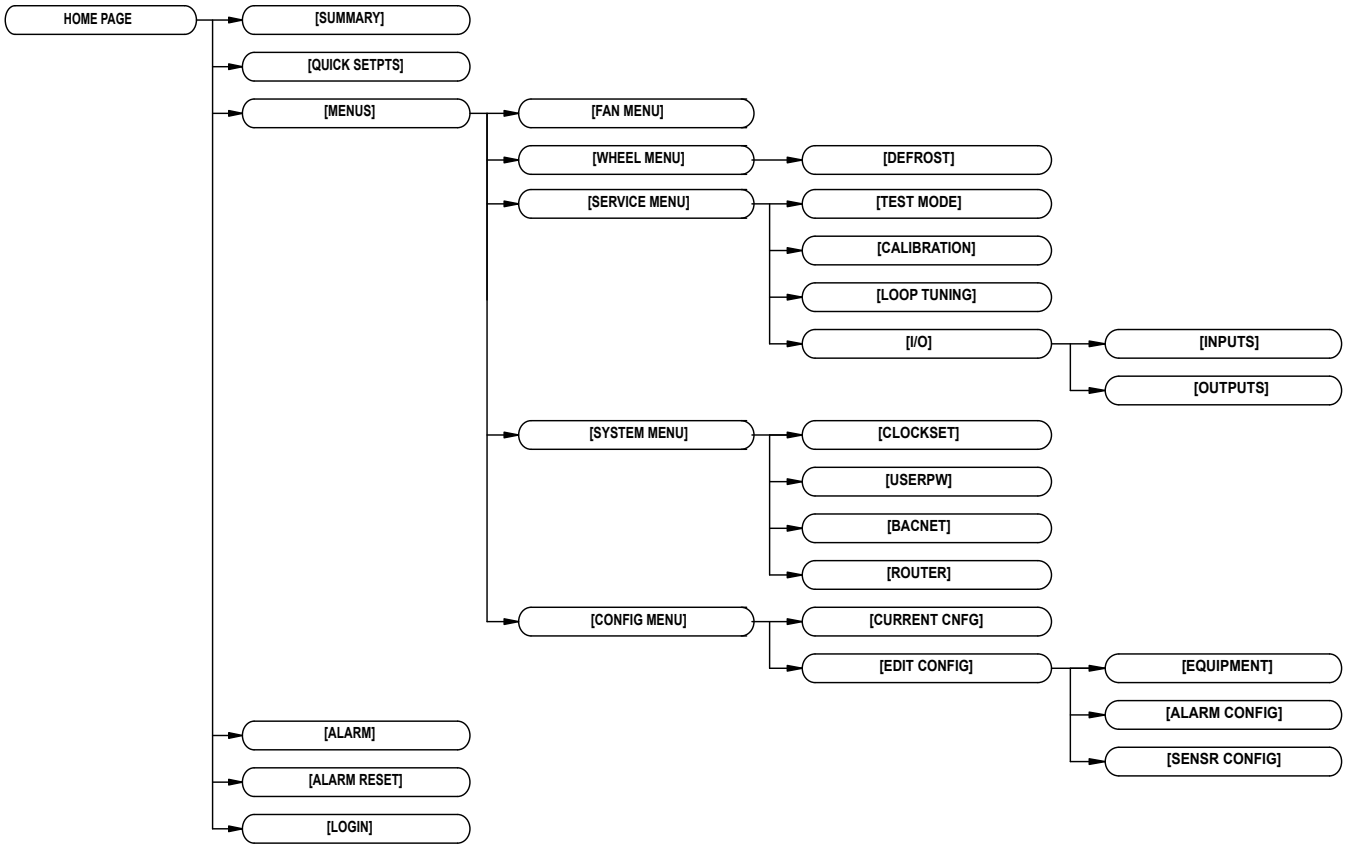
NOTE: Some menus listed here will not be available; availability is based on options purchased.



LOCAL CONTROL DISPLAY MENU LAYOUT

3.0 Dialogs (cont'd)

The following diagram shows the menu layout for the Local Control Display in the energy recovery module (Option ER1). See the individual sections for details on each menu.



LOCAL CONTROL DISPLAY MENU LAYOUT

3.5 Detailed Menu List

Menu Information

The following section details each menu available by providing the control display name, point description, range, and factory default settings.

NOTE: Some menus listed here will not be available; availability is based on options purchased.

3.5.1 Home Page Menu Information

From the LCD display the summary menu is used to display the status of both physical and virtual points. The following table lists the available informational points.

Control Display		Description	Status or Menu Link
Mode:		Current System Mode: Below is a description of each mode currently available.	
	TestMode	Manual test mode is active. Unit only runs based on manual commands.	Status Only
	Unoccupied	Unit is in the Unoccupied Mode.	
	ManualOff	Unit is manually off. See OffCmd status below.	
	BadSensor	A sensor has failed. See Alarm Menu for specific sensor failure.	
	SysRestart	System is in Restart sequence due to critical failure. See Alarm Menu for specific failure.	
	SysShutdown	Critical system has failed. Unit must be manually reset through the Alarm Reset Menu.	
	PhaseLoss	Phase loss (IN-9) alarm is active. Automatic reset when input returns to normal.	
	SmokeAlrm	Smoke (IN-10) alarm is active. Automatic reset upon return to normal.	
	NoFlow	Supply air fan is commanded on but no feedback from pressure status switch (IN-8).	
	VentMode	Unit is in Ventilation Mode. Only supply fan is running.	
	Cooling	Unit is in Cooling Mode.	
	Heating	Unit is in Heating Mode.	
	FreeCooling	Economizer Mode is active.	
	MrngClDown	System is in Morning Cool Down Mode.	
	MrngWarmUp	System is in Morning Warm up Mode.	
	Dehum+Clg	System is in Dehumidification + Cooling Mode.	
	Dehum+Htg	System is in Dehumidification + Heating Mode.	
	Dehum+Vent	System is in Dehumidification + Ventilation Mode.	
	NSB-Clg	System is in Cooling Night Setback Mode.	
	NSB-Htg	System is in Heating Night Setback Mode.	
	NSB-Dehum	System is in Dehumid Night Setback Mode.	
Status:		Current status of Supply Air Fan	
	On	Unit status is On, proved via the air pressure switch.	Status Only
	Off	Unit status is Off, proved via the air pressure switch.	
OffCmd:		Shows what has unit in Off Condition (Only shown when unit is commanded off.)	
	Sch Off	Local schedule has unit off.	Status Only
	DI Off	Manual DI start/stop point has unit off.	
	Stat Off	Room Interface Module (Option CL77) has unit off.	
	BAS Off	Building automation has unit off.	
	LCD Off	Unit Interface Module (BACview) has unit off.	
RestartTimer:		Minutes remaining before restart attempt (Only shown in restart mode)	
Navigate Other Menus:			
→Summary:		Opens Summary Menu	3.5.2 Summary Menu, pg 28
→Quick Setpts:		Opens Quick Setpoints Menu	3.5.3 Quick Setpoints Menu, pg 29
→Menus:		Opens Menus	3.5.6 Menus, pg 30
→Schedules:		Opens Schedules	3.5.47 Schedule Menu, pg 40
→Alarm:		Opens Alarm	3.5.48 Alarm Menu, pg 40
→?:		Opens Alarm Help	3.5.49 Help Menu, pg 40
→Alarm Reset:		Opens Alarm Reset Menu	3.5.38 Reset Alarms, pg 40
→Login:		Opens User Login	Menu Link

3.0 Dialogs (cont'd) 3.5.2 Summary Menu

Control Display	Description	Function
Cntrl:	This is the current setting for type of control.	
Neu/Dis	The system is set to D15 control (Neutral Air/Discharge air control).	
Space	The system is set to D16 control (Space override control).	
Status:	Current status of unit	
On	Unit status is on, proved via the air proving switch.	
Off	Unit status is off, proved via the air proving switch.	
Mode:	Current System Mode	
-	See Mode definitions in 3.5.1 Home Page menu information.	
OffCmd:	Shows what has unit in Off Condition (Only shown when unit is off)	
-	See OffCmd definitions in 3.5.1 Home Page menu information.	
SFan Cmd:	Supply Air Fan Command	
On	Unit status is commanded on.	
Off	Unit status is commanded off.	
SFan Status:	Supply Air Fan Status	
On	Unit status is on, proved via the air proving switch.	
Off	Unit status is off, proved via the air proving switch.	
SFan VFD:	Supply Air Fan VFD command percentage	
OA Temp:	Outside Air Temperature reading	
OA Hum:	Outside Air Humidity reading	
OA Enth:	Outside Air Enthalpy reading	
OA Dewpt:	Outside Air Dewpoint reading	
DA Temp:	Discharge Air Temperature reading	
SpcTemp:	Space Temperature from CL77	
SpcHum	Space Humidity from DT7	
SpcEnth:	Space Enthalpy calculated reading	
SpcDewpoint:	Space Dewpoint calculated reading	
SpcHtgSP:	Active Spce Heating Setpoint	
-	For D15 this is the active discharge air heating setpoint.	
-	For D16 this is the active space heating setpoint.	
SpcClgSP:	Active Space Cooling Setpoint	
-	For D15 this is the active discharge air cooling setpoint.	
-	For D16 this is the active space cooling setpoint.	
CC DAT:	Cooling Coil Discharge Air Temperature reading	
Heating:	Current Heating Status	
Enabled	Heating is allowed to run	
Disabled	Heating is not allowed to run	
HtgFB	Deep Modulating Heating Alarm Feedback	
Comm_Error	No feedback signal available from deep modulation heating board	
Off	Deep modulation heating board is off.	
On	Deep modulation heating board is on.	
Failure	Deep modulation heating board is returning a failure; see alarm menu for specific failure.	3.5.3 Quick Setpoints Menu, pg 29
0 of X Stgs On:	Number of current heating stages enabled	
Mod Htg:	Modulating Heating command output	
HtgCtlT:	Active heating control temperature (This is the discharge air for D15 and D16.)	
HtgDatSP:	Active heating control setpoint (This is the setpoint the system is maintaining.)	
Cooling:	Current Cooling Status	
Enabled	Cooling is allowed to run.	
Disabled	Cooling is not allowed to run.	
0 of X Stgs On	Number of current cooling stages enabled	
ClgCtlT:	Active cooling control temperature	
-	For D15 this is the discharge air temperature	
-	For D16 this is the space temperature	
-	For Both, this is the cooling coil discharge temperature when in dehumidification mode.	
ClgDATSP:	Active cooling control setpoint (This is the setpoint the system is maintaining.)	
Reheat Cmds:	Current Reheat Command	
Mod Reheat:	Modulating Reheat command output	
ActRhtT:	Active reheat control temperature (This is the discharge air for D15 and D16.)	

Control Display	Description	Function
ActRhtSP:	Active reheat control setpoint (This is the setpoint the system is maintaining)	
Economizer:	Economizer Status	
Off	Economizer if off and damper is at either max or min position.	
On	Economizer is on and system is modulating damper to maintain setpoint.	
OA Damp:	OA Damper command percentage	
Pressure:	Pressure reading (Building or Static)	
Filter:	Filter Monitor Status	
Safety:	Safety Input Status	
MA Temp:	Mixed Air Temperature reading	
CO2:	Carbon Dioxide Level reading	
RA Temp:	Return Air Temperature reading	
RA Hum:	Return Air Humidity reading	
ERM:	ERM communication Status	
Linked	The Main unit and ERM controller are connected.	
Comm Loss	The Main unit has lost communication connection to the ERM module. ERM will operate as a stand-alone unit. (See Appendix, page 71.)	
ErSt/StIn:	Energy Recovery Start/Stop Digital input status.	
ErSf Cmd:	Energy Recovery supply (inlet) fan command	
ErSfStat:	Energy Recovery supply (inlet) fan status	
ErSf VFD%:	Energy Recovery supply (inlet) fan VFD % command	
ErSfPres:	Energy Recovery supply (inlet) fan pressure	
ErEf Cmd:	Energy Recovery exhaust fan command	
ErEfStat:	Energy Recovery exhaust fan status	
ErEf VFD%:	Energy Recovery exhaust fan VFD % command	
ErEfPres:	Energy Recovery exhaust fan building pressure	
ErW Cmd:	Energy Recovery enthalpy wheel command	
ErW Stat:	Energy Recovery enthalpy wheel status	
ErW DAT:	Energy Recovery enthalpy wheel discharge (supply) air temperature	
Er OAT:	Energy Recovery outside air temperature	
ErFilter	Energy Recovery outside air filter status	
Er RAT:	Energy Recovery return air temperature	
Er RA Hum:	Energy Recovery return air humidity	
ErRaEnth:	Energy Recovery return air enthalpy	
ErRaDewpt:	Energy Recovery return air dewpoint	
→Prev	Opens previous menu	Menu Link

3.5.3 Quick Setpoints Menu

Control Display	Description	Range	Factory Default
OccClgSP	Occupied Space Cooling Setpoint (Shown under D16 control.)	55 - 90°F	72
OccHtgSP	Occupied Space Heating Setpoint (Shown under D16 control.)	55 - 90°F	70
NA SP	Neutral Air Setpoint (Shown under D15 control.)	52 - 150°F	70
NADB SP	Neutral Air Deadband Setpoint (Shown under D15 control.)	0.5 - 20°F	1
SpcAdjRg+/-	Space Adjustment Range (Shown under D16 control and when CL77 is installed ,under D15 control.)	0 - 10°F	2
NatHiSP	Neutral Air Temp High Limit Reset Setpt (Shown under D15 control and when OA reset is enabled.)	55 - 150°F	90
NatLoSP	Neutral Air Temp Low Limit Reset Setpt (Shown under D15 control and when OA reset is enabled.)	55 - 150°F	70
OatHiSP	Outside Air Temp High Limit Reset Setpt (Shown under D15 control and when OA reset is enabled.)	0 – 90°F	65
OatLoSP	Outside Air Temp Low Limit Reset Setpt. Shown under D15 control and when OA reset is enabled.	0 – 90°F	20
OA Temp	Outside Air Temperature reading		
ActHtgSP	Active Heating Setpoint		
ActClgSP	Active Cooling Setpoint		
→UnOcc Setpts	Opens UnOccupied Setpoints		
→Expand Setpt	Opens Setpoints menu		
→Prev	Opens previous menu		

3.5.4 Unoccupied Setpoints Menu

Control Display	Description	Range	Factory Default
NsbDmPs	Night setback damper position		
Auto	OA Damper position during sequence of operation		
Close	OA Damper closed during night setback operation		
Open	OA Damper open during night setback operation		
-Cooling			
UnocClgSP	Unoccupied Cooling Setpoint	65 – 90°F	85
ClgDisDB	Cooling disable deadband	2 – 8°F	3
ClDnDATSP	Cool-down Discharge Air Temp Setpoint	52 – 75°F	55
ClgStgDB	Cooling staging deadband	4 – 10°F	5
-Heating			
UnocHtgSP	Unoccupied Heating Setpoint	50 – 70°F	60
HtgDisDB	Heating disable deadband	2 – 8°F	3
WUpDATSP	Warm-up Discharge Air Temp Setpoint	65 – 150°F	90
HtgStgDB	Heating staging deadband	4 – 10°F	5
→Prev	Opens previous menu	Menu Link	

3.5.5 Expanded Setpoints (Setpoints Menu)

Control Display	Description	Menu Link
→Space Setpt	Opens Space Setpoints menu	3.5.15 Space Setpoints, pg 32
→NeuAir Setpt	Opens Neutral Air Setpoints menu	3.5.13 Neutral Air Setpoints, pg 31
→Fan Setpt	Opens Fan Setpoint menu	3.5.17 Fan Setpoints, pg 32
→OAD Setpt	Opens Outside Air Damper Setpoints menu	3.5.19 Outside Air Damper Setpoints, pg 33
→Clg Setpt	Opens Cooling Setpoints menu	3.5.21 Cooling Setpoints, pg 33
→Htg Setpt	Opens Heating Setpoints menu	3.5.25 Heating Setpoints, pg 34
→dH Setpt	Opens Dehumidification Setpoints menu	3.5.28 Dehumidification Setpoints, pg 35
→Misc Setpt	Opens Misc Setpoints menu	Menu Link
→Alarm Config	Opens Alarm Configuration Setpoints	3.5.32 Alarm Configuration Setpoints, pg 36
→Prev	Opens previous menu	Menu Link

3.5.6 Menus

Control Display	Description	Menu Link
→Rm IM Menu	Opens WallStat menu	3.5.7 Wall Temperature Sensor Menu, pg 30
→Space Menu	Opens Space menu	3.5.14 Space Menu, pg 32
→NeuAirMenu	Opens Neutral Air menu	3.5.12 Neutral Air Menu, pg 31
→Fan Menu	Opens Fan menu	3.5.16 Fan Menu, pg 32
→OA DampMenu	Opens Outside Air Damper Menu	3.5.18 Outside Air Damper Menu, pg 33
→Clg Menu	Opens Cooling menu	3.5.20 Cooling Menu, pg 33
→Htg Menu	Opens Heating menu	3.5.24 Heating Menu, pg 34
→dH Menu	Opens Dehumidification menu	3.5.27 Dehumidification Menu, pg 35
→ERM Menu	Opens ERM menu	3.5.29 ERM, pg 35
→Setpt Menu	Opens Setpoints menu	3.5.5 Expanded Setpoints (Setpoints Menu), pg 30
→Service Menu	Opens Service menu	3.5.33 Service Menu, pg 36
→System Menu	Opens System menu	3.5.42 System Menu, pg 39
→Config	Opens Configuration menu	3.5.46 Configuration Menu, pg 39
→Prev	Opens previous menu	Menu Link

3.5.7 Rm IM Menu

Control Display	Description	Function / Menu Link
Setpt Adj	Current setpoint adjustment from Wall Temperature Sensor	Status Only
Unit Mode	Current Unit mode	
Ovrd Timer	Time remaining from push button override timer	
Fan Speed	Current requested fan speed	
→UnOcc Setpts	Opens UnOccupied Setpoints	3.5.4 Unoccupied Setpoints Menu, pg 30
→MrngCooldown	Opens Morning Cool-down Setpoints	3.5.8 Morning Cooldown Menu, pg 30
→MrngWarmup	Opens Morning Warm-up Setpoints	3.5.9 Morning Warm-up Menu, pg 31
→Config Menu	Opens WallStat Configuration Menu	3.5.10 Wall Temperature Sensor Configuration Menu, pg 31
→Prev	Opens previous menu	Menu Link

3.5.8 Morning Cool-down Menu

Control Display	Description	Range	Factory Default
McdSpcSP	Morning Cool-down Space Setpoint	60 – 80°F	72
ClDnDATSP	Cool-down Discharge Air Temp Setpoint	52 – 75°F	55

MinTilOccupied		Function / Menu Link
xxxx Min	Time (minutes) before system is occupied	Status Only
→?	Opens Minutes until occupied help menu	3.5.49 Help Menu, pg 40
→Prev	Opens previous menu	Menu Link

3.5.9 Morning Warm-up Menu

Control Display	Description	Range	Factory Default
MwuSpcSP	Morning Warm-up Space Setpoint	60 – 80°F	68
WupDATSP	Morning Warm-up Discharge Air Temp Setpoint	65 – 150°F	90
MinTilOccupied		**Function / Menu Link**	
xxxx Min	Time (minutes) before system is occupied	Status Only	
→?	Opens Minutes until occupied help menuk	3.5.49 Help Menu, pg 40	
→Prev	Opens previous menu	Menu Link	

3.5.10 Wall Temperature Sensor Configuration Menu

Control Display	Description	Choice	Factory Default
Mode Control?	Allow Wall Temperature Sensor to set unit mode	Enabled /Disabled	Enabled
MrnWrmup / Cldwn	Allow morning warm-up and cool-down	Enabled /Disabled	Enabled
Night Setback	Allow night setback / setup	Enabled /Disabled	Enabled
→Cnfg Info Bn	Allows the information displayed on Wall Sensor to be configured	3.5.11 Configure Info Button on Wall Temperature Sensor Menu, pg 31	
→Prev	Opens previous menu	Menu Link	

3.5.11 Configure Info Button on Wall Temperature Sensor Menu (Follow instructions in Paragraph 5.3.)

Control Display	Description	Range	Factory Default
AV1	Configurable Display for Wall Temperature Sensor – AI-1	Alarm Code Only	
AV2	Configurable Display for Wall Temperature Sensor – AI-2	-	DA Temp
AV3	Configurable Display for Wall Temperature Sensor – AI-3	-	OA Hum
AV4	Configurable Display for Wall Temperature Sensor – AI-4	-	Space Hum
BV1	Configurable Display for Wall Temperature Sensor – DI-1	-	Reheat Pump
BV2	Configurable Display for Wall Temperature Sensor – DI-2	-	Comp 1
BV3	Configurable Display for Wall Temperature Sensor – DI-3	-	Comp 2
BV4	Configurable Display for Wall Temperature Sensor – DI-4	-	Comp 3
→Prev	Opens previous menu link	Menu Link	

3.5.12 Neutral Air Menu

Control Display	Description	Function / Menu Link
ActHtgSP	Active Heating Setpoint	Status Only
ActClgSP	Active Cooling Setpoint	
DA Temp	Discharge Air Temperature	
→NeuAir Setpt	Opens Neutral Air Setpoints menu	3.5.13 Neutral Air Setpoints, pg 31
→UnOcc Setpts	Opens UnOccupied Setpoints	3.5.4 Unoccupied Setpoints Menu, pg 30
→MrngCooldown	Opens Morning Cool-down Setpoints	3.5.8 Morning Cooldown Menu, pg 30
→MrngWarmup	Opens Morning Warm-up Setpoints	3.5.9 Morning Warm-up Menu, pg 31
→Prev	Previous menu	Menu Link

3.5.13 Neutral Air Setpoints

Control Display	Description	Range	Factory Default
NA SP	Neutral Air Setpoint	52 - 150°F	70
NADB SP	Neutral Air Deadband Setpoint	0.5 - 20°F	1
SpcAdjRg+/-	Space Adjustment Range	0 - 10°F	2
NatHiSP	Neutral Air Temp High Limit Reset Setpt	55 - 150°F	90
NatLoSP	Neutral Air Temp Low Limit Reset Setpt	55 - 150°F	70
OatHiSP	Outside Air Temp High Limit Reset Setpt	0 – 90°F	65
OatLoSP	Outside Air Temp Low Limit Reset Setpt	0 – 90°F	20
OA Temp	Outside Air Temperature	Status Only	
ActHtgSP	Active Heating Setpoint		
ActClgSP	Active Cooling Setpoint		
AllwTempRst	Changes for fixed setpoint to reset schedule	Y / N	N
Allow NSB	Enables night setback / setup	Y / N	N
→Prev	Opens previous menu	Menu Link	

3.0 Dialogs (cont'd)

3.5.14 Space Menu

Control Display	Description	Function / Menu Link
SpcHtgSP	Active Space Heating Setpoint	Status Only
SpcClgSP	Active Space Cooling Setpoint	
SpcTemp	Space Temperature	
SpcHum	Space Humidity	
Spc Enth	Space Enthalpy	
SpcDewpt	Space Dewpoint	
DA Temp	Discharge Air Temperature	
→**Space Setpts**	Space Setpoints link	3.5.15 Space Setpoints, pg 32
→**UnOcc Setpts**	UnOccupied Setpoints link (Shown only when applicable.)	3.5.4 Unoccupied Setpoints Menu, pg 30
→**MrngCooldown**	Morning Cool-down Setpoints (Shown only when applicable.)	3.5.8 Morning Cool-down Menu pg 30
→**MrngWarmup**	Morning Warm-up Setpoints (Shown only when applicable.)	3.5.9 Morning Warm-up Menu, pg 31
→**Prev**	Opens previous menu	Menu Link

3.5.15 Space Setpoints

Control Display	Description	Range	Factory Default
OccClgSP	Occupied Cooling Setpoint	55 - 90°F	72
UnocClgSP	Unoccupied Cooling Setpoint	65 – 90°F	85
OccHtgSP	Occupied Heating Setpoint	55 - 90°F	70
UnocHtgSP	Unoccupied Heating Setpoint	50 – 70°F	60
SpcAdjRg+/-	Space Adjustment Range	0 - 10°F	2
ClgEnaDB	Cooling enable deadband	2 - 10°F	2
HtgEnDB	Heating enable deadband	4 - 10°F	4
Allow NSB	Enables night setback / setup	Y / N	N
→**Prev**	Opens previous menu	Menu Link	

3.5.16 Fan Menu

Control Display	Description	Function / Menu Link
Type	Fan Control Type	Status Only
SFan Cmd	Supply Air Fan Command	
SFAN Status	Supply Air Fan Status	
Sfan VFD	Current Supply Fan VFD Speed	
Pressure	Current pressure reading	
Pressure SP	Current Pressure setpoint	
CO2	Current Carbon Dioxide reading	
CO2 SP	Current Carbon Dioxide setpoint	
→**Fan Setpts**	Fan setpoints link	3.5.17 Fan Setpoints, pg 32
→**Prev**	Opens previous menu link	Menu Link

3.5.17 Fan Setpoints

Control Display	Description	Range	Factory Default
Type	Fan Control Type	Status Only	
VFD Setpt	Supply Air Fan VFD setpoint	25 – 100%	100
Min Spd	Minimum VFD speed	25 – 100%	25
Press SP	Building Pressure setpoint	(-)1 - 1 in	0.1
Press SP	Static Pressure setpoint	0 – 3 in	1
CO2 SP	CO2 setpoint	200 - 1500	800
Open	Open inputs setpoint	25 – 100%	50
In1Closed	In1 Closed setpoint	25 – 100%	60
In2Closed	In2 Closed setpoint	25 – 100%	75
Closed	Closed inputs setpoint	25 – 100%	100
Low Speed	Low Speed setpoint	25 – 100%	30
Med Speed	Medium Speed setpoint	25 – 100%	60
Hi Speed	High Speed setpoint	25 – 100%	100
SaFMinPos	Supply air fan Minimum position	25 – 100%	25
SaFmaxPos	Supply air fan maximum position	25 – 100%	100
→**Prev**	Opens previous menu	Menu Link	

3.5.18 Outside Air Damper Menu

Control Display	Description	Function / Menu Link
Type	Damper Control Type	Status Only
Cntrl	Status on what is controlling Damper (Sequence, Override, Etc)	
Dmpr Pos	Damper Command Position	
CO2	Current Carbon Dioxide reading	
CO2 SP	Current Carbon Dioxide setpoint	

Pressure	Current Pressure reading	Status Only
Pressure SP	Current Pressure setpoint	
MAT	Current Mixed Air Temperature reading	
MAT SP	Current Mixed Air setpoint	
→**Dmpr Setpts**	Fan setpoints	3.5.19 Outside Air Damper Setpoints, pg 33
→**Prev**	Opens previous menu	Menu Link

3.5.19 Outside Air Damper Setpoints

Control Display	Description	Range	Factory Default
CO2 SP	CO2 setpoint	200 – 2000 ppm	800
Press SP	Pressure setpoint	-0.5 – 3”	.5
Open	Open inputs setpoint	0 – 100%	50
In1Closed	In1 Closed setpoint	0 – 100%	60
In2Closed	In2 Closed setpoint	0 – 100%	75
Closed	Closed inputs setpoint	0 – 100%	100
OAE ChngOver	OA Enthalpy Damper Changeover setpoint	15 – 40	28
HI OAEPos	High OA Enthalpy Damper Position Setpoint	0 – 100%	50
Lo OAEPos	Low OA Enthalpy Damper Position Setpoint	0 – 100%	100
MAT Setpt	Mixed Air Temp Setpoint	15 – 90˚F	55
MATOffset	Mixed Air Temp Offset	1 – 5˚F	1
→**Prev**	Opens previous menu	Menu Link	

3.5.20 Cooling Menu

Control Display	Description	Function / Menu Link
Cooling	Cooling Status	Status Only
0 of X Stgs On	Number of current stages enabled and available	
0 of X Comp On	Number of current compressors enabled and available	
ModClgCnt	Modulating Cooling	
ModClgCnt	Output Command	
ModClgCnt	Status	
EnthpyLkout	Current Enthalpy Lockout Status	
Ctrl Temp	Current Cooling Control Temperature	
CtrlSP	Current Cooling Control Temperature Setpoint	
DA Temp	Discharge Air Temperature	
MA Temp	Mixed Air Temp	
OA Temp	Outside Air Temperature	
OA Hum	Outside Humidity	
OA Enth	Outside Air Enthalpy	
OA Dewpt	Outside Air Dewpoint	
SpcTemp	Space Temp	
Spc Hum	Space Humidity	
CC DAT	Cooling Coil Discharge Air Temperature	
→**Clg Setpts**	Opens Cooling Setpoints menu	3.5.21 Cooling Setpoints, pg 33
→**Prev**	Opens previous menu	Menu Link

3.5.21 Cooling Setpoints

Control Display	Description	Range	Factory Default
ClgEnDB	Cooling Enable Deadband	4 - 10°F	4
ClgDatSp when space>Setpt by:			
0°F	Cooling Discharge air temperature setpoint when space temp equals setpoint	52 - 90°F	70°F
1°F	Cooling Discharge air temperature setpoint when space temp is greater that setpoint by half of ClgEnDb	Calculated	
2°F	Cooling Discharge air temperature setpoint when space temp is greater that setpoint by the ClgEnDb	Calculated	
ClgDatOffset:	Cooling Discharge Air temperature offset from base setpoint		
1°F	Cooling Discharge air temperature offset when space temp is greater that setpoint by half of ClgEnDb	0 - 20°F	7.5°F
2°F	Cooling Discharge air temperature offset when space temp is greater that setpoint by the ClgEnDb	0 - 20°F	7.5°F
ClgLckOut	Cooling Lockout Setpoint	50 - 99°F	68
→**EnthlpyLkout**	Opens Enthalpy Lockout Menu	3.5.22 Enthalpy Lockout, pg 34	
→**DryBulbLkout**	Opens Drybulb Lockout Menu	3.5.23 Dry Bulb Lockout, pg 34	
→**MrngCooldown**	Opens Morning Cool-down Setpoints	3.5.8 Morning Cooldown Menu, pg 30	
→**UnOcc Setpts**	Opens UnOccupied Setpoints link	3.5.4 Unoccupied Setpoints Menu, pg 30	
→**Prev**	Opens previous menu	Menu Link	

3.0 Dialogs (cont'd)

3.5.22 Enthalpy Lockout

Control Display	Description	Range	Factory Default
Stat	Enthalpy Lockout Enabled Status	Status Only	
OA Enthalpy	Calculated Outside Air Enthalpy		
RA Enthalpy	Calculated Return Air Enthalpy		
S1 Lockout	Stage one Lockout Setpoint	20 – 35	27
S2 Diff SP	Stage two Differential Lockout Setpoint	1 – 10	5
S2 Lockout	Stage two Lockout Status Point	Status Only	
S3 Diff SP	Stage three Differential Lockout Setpoint	1 – 10	5
S3 Lockout	Stage three Lockout Status Point	Status Only	
→Prev	Opens previous menu link	Menu Link	

3.5.23 Dry Bulb Lockout

Control Display	Description	Range	Factory Default
Stat	Enthalpy Lockout Enabled Status	Status Only	
OA Temp	Outside Air Temp		
S1 Lockout	Stage one Lockout Setpoint	60 – 100°F	70
S2 Diff SP	Stage two Differential Lockout Setpoint	5 – 20°F	5
S2 Lockout	Stage two Lockout Status Point	Status Only	
S3 Diff SP	Stage three Differential Lockout Setpoint	5 – 20°F	5
S3 Lockout	Stage three Lockout Status Point	Status Only	
→Prev	Opens previous menu link	Menu Link	

3.5.24 Heating Menu

Control Display	Description	Function / Menu Link
Heating	Heating Status	Status Only
HtgFB	Heating Feedback	
0 of X Stgs On	Number of current stages enabled and available	
Mod Htg	Modulating Heat output	
DA Temp	Discharge Air Temperature	
HtgDASP	Active Heating Control Setpoint	
MA Temp	Mixed Air Temp	
OA Temp	Outside Air Temperature	
SpcTemp	Space Temp	
→Htg Setpts	Opens Heating Setpoints menu	3.5.25 Heating Setpoints, pg 34
→Prev	Opens previous menu	Menu Link

3.5.25 Heating Setpoints

Control Display	Description	Range	Factory Default
HtgEnDB	Heating Enable Deadband	3 - 20°F	4
HtgStgDB	Heat Staging Deadband	4 - 20°F	5
Spc HiSP	Space Differential High Setpoint	0.5 - 5°F	1
Spc LoSP	Space Differential Low Setpoint	(-)0.5 – (-)5	(-)1
DAT HiSP	DA Temperature High Reset Setpoint	50 -120°F	90
DAT LoSP	DA Temperature Low Reset Setpoint	50 -120°F	65
HtgLckout	Heating Lockout Setpoint	40 - 75°F	62
→Adv Setpts	Opens Advanced Setpoints Menu	3.5.26 Advanced Heating Setpoints, pg 34	
→MrngWarmUp	Opens Morning Warm-up Setpoints	3.5.9 Morning Warm-up Menu, pg 31	
→UnOcc Setpts	Opens UnOccupied Setpoints	3.5.4 Unoccupied Setpoints Menu, pg 30	
→Prev	Opens previous menu	Menu Link	

3.5.26 Advanced Heating Setpoints

Control Display	Description	Range	Factory Default
MinOn	Min On Timer	3 – 15 Min	4
MinOff	Min Off Timer	3 – 15 Min	4
MinPosTm	Minimum Position Timer	2 – 15 Min	5
MaxPosTm	Maximum Position Timer	2 – 15 Min	5
→Prev	Previous menu	Menu Link	

3.5.27 Dehumidification Menu

Control Display	Description	Function / Menu Link
Dehum Mode	Dehumidification Mode Status	Status Only
Reheat Cmd	Reheat Command	
Mod Reheat	Percentage output for Modulating Reheat	
ActRhtT	Active Reheat Control Temperature	
ActRhtSP	Active Reheat Setpoint	
OA Temp	Outside Air Temperature	
OA Hum	Outside Humidity	
OA Enth	Outside Air Enthalpy	
OA Dewpt	Outside Air Dewpoint	
→dH Setpts	Opens Dehumidification Setpoints menu	3.5.32 Alarm Configuration Setpoints, pg 36
→Prev	Opens previous menu	Menu Link

3.5.28 Dehumidification Setpoints

Control Display	Description	Range	Factory Default
Spc Hum SP	Space Humidity Setpoint	45 – 100%	60
UnoccHumSP	Unoccupied Humidity Setpoint	55 – 100%	75
UnoccHumDB	Unoccupied Humidity Deadband	3 – 10%	5
DwPtLkout	Dewpoint Lockout Setpoint	52 – 80°F	58°F
OATHiLkout	OA Temperature High Lockout Setpoint	100 - 120°F	120°F
OATLoLkout	OA Temperature Low Lockout Setpoint	58 - 80°F	60°F
SpcHiSP	Space Differential High Setpoint	0.5 - 5°F	1
SpcLoSP	Space Differential Low Setpoint	(-)0.5 – (-)5	(-)1
DAT HiSP	DA Temperature High Reset Setpoint	50 -120°F	90
DAT LoSP	DA Temperature Low Reset Setpoint	50 -120°F	65
CC DAT SP	Cooling Coil DA temperature Setpoint	52 - 65°F	52°F
CC DAT DB	Cooling Coil DA temperature Deadband Setpoint	4 - 10°F	4°F
Priority	Allow priority control of humidity	Temp/Hum	Temp
RmOvdClg	Room Override Cooling Setpoint	52 – 70°F	55
RmOvdHtg	Room Override Heating Setpoint	70 - 120°F	90
RmOvdDB	Room Override Deadband	2 - 10°F	2
→Adv Setpts (Only on v2.01 and above)			
Humidity Sensor			
Disable dH	This allows the space humidity sensor to disable the dehumidification sequence when space humidity is below humidity setpoint		
Enable dH	This allows the space humidity sensor to enable the dehumidification sequence when space humidity is above humidity setpoint		
→Prev	Opens previous menu	Menu Link	

3.5.29 ERM Menu

ERM:	Energy Recovery Communication Status
Linked	The Main unit and ERM controller are connected
Comm Loss	The Main unit has loss communication connection to the ERM module. ERM will operate as a stand-alone unit (See Appendix, page 71).
ErSt/StIn:	Energy Recovery Start/Stop Digital input status.
ErSf Cmd:	Energy Recovery supply (inlet) fan command
ErSfStat:	Energy Recovery supply (inlet) fan status
ErSf VFD%:	Energy Recovery supply (inlet) fan VFD % command
ErSfPres:	Energy Recovery supply (inlet) fan pressure
ErEf Cmd:	Energy Recovery exhaust fan command
ErEfStat:	Energy Recovery exhaust fan status
ErEf VFD%:	Energy Recovery exhaust fan VFD % command
ErEfPres:	Energy Recovery exhaust fan building pressure
ErW Cmd:	Energy Recovery enthalpy wheel command
ErW Stat:	Energy Recovery enthalpy wheel status
ErW DAT:	Energy Recovery enthalpy wheel discharge (supply) air temperature
Er OAT:	Energy Recovery outside air temperature
ErFilter	Energy Recovery outside air filter status
Er RAT:	Energy Recovery return air temperature
Er RA Hum:	Energy Recovery return air humidity
ErRaEnth:	Energy Recovery return air enthalpy
ErRaDewpt:	Energy Recovery return air dewpoint

3.0 Dialogs (cont'd)

3.5.30 ERM Setpoints

ErSfSetpt:	Energy Recovery supply (inlet) fan VFD setpoint	10 – 100 %	
ErSfPrs:	Energy Recovery supply (inlet) fan pressure setpoint	(-)1 - 1	
ErSfPsDb:	Energy Recovery supply (inlet) fan pressure deadband	0 - 1	
ErEfSetpt:	Energy Recovery exhaust fan VFD setpoint	10 – 100 %	
ErEfPrs:	Energy Recovery exhaust fan pressure setpoint	(-)1 - 1	
ErEfPsDb:	Energy Recovery exhaust fan pressure deadband	0 - 1	
ErEfOfset:	Energy Recovery exhaust fan offset	(-) 50 – 50 %	
DefrostSp	OAT setpoint at which the defrost control is activated.	(-) 15 - 30°F	
→Config			
ERM Address	This allows the ERM controller address to be changed. **NOTE:** Physical address on ERM must also be changed.	2499 – 2498	2499

3.5.31 Miscellaneous Menu

Control Display	Description	Choice	Factory Default
Manual Ovrd	Manual Override (BE20) Configuration	Occ/Unocc	Occ
→Prev	Opens previous menu	Menu Link	

3.5.32 Alarm Configuration Setpoints

Control Display	Description	Range	Factory Default
Alm Timer	Alarm Delay Timer	60 – 240 sec	180
Auto Restart	Auto Restart Cycles	1 – 5	3
LoLimitSP	Low Limit (Freezestat) Setpoint	32 - 50°F	36
LoLimitTmr	Low Limit Timer (Freezestat)	5 – 25 Min	10
LoLimitEn	Low Limit Enabled	Yes/No	Yes
→Prev	Opens previous menu	Menu Link	

3.5.33 Service Menu

Control Display	Description	Function / Menu Link
Version #	Current Software version installed	Status Only
→Test Mode	Opens Test Mode menu	3.5.34 Test Mode Menu, pg 36
→Calibration	Opens Calibration menu	3.5.36 Calibration Menu, pg 37
→Loop Tuning	Opens Loop Tuning menu	3.5.37 Loop Tuning Menu, pg 37
→Run Times	Opens Run Times menu	3.5.38 Run Times Menu, pg 38
→Alarm Codes	Opens Alarm codes description	3.5.48 Alarm Menu, pg 40
→Rest Alarm	Opens Reset alarms menu	3.5.38 Reset Alarms, pg 38
→I/O	Opens Inputs/Outputs menu	3.5.39 Inputs/Outputs, pg 39
→Tech Support	Opens Tech Support menu	3.5.40 Technical Support Menu, pg 39
→Prev	Opens previous menu	Menu Link

3.5.34 Test Mode Menu

Control Display	Description	Menu Link
→Manual Test	Opens Manual Test Mode menu	3.5.35 Manual Test Mode Menu, pg 36
→Prev	Opens previous menu	Menu Link

3.5.35 Manual Test Mode Menu

Control Display	Description	Range	Factory Default
Test Mode	Test Mode Enable Command	On/Off	Off
DamperCmd	Damper Command Percentage	0 - 100%	100
Fan Cmd	Fan Test Command	On/Off	Off
SF VFD	Supply Fan VFD Command	0 – 100%	100%
EF Cmd	Exhaust fan Command	On/Off	Off
EF VFD	Exhaust fan VFD Command	0 – 100%	100%
Comp A	Comp A Test Command	On/Off	Off
Comp B	Comp B Test Command	On/Off	Off
Comp C	Comp C Test Command	On/Off	Off
Comp D	Comp D Test Command	On/Off	Off
ModCool	Modulating Cooling Output Test Command	0 – 100%	100%
Reheat Cmd	Reheat Test Command	On/Off	Off
ModReHt	Modulating Reheat Output Test Command	0 – 100%	100%

Heat Stg 1	Heat Stage 1 Test Command	On/Off	Off
Heat Stg 2	Heat Stage 2 Test Command	On/Off	Off
Heat Stg 3	Heat Stage 3 Test Command	On/Off	Off
Heat Stg 4	Heat Stage 4 Test Command	On/Off	Off
Heat Stg 5	Heat Stage 5 Test Command	On/Off	Off
ModHeat	Modulating Heat Test Command	0 - 100%	100
ErSf Cmd:	Energy Recovery supply (inlet) fan Command	ON/OFF	OFF
ErSfVFD%:	Energy Recovery supply (inlet) fan VFD Setpoint	ON/OFF	OFF
ErEf Cmd:	Energy Recovery supply (inlet) fan pressure deadband	0 – 100 %	50%
ErEfVFD%:	Energy Recovery exhaust fan VFD setpoint	ON/OFF	OFF
ErW Cmd:	Energy Recovery exhaust fan pressure setpoint	0 – 100 %	50%
ErW DAT:	Energy Recovery enthalpy wheel discharge (supply) air temperature	ON/OFF	OFF
Er OAT:	Energy Recovery outside air temperature		
→**Prev**	Opens previous menu	Menu Link	

3.5.36 Calibration Menu (Consult factory before changing offsets.)

Control Display	Description	Range	Factory Default
SpcTemp	Space Temperature	Status Only	
+/- Offset	Space Temperature Offset	-	0
DA Temp	Discharge Air Temperature	Status Only	
+/- Offset	DA Temperature Offset	-	0
Spc Hum	Space Humidity	Status Only	
+/- Offset	Space Humidity Offset	-	0
OA Temp	Outside Air Temperature	Status Only	
+/- Offset	OA Temperature Offset	-	0
OA Humidity	Outside Air Humidity	Status Only	
+/- Offset	OA Humidity Offset	-	0
CC DAT	Cooling Coil Discharge Air Temperature	Status Only	
+/- Offset	Cooling Coil Discharge Air Temperature Offset	-	0
MA Temp	Mixed Air Temperature	Status Only	
+/- Offset	Mixed Air Temperature offset	-	0
ERM DAT	Energy Recovery Discharge Air Temperature	Status Only	
+/- Offset	Energy Recovery Discharge Air Temperature offset	-	0
ERM Hum	Energy Recovery Discharge Air Humidity	Status Only	
+/- Offset	Energy Recovery Discharge Air Humidity offset	-	0
Press	Pressure	Status Only	
+/- Offset	Pressure Offset	-	0
CO2	Carbon dioxide Level	Status Only	
+/- Offset	Carbon dioxide Level offset	-	0
→**Prev**	Opens previous menu	Menu Link	

3.5.37 Loop Tuning Menu (Consult factory before changing.)

Control Display	Description	Range	Factory Default
-Mod Cooling (Only shown when applicable)			
SrtUp%Sm	Startup percentage small	10 -100%	20
SrtUp%Lrg	Startup percentage Large	10 -100%	50
SrtUp%Chg	Startup percentage changeover setpoint	2 - 30°F	10
Cg/SnSm	Change per scan small	0 – 20%	1
Cg/SnLrg	Change per scan large	0 – 20%	5
Cg/SnChg	Change per scan changeover	2 - 30°F	5
Scan Rate	Loop scan rate	1 – 300 Sec	45
Deadband	Deadband from setpoint	0 - 10°F	2
Mod Clg%	Modulating cooling percentage command		
ClgCtlT	Cooling control temperature		
ClgDatSP	Cooling Discharge air temperature setpoint		
-Mod Heating (Only shown when applicable)			
PID Tmr	PID Loop Timer	0 – 600 sec	10
Prop	Proportional Band	0 – 600 sec	4
Integ	Integral Timer	0 – 600 sec	1
Deadband	Deadband	0 – 600°F	0.5
ActHtgT	Active Heating Temperature	Status Only	
ActHtgSP	Active Heating Setpoint		
PID Out	PID Output		

3.0 Dialogs (cont'd)

3.5.37 Loop Tuning Menu (Consult factory before changing.) (cont'd)

-Mod Reheat (Only shown when applicable)			
PID Tmr	PID Loop Timer	0 – 600 sec	10
Prop	Proportional Band	0 – 600 sec	4
Integ	Integral Timer	0 – 600 sec	1
Deadband	Deadband	0 – 600°F	0.5
ActRhtT	Active Reheat Temperature	Status Only	
ActRhtSP	Active Reheat Setpoint		
PID Out	PID Output		
-Pressure Loop (Only shown when applicable)			
Strtup Pct	Startup percentage	25 – 100%	50
Strtup Tmr	Startup timer	35 – 200 sec	120
Cng/scan	Change per scan	0 – 20%	1
Scan Rate	Scan Rate	1 – 300 sec	45
Deadband	Deadband	0 – 10	0.1
Pressure	Pressure	Status Only	
Press Sp	Pressure Setpoint		
-CO2 Loop (Only shown when applicable)			
Strtup Pct	Startup percentage	25 – 100%	50
Strtup Tmr	Startup timer	35 – 200 sec	120
Cng/scan	Change per scan	0 – 20%	1
Scan Rate	Scan Rate	1 – 300 sec	45
Deadband	Deadband	0 – 200	50
CO2 Level	Carbon Dioxide Level	Status Only	
CO2 Sp	Carbon Dioxide Setpoint		
-Damper Mod (Only shown when applicable)			
PID Tmr	PID Loop Timer	0 – 600 sec	10
Prop	Proportional Band	0 – 600 sec	4
Integ	Integral Timer	0 – 600 sec	1
Deadband	Deadband	0 – 600°F	0.5
MAT	Mixed Air Temperature	Status Only	
MATSetpt	Mixed Air Setpoint		
PID Out	PID Output		
→Prev	Opens previous menu link	Menu Link	

3.5.38 Reset Alarms

Control Display	Description	Choice	Factory Default
System Shutdown			
Reset	Reset Shutdown alarm command	Yes/No	No
→Prev	Opens previous menu	Menu Link	

3.5.39 Inputs/Outputs

Control Display	Description	Menu Link
→Inputs	Inputs Status list (List all current inputs)	
→Outputs	Output Status list (List all current outputs and status)	
→Prev	Opens previous menu	Menu Link

3.5.40 Technical Support Menu

Control Display	Description	Function / Menu Link
#	Displays the current technical support number	Status Only
→Chg #	Opens Change Number menu	3.5.41 Change Number Menu, pg 39
→Prev	Opens previous menu	Menu Link

3.5.41 Change Number Menu

Control Display	Description	Range	Factory Default
Area Code	Input for area Code	-	800
Num:	Input for technical support number	-	695 - 1901
→Prev	Opens previous menu	Menu Link	

3.5.42 System Menu

Control Display	Description	Function / Menu Link
Version	Current System Software Version number	Status Only
→**Clockset**	Opens System Clock Set menu	3.5.43 Clockset Menu, pg 39
→**Support PH #**	Opens Change Number menu	3.5.41 Change Number Menu, pg 39
→**BACNET**	BACnet menu (Used to modify Instance numbers)	3.5.44 BACnet, pg 39
→**ROUTER**	Router Menu (Used to change from MSTP to ARCnet)	3.5.45 Router, pg 39
→**Prev**	Opens previous menu	Menu Link

3.5.43 Clockset Menu

Control Display	Description	
Date	Day – Month – Year	
Time	Hour – Minute - Second	
→**Prev**	Opens previous menu	Menu Link

3.5.44 BACnet

Control Display	Description	Range	Factory Default
Instance	Current Instance Number (This can be manually set if Autogenerate = N)	-	-
Base Device ID	Base Number	-	2400
Autogenerate	Autogenerate Device ID from Base + Module address	Yes / No	Yes
→**Prev**	Opens previous menu	Menu Link	

3.5.45 Router (change requires admin; contact factory)

Control Display		Description	Range	Factory Default
	ARC156	Current ARCnet network number	-	0
+	**MSTP**	Current MSTP network number	-	12345
NOTE: + sign indicates the current network setting. Network not being used should be set to 0.				
Mac Address:				
ARC156		Current ARC 156 address set by dials	-	02
MSTP		Current MSTP Address set by dials	-	02
→**Prev**		Opens previous menu	Menu Link	

3.5.46 Configuration Menu

Control Display		Description	Range	Factory Default
Current Config:				
→Config Descr				
This menu provides a test description of the installed system components. This includes items like controller type, clg size, htg size, damper control, etc.				
→A.I.N				
This menu list the application identification number. This is the barcode used by the factory to install the controller application.				
Edit Config:				
→Equipment				
CtrlType:				
	Neutral Air	This is the D15 application. The sets the application to control the discharge air temperature.		
	Space Ctrl	This is the D16 application. This allows the space temperature to override the unit based on space conditions. This requires the CL77 room interface module.		
Room Module: Installed?		This tells the controller that the room interface module is installed and activates all associated menus.		
	→MultiSpcSens	This menu allows the user add additional space sensors to the system and set how the unit reacts to those sensors.		
→Alarm Config				
Alm Timer		Adjust the failure timers	60 - 240	180 s
# of restarts		# of restarts before system shuts down.	0 – 5	3
LoLimitSP		Low limit setpoint	32 – 50	36
LoLimitTmr		Low limit timer	5 – 25	10 m
LoLimitEn		Low limit enabled	Yes/No	Yes
Htg Alarms		Enables unit interface logging of Heating Alarms	Enabled / Disabled	Enabled
Htg Shtdn		Unit shuts down on a heating failure.	Enabled / Disabled	Disabled
→Point Config				

(continued)

3.0 Dialogs (cont'd)

3.5.46 Configuration Menu (cont'd)

Control Display	Description	Range	Factory Default
Space Hum	Space Humidity	Enabled / Disabled	By option Ordered
OA Hum	Outside air humidity	Enabled / Disabled	By option Ordered
MA Temp	Mixed air temperature	Enabled / Disabled	By option Ordered
CC DAT	Cooling coil discharge air temperature	Enabled / Disabled	By option Ordered
Filter	Filter monitor	Enabled / Disabled	By option Ordered
→Sensr Config			
Pressure	Of pressure sensor installed this allows the user to rescale the sensor ranges.		

3.5.47 Schedule Menu

Control Display	Description	Range	Factory Default
Currently:	Shows current occupancy status	Occ/Unocc	-
Type:	Shows current schedule type:	See Below	-
	Always Occ (Default)		
	Always Off		
	BAS On/off		
	DI On/Off		
	BAS Occ/Unocc		
	BACnet Sch		
	Local Sch		
Time:	Shows current controller time		
Date:	Shows current controller Date		
→Daily Sch	Opens Daily schedule	-	-
→Holiday Sch	Opens Holiday schedule	-	-
→Override Sch	Opens Override schedule	-	-
→MinTilOccpd	Opens Minutes until Occupied	-	-
→Clockset	Opens System Clock Set menu	3.5.43 Clockset Menu, pg 39	
→Occ Config	Opens System Clock Set menu		
→Prev	Opens previous menu	Menu Link	

3.5.48 Alarm Menu

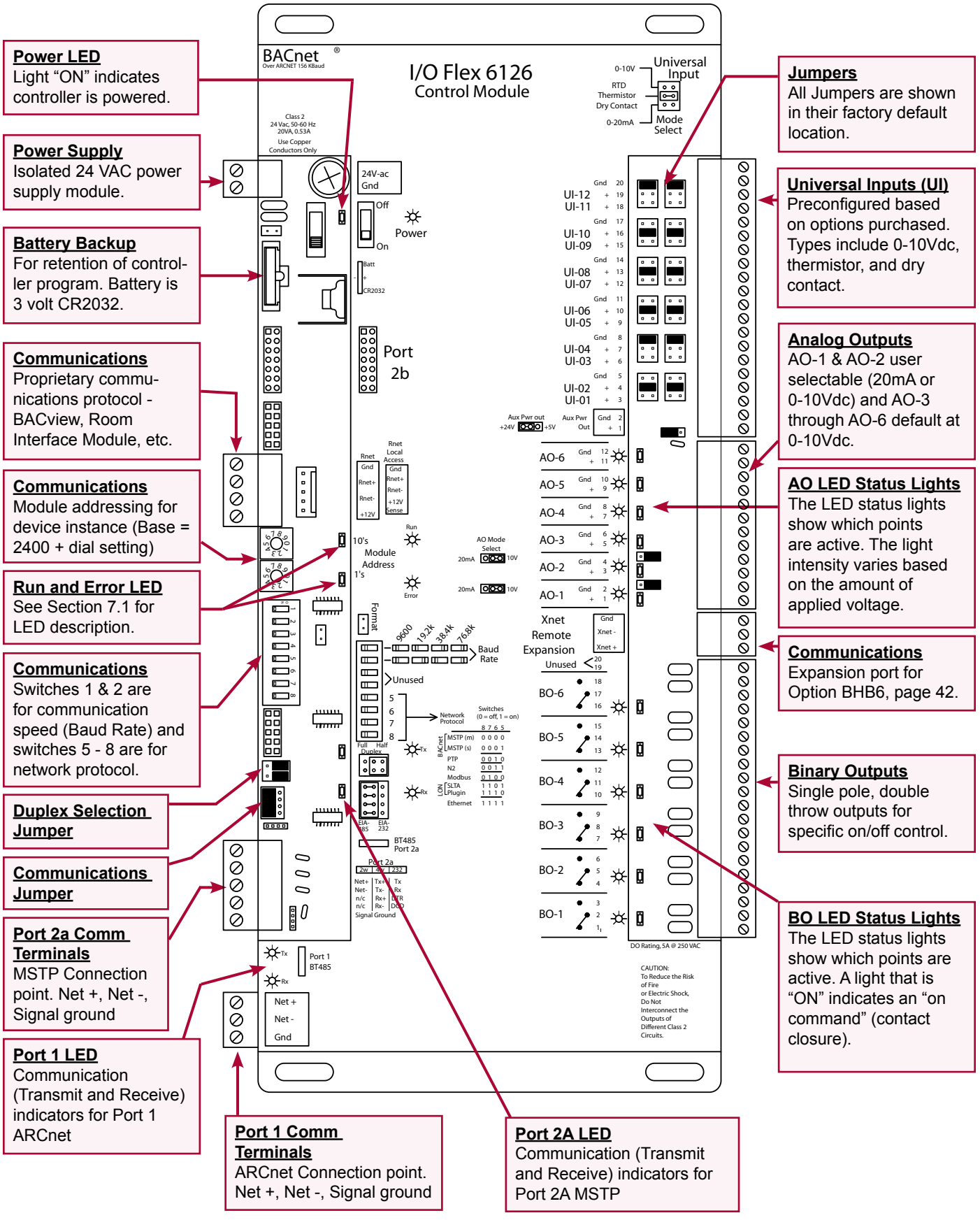
Control Display	Description	Function / Menu Link
Active Alarms	Shows all current alarms	Status Only
Return-Normal	Log for all old alarms	Status Only
→Prev	Opens previous menu	Menu Link

3.5.49 Help Menu

Control Display	Description	Function / Menu Link
Alarm List	Shows all possible alarms and associated alarm code that displays on Wall Temperature Sensor. (Under Development)	Status Only
→Prev	Opens previous menu	Menu Link

4.0 IQ System Layout

4.1 IQ System Base Controller Layout



Power LED
Light "ON" indicates controller is powered.

Power Supply
Isolated 24 VAC power supply module.

Battery Backup
For retention of controller program. Battery is 3 volt CR2032.

Communications
Proprietary communications protocol - BACview, Room Interface Module, etc.

Communications
Module addressing for device instance (Base = 2400 + dial setting)

Run and Error LED
See Section 7.1 for LED description.

Communications
Switches 1 & 2 are for communication speed (Baud Rate) and switches 5 - 8 are for network protocol.

Duplex Selection Jumper

Communications Jumper

Port 2a Comm Terminals
MSTP Connection point. Net +, Net -, Signal ground

Port 1 LED
Communication (Transmit and Receive) indicators for Port 1 ARCnet

Port 1 Comm Terminals
ARCnet Connection point. Net +, Net -, Signal ground

Port 2A LED
Communication (Transmit and Receive) indicators for Port 2A MSTP

Jumpers
All Jumpers are shown in their factory default location.

Universal Inputs (UI)
Preconfigured based on options purchased. Types include 0-10Vdc, thermistor, and dry contact.

Analog Outputs
AO-1 & AO-2 user selectable (20mA or 0-10Vdc) and AO-3 through AO-6 default at 0-10Vdc.

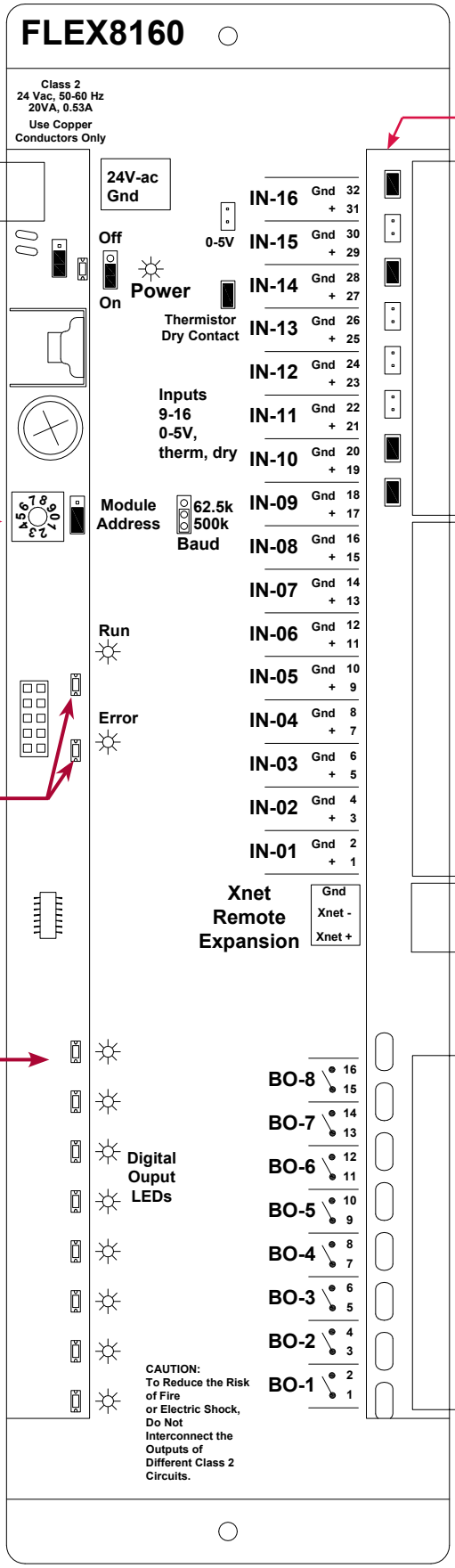
AO LED Status Lights
The LED status lights show which points are active. The light intensity varies based on the amount of applied voltage.

Communications
Expansion port for Option BHB6, page 42.

Binary Outputs
Single pole, double throw outputs for specific on/off control.

BO LED Status Lights
The LED status lights show which points are active. A light that is "ON" indicates an "on command" (contact closure).

4.2 IQ System Expansion Board Layout (Option BHB6)



Power Supply
Isolated 24 VAC power supply module

Communications Module Addressing (Factory Default = 1, and the Baud Speed (Factory Default = 500k)

Run and Error LED
See Section 7.2 for LED description.

BO LED Status Lights
The LED status lights show which points are active. A light that is "ON" indicates an "on command" (contact closure).

Jumpers
All Jumpers are shown in the factory default location.

Universal Inputs (IN09 - IN16))
Preconfigured based on options purchased. Types include 0-5Vdc, thermistor and dry contact.

Digital Inputs (IN01 - IN08)
Preconfigured based on options purchased.

Communications
Expansion port for communication to IQ System Controller (See page 41.)

Binary Outputs
Single pole, double throw outputs for specific on/off control

4.3 Physical Point Layout

The table lists the physical points connected to the controller. See the wiring diagram for terminal numbers. Refer to the illustration on page 41 to identify on the controller. Only points required based on configurations purchased will be active; all other points will be disabled

IQ System Controller 6126 Typical Physical Point Layout					
Point #	**Point Type**	**Points**	**Value**	**Interface Device**	**Location**
IN-12	AI	Heating Feedback	-	Heating Board	Control Panel
IN-11	AI	Pressure	" w.c.	Pressure Sensor	Field Mounted – Duct/Bldg
IN-10	DI	Safety Input	ON/OFF	Dry Contact	Field Mounted – Duct
IN-9	DI	Manual Start/Stop Cmd	ON/OFF	Dry Contact	Control Panel
IN-8	DI	Fan Status	ON/OFF	Diff Press Switch	Control Panel
IN-7	DI	Filter Status	ON/OFF	Diff Press Switch	Control Panel
IN-6	DI	Cooling Coil DAT	Deg F	Temp Sensor	Discharge side of Evap Coil
IN-5	AI	Mixed Air Temp	Deg F	Temp Sensor	Mixed air section of unit
IN-4	AI	OA Hum	0 - 100% RH	Hum Sensor	Unit Intake
IN-3	AI	Space Hum	0 - 100% RH	Hum Sensor	Field Mounted - Space
IN-2	AI	OAT	Deg F	Temp Sensor	Unit Intake
IN-1	AI	DAT	Deg F	Temp Sensor	Field Mounted – Duct
AO-6	AO	Ex Fan VFD Speed / Modulating Cooling	0-100%	0-10V Signal	VFD / Control Panel
AO-5	AO	Modulating Reheat	0-100%	0-10V Signal	Control Panel
AO-4	AO	SA Fan VFD Speed	0-100%	0-10V Signal	VFD
AO-3	AO	Damper Control	0-100%	0-10V Signal	OA Damper Section
AO-2	AO	Modulating Heat	0-100%	0-10V Signal	Control Panel
BO-6	BO	Comp 4 Start/Stop or Condenser Fan Start/Stop	ON/OFF	Relay	Control Panel
BO-5	BO	Comp 3 Start/Stop	ON/OFF	Relay	Control Panel
BO-4	BO	Comp 2 Start/Stop	ON/OFF	Relay	Control Panel
BO-3	BO	Comp 1 Start/Stop	ON/OFF	Relay	Control Panel
BO-2	BO	Reheat Start/Stop	ON/OFF	Relay	Control Panel
BO-1	BO	SA Fan Start/Stop	ON/OFF	Relay	Control Panel

Refer to the illustration of the expansion board on page 42.

IQ Expansion Controller 8160 Typical Physical Point Layout (Option BHB6 Expansion Board)					
Point #	**Point Type**	**Points**	**Value**	**Interface Device**	**Location**
IN-16	UI	Future Expansion	-	-	-
IN-15	AI	RA Humidity (0-5 Vdc)	0 - 100% RH	Hum Sensor	Field Mounted – Duct
IN-14	AI	RA Temp	Deg F	Temp Sensor	Field Mounted – Duct
IN-13	AI	Manual Voltage Control Input (0-5 Vdc)	0 - 100%	Terminals	Control Panel
IN-12	AI	CO2 (0-5 Vdc)	PPM Level	Heating Board	Field Mounted - Space
IN-11	AI	Future Expansion			
IN-10	AI	Future Expansion			
IN-9	DI	Future Expansion	ON/OFF	Dry Contract	Control Panel
IN-8	DI	Manual Occupancy Cmd	ON/OFF	Dry Contract	Control Panel
IN-7	DI	Future Expansion			
IN-6	DI	Future Expansion			
IN-5	DI	Future Expansion			
IN-4	DI	Future Expansion			
IN-3	DI	Future Expansion			
IN-2	DI	Input 2 status (Ex Fan, etc)	ON/OFF	Dry Contract	Control Panel
IN-1	DI	Input 1 status (Ex Fan, etc)	ON/OFF	Dry Contract	Control Panel
BO-8	BO	Future Expansion	-	-	-
BO-7	BO	Future Expansion	-	-	-
BO-6	BO	Future Expansion	-	-	-
BO-5	BO	Ex Fan Start/Stop	ON/OFF	Relay	Control Panel
BO-4	BO	Future Expansion			
BO-3	BO	Future Expansion			
BO-2	BO	Future Expansion	-	-	-
BO-1	BO	Future Expansion	-	-	-

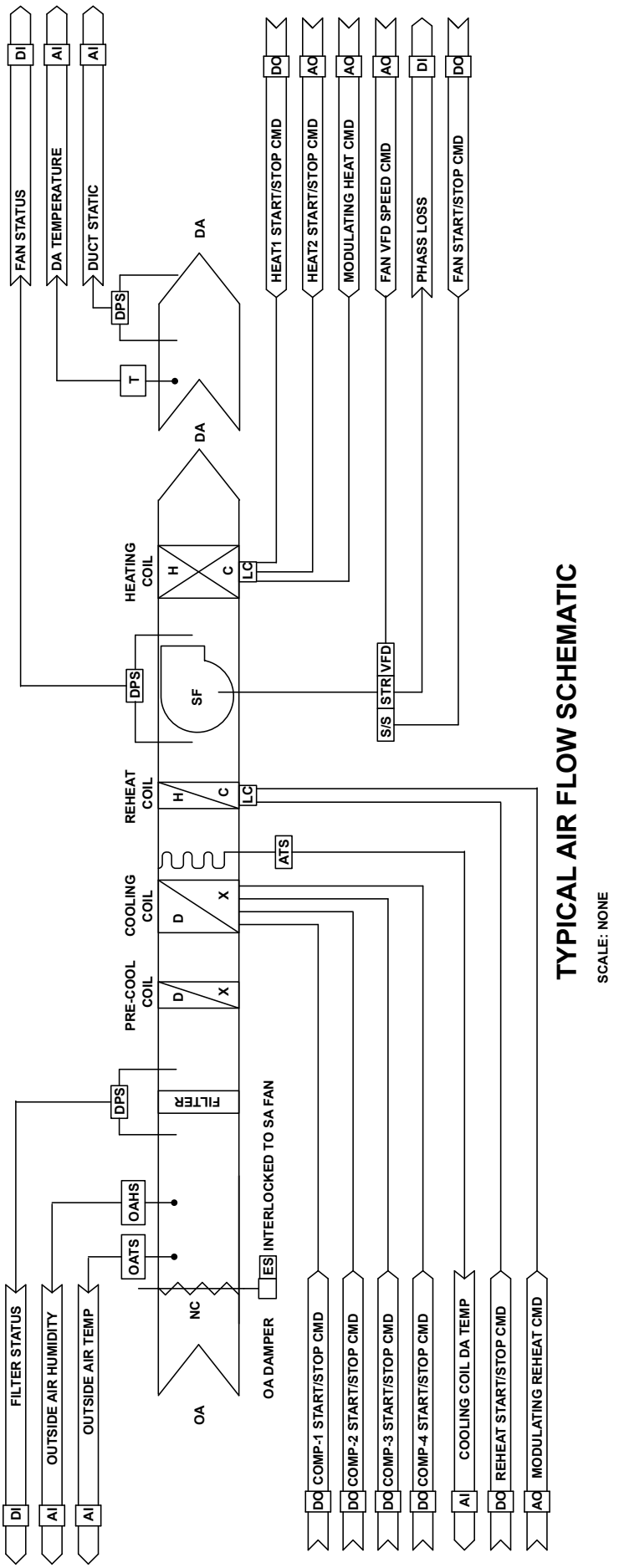
4.0 IQ System Layout (cont'd)

4.3 Physical Point Layout (cont'd)

ERM IQ System Controller 6126 Typical Points Layout					
Controller Point	Point Type	Point Name	Value	Interface Device	Stand/ Optional
IN-12	AI	ERM Ea Pressure Input	inch WC	Pressure transducer	Optional
IN-11	AI	ERM SA Fan Pressure Input	inch WC	Pressure transducer	Optional
IN-10	AI	ERM Return Air Humidity	% RH	Humidity Sensor	Optional
IN-9	DI	ERM Wheel Status	On/Off	Current Switch	Standard
IN-8	DI	ERM EA Fan Status	On/Off	Diff Press Switch	Standard
IN-7	DI	ERM SA Fan Status	On/Off	Diff Press Switch	Standard
IN-6	DI	ERM Start/Stop Input	On/Off	Dry Contact	Standard
IN-5	DI	ERM Dirty Filter	On/Off	Diff Press Switch	Optional
IN-4	UI				
IN-3	AI	ERM Return Air Temp	Deg F	Temp Sensor	Optional
IN-2	AI	ERM OA Temp	Deg F	Temp Sensor	Standard
UI-1	AI	ERM Wheel DAT	Deg F	Temp Sensor	Standard
AO-6	AO				
AO-5	AO				
AO-4	AO				
AO-3	AO				
AO-2	AO	ERM SA Fan Speed Control	0 – 100%	0-10vdc signal	Optional
AO-1	AO	ERM EA Fan Speed Control	0 – 100%	0-10vdc signal	Optional
DO-6	DO				
DO-5	DO				
DO-4	DO				
DO-3	DO	ERM Wheel Start/Stop	On/Off	Relay	Standard
DO-2	DO	ERM EA Fan Start/Stop	On/Off	Relay	Standard
DO-1	DO	ERM SA Fan Start/Stop	On/Off	Relay	Standard

4.4 Airflow Diagram

NOTE: Not all available options are illustrated.



5.0 Field Installed Sensors

5.1 Sensor Wiring General Guidelines - Guidelines apply to all sensor wiring in Section 5.0.

Digital control inputs are low-current, resistance-based signals. The manufacturer recommends for optimum temperature control performance that the analog and digital inputs (zone sensors, discharge air sensors, etc.) that are connected to the controller be routed in one of the following manners unless otherwise specified for specific sensor.

- In separate conduits, isolated from 24VAC controls and line voltage power to the unit,

OR

- If the wires are to be run in the same conduit as the 24 VAC control wiring, the digital control wiring must use shielded cable and be bundled separately from 24 VAC control wiring. The shield must be drained at the unit and taped on the opposite end.

Refer to the wiring diagram for making wiring connections.

Wire Gauge	Maximum Sensor Wire Length (Digital Control)	
AWG	Feet	Meters
14	800	244
16	500	152
18	310	94
20	200	61
22	124	38

Temperature		Resistance (Type 24)
°F	°C	
-10.0	-23.3	118.0K
-5.0	-20.6	100.2K
0.0	-17.8	85.35K
5.0	-15.0	72.91K
10.0	-12.2	62.48K
15.0	-9.4	53.64K
20.0	-6.7	46.23K
25.0	-3.9	39.91K
30.0	-1.1	34.56K
35.0	1.7	30.00K
40.0	4.4	26.10K
45.0	7.2	22.76K
50.0	10.0	19.90K
55.0	12.8	17.44K
60.0	15.6	15.31K
65.0	18.3	13.48K
70.0	21.1	11.88K
75.0	23.9	10.50K
77.0	25.0	10,000
80.0	26.7	9.298K
85.0	29.4	8.250K
90.0	32.2	7.331K
95.0	35.0	6.532K
100.0	37.8	5.826K
105.0	40.6	5.209K
110.0	43.3	4.663K
115.0	46.1	4.182K
120.0	48.9	3.757K
125.0	51.7	3.381K
130.0	54.4	3.047K
135.0	57.2	2.750K
140.0	60.0	2.486K
145.0	62.8	2.251K

Discharge Air Temperature Sensor, P/N 222753

5.2 Discharge Air Sensor

The discharge air temperature sensor is shipped separately for field installation in the ductwork. The location and position of the sensor are important. Follow the instructions below.

1. **Determine the appropriate distance from the unit.** Be sure there is sufficient distance from the supply outlet to have a good mixture of discharge air temperature. According to the latest edition of AMCA Standard 201, in straight ducts, the air is typically well mixed a minimum of five equivalent duct diameters from the discharge of the unit with equivalent duct diameter defined as equal to the square root of 4AB/3.14. "A" and "B" are the duct cross-sectional dimensions.

   Example: **Supply ductwork cross-sectional dimension is 24" x 12" (610mm x 305mm).**

   $$5 \times \sqrt{\frac{4 \times 12 \times 24}{3.14}} = 96\text{"} \quad 5 \times \sqrt{\frac{4 \times 305 \times 610}{3.14}} = 2435\text{mm}$$

   Locate the sensor a minimum of 96" (2435mm) from the outlet of the unit.

   NOTE: If the length of the discharge duct is less than 8 ft (2.4M), a mixing vane is recommended for mixing the discharge air.

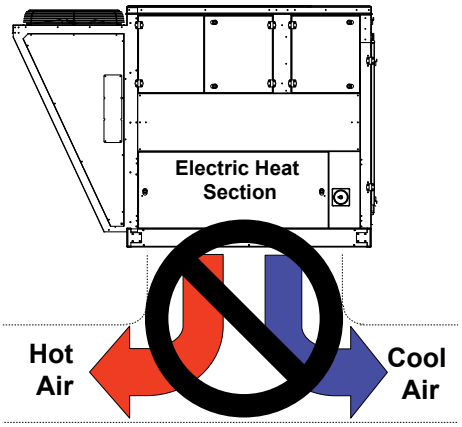
Do not mount the sensor in the ductwork after a split in the supply as that will cause loss of control in the duct that does not house the sensor.

2. **Determine the location and orientation of the sensor.** The position of the sensor in the duct is also important. In horizontal ductwork, locate the sensor assembly in the top, middle of the duct with the sensor probe extending vertically down into the center of the airstream.

   In vertical ductwork, locate the sensor assembly in the middle of the side of the duct that corresponds with the top middle of the discharge outlet.
3. **Attach the sensor.** Mark the selected location and drill a 7/16" hole. Insert the probe into the hole. Be sure that the blue plastic fitting holding the probe is centered in the hole. Attach with two No. 8 sheetmetal screws (do not overtighten). Check to be certain that the hole is sealed.
4. **Run the sensor wire to the unit** per the general wiring guidelines.
5. **Verify Operation**. Now verify that you are getting a temperature reading on the summary page of the BACview installed in the unit.

Specific requirements for locating discharge air sensor on electric heat models:

If a Model RECB or REDB with multi-stage control is installed in a system with immediate "T" configuration ductwork leaving the discharge, heat staging may allow stratification of the air. The result is hot air only moving down one segment of the duct while cool air moves down the other segment. Avoid this application. If this application is not avoidable, provide air mixing devices or the necessary duct length before the "T" for mixing of the discharge air.



5.3 Room Interface Module (Option CL77)

Room Interface Module, P/N 222756

The wall temperature sensor uses a precise 10K ohm thermistor with + 0.36ºF (0.2ºC) standard accuracy and less than 0.18ºF (0.01ºC) drift over a ten year span – requires no maintenance or re-calibration. There is a hidden communication port that allows a laptop computer or handheld service tool to be connected to the unit. The Wall Temperature Sensor (either standard or Option CL77) mounts on a standard 2" x 4" electrical box for easy installation.

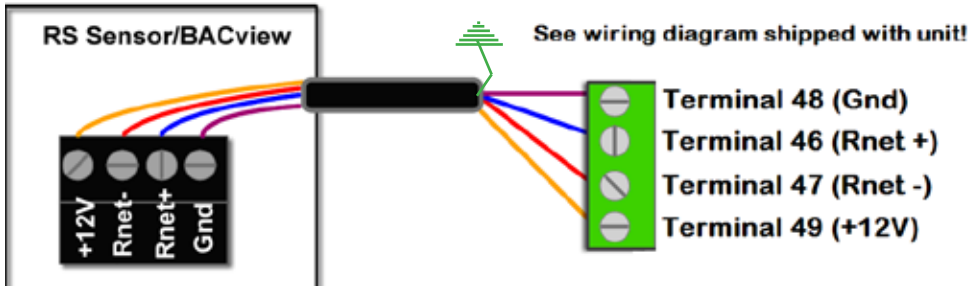
The following is the recommended installation requirements for the wall temperature sensor.

Wiring Specifications: Use an 18 AWG, 4 conductor shielded wire that is no more than 500 feet (152 meters).

To wire a Room Interface Module

1. Turn power off to the IQ Controller.
2. Wire each terminal as shown below to the terminals on the Wall Temperature Sensor.

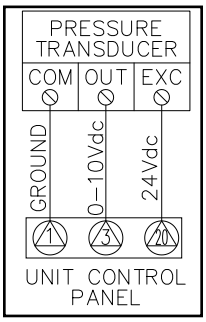
   NOTE Connect the shield wire and the ground wire to the **Gnd** terminal at unit only.
3. Turn on the power to the IQ controller.



5.0 Field Installed Sensors (cont'd)

Duct Pressure Transducer, P/N 234818; Building Pressure Transducer, P/N 234819

Duct Static Pickup Tube for Option BE11, P/N 234821



NOTE: Terminals 1, 3, and 20 are typical control panel terminals and should be verified on the unit specific wiring diagram.

CO2 Sensor, P/N 234820

NOTE: If the printed circuit board (PCB) must be removed, handle it carefully and protect it from electrostatic discharge. Normally, removing the PCB is not required.

5.4 Pressure Sensors (Options BE11 and BE12)

Duct pressure Option BE11 has a range of 0 to 2.5" and building pressure Option BE12 has a range of.-0.5 to +0.5". Both pressure transducers sense differential or gage (static) pressure and convert this pressure difference to a proportional high level analog output (0-10Vdc) for both unidirectional and bidirectional pressure ranges. The transducers are designed to be used with air or nonconducting gases. The operating and compensated temperature limits of the transducers are 0˚F to +150˚F (-18˚C to +65˚C).

The transducer is mounted in the control compartment. The pressure sensor pickup for Option BE11 is shipped loose for field mounting in the ductwork. The sensor pickups for building pressure (Option BE12) are field supplied. The location and position of sensor pickups is important. Follow the instructions below.

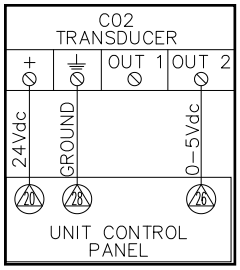
1. **Determine the location of the sensor pickup(s).**
   The duct static pickup tube used with Option BE11 should be mounted 2/3 down the length of the ductwork (minimum of 10 duct lengths). At the selected location, drill a 7/16" hole in the side of the duct. Insert the pickup tube being sure that it is centered in the hole and attach with two #8 sheetmetal screws. Check to be sure that the hole is sealed.
   The building pressure sensor used with Option BE12 should have a positive (high) pressure pickup tube (field supplied) installed on one side of the reference area and the reference (low) pressure pickup tube (field supplied) on the other side.
2. **Connect tubing.** All tubing is field supplied. The transducer is equipped with 1/4" O.D. pressure fittings for the pressure signal connection. Both the positive (high) pressure port and the reference (low) pressure port are located on the front of the unit, labeled "HIGH" and "LOW" respectively. For best results (shortest response times), 3/16" I.D. tubing is suggested for tubing lengths up to 100 feet long, 1/4" I.D. for tubing lengths up to 300 feet, and 3/8" I.D. for tubing lengths up to 900 feet. When sensing duct pressure (Option BE11), attach tubing from the pickup sensor to the high pressure fitting. Leave the low pressure connection open to sense atmospheric pressure.
3. **Verify Operation.** On startup, verify that there is a pressure reading on the summary page on the Unit Interface Module (BACview) display.

5.5 Space CO2 Sensor (Option BE15)

The space CO2 Sensor is a new state-of-the-art, infrared, maintenance-free carbon dioxide transmitter for installation in the climate zone. The sensor measures the carbon dioxide concentration in the ambient air up to 2000 ppm and transforms the data into a 0-5 Vdc analog output.

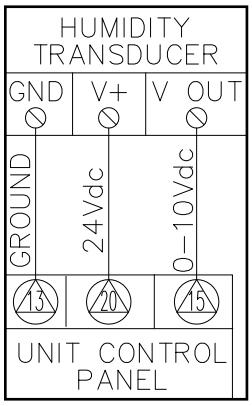
The Space CO2 sensor is shipped separately or loose for field mounting. The location and position of the sensor is important. Follow the instructions below.

1. **Determine the location of the sensor.** The CO2 transmitter should be placed away from areas of excessive moisture, corrosive fumes, vibration, or extremely high temperatures.
2. **Attach the sensor using the following steps**.
   a) **Remove the wall plate:** The sensor is shipped with the wall plate mounted. The wall plate has to be removed before the sensor is mounted on the wall. Unscrew the screw on the side of the box.
   b) **Electrical cable entry:** The box has a factory mounted cable entry bushing. Never feed more than one cable through each cable entry bushing or gas might leak around the cable.
   c) **Screw the wall plate onto the wall:** The wall plate has holes for three screws. Using the plate as a template, mark and drill holes for 3.5mm screws. Screws and wall anchors are included. Insert the wall anchors in the holes. Attach the wall plate with the screws.
   d) **Attach the sensor box to the wall plate**. The wall plate has three hooks that fit in holes in the sensor box. Carefully, snap the box in place. Fasten the screw on the side of the box.



NOTE: The same ground reference has to be used for the CO2 Sensor and for the DDC/signal receiver. Terminals 20, 26, and 28 are typical control panel terminals and should be verified on the unit wiring *diagram.*

Space Humidity Sensor, P/N 234822



NOTE: Terminals 13, 15, and 20 are typical control panel terminals and should be verified on the unit specific wiring diagram.

NOTE: It may take ten to twenty minutes for this sensor reading to stabilize upon initial power up.

e) Lock the lid with the screw at the bottom of the sensor box.

3. **Run sensor wire to the unit per the general wiring guidelines in Section 5.1.**
4. **Connect wire to sensor.** The power supply has to be connected to +~ and ground (-). The ground (-) is considered as system ground.
5. **Connect wire to factory installed control terminals.**
6. **Verify Operation.** On startup, verify that there is a CO2 reading on the summary page on the LCD (BACview) display.

5.6 Space Humidity Sensor (Option DT7)

The space humidity sensor is shipped separately or loose for field mounting. Follow the instructions below to install.

1. **Determine the location of the sensor.** The RH transmitter should be placed away from areas of excessive moisture, corrosive fumes, vibration, or extremely high temperatures.
2. **Run sensor wire to the unit per the general wiring guidelines in Section 5.1.**
3. **Attach the sensor**. The sensor can be mounted using a junction box or mounted directly to the drywall following the steps below.

Junction Box Mounting

a) Pull the wire through the wall and out of the junction box, leaving about six inches free.
b) Pull the wire through the hole in the base plate.
c) Secure the base to the box using the #6-32 x 1/2 inch mounting screw provided.
d) Connect wires to the sensor terminals.
e) Attach cover by latching it to the top of the base, rotating the cover down, and snapping it into place.
f) Secure the cover by backing out the lock-down screws using a 1/16” allen wrench until they are flush with the bottom of the cover.

Drywall Mounting

a) In the selected location, place the base plate against the wall .
b) Using a pencil, mark out the two mounting holes and the area where the wires will come through the wall.
c) Drill two 3/16” holes in the center of each marked mounting hole. Insert a drywall anchor into each hole.
d) Drill one 1/2” hole in the middle of the marked wiring area.
e) Pull the wire through the wall and out of the 1/2” hole, leaving about six inches free. Pull the wire through the hole in the base plate.
f) Secure the base to the drywall anchors using the #6 x 1 inch mounting screws provided.
g) Connect wires to the sensor terminals.
h) Attach cover by latching it to the top of the base, rotating the cover down, and snapping it into place.
i) Secure the cover by backing out the lock-down screws using a 1/16” allen wrench until they are flush with the bottom of the cover.

4. **Refer to the wiring diagram on the unit and connect the wires.**
5. **Verify Operation.** On startup, verify that there is a humidity reading on the summary page on the LCD (BACview) display.

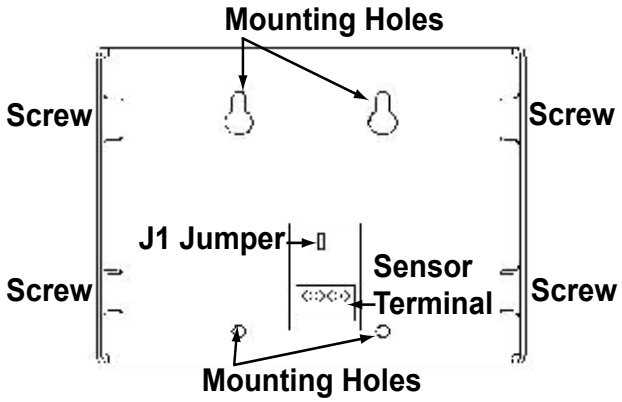
5.7 Remote Unit Interface Module (Option RB3)

Option RB3 is a remote unit interface module (BACview), it provides the same access as the unit interface module described in Section 3.2. The remote unit interface module is shipped separately or loose for field mounting. Follow the instruction below for setup and installation.

1. Determine the location for the remote unit interface module. It can be located up to 500 feet from the unit.

5.7 Remote Unit Interface Module (Option RB3) (cont'd)

2. Run wire to the unit per the general wiring specification in Section 5.1.
3. Attach the sensor following the steps below.

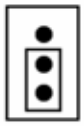


a) Remove the four screws on the sides of the remote unit interface module (BACview) to remove the rear mounting plate.

b) Using the rear mounting plate as a template, mark and drill four holes in the mounting surface. Use the cutout in the rear mounting plate as a template to cut a hole for the cable to pass through.

c) Secure the mounting plate to the surface using the appropriate screws for the type of surface.

d) On the remote unit interface module (BACview), set the J1 jumper to position 2 (down position).



e) **Turn power OFF to the unit!**

f) Pull the sensor terminal connector.

g) Connect the wiring to the sensor terminal, external power supply, and control panel terminal (see wiring diagram for terminal numbers). Verify that all wiring is correct.

WARNING: Improper wiring can damage the remote unit interface module (BACview) as well as the main IQ system controller.

h) Pull sensor terminal connector back into the remote unit interface module (BACview). Check that all wires are properly connected.

i) Reattach the remote unit interface module (BACview) to the rear mounting plate with the four holding screws.

j) Turn on power to the IQ system controller.

k) Verify operation of both the unit interface module (BACview) and the remote unit interface module (Option RB3 BACview).

6.0 Controls Parts List

Part Number	Description	Std or Opt	Factory or Field
257604	IQ System Base Controller - **IMPORTANT:** Each controller is unique to a specific unit. A full Model No. and Serial No. is required to order a replacement controller.	**Std**	Factory
222189	IQ Local Control Display (BACview)	**Std**	Factory
222188	IQ Expansion Controller **(Option BHB6)** – Required with certain options.	**Opt**	Factory
258452	Hand Held Remote Display with 12-ft Cable **(Option RB4)**	**Opt**	Field
234835	Wall Mounted Remote Display with Cable **(Option RB3)**	**Opt**	Field
222753	Discharge Air Sensor – Type 2, 10k Ohm thermistor	**Std**	Field
222754	Outside Air Temperature/Humidity Sensor – 0-10Vdc output for Humidity, Type 2, 10k Ohm thermistor for temperature	**Std**	Factory
222753	Return Air Temperature Sensor – Type 2, 10k Ohm thermistor (**monitoring Option BE13 and damper control Options GF8 and GF9)**	**Opt**	Factory
234907	Return Air Humidity Sensor - 0-5Vdc output for Humidity **(monitoring Option BE14 and damper control Option GF8)**	**Opt**	Factory
223111	Mixed Air Temperature Sensor - Type 2, 10k Ohm thermistor **(monitoring Option BE10 and damper control Option GF9)**	**Opt**	Factory
234054	Air Proving Switch – Dry contact	**Std**	Factory
105507	Dirty Filter Switch **(Option BE18)** – Dry contact	**Opt**	Factory
234818	Duct Static Pressure Sensor – 0-10Vdc output for 0 to +2.5 inches static **(monitoring Option BE11 and VFD control Option VFC3)**	**Opt**	Factory & Field
234819	Building Pressure Sensor – 0-10Vdc output for -0.5 to +0.5 inches static **(monitoring Option BE12; VFD control Option VFC4; and damper control Option GF5)**	**Opt**	Factory & Field
234820	Space CO2 Sensor - 0-5Vdc output for 0 to 2000 PPM **(monitoring Option BE15; VFD control Option VFC5; and damper control Option GF6)**	**Opt**	Field
234822	Space Humidity Sensor **(Option DT7)** - 0-10Vdc output for Humidity	**Opt**	Field
222756	Wall Temperature Sensor – Communicating Wall Temperature Sensor **(Option CL77 with System Control Option D15, provided for space override with System Control Option D16; required with VFD control Option VFC7)**	**Opt -D15; Std - D16**	Field
223111	Evaporator Coil Discharge Air Temperature - Type 2, 10k Ohm thermistor **(monitoring Option BE9 and reheat modulation control Option AUR1)**	**Opt**	Factory
234823	LonWorks® Card **(Option BHB5)** - Requires change to software program.	**Opt**	Factory

7.0 Test Mode

NOTE: Depending on the cooling size, the condenser fans may be interlocked with only certain stages of cooling. Therefore, you may have to run compressors in conjunction while testing to allow condenser fan operation.

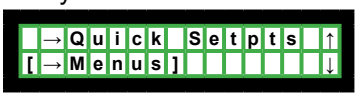
NOTE: [ ] Brackets are around the current selection.

7.1 General

The IQ system controller has a test mode to assist in the start-up procedure. The manual test mode allows each component to be staged individually to allow for start-up of the system. The components are broken up into three different menus: Fan only, fan plus cooling system, and fan plus heating system. The system will not allow heating and cooling to run at the same time. To start the cooling or heat, command a stage on and the IQ system will start the fan automatically before starting the cooling. When moving from one component to the next, the system shuts down the current component automatically including the fan before starting the next one. The test mode has a maximum of three hours continuous run time.

7.2 Example on how to use the Test Mode (Display will appear as illustrated.)

1. First press the ***Home Button***. Now, Press the ***right arrow button*** to scroll down until you reach the **Menus** selection.

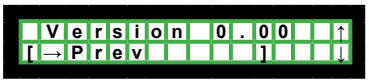


2. Once [Menus] is selected press the ***Enter button***. (**NOTE:** This moves you to the Menus page.)

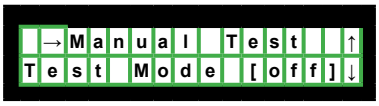
3. The system will then request a password. The password is (0000). This is entered by pressing the ***INC button*** to input a number then the ***right arrow button*** to move to the next position. After you have entered all the numbers press the press the ***Enter button***.

4. Then scroll down to the **Service** menu and press the ***Enter button***. (**NOTE**: This moves you to the Service page.)

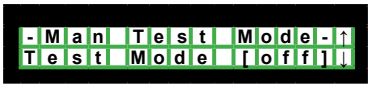
5. Once in the Service Menu scroll down to the **Test Mode** menu and press the ***Enter button***.



6. Once in the Test Mode Menu scroll down to the **Manual Test** menu and press the ***Enter button***.



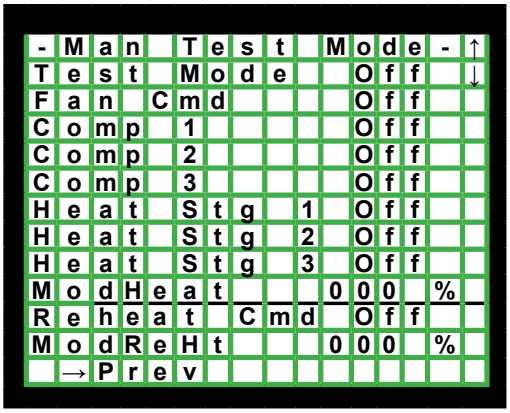
7. Once on the Manual Test Mode page, enable the test mode by selecting the command as shown below, then press the ***Enter button*** (**NOTE**: the selection will flash), and then press the ***INC button*** to change the command (from “off” to “on”), now press the ***Enter button*** to accept the command. This now allows the test mode. **NOTE: You must wait until the system has completed the shutdown sequence before moving to the next step.**



8. Next scroll down to the [Fan Cmd] and follow the direction in Step 7. If there is a safety alarm enabled (Smoke Alarm, Phase Loss Alarm, Discharge Air Sensor Failure, etc.), the system will not allow test mode to run. If the system is power cycled, the unit will return to normal control. **NOTE**: The display below was expanded to show all available points within the Manual Test Menu.

NOTE: When moving from system components such as from fan to cooling or cooling to heating, the system shuts down then restarts in the correct mode. This is to insure the proper mode while testing.

NOTE: When testing Cooling/ Heating stages, enable the next stage before shutting down the current stage. This will allow the next stage to start without shutting down the fan.



*******Once testing is complete you will need to return to the Test mode and disable it by turning it to the off position. Follow step 7. *******

8.0 Troubleshooting

Using the LED Lights for Troubleshooting

The controller uses onboard LED lights to provide status of certain functions as well as various diagnostic conditions. The controller has 19 LED Lights: Power, Run, Error, Tx and Rx for Port 1, Tx and Rx for Port 2a, one for each of the six binary outputs, and one for each of the six analog outputs. The LED lights provide visual indication of power, device status, or communications. The following tables define how to use the LED lights for troubleshooting.

LED Lit	Status
Power	**The controller has power.
Rx	The controller is receiving data from the network segment; there is an Rx LED for Ports 1 and 2a.
Tx	The controller is transmitting data over the network segment; there is a Tx LED for Ports 1 and 2a.
AO#	The analog output is active. LED brightness is proportional to the signal output.
BO#	The binary output is active.

NOTE: See illustrations on pages 41 and 42 to identify LED lights.

****NOTE** The IQ Controller is protected by internal solid state polyswitches on the incoming power and network connections. These polyswitches are not replaceable and will reset themselves if the condition that caused the fault returns to normal.

The RUN and ERROR LED lights indicate control module and network status.

If Run LED shows..	And Error LED shows..	Status is..
2 flashes per second	**Off**	Normal
2 flashes per second	**2 flashes, alternating with Run LED**	Five minute auto-restart delay after system error
2 flashes per second	**3 flashes, then off**	Control module has just been formatted
2 flashes per second	**4 flashes, then pause**	Two or more devices on this network have the same ARC156 network address
2 flashes per second	**On**	Controller execution of application halted after frequent system errors or control programs halted
5 flashes per second	**On**	Controller execution of application startup aborted; boot is running.
5 flashes per second	**Off**	Firmware transfer in progress; boot is running.
7 flashes per second	**7 flashes per second, alternating with Run LED**	Ten second recovery period after brownout
14 flashes per second	**14 flashes per second, alternating with Run LED**	Brownout - There is a three minute restart timer after a brownout condition.
On	**On**	Failure. Try the following solutions: • Turn the controller OFF, then ON. • Replace the controller.

9.0 Network

9.1 General

The IQ System supports BACnet over MS/TP, BACnet over ARCnet, and LonWorks for Building Automation System (BAS) integration. The LonWorks protocol requires an optional plug-in communication card (Option BHB5) and preprogramming of the controller while the BACnet protocol is standard on the controller. The IQ System controller on a MAPS® unit is shipped as standard with the BACnet over MS/TP active and configured with a 9600 baud rate, 12345 MSTP network number, and 2402 device instance address. The speed, network number, and device instance are all field selectable.

NOTE: Units are NOT field convertible to LonWorks.

9.2 Protocols

Protocols are the communication languages spoken by control devices. The main purpose of a protocol is to provide a standard communication link between control devices to allow information to be passed in the most efficient method possible. The IQ controller has the ability to speak multiple protocols to allow seamless integration to any Building Automation System. For two devices to communicate with each other, they must speak the same protocol or have a protocol translator. A protocol is defined as follows:

- A set of formal rules describing how to transmit data.
  - o Low level protocols define
    - □ the electrical and physical standards to be observed
    - □ bit-and-byte-ordering
    - □ the transmission, error detection, and correction of the bit stream
  - o High level protocols deal with data formatting, including
    - □ syntax of messages
    - □ terminal-to-computer dialogue
    - □ character sets
    - □ sequencing of messages, etc.
- It is a language spoken between electronic devices
  - o Example: the protocol IP, which stands for Internet Protocol.

9.3 BACnet

BACnet, which stands for Building Automation and Controls Network, is a protocol developed by ASHRAE. BACnet was developed as a response to industry concerns about increased networking of Building Automation Systems components using proprietary communication methods. In many instances, these proprietary communications severely limited system expansion, upgrade, and replacement. BACnet has been accepted as an open standard by the American National Standards Institute (ANSI) and the European CEN standards. It is also being adopted as an international ISO standard. BACnet is designed to include all building systems, including lighting, security, fire, heating, ventilation, and air conditioning.

It is important to understand the BACnet communication protocol contained in the IQ control system in a Reznor® MAPS® unit. The BACnet information in the following paragraphs is designed to assist in the understanding of the basics of how a Reznor® unit interfaces with a front-end Building Automation System (BAS). There needs to be an understanding of Reznor® equipment responsibility versus the responsibility of the control contractor. This section will explain a few points of interest and define the BACnet interface between the Reznor® IQ system and a typical controls front-end BAS. The following is a short breakdown of the target points that are covered.

- Overview of the BACnet communications protocol
  - o Short definition of the needed variables and their general application
- Overview of requirements for the Reznor® IQ control system to successfully interface with a BACnet front-end BAS control system
  - o Setting of network specific variables to make the Reznor® IQ system compatible and ready for BACnet interfacing. (MS/TP, Device ID, and IQ Controller Device Instance)

9.0 Network (cont'd)

- Setting up the Reznor® IQ controller physical switch settings for interfacing with the BACnet protocol
  - Addressing of IQ Controller
  - IQ Controller communication Baud rate setting to match network speed
  - Configurable switch settings for making the IQ BACnet compatible
- Setting up the Reznor® IQ controller internal user defined network settings for interfacing with the BACnet protocol to ensure valid communications link
  - Step by step menu breakdown for the entering of the network settings
    1) Network Number
    2) Device ID
    3) Device Instance

What is BACnet?

BACnet is a data communication protocol for building automation and control networks. It is neither software, hardware, nor firmware. Think of it as a standardized set of rules that govern how microprocessors exchange information. These rules enable the integration of control products made by different manufacturers into a single, cohesive system. All systems require "addressing" of individual components/units to allow the system to communicate. There are four items that must be set to insure proper communication.

- Network Number
- Device ID
- Device Instance
- Baud Rate

These "values" are NOT determined or assigned by Reznor®; they are predefined by the front-end BAS. The Reznor® IQ controller has default values that must be changed to match the BAS requirements. The drawing below is a typical schematic showing the break down of the address sequence.
The drawing shows two types of networks.

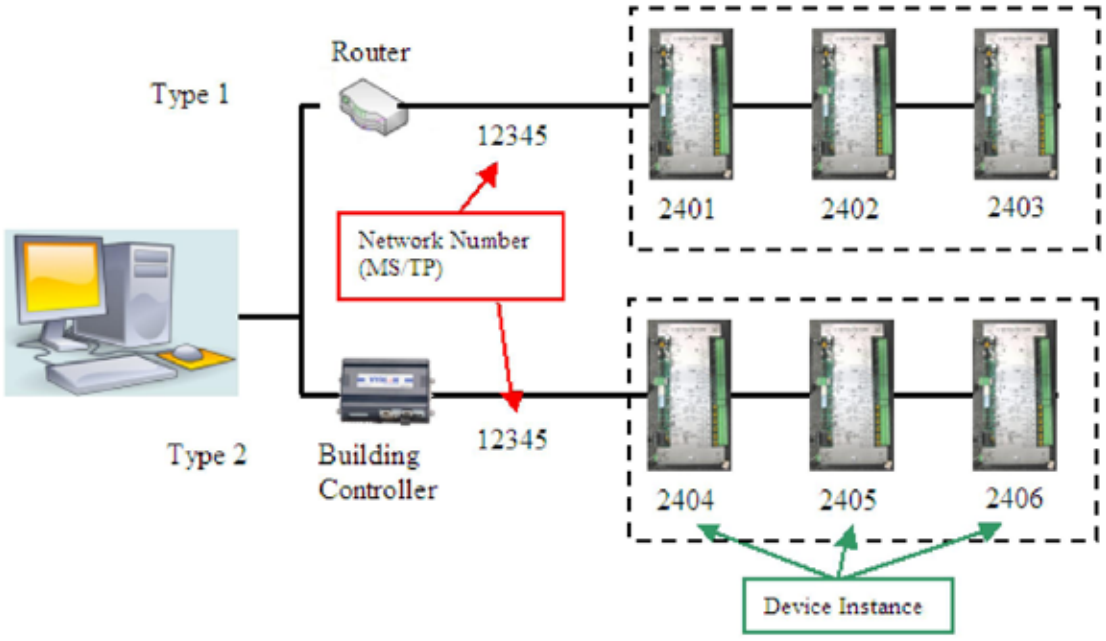


Illustration Type 1 - The first type uses a **router** to connect the controllers to the main building automation system computer. These are networks typical of Automated Logic, Siemens, Delta controls, and Reliable controls. A network of this type requires that all MSTP field bus wiring have a unique Network number. It also requires that all controllers connected have a unique device instance. This is for all systems and buildings connected to the Building Automation System.

Illustration Type 2 - The second network type uses a building controller to connect the controllers to the Building Automation System. This type of network is typical of Tridium, JCI, and Honeywell. This type of network will use a standard MSTP network number (each vendor uses a unique number) and requires that all controllers connected under the specific building controller have a unique device instance number.

The standard communication protocol set for the IQ controller in a Reznor® MAPS® unit is identified as **BACnet over MS/TP (Master Slave / Token Passing)**. This protocol is used for communicating BACnet over a network of BACnet only controllers. The network is considered open communication, whereas any device on the network has the capability to receive input from any other controller on the network. In all MAPS® units included on a BACnet network, there are certain configuration parameters that need to be met before communication can be established with other devices. These settings and configuration parameters must be set properly or the device will not respond when prompted by other devices in the network.

- **BACnet NETWORK NUMBER (Network Setting)**
  a. Set from Bacview
  b. Menus - Systems Menu – Router Menu
     - Device settings from BAS front-end system
     - Range from 0-99999
     - Default for BACnet over MS/TP is 12345

- **DEVICE ID (IQ Address ID Number)**
  a. Set from BACview
  b. Menus - Systems Menu - BACnet Menu
     - Device settings from BAS front-end system
     - Range from 0-9999
     - Default is 2400

- **BACnet DEVICE INSTANCE (IQ Module Address)**
  a. Menus - Systems Menu - BACnet Menu (set dials on IQ controller)
     - Sum of the Device ID and IQ rotary dial address
     - Range from 0-99 (default is 02)
     - Default is 2402 (2400 + 02)
     - Can be set for Auto-generation via front-end BAS

- **NETWORK SPEED**
  a. Determined from individual dip switch settings on IQ controller
     - Network communication speed
     - Ranges from 9600, 19.2K, 38.4K, and 78.6K
     - Default is 9600 baud
     - Field selectable from IQ Controller

9.3.1 Reznor® IQ Controller Settings for BACnet over MS/TP

The following configuration sequence will assist in allowing the IQ controller to communicate via BACnet over MS/TP.

1. Turn off power to the IQ controller.

2. Set the IQ module address (BACnet Device Instance) as defined by the dual rotary dial switches. (See controller illustration, page 41; locate the rotary dial switches.)

Address is determined by the front-end BAS contractor. (Default for BACnet is 02 as illustrated below.)

NOTE: Default base is 2400. Therefore, device instance will be 2400 plus dial address (2400 + 02 = 2402).

Tens Digit Switch

Ones Digit Switch

Default 02 setting is illustrated.

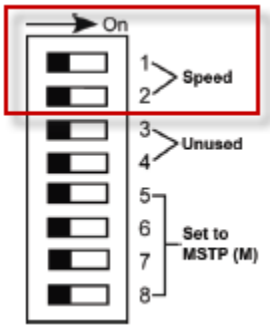
If dial(s) needs set, use a small screw driver.

9.0 Network (cont'd)

Setting up the Reznor® IQ system for BACnet over MS/TP (cont'd):

3. Set the communications speed (baud rate). (See controller illustration, page 41. On the left side, locate Communications Switches 1 and 2.)

Set the switches according to the legend (9600, 19.2k, 38.4k, or 76.8k bps) on the IQ cover. (Default is 9600; both SW1 and SW2 are set to OFF.)

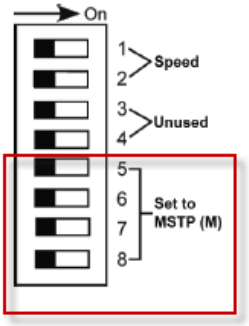


Baud rate legend is printed on the IQ cover. For default 9600, both SW1 and SW2 are set to OFF.

NOTE: Use the same baud rate for all control modules on the network segment.

4. Set BACnet network communications protocol (MS/TP Network Setting) setting. (See controller illustration, page 41. On the left side, locate Communications Switches 5, 6, 7, and 8.)

Set the switches according to the legend on the IQ cover. (Set SW5, SW6, SW7, and SW8 to OFF for BACnet over MS//TP.)



BACnet over MS/TP(m).

The protocol legend is printed on the IQ cover. For MS/TP, set SW5, SW6, SW7, and SW8 to OFF for either master(m) or slave (s).

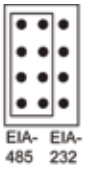
NOTE: MS/TP (m) master setting is recommended.

5. Set the Duplex Selection jumper for Half Duplex. (See controller illustration, page 40. On the left side, locate the Duplex Selection Jumper.)

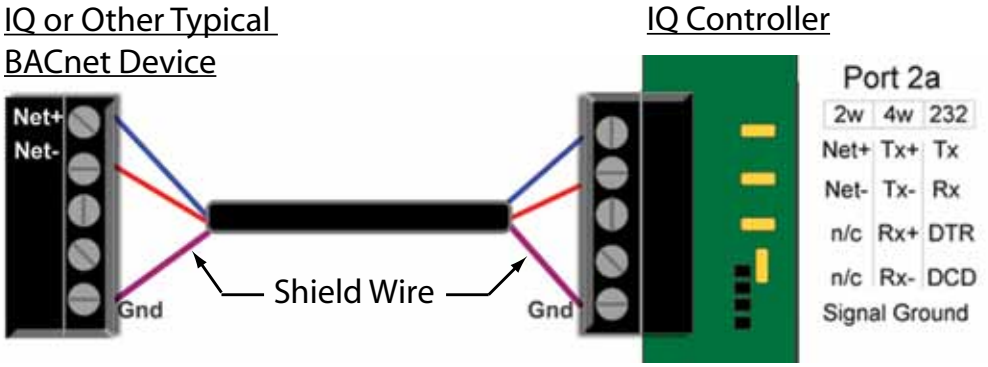
Set jumper at half duplex.

6. Set the Communications Jumper to EIA-485. (See controller illustration, page 41. On the left side, locate the Communications Jumper.

Set jumper at EIA-485.



7. Wire communications to Port 2a (left side of IQ controller) for BACnet MS/TP by connecting polarity specific wiring to Net+, Net- and Gnd.



Recommended Wire Specifications:

- **A shielded, dedicated 22 AWG to 18 AWG twisted pair wire (EIA 485)**
- **2000 feet (610 meters) for 76.8 kbps or 3000 feet (914.4 meters) for 9600 bps, 19.2 kbps, or 38.4 kbps, before needing a Repeater.**
- **Devices should be daisy chained and not star wired.**

NOTE: Use the same polarity throughout the network segment.

BACnet Over MS/TP settings required in Reznor® IQ System (BACview)

After the above physical configurations have been set and adjusted, there are certain parameters that need to be set within the logic of the IQ controller to accommodate the settings of the front-end BAS. These settings are predicated by the Building Automation System and can be accessed for system interface with the Reznor® controls using the BACview.

To access the menu for protocol adjustment, first press the **HOME** button. Then press the **RIGHT ARROW** button to scroll down until the **MENU** selection choice is displayed.

Change Menu Settings - follow the instructions using the numbers that coordinate with the BAS:

ROUTER MENU -- Specific BACnet over MS/TP NETWORK Number from the BAS contractor

_____

BACNET MENU -- Specific BASE DEVICE ID SETTING from the BAS contractor

_____

Menu Directory

Once the **MENU** option is reached and highlighted, press the **ENTER** button. The BACview will then prompt for a password to gain access further into the **MENU** sub-directories. The password is “0000”. Enter the password using the **INC** button to change the left variable to “0”, then the **RIGHT ARROW** button to move to the next position. Press the **INC** button once again to change the next position to “0” and repeat until four zeros appear; then hit **ENTER**.

System Menu Directory

- From the **MENU** sub-directory, press the **RIGHT ARROW** down until the **SYSTEM MENU** option is displayed.
- Press the **ENTER** button.
- Once inside the System Menu sub-directory, **RIGHT ARROW** down until the **ROUTER** menu option menu is displayed.
- Press the **ENTER** button. The BACview will then prompt for an additional level password to gain access further into the Router sub-directory. The password is “8155”. Enter the password using the **INC** button to change the left variable to “8”, then the **RIGHT ARROW** button to move to the next position. Press the **INC** button to change the next position to “1”. Then **RIGHT ARROW** and repeat until **8155** has been entered. When 8155 is displayed, press the **ENTER** button.

NOTE: The current active network will have a “+” sign in front of the network type. Verify that the ARCnet network number is set to “0” when using BACnet over MS/TP !

Router Menu Directory – BACnet NETWORK NUMBER

RIGHT ARROW past the first menu choice showing **BACnet NETWORK NUMBER for ARC156** setting (this should be set to default of zero) until **BACnet NETWORK NUMBER for MS/TP** is shown. This is where the network communication address needs to be entered. The default setting from the factory for the MS/TP value is “12345”. This particular setting is specific to the front-end BAS and will need to be obtained from the BAS contractor. The value of the “12345” should be changed to match the specific

network address number. Press the **ENTER** button and now [12345] will be prompted. Make the accommodating adjustments by entering the provided MS/TP network number. The curser will be over the "ones" value of the default setting. Make the appropriate MS/TP number change by entering the values by pressing the **INC** or **DEC** buttons and using the **RIGHT** or **LEFT** arrow buttons to move from the "ones" value, to the "tens" value, and so on until the MS/TP number displayed matches the correct value. Then press the **ENTER** button again to save the setting.

BACnet Menu Directory – BASE DEVICE ID SETTING (MS/TP)

After the Network Address Number setting has been set, the **BASE DEVICE ID** must be entered. You will need to back out of the **ROUTER** menu and access the **BACnet** menu (still within the **SYSTEM MENU**)

- If still in the **ROUTER** menu, **RIGHT ARROW** down to the [Prev] tab and hit **ENTER**.
- **RIGHT ARROW** down to the **BACnet** menu. Press the **ENTER** button.
- **RIGHT ARROW** down to the **BACnet BASE DEVICE ID** setting (this will be the individual device address of the IQ controller on the BACnet network). The IQ controller is shipped with a default **BASE DEVICE ID** number of "2400" and will have to be changed on site to coincide with the BAS assigned setting. To change the defaulted "2400" setting, press the **ENTER** button. The curser will be over the "ones" value of the defaulted setting. Make the appropriate **BASE** number change by entering the values pressing the **INC** or **DEC** buttons and using the **RIGHT** or **LEFT** arrow buttons to move from the "ones" value, to the "tens" value, and so on until the **BASE** number matches the needed value. Once achieved, press the **ENTER** button to retain the value.

The **Base Device ID** number is **specific** to the front-end BAS and will need to be obtained from the BAS contractor so that the "2400" value can be changed to match their corresponding number.

The system should now have the necessary variables and settings to allow the IQ controller to be visible on the BAS network via BACnet over MS/TP protocol.

9.3.2 Reznor® IQ Controller Settings and BACnet Over ARCnet

ARCnet is an embedded networking technology well suited for real-time control applications in both the industrial and commercial marketplaces.

ARC156 is a unique implementation of ARCnet and is similar to master slave/token passing (MS/TP). The main difference between the two is speed. ARC156 baud rate is 156K baud whereas MS/TP tops out at 76.8K baud.

Also, ARC156 uses a separate communications co-processor to handle the network traffic and a separate processor to handle the program execution. This provides faster processing of applications and handling of communications on the network.

Configuring the IQ System Controller for BACnet over ARC156

1. Turn off the power to the IQ controller.

2. Set the IQ module address (BACnet Device Instance) as defined by the dual rotary dial switches. (See controller illustration, page 41; locate the rotary dial switches.)

Address to set is determined by the front-end BAS contractor. (Default for BACnet is 02 as illustrated below.)

NOTE: The default base is 2400. Therefore the device instance will be 2400 + dial address. In the example below the address would be 2402. The base can be modified using the BACview under the BACnet menu. See menu layout for menu location.

EXAMPLE: If the control module's address is 02, point the arrow on the TENS switch to 0 and the arrow on the ONES switch to 2.

Tens Digit Switch

Ones Digit Switch

Default 02 setting is illustrated.

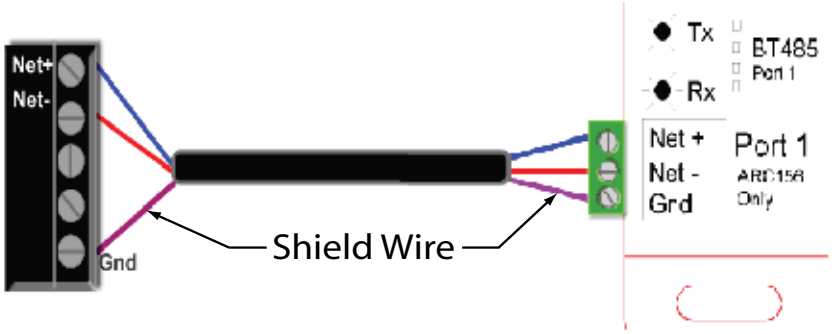
If dial(s) needs set, use a small screw driver.

3. Connect the communications wiring to Port 1 (bottom left of controller) in the screw terminals labeled **Net +**, **Net -**, and **Gnd**.

NOTE: Use the same polarity throughout the network segment.

Recommended Wire Specifications:

- **22 AWG, low-capacitance, twisted, stranded, shielded copper wire**
- **2000 feet (610 meters), before needing a Repeater.**
- **Devices have to be daisy chained and not star wired.**



4. Turn on the power to the IQ controller.

5. Set the network number (Default = 2400) to the unique BACnet over ARCnet network number at the site using the BACview. Follow instructions below.

BACnet Over ARCnet settings required in Reznor® IQ System (BACview)

After the above physical configurations have been set and adjusted, there are certain parameters that need to be set within the logic of the IQ controller to accommodate the settings of the front-end BAS. These settings are predicated by the Building Automation System and can be accessed for system interface with the Reznor® controls using the BACview.

To access the menu for protocol adjustment, first press the **HOME** button. Then press the **RIGHT ARROW** button to scroll down until the **MENU** selection choice is displayed.

Change Menu Settings - follow the instructions using the numbers that coordinate with the BAS:

ROUTER MENU - Specific BACnet over ARCnet NETWORK Number from the BAS contractor

_____

BACNET MENU - Specific BASE DEVICE ID SETTING from the BAS contractor

_____

Menu Directory

Once the **MENU** option is reached and highlighted, press the **ENTER** button. The BACview will then prompt for a password to gain access further into the **MENU** sub-directories. The password is “0000”. Enter the password using the **INC** button to change the left variable to “0”, then the **RIGHT ARROW** button to move to the next position. Press the **INC** button once again to change the next position to “0” and repeat until four zeros appear; then hit **ENTER**.

System Menu Directory

- From the **MENU** sub-directory, press the **RIGHT ARROW** down until the **SYSTEM MENU** option is displayed.
- Press the **ENTER** button.
- Once inside the System Menu sub-directory, **RIGHT ARROW** down until the **ROUTER** menu option is displayed.
- Press the **ENTER** button. The BACview will then prompt for an additional level password to gain access into the Router sub-directory. The password is “8155”.

9.3.2 Reznor® IQ Controller Settings and BACnet Over ARCnet (cont'd)

Enter the password using the **INC** button to change the left variable to "8", then the **RIGHT ARROW** button to move to the next position. Press the **INC** button to change the next position to "1". Then **RIGHT ARROW** and repeat until 8155 has been entered. When 8155 is displayed, press the **ENTER** button.

Router Menu Directory - BACnet NETWORK NUMBER

NOTE: The current active network will have a "+" sign in front of the network type, insure that the MSTP network number is set to "0" if you are using ARCnet!

The first menu choice is **BACnet NETWORK NUMBER for ARC156** and will be set to default setting of zero. This is where the network communication address needs to be entered. This particular setting is specific to the front-end BAS and will need to be obtained from the BAS contractor. The value of the "0" should be changed to match the specific network address number. Press the **ENTER** button and "0" will be displayed. Make the accommodating adjustments by entering the provided ARCnet network number. The curser will be over the "ones" value of the default setting. Make the appropriate number change by entering the values by pressing the **INC** or **DEC** buttons and using the **RIGHT** or **LEFT** arrow buttons to move from the "ones" value, to the "tens" value, and so on until the ARCnet number displayed matches the correct value. Press the **ENTER** button to save the setting.

Still in the Router Menu directory, **RIGHT ARROW** until the **BACnet NETWORK NUMBER for MS/TP** is shown. Press **ENTER** and "12345" will be displayed. This value needs to be changed to "0". Make the appropriate number change by pressing the **DEC** button and using the **RIGHT** or **LEFT** arrow buttons until "0" is displayed. Press the **ENTER** button again to save the setting.

BACnet Menu Directory – BASE DEVICE ID SETTING (ArcNet)

After the Network Address Number settings have been set, the **BASE DEVICE ID** must be entered. You will need to back out of the **ROUTER** menu and access the **BACnet** menu (still in the **SYSTEM MENU**).

- If still in the **ROUTER** menu, **RIGHT ARROW** down to the [Prev] tab and hit **ENTER**.
- **RIGHT ARROW** down to the **BACnet** menu. Press the **ENTER** button.
- **RIGHT ARROW** down to the **BACnet BASE DEVICE ID** setting (this will be the individual device address of the IQ controller on the BACnet network). The IQ controller is shipped with a default **BASE DEVICE ID** number of "2400" and will have to be changed on site to coincide with the BAS assigned setting. To change the defaulted "2400" setting, press the **ENTER** button. The curser will be over the "ones" value of the defaulted setting. Make the appropriate **BASE** number change by entering the values pressing the **INC** or **DEC** buttons and using the **RIGHT** or **LEFT** arrow buttons to move from the "ones" value, to the "tens" value, and so on until the **BASE** number matches the needed value. Once achieved, press the **ENTER** button to retain the value.

The **Base Device ID** number is **specific** to the front-end BAS and will need to be obtained from the BAS contractor so that the "2400" value can be changed to match their corresponding number.

The system should now have the necessary variables and settings to allow the IQ controller to be visible on the BAS network via BACnet over ARCnet protocol.

Energy Recovery Module Network Considerations

When connecting the MAPS® unit to a BACnet network, there are a few items that need to be set on the Energy Recovery Module IQ controller so that the system continues to work as an integrated unit.

When installing on an MSTP network, the network speeds and network (router) numbers have to be the set the same. The default network speed is 9600 bps, so if the main controller baud rate is increased, you must also increase the speed on the ERV controller. This can be done by following the procedure shown in Section 9.3. The network numbers on the main unit and the ERV controller also have to match; the default number is 12345. You will need a handheld unit interface display (Option RB4) to plug directly into the ERV controller and change the network (router) number per the instructions in Section 9.3. The next is the module address. The default device

instance (device address) on the ERV controller is 2499. A maximum of two units with ERV modules can reside on a single network truck or subnet. The alternate device instance for the ERV controller is 2498. This will need to be changed on both the ERV controller using the instructions in Section 9.3 for changing the address dip switches and also in the MAPS® unit interface; see Menu 3.5.30 (ERV setpts menu).

When installing the system on an ARCnet network, the device instance and network (router) number will need to be addressed. The default device instance (device address) on the ERV controller is 2499. A maximum of two units with ERV modules can reside on a single network truck or subnet. The alternate device instance is 2498. This will need to be changed on both the ERV controller using the instructions in Section 9.3 for changing the address dip switches and also in the MAPS® unit interface, see menu 3.5.30 (ERV setpts menu). The next item is the network (router) number. You will need a handheld unit interface display (Option RB4) to plug directly into the ERV controller and change the network (router) number per the instructions in Section 9.3.

9.4 LonWorks (Requires Option BHB5)

IMPORTANT NOTE: Units are NOT field convertible to LonWorks. Contact the factory if needed.

LonWorks® is an open protocol that was originally developed by Echelon Corporation. It is now maintained by Echelon in collaboration with members of the LonMark Interoperability Association. It requires the use of Echelon's Neuron microprocessor to encode and decode the LonWorks packets.

The LonWorks protocol is based on the concept of using standardized functional profiles to control similar pieces of equipment. OEM control modules are LonWorks devices, but are not LonMark devices. A LonMark device has been thoroughly tested by Echelon (LonMark.org) and has been given the LonMark logo indicating compliance with the LonWorks profile specification. All LonMark devices require the use of proprietary hardware manufactured by Echelon Corp.

Connecting the IQ System Controller to the LON plug-in

1. Turn off the power to the IQ controller.

2. Set the IQ module address (BACnet Device Instance) as defined by the dual rotary dial switches. (See controller illustration, page 41; locate the rotary dial switches.)

Address to set is determined by the front-end BAS contractor. (Default for BACnet is 02 as illustrated below.)

EXAMPLE: If the control module's address is 02, point the arrow on the **Tens** digit switch to "0" and the arrow on the **Ones** digit switch to "2".

Tens Digit Switch

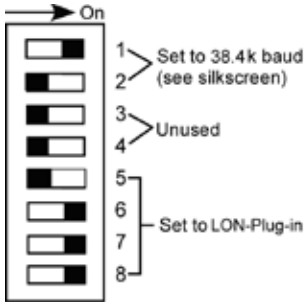
Ones Digit Switch

Default 02 setting is illustrated.

If dial(s) needs set, use a small screwdriver.

3. Set the communications speed (baud rate). (See controller illustration, page 41. On the left side, locate Communications Switches 1 and 2.)

Set the switches according to the legend (9600, 19.2k, 38.4k, or 76.8k bps) on the IQ cover. For LonWorks, set communications SW1 and SW2 to 38.4k bps.

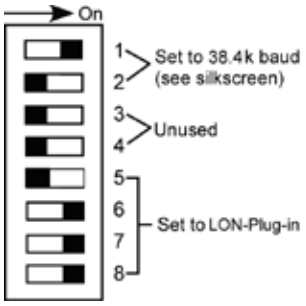


Baud rate legend is printed on the IQ cover. For LonWorks, set switches for 38.4k bps. (Set SW1 to ON; set SW2 to OFF.)

NOTE: Use the same baud rate for all control modules on the network segment.

9.4 LonWorks (requires Option BHB5) (cont'd)

4. Set network communications protocol (LonWorks Plugin) setting. (See controller illustration, page 41. On the left side, locate Communications Switches 5, 6, 7, & 8.)

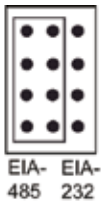


Set the switches according to the legend on the IQ cover. (Set SW5 to ON; set SW6, SW7, and SW8 to OFF.)

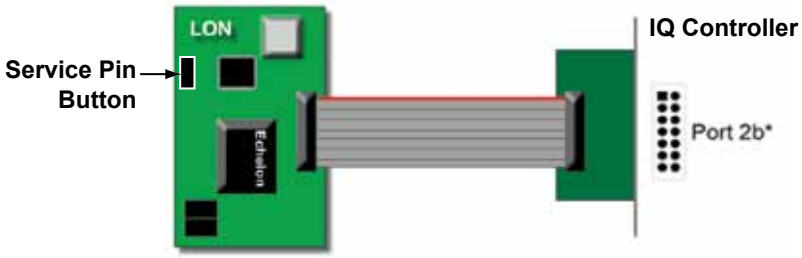
The protocol legend is printed on the IQ cover. Set SW5, SW6, SW7, and SW8 as shown for LonWorks Plugin.

5. Set the Communications Jumper to EIA-485. (See controller illustration, page 41. On the left side, locate the Communications Jumper.

Set jumper at EIA-485.



6. Connect Port 2b (left, top half of controller) to the LON Plug-in card with the supplied ribbon cable.



7. Turn on the power to the IQ system controller.

Service Pin (LonWorks)

The service pin generates and broadcasts the service-pin message. This message contains both the Neuron® ID and the program identification number of the LonWorks node. It is used to identify the node and also used to commission the LONWORKS network. The service pin is located on the LonWorks serial interface card which is connected to Port 2b on the IQ system controller. To activate the service pin, press the service pin button.

Commissioning the IQ System Controller for LonWorks

Before a device can participate on a LonWorks network, it must be commissioned. Commissioning allows the system integrator to associate the device hardware with the LonWorks system's network layout diagram. This is done using the device's unique Neuron ID. Together, the IQ system controller and its LON plug-in card serve as a single LonWorks device or node. The LON plug-in card's internal Neuron chip provides a unique Neuron ID. There is a service pin button located on the LON plug-in card that will allow the user to broadcast the neuron id and network information.

A network management tool such as Echelon's LonMaker is used to commission each device, as well as, to assign addressing. Specific instructions regarding the commissioning of LonWorks devices should be obtained from documentation supplied with the LonWorks network management tool.

When a new device is first commissioned onto the LonWorks network, the system integrator must upload the device's External Interface File (XIF) information. LonWorks uses the XIF to determine the points (network variables) that are available from a device. A typical LonWorks device has a set of predefined network variables. These are the variables bound or accessed by the network management tool. The network variables defined on the IQ Controller's Network Variables Property pages determines its XIF information. If any information is changed, added, or deleted on the Network Variable Property pages, the IQ Controller must be removed from the network man-

agement tool's database and recommissioned, including uploading the XIF information again.

ERV Module Network Considerations

Due to the limitations of LONworks, a second LONworks interface card is installed on the ERV when connecting to a LONworks network. Each unit will have two connection points for a LONworks system. See Section 9.4 on how to connect to a LONworks network.

9.5 Troubleshooting Network Communication

The most common communication problems stem from one of the following conditions.

1. Wiring termination.

a. If wiring an EIA-485 connection, the wire is terminated plus (+) to plus (+) and minus (-) to minus (-). If the receive LED is solid, this means you have the connection incorrectly terminated.

b. If the wiring is an EIA-232 connection, the wire must connect plus (+) to minus (-) and minus (-) to plus (+). The GND must be connected to GND.

2. Jumper selection.

Make sure the jumper for the communication port is set to the communication networks wiring type EIA-485 or EIA-232.

3. Dip switch selection.

a. Make sure the correct protocol is chosen. Switches 5, 6, 7, & 8.

b. Make sure the correct baud rate is chosen. Switches 1 & 2.

c. **NOTE**: These settings are defined at controller start-up. Power must be cycled to make a settings change.

4. Addressing.

The rotary address switches define the controllers' individuality on the network. Each controller must have a unique address.

Communication LED Indicator Lights

The LED lights indicate if the controller is speaking to the devices on the network. The LED lights should reflect communication traffic based on the baud rate set. The higher the baud rate, the faster the LED's.

9.6 BACnet Network Point List

Name	Direction	Type	Object ID	Object Name	Notes
Occupancy Control					
BAS Occ/Unocc Control	Input	BBV	BV:50	bas_occ_unocc_cmd_1	Binary value to control occupied and unoccupied mode. Used only when selected in schedule configuration
BAS On/Off	Input	BBV	BV:51	bas_on_off_cmd_1	Binary value to control On and Off mode. Used only when selected in schedule configuration
BAS Min Until OCC	Input	BAV	AV:52	bas_min_til_occ_1	Minutes until next occupied state. Used when BACnet schedule is used to allow optimum start application.
Bacnet Schedule Object	Input	BBV	BV:53	schedule_1	BACnet schedule object, Used only when selected in schedule configuration.
Occupancy Status	Output	BBV	BV:54	occ_status_1	Current occupancy Status. On = Occupied.
Minutes Until Occupied	Output	BAV	AV:55	min_til_occ_1	Minutes until next occupied state.
Wall Temperature Sensor					
Setpt Adjust Range	Input	BAV	AV:200	sp_adjust_range_1	Used to limit adjustable range of Wall Temperature Sensor
Space Temperature	Output	BAV	AV:201	sptsens_1	Space Temperature
Wall Temperature Sensor Setpoint Adjustment	Output	BAV	AV:202	spt_adj_1	Wall Temperature Sensor adjustment range
Space Occupancy Override Time Remaining	Output	BAV	AV:203	ovrd_out_1	Time remaining for Occupancy override from Wall Temperature Sensor
Wall Temperature Sensor Mode Request	Output	BMSV	MSV:204	ws_mode_1	Requested mode from Wall Temperature Sensor: Auto, Heat, Cool, Off
Wall Temperature Sensor Mode Request as AO	Output	BAV	AV:205	ws_mode_ao_1	Requested mode from Wall Temperature Sensor: 0 = Auto, 1 = Heat, 2 = Cool, 3 = Off
Wall Temperature Sensor Fan Speed Request	Output	BMSV	MSV:206	fan_lvl_out_msv_1	Requested Fan Speed from Wall Temperature Sensor: Auto, Low, Medium, High

(continued)

Name	Direction	Type	Object ID	Object Name	Notes
Wall Temperature Sensor Fan Speed Request as AO	Output	BAV	AV:207	fan_lvl_out_1	Requested Fan Speed from Wall Temperature Sensor: 0 = Auto, 1 = Low, 2 = Medium, 3 = High
Temp Control					
Active Cool Setpoint	Output	BAV	AV:230	effective_cool_sp_1	Active Space/Discharge Air Cooling Setpoint
Active Heat Setpoint	Output	BAV	AV:231	effective_heat_sp_1	Active Space/Discharge Air Heating Setpoint
Neutral Air Control					
Neutral Air Setpoint	Input	BAV	AV:150	na_stpt_1	The Neutral Air / Discharge Air Setpoint.
NA Htg/Clg Offset	Input	BAV	AV:151	na_sp_gap_1	Used for offsetting the heating and cooling setpoints.
NA High Reset Setpoint	Input	BAV	AV:152	na_reset_high_setpt_1	Used for resetting Neutral Air / Discharge Air Setpoint based on OAT. Used only when Reset is enabled.
NA Low Reset Setpoint	Input	BAV	AV:153	na_reset_low_setpt_1	Used for resetting Neutral Air / Discharge Air Setpoint based on OAT. Used only when Reset is enabled.
OAT High Reset Setpoint	Input	BAV	AV:154	oat_high_setpt_1	Used for resetting Neutral Air / Discharge Air Setpoint based on OAT. Used only when Reset is enabled.
OAT Low Reset Setpoint	Input	BAV	AV:155	oat_low_setpt_1	Used for resetting Neutral Air / Discharge Air Setpoint based on OAT. Used only when Reset is enabled.
Space Override Control					
Occupied Space Cool Setpoint	Input	BAV	AV:100	occ_cool_sp_1	Occupied Space Cooling Setpoint
Occupied Space Heat Setpoint	Input	BAV	AV:101	occ_heat_sp_1	Occupied Space Heating Setpoint
Unoccupied Space Cool Setpoint	Input	BAV	AV:102	unocc_cool_sp_1	Unoccupied Space Cooling Setpoint
Unoccupied Space Heat Setpoint	Input	BAV	AV:103	unocc_heat_sp_1	Unoccupied Space Heating Setpoint
Morning Cool-Down Space Temp Setpoint	Input	BAV	AV:108	mcd_temp_stpt_1	Used when system is set to NA Control, a Wall Temperature Sensor is installed, and Morning Cool-down is enabled
Morning Warm-Up Space Temp Setpoint	Input	BAV	AV:109	mwu_temp_stpt_1	Used when system is set to NA Control, a Wall Temperature Sensor is installed, and Morning Warm-up is enabled
Fan Control					
Unit Mode	Output	BAV	AV:175	unit_mode_1	Current Unit Mode 1 = Test Mode, 2 =Unoccupied, 4 = BadSensor, 5 = SysRestart, 6 = SysShutdwn, 7 = PhaseLoss, 8 = SmokeAlrm, 9 = No Flow, 10 = Vent Mode, 11 = Cooling, 12 = Heating, 13 = Free Cooling, 14 = Morning Cool Down, 15 = Morning Warm Up, 16 = Dehumid+Clg, 17 = Dehumid+Htg, 18 = Dehumid+Vent, 19 = Night Setback / Clg, 20 = Night Setback / Htg, 21 = Night Setback / Dehum
Supply Fan Failure	Output	BALM	BV:176	sf_fail_1	
Manual Mode Off Condition	Output	BAV	AV:177	man_off_mode_1	
BAS Reset System Shutdown	Input	BBV	BV:178	bas_reset_sys_shtdwn_1	
Minimum VFD Speed	Input	BAV	AV:179	vfd_minspd_param_1	Only available when VFD installed.
System Shutdown Mode	Output	BALM	BV:191	shutdown_fail_1	Active when unit is shutdown due to alarm. Manual Reset required.
VFC2 Manual Control (0-5V)					
VFC3 Duct Static Control					
Static Pressure Setpoint	Input	BAV	AV:180	stp_stpt_param_1	
VFC4 Building Pressure Control					
Building Pressure Setpoint	Input	BAV	AV:181	bpress_stpt_param_1	
VFC5 CO2 Control					
CO2 Setpoint	Input	BAV	AV:182	co2_setpt_1	
VFC7 3 Speed Control					
Low SF VFD Speed	Input	BAV	AV:183	ws3spd_low_sfvfd_1	
Medium SF VFD Speed	Input	BAV	AV:184	ws3spd_med_sfvfd_1	
High SF VFD Speed	Input	BAV	AV:185	ws3spd_high_sfvfd_1	
VFC8 DI Status Control					
Open SF VFD Speed	Input	BAV	AV:186	four_spd_opn_sfvfdmin_1	
Input 1 SF VFD Speed	Input	BAV	AV:187	four_spd_in1_sfvfdmin_1	
Input 2 SF VFD Speed	Input	BAV	AV:188	four_spd_in2_sfvfdmin_1	
Closed SF VFD Speed	Input	BAV	AV:189	four_spd_cls_sfvfdmin_1	

Name	Direction	Type	Object ID	Object Name	Notes
VFC9 Adjustable Speed					
VFD Constant Volume Speed	Input	BAV	AV:190	vfd_speed_setpt_1	
Damper Control					
GF1 Manual Control (0-5V)					
GF2 DDC Control 2 position					
Damper 2 pos Cmd	Input	BAV	AV:192	dmp_2pos_cmd_1	
GF4 DI Status Control					
Open Position	Input	BAV	AV:186	four_pos_opn_min_1	
Input 1 Closed Position	Input	BAV	AV:187	four_spd_in1_pos_1	
Input 2 Closed Position	Input	BAV	AV:188	four_spd_in2_pos_1	
Closed Position	Input	BAV	AV:189	four_spd_cls_pos_1	
GF5 Building Pressure Control					
Building Pressure Setpoint	Input	BAV	AV:181	bpress_stpt_param_1	
GF6 CO2 Control					
CO2 Setpoint	Input	BAV	AV:182	co2_setpt_1	
GF7 OA Enthalpy					
High OA Enth Damper Pos	Input	BAV	AV:193	hi_oa_dmp_pos_1	
Low OA Enth Damper Pos	Input	BAV	AV:194	lo_oa_dmp_pos_1	
OA Enth Damper Changeover Setpt	Input	BAV	AV:195	oae_setpt_dmp_1	
GF8 Dual Reference Enthalpy / GF9 Dry Bulb Economizer					
Active MAT Setpoint	Output	BAV	AV:196	mat_setpt_status_1	
MAT Setpt Offset	Input	BAV	AV:197	mat_setpt_offset_1	Only used in D15 Application. Used to calculate the MAT setpt (DAT Setpt - Offset)
MAT Setpt	Input	BAV	AV:198	mat_setpt_1	Only used in D16 Application.
Heating/Cooling Shared Points					
Mode Changeover Timer	Input	BAV	AV:241	mode_xover_1	Minimum time between heating and cooling mode.
Allow Night Setback	Input	BBV	BV:242	allow_night_setbk_1	Allow the system to stage cooling at night to maintain a minimum space temperature. Must have Wall Temperature Sensor installed.
Allow Optimal Start	Input	BBV	BV:243	allow_optimal_start_1	Allow the system to start fan based on an optimum start sequence. Used only in space override applications.
Cooling Control					
Cooling Mode Lockout Temp	Input	BAV	AV:240	cool_mode_lockout_ setpt_1	When OAT is above this value cooling mode is enabled.
Active Clg Stages	Output	BAV	AV:244	active_clg_stgs_1	Current number of cooling stages being requested.
Number of stages Available	Output	BAV	AV:245	num_clg_stgs_1	Number of available cooling stages.
Active Clg Control Temp	Output	BAV	AV:246	clg_ctrl_temp_1	Active temperature being used as controlling point for cooling (Space, DAT, or Cooling Coil DAT)
Active Clg Controlling Setpt	Output	BAV	AV:247	clg_ctrlng_sp_1	Active cooling control setpoint (Space clg Setpoint, DA cooling Setpoint, or Cooling Coil DA Setpoint)
Neutral Air Cooling Temp Deadband	Input	BAV	AV:248	na_clg_dbnd_1	Dead band (+/- Setpoint) around the Neutral Air Cooling Setpoint used to stage up and down the cooling when system is in a Neu/Dis configuration.
Space override Cooling Temp Deadband	Input	BAV	AV:249	sc_clg_dbnd_1	Dead band (+/- Setpoint) around the Space Cooling Setpoint used to stage up and down the cooling when system is in a Space Cooling configuration.
Heating Control					
Heating Mode Lockout Temp	Input	BAV	AV:275	heat_mode_lockout_ setpt_1	When OAT is below this value heating mode is enabled.
Active Heating Stg Req	Output	BAV	AV:276	active_htg_stgs_1	Current number of heating stages being requested.
Available Heating Stages	Output	BAV	AV:277	available_htg_stgs_1	Number of available heating stages.
Active heating DAT control Setpoint	Output	BAV	AV:278	active_htg_ctr_sp_1	Active Heating DAT setpoint
Space deltaT High Setpoint	Input	BAV	AV:279	sc_delta_high_1	
Space deltaT Low Setpoint	Input	BAV	AV:280	sc_delta_low_1	

(continued)

Name	Direction	Type	Object ID	Object Name	Notes
Heating Control (cont'd)					
Heating DAT High Setpoint	Input	BAV	AV:281	sc_htdat_high_1	
Heating DAT Low Setpoint	Input	BAV	AV:282	sc_htdat_low_1	
Heating Enable Deadband	Input	BAV	AV:283	htg_enable_db_1	
Heat staging Deadband	Input	BAV	AV:284	ht_staging_dbnd_1	
ReHeat Control					
Reheat Lockout Setpoint	Input	BAV	AV:500	na_rhlock_stpt_1	When the OA dewpoint is below this setpoint the Reheat circuit is disabled.
Space Humidity Setpoint	Input	BAV	AV:501	spc_hum_stpt_1	When the space humidity is below this setpoint the Reheat circuit is disabled.
Unoccupied Humidity Setpoint	Input	BAV	AV:502	sc_unocchum_stpt_1	If space humidity is above this setpoint during unoccupied conditions system enabled fan and go to humidity control. (All lockouts are still enabled)
Unocc Humidity Deadband	Input	BAV	AV:503	sc_unocchum_dbnd_1	The system will remain in Unoccupied dehumidification mode until the space humidity is below the Unoccupied Humidity setpoint by a difference of this setpoint.
Cooling Coil DA Temp Setpoint	Input	BAV	AV:504	cc_dat_stpt_1	When the system is in Dehumidification mode the cooling uses this setpoint to stage the compressors.
Cooling Coil DA Temp Deadband	Input	BAV	AV:505	cc_dat_db_1	Deadband that is used to stage compressor up and down when Cooling Coil DA temp Setpoint is being utilized.
DAT Setpt for Fast Cool	Input	BAV	AV:506	dat_sp_4fc_1	System maintains this setpoint for DAT when in morning cooldown, night setup control, and space cooling override control.
DAT Setpt for Fast Heat	Input	BAV	AV:507	dat_sp_4fh_1	System maintains this setpoint for DAT when in morning warmup, night setback control, and space Heating override control.
Space deltaT High Setpoint in Dehumid	Input	BAV	AV:508	sc_delta_high_dehum_1	
Space deltaT Low Setpoint in Dehumid	Input	BAV	AV:509	sc_delta_low_dehum_1	
Heating DAT High Setpoint in Dehumid	Input	BAV	AV:510	sc_htdat_high_dehum_1	
Heating DAT Low Setpoint in Dehumid	Input	BAV	AV:511	sc_htdat_low_dehum_1	
Alarm Control					
Reset All Runtimes	Input	BBV	BV:400	reset_all_runtms_1	Reset all runtimes
Reset Fan Runtime	Input	BBV	BV:401	reset_sf_rntm_1	Reset Supply Air Fan runtime
Reset Reheat Pump Runtime	Input	BBV	BV:402	reset_reheat_rntm_1	Reset Reheat Pump runtime (Only Used when Reheat Pump installed)
Reset Comp A Runtime	Input	BBV	BV:403	reset_compa_rntm_1	Reset Comp A runtime (Only used when compressor installed)
Reset Comp B Runtime	Input	BBV	BV:404	reset_compb_rntm_1	Reset Comp B runtime (Only used when compressor installed)
Reset Comp C Runtime	Input	BBV	BV:405	reset_compc_rntm_1	Reset Comp C runtime (Only used when compressor installed)
Reset Comp D Runtime	Input	BBV	BV:406	reset_compd_rntm_1	Reset Comp D runtime (Only used when compressor installed)
Comp A Runtime Alarm	Output	BALM	BV:407	compa_runtime_alm_1	Compressor runtime Alarm. Alarm Condition occurs when runtime exceeds Limit Setpoint. (Only used when compressor installed)
Comp B Runtime Alarm	Output	BALM	BV:408	compb_runtime_alm_1	Compressor runtime Alarm. Alarm Condition occurs when runtime exceeds Limit Setpoint. (Only used when compressor installed)
Comp C Runtime Alarm	Output	BALM	BV:409	compc_runtime_alm_1	Compressor runtime Alarm. Alarm Condition occurs when runtime exceeds Limit Setpoint. (Only used when compressor installed)
Comp D Runtime Alarm	Output	BALM	BV:410	comp4_runtime_alm_1	Compressor runtime Alarm. Alarm Condition occurs when runtime exceeds Limit Setpoint. (Only used when compressor installed)
Smoke Alarm	Output	BALM	BV:411	smoke_detect_alm_1	
Phase Loss Alarm	Output	BALM	BV:412	phase_loss_alarm_1	
Comp A Runtime Alarm Enabled	Input	BBV	BV:413	compa_rt_alm_en_1	
Comp A Runtime Alarm Limit	Input	BAV	AV:414	compa_rt_alm_limit_1	

Name	Direction	Type	Object ID	Object Name	Notes
Comp B Runtime Alarm Enabled	Input	BBV	BV:415	compb_rt_alm_en_1	
Comp B Runtime Alarm Limit	Input	BAV	AV:416	compb_rt_alm_limit_1	
Comp C Runtime Alarm Enabled	Input	BBV	BV:417	compc_rt_alm_en_1	
Comp C Runtime Alarm Limit	Input	BAV	AV:418	compc_rt_alm_limit_1	
Comp D Runtime Alarm Enabled	Input	BBV	BV:419	compd_rt_alm_en_1	
Comp D Runtime Alarm Limit	Input	BAV	AV:420	compd_rt_alm_limit_1	
SAF Runtime Alarm Enabled	Input	BBV	BV:421	saf_rt_alarm_en_1	
SAF Runtime Alarm limit	Input	BAV	AV:422	saf_rt_alam_limit_1	
Reheat Runtime Alarm Enabled	Input	BBV	BV:423	reht_rt_alm_en_1	
Reheat Runtime Alarm Limit	Input	BAV	AV:424	reht_rt_alm_limit_1	
Locked Input	Output	BALM	BV:425	locked_input_1	
SAF Runtime Alarm	Output	BALM	BV:426	saf_runtime_alm_1	
Reheat Runtime Alarm	Output	BALM	BV:427	reht_runtime_alm_1	
Heating General Failure Alarm	Output	BALM	BV:428	ht_failure_1	
High DAT SP Limit Alarm	Output	BALM	BV:429	hi_datsp_alarm_1	
Filter Alarm	Output	BALM	BV:430	filt_fail_1	
Freeze Stat Alarm	Output	BALM	BV:431	ll_fail_1	
Space Temp - Bad Sensor	Output	BALM	BV:432	space_bad_1	
Outside Air Temp - Sensor Bad	Output	BALM	BV:433	oat_bad_1	
Cooling Coil Discharge Air Temp - Sensor Bad	Output	BALM	BV:434	cc_dat_bad_1	
Discharge Air Temp - Bad Sensor	Output	BALM	BV:435	dat_bad_1	
Outdoor Relative Humidity - Sensor Bad	Output	BALM	BV:436	oarh_bad_1	
Mixed Air Temp - Sensor Bad	Output	BALM	BV:437	mat_bad_1	
Heating - Failed Ignition Attempt (A01)	Output	BALM	BV:438	htg_alm_fia_1	
Heating - Lost Flame (A02)	Output	BALM	BV:439	htg_alm_lf_1	
Heating - Insufficient Combustion Air (A03)	Output	BALM	BV:440	htg_alm_ica_1	
Heating - Limited Low Fire (A04)	Output	BALM	BV:441	htg_alm_llf_1	
Heating - Weak Flame Signal (A05)	Output	BALM	BV:442	htg_alm_wfs_1	
Heating - Com Error (Slave) (A99)	Output	BALM	BV:443	htg_alm_ces_1	
Heating - Failed Ignition (E01)	Output	BALM	BV:444	htg_alm_fi_1	
Heating - Primary Limit Failure (E02)	Output	BALM	BV:445	htg_alm_plf_1	
Heating - Modulation Valve Failure (E03)	Output	BALM	BV:446	htg_alm_mvf_1	
Heating - Air Sensor Failure (Low) (E04)	Output	BALM	BV:447	htg_alm_asfl_1	
Heating - Air Sensor Failure (High) (E05)	Output	BALM	BV:448	htg_alm_asfh_1	
Heating - Gas Sensor Failure (Low) (E06)	Output	BALM	BV:449	htg_alm_gsfl_1	
Heating - Gas Sensor Failure (High) (E07)	Output	BALM	BV:450	htg_alm_gsfh_1	
Heating - Improper Flame Signal (E08)	Output	BALM	BV:451	htg_alm_ifs_1	
Heating - No Firing Rate Input (E09)	Output	BALM	BV:452	htg_alm_nfri_1	
Heating - Invalid I.D. Plug (Eid)	Output	BALM	BV:453	htg_alm_iidp_1	

(continued)

Name	Direction	Type	Object ID	Object Name	Notes
Alarm Control (cont'd)					
Heating - Slave Furnace COM Missing (E20)	Output	BALM	BV:454	htg_alm_sfcm_1	
Heating - Slave Furnace Lockout (E21)	Output	BALM	BV:455	htg_alm_sfl_1	
Heating - Board Comm Output Failure	Output	BALM	BV:456	htg_alm_comm_1	
Outputs					
Comp A Runtime	Output	BAV	AV:300	compa_runtime_1	Current runtime in Hours (Only used when compressor installed)
Comp B Runtime	Output	BAV	AV:301	compb_runtime_1	Current runtime in Hours (Only used when compressor installed)
Comp C Runtime	Output	BAV	AV:302	compc_runtime_1	Current runtime in Hours (Only used when compressor installed)
Comp D Runtime	Output	BAV	AV:303	compd_runtime_1	Current runtime in Hours (Only used when compressor installed)
Supply Fan Runtime	Output	BAV	AV:304	sf_runtime_1	Current runtime in Hours
Reheat Pump Runtime	Output	BAV	AV:305	reheat_runtime_1	Current runtime in Hours (Only used when ReHeat Pump installed)
Supply Fan Command	Output	BBV	BV:306	sa_fan_cmd_1	
Reheat Command	Output	BBV	BV:307	reheat_cmd_1	
Comp A Command	Output	BBV	BV:308	comp_a_cmd_1	
Comp B Command	Output	BBV	BV:309	comp_b_cmd_1	
Comp C Command	Output	BBV	BV:310	comp_c_cmd_1	
Comp D Command	Output	BBV	BV:311	comp_d_cmd_1	
DAT	Output	BAV	AV:312	dat_1	
OA Temp	Output	BAV	AV:313	oat_1	
Space Hum	Output	BAV	AV:314	space_hum_1	
OA Hum	Output	BAV	AV:315	oa_hum_1	
MAT	Output	BAV	AV:316	mat_1	
Clg Coil DAT	Output	BAV	AV:317	cc_dat_1	
Modulating Heat	Output	BAV	AV:318	mod_heat_1	
Damper Control	Output	BAV	AV:319	damper_ctrl_1	
OA Dewpoint	Output	BAV	AV:320	oad_1	
Filter Status	Output	BBV	BV:322	filter_status_1	
Fan Status	Output	BBV	BV:323	fan_status_1	
Pressure	Output	BAV	AV:324	pressure_1	
SF VFD Speed	Output	BAV	AV:325	sf_vfd_speed_1	
Modulating Reheat	Output	BAV	AV:326	mod_reheat_1	
Modulating Cooling Output	Output	BAV	AV:327	mod_clg_out_1	
Exhaust Fan VFD Speed	Output	BBV	AV:328	ex_fan_vfd_1	
Phase Loss	Output	BBV	BV:329	phase_loss_1	
Smoke Detector Input Status	Output	BBV	BV:330	smoke_detector_1	
Reheat Comp Status	Output	BBV	BV:331	reheat_comp_stat_out_1	
Comp A Status	Output	BBV	BV:332	comp_a_stat_out_1	
Comp B Status	Output	BBV	BV:333	comp_b_stat_out_1	
Comp C Status	Output	BBV	BV:334	comp_c_stat_out_1	
Comp D Status	Output	BBV	BV:335	comp_d_stat_out_1	
DI Status Input 1	Output	BBV	BV:336	status_input_1_out_1	
DI Status Input 2	Output	BBV	BV:337	status_input_2_out_1	
ERM DAT	Output	BAV	AV:338	ERM_dat_1	
ERM Hum	Output	BAV	AV:339	ERM_hum_1	
AI VFD Manual Input 0-10Vdc	Output	BAV	AV:340	var_fan_spd_manual_1	
CO2	Output	BAV	AV:341	co2_1	
DI Start/Stop Command Manual Input	Output	BBV	BV:342	start_stop_cmd_1	
DI Occupancy Command Manual Input	Output	BBV	BV:343	occ_cmd_manual_1	
ERM Command	Output	BAV	AV:344	ERM_1	
Exhaust Fan Command	Output	BBV	BV:345	exh_fan_1	
OA Enthalpy	Output	BAV	BV:346	oae_1	

Name	Direction	Type	Object ID	Object Name	Notes
Cooling Stage Lockout State	Output	BAV	BV:347	clg_lck_state_1	Number indicates which cooling stage is lockout due to Enthalpy/Dry Bulb Lockout Setpoints
Return Air Temp	Output	BAV	BV:348	rat_1	Return Air Temp
Return Air Humidity	Output	BAV	BV:349	rah_1	
RA Enthalpy	Output	BAV	BV:350	rae_1	
Return Air Dewpoint	Output	BBV	BV:351	rad_1	

ERM Interface							
ERM VFD Constant Volume Speed	Input	BAV	AV:617	main_erm_saf_vfd_speed_1	Energy Recovery Supply Air Fan VFD Constant volume setpoint	10 - 100%	50
SA VFD Pressure Setpt	Input	BAV	AV:618	main_erm_savfd_press_setpt_1	Energy Recovery Supply Air Fan VFD Pressure Setpoint	-	-0.1
SA VFD Pressure Setpt Deadband	Input	BAV	AV:619	main_erm_savfd_press_setpt_db_1	Energy Recovery Supply Air Fan VFD Pressure Deadband	0 - 1”	0.05
ERM EAF Constant Volume Speed	Input	BAV	AV:620	main_erm_eaf_vfd_speed_1	Energy Recovery Exhaust Air Fan VFD Constant volume setpoint	10 - 100%	50
EA VFD Pressure Setpt	Input	BAV	AV:621	main_erm_eavfd_press_setpt_1	Energy Recovery Exhaust Air Fan VFD Pressure Setpoint	-	0.1
EA VFD Pressure Setpt Deadband	Input	BAV	AV:622	main_erm_eavfd_press_setpt_db_1	Energy Recovery Exhaust Air Fan VFD Pressure Deadband	0 - 1”	0.05
ERM EAF VFD Offset	Input	BAV	AV:623	main_erm_eaf_vfd_offset_1	Energy Recovery Exhaust Air Fan VFD Offset Setpoint	(-)50 to 50%	0
ERV Comm Available	Output	BBV	BV:618	erv_comm_avail_1		-	-
ERV OAT	Output	BAV	AV:626	main_erv_oat_1		-	-
ERV DAT	Output	BAV	AV:625	main_erv_dat_1		-	-
ERV RAT	Output	BAV	AV:601	main_erv_rat_1		-	-
Main ERV RA Hum	Output	BAV	AV:602	main_erv_rah_1		-	-
Main ERV SAF Press	Output	BAV	AV:603	main_erv_saf_press_1		-	-
Main ERV EAF Press	Output	BAV	AV:604	main_erv_eaf_press_1		-	-
Main ERV SAF Speed	Output	BAV	AV:605	main_erv_saf_spd_cmd_1		-	-
Main ERV EAF Speed	Output	BAV	AV:606	main_erv_eaf_spd_cmd_1		-	-
Main ERV Mode	Output	BAV	AV:614	main_erv_mode_1		-	-
Main ERV Cmd Input Status	Output	BBV	BV:606	main_erv_start_cmd_stat_1		-	-
Main ERV SAF Status	Output	BBV	BV:607	main_erv_saf_stat_1		-	-
Main ERV EAF Status	Output	BBV	BV:608	main_erv_eaf_stat_1		-	-
Main ERV Wheel Status	Output	BBV	BV:609	main_erv_wheel_stat_1		-	-
Main ERV SAF Cmd	Output	BBV	BV:610	main_erv_saf_cmd_1		-	-
Main ERV EAF Cmd	Output	BBV	BV:611	main_erv_eaf_cmd_1		-	-
Main ERV Wheel Cmd	Output	BBV	BV:612	main_erv_wheel_cmd_1		-	-
Main ERV Filter Status	Output	BBV	BV:613	main_erv_filte_stat_1		-	-
ERV RA Enthalpy	Output	BAV	AV:615	main_erv_ra_enth_1		-	-
ERV RA Dewpoint	Output	BAV	AV:616	main_erv_ra_dewpt_1		-	-
COMM_LOSS	Output	BALM	BV:6	comm_loss_alarm_1		-	-
ERM Wheel DAT-Sensor Bad	Output	BALM	BV:80	erm_dat_bad_1		-	-
ERM Return Air Temp-Sensor Bad	Output	BALM	BV:82	erm_rat_bad_1		-	-
ER Wheel Fail	Output	BALM	BV:83	er_wheel_fail_1		-	-
ERM SAF Fail	Output	BALM	BV:84	erm_saf_fail_1		-	-
ERM EAF Fail	Output	BALM	BV:85	erm_eaf_fail_1		-	-
ERM Filter Alarm	Output	BALM	BV:86	erm_filter_alm_1		-	-
ERM RA Humidity-Sensor Bad	Output	BALM	BV:87	ermrahum_bad_1		-	-

APPENDIX

NOTE: Remove and connect the display from the MAPS® unit to the IQ controller in the energy recovery module or connect a remote display.

Controller Information for Option ER1, Energy Recovery Module, when NOT Communicating with the MAPS® Unit Controller

The energy recovery module is designed for integrated operation with the MAPS® unit but the controller has the capability to act as a standalone unit if communication to the main board is lost. The energy recovery module continues to follow the standard sequence of operation with the following exceptions.

1. Whenever the main unit supply fan starts, the ERM starts and runs continuously.
2. Whenever the main unit supply fan starts, the enthalpy wheel runs continuously.

ERM Stand-alone Menu Layout

ERM:	Energy Recovery Communication Status
Linked	The Main unit and ERM controller are connected
Comm Loss	The Main unit has loss communication connection to the ERM module. ERM will operate as a standalone unit.
ErSt/StIn:	Energy Recovery Start/Stop Digital input status.
ErSf Cmd:	Energy Recovery supply (inlet) fan command
ErSfStat:	Energy Recovery supply (inlet) fan status
ErSf VFD%:	Energy Recovery supply (inlet) fan VFD % command
ErSfPres:	Energy Recovery supply (inlet) fan pressure
ErEf Cmd:	Energy Recovery exhaust fan command
ErEfStat:	Energy Recovery exhaust fan status
ErEf VFD%:	Energy Recovery exhaust fan VFD % command
ErEfPres:	Energy Recovery exhaust fan building pressure
ErW Cmd:	Energy Recovery enthalpy wheel command
ErW Stat:	Energy Recovery enthalpy wheel status
ErW DAT:	Energy Recovery enthalpy wheel discharge (supply) air temperature
Er OAT:	Energy Recovery outside air temperature
ErFilter	Energy Recovery outside air filter status
Er RAT:	Energy Recovery return air temperature
Er RA Hum:	Energy Recovery return air humidity
ErRaEnth:	Energy Recovery return air enthalpy
ErRaDewpt:	Energy Recovery return air dewpoint

ERM Stand-alone Detailed Menu List

The following section details each menu available by providing the control display name, point description, range, and factory default settings.

Home Page Menu Information		
Control Display	Description	Status or Menu Link
Mode:	Current System Mode: Below is a description of each mode currently available.	
Off	Unit is commanded off.	Status Only
On	Unit is commanded on.	
Test Mode	Manual test mode is active. Unit only runs based on manual commands.	
Defrost	Unit is cycling enthalpy wheel to prevent frost buildup.	
Cripple	Unit is running but has failed sensors.	
Economize	Unit has turned off enthalpy wheel and is running in a free air mode.	
Status:	Current status of ERM Supply (Inlet) Air and Exhaust Fans	
On	Unit status is On, proved via the air pressure switch.	Status Only
Off	Unit status is Off, proved via the air pressure switch.	
ERM:	Current communication status and operation status of ERM	Status Only
Standalone	Communication is lost to main MAPS® unit and ERM is functioning in a standalone mode.	
Linked	Communication is established with main MAPS® unit and ERM is functioned as an integration component.	
→Summary:	Opens Summary Menu	
→Quick Setpts:	Opens Quick Setpoints Menu	
→Menus:	Opens Menus	
→Alarm:	Opens Alarm	
→Alarm Reset:	Opens Alarm Reset Menu	
→Login:	Opens User Login	Menu Link

Summary Menu Information		
Control Display	Description	Status or Menu Link
Mode:	Current System Mode	
	See Mode definitions in on Home Page menu information	
St/St In:	Current digital input ERM start/stop status reading	
Off (O)	Unit digital start/stop input status in off (open).	
On (C)	Unit digital start/stop input status in on (closed).	
SFan Cmd:	ERM Supply (Inlet) Air Fan Command	
Off (O)	ERM Supply (Inlet) Air Fan is commanded off.	
On (C)	ERM Supply (Inlet) Air Fan is commanded on.	
SfanStat:	ERM Supply (Inlet) Air Fan status.	
Off (O)	Fan is on, proven via differential pressure switch.	
On (C)	Fan is off, proven via differential pressure switch.	
Sfan VFD%:	ERM Supply (Inlet) Air Fan VFD percentage command output	
SF Press:	ERM Supply (Inlet) Air Fan pressure reading	
EFan Cmd:	ERM Exhaust Air Fan Command	
Off (O)	ERM Exhaust Air Fan is commanded off.	
On (C)	ERM Exhaust Air Fan is commanded on.	
EfanStat:	ERM Exhaust Air Fan status.	
Off (O)	Fan is off, proven via differential pressure switch.	
On (C)	Fan is on, proven via differential pressure switch.	
Efan VFD%:	ERM Exhaust Air Fan VFD percentage command output	
EF Press:	ERM Exhaust Air Fan pressure reading	
ERW Cmd:	ER Enthalpy Wheel Command	
Off (O)	ER Enthalpy Wheel is commanded off.	
On (C)	ER Enthalpy Wheel is commanded on.	

Summary Menu Information			
Control Display		Description (cont'd)	Status or Menu Link
ERW Stat:		ERM Exhaust Air Fan status.	
	Off (O)	ER Enthalpy Wheel is off, proven via current switch.	
	On (C)	ER Enthalpy Wheel is on, proven via current switch.	
ERW DAT:		ER Enthalpy Wheel Discharge (Supply) Air Temperature reading	
ER OAT:		ERM Outside Air Temperature reading	
ER Filter:		ERM Filter Status	
ER RAT:		ERM Return Air Temperature reading	
ER RAH:		ERM Return Air Humidity reading	
RA ENTH		ERM Return Air Enthalpy Reading	
RA DEWPT		ERM Return Air Dewpoint Reading	

Quick Setpts			
Control Display	Description	Range	Factory Default
SFanSetpt	ERM Supply (Inlet) Air Fan VFD setpoint.	10 – 100%	50%
SFPrsSP	ERM Supply (Inlet) Air Fan Pressure Setpoint		
EF Offset	ERM Exhaust Air Fan offset	(-) 50 to 50	0
EFanSetpt	ERM Exhaust Air Fan setpoint.	10 – 100%	50%
EFPrsSP	ERM Exhaust Air Fan Pressure Setpoint		

Menus		
Control Display	Description	Status or Menu Link
→Fan Menu:	Opens Fan Menu	Menu Link
→Wheel Menu:	Opens Wheel Menu	Menu Link
→Service Menu:	Open Service Menu	Menu Link
→System Menu:	Opens System Menu	Menu Link
→Config Menu:	Open Configuration Menu	Menu Link
→Prev:	Opens previous menu	Menu Link

FAN MENU				
Control Display		Description	Range	Factory Default
SFan Cmd:		ERM Supply (Inlet) Air Fan Command		
	Off (O)	ERM Supply (Inlet) Air Fan is commanded off.		
	On (C)	ERM Supply (Inlet) Air Fan is commanded on.		
SfanStat:		ERM Supply (Inlet) Air Fan status.		
	Off (O)	Fan is on, proven via differential pressure switch.		
	On (C)	Fan is off, proven via differential pressure switch.		
SFanSetpt		ERM Supply (Inlet) Air Fan VFD setpoint	10 – 100%	50%
Sfan VFD%:		ERM Supply (Inlet) Air Fan VFD percentage command output		
SF Press:		ERM Supply (Inlet) Air Fan pressure reading		
SFPrsSP		ERM Supply (Inlet) Air Fan Pressure Setpoint		
EFan Cmd:		ERM Exhaust Air Fan Command		
	Off (O)	ERM Exhaust Air Fan is commanded off.		
	On (C)	ERM Exhaust Air Fan is commanded on.		
EfanStat:		ERM Exhaust Air Fan status.		
	Off (O)	Fan is off, proven via differential pressure switch.		
	On (C)	Fan is on, proven via differential pressure switch.		
EF Offset		ERM Exhaust Air Fan offset Setpoint	(-) 50 to 50	0
EFanSetpt		ERM Exhaust Air Fan setpoint	10 – 100%	50%
Efan VFD%:		ERM Exhaust Air Fan VFD percentage command output		
EF Press:		ERM Exhaust Air Fan pressure reading		
EFPrsSP		ERM Exhaust Air Fan Pressure Setpoint		

ER WHEEL MENU			
Control Display		Description	Status or Menu Link
ERW Cmd:		ER Enthalpy Wheel Command	
	Off (O)	ER Enthalpy Wheel is commanded off.	
	On (C)	ER Enthalpy Wheel is commanded on.	
ERW Stat:		ERM Exhaust Air Fan status	
	Off (O)	ER Enthalpy Wheel is off, proven via current switch.	
	On (C)	ER Enthalpy Wheel is on, proven via current switch.	
ERW DAT:		ER Enthalpy Wheel Discharge (Supply) Air Temperature reading	
ER OAT:		ERM Outside Air Temperature reading	
→Defrost:		Opens the defrost menu	

DEFROST MENU			
Control Display	Description	Range	Factory Default
DefrostSP	This is the setpoint at which the defrost control in enabled. This is only used when BE6 option is not ordered.	(-) 15 to 22	-7
Frost Threshold Setpoint	This is the calculated outside air temperature at which frost when begin to form on wheel. This point varies based on OA and RA conditions. When OAT is below this setpoint the defrost control is enabled.	Status Only	
DefrostStat	This is the status of Defrost control.	On/Off	Status Only
ERW Jog Timers			
ERW On	This is the amount of time the wheel will run when unit is in the defrost cycle.	1 – 60 m	2
ERW Off	This is the amount of time the wheel will be off when unit is in the defrost cycle.	1 – 60 m	30
ER RAT:	ERM Return Air Temperature reading	Status Only	
ER RAH:	ERM Return Air Humidity reading	Status Only	
RA ENTH:	ERM Return Air Enthalpy Reading	Status Only	
RA DEWPT:	ERM Return Air Dewpoint Reading	Status Only	

SERVICE MENU			
Control Display	Description	Range	Factory Default
Version #	Current Software version installed	Status Only	
→Test Mode	Test Mode menu link	Menu Link	
→Calibration	Calibration menu link	Menu Link	
→Loop Tuning	Loop Tuning menu link	Menu Link	
→I/O	Inputs/Outputs menu link	Menu Link	
→Prev	Previous menu link	Menu Link	

TEST MODE MENU			
Control Display	Description	Range	Factory Default
Test Mode	Test Mode Enable Command	On/Off	Off
SFanCmd	ERM Supply (Inlet) Fan Test Command	On/Off	Off
SFan VFD	ERM Supply (Inlet) VFD Command	0 – 100%	100%
SFanStat	ERM Supply (Inlet) Fan status	Status Only	
SF Press	ERM Supply (Inlet) Fan pressure reading	Status Only	
EFanCmd	ERM Exhaust fan Command	On/Off	Off
EFan VFD	Exhaust fan VFD Command	0 – 100%	100%
EFanStat	ERM Exhaust Fan status	Status Only	
EF Press	ERM Exhaust Fan pressure reading	Status Only	
ERW Cmd	ER Enthalpy Wheel Command	On/Off	Off
ERW Stat	ER Enthalpy Wheel Status reading		
ERW DAT	ER Enthalpy Wheel Discharge (Supply) Air Temperature reading	Status Only	
ER OAT	ERM Outside Air Temperature reading	Status Only	
ER RAT	ERM Return Air Temperature reading	Status Only	
ER RA Hum	ERM Return Air Humidity reading	Status Only	
→Prev	Previous menu link	Menu Link	

CALIBRATION MENU			
Control Display	Description	Range	Factory Default
ERW DAT	ER Enthalpy Wheel Discharge (Supply) Air Temperature	Status Only	
+/- Offset	ER Enthalpy Wheel Discharge (Supply) Air Temperature Offset	-	0
ER OAT	ERM Outside Air Temperature	Status Only	
+/- Offset	ERM Outside Air Temperature Offset	-	0
ER RAT	ERM Return Air Temperature	Status Only	
+/- Offset	ERM Return Air Temperature Offset	-	0
ER RA Hum	ERM Return Air Humidity	Status Only	
+/- Offset	ERM Return Air Humidity Offset	-	0
→Prev	Previous menu link	Menu Link	

APPENDIX (cont'd) ERM Stand-alone Detailed Menu List (cont'd)

LOOP TUNING MENU			
Control Display	Description	Range	Factory Default
-SAF Pressure Loop			
Strtup Pct	Startup percentage	25 – 100%	50
Strtup Tmr	Startup timer	35 – 200 sec	120
Cng/sTight	Change per scan when below changeover value	0 – 20%	1
Cng/sWide	Change per scan when above changeover value	0 – 20%	5
ChngOver	Change over point from Change per scan wide to change per scan tight	-	0.25
Scan Rate	Scan Rate	1 – 300 sec	45
Deadband	Deadband	0 – 10	0.1
Pressure	Pressure	Status Only	
Press Sp	Pressure Setpoint	Status Only	
Deadband	Distance from setpoint control loop tries to maintain	0 – 10	.05
Min Speed	Minimum VFD speed the loop uses to control setpoint	20 – 100%	50
Max Speed	Maximum VFD speed the loop uses to control setpoint	20 – 100%	100
-EAF Pressure Loop			
Strtup Pct	Startup percentage	25 – 100%	50
Strtup Tmr	Startup timer	35 – 200 sec	120
Cng/sTight	Change per scan when below changeover value	0 – 20%	1
Cng/sWide	Change per scan when above changeover value	0 – 20%	5
ChngOver	Change over point from Change per scan wide to change per scan tight	-	0.25
Scan Rate	Scan Rate	1 – 300 sec	45
Deadband	Deadband	0 – 10	0.1
Pressure	Pressure	Status Only	
Press Sp	Pressure Setpoint	Status Only	
Deadband	Distance from setpoint control loop tries to maintain	0 – 10	.05
Min Speed	Minimum VFD speed the loop uses to control setpoint	20 – 100%	50
Max Speed	Maximum VFD speed the loop uses to control setpoint	20 – 100%	100
→Prev	Previous menu link	Menu Link	

I/O			
Control Display	Description	Range	Factory Default
→Inputs	Inputs Status list (List all current inputs)	Menu Link	
→Ouputs	Output Status list (List all current outputs and status)	Menu Link	
→Prev	Previous menu link	Menu Link	

SYSTEM MENU			
Control Display	Description	Range	Factory Default
Version	Current System Software Version number	Status Only	
→Clockset	System Clock Set menu link	Menu Link	
→Support PH #	Change Number menu link	Menu Link	
→BACNET	BACnet menu (Used to modify Instance numbers)	Menu Link	
→ROUTER	Router Menu (Used to change from MSTP to ARCnet)	Menu Link	
→Prev	Previous menu link	Menu Link	

CLOCKSET MENU			
Control Display	Description	Range	Factory Default
Date	Day – Month – Year	-	-
Time	Hour – Minute - Second	-	-
→Prev	Previous menu link	-	-

B ACNET			
Control Display	Description	Range	Factory Default
Instance	Current Instance Number (This can be manually set if Autogenerate = N	-	-

B ACNET			
Control Display	Description (cont'd)	Range	Factory Default
Base Device ID	Base Number	1200	-
Autogenerate	Autogenerature Device ID from Base + Module address	Yes / No	Yes
→Prev	Previous menu link	Menu Link	

ROUTER				
Control Display		Description	Range	Factory Default
	ARC156	Current ARCnet network number		0
+	MSTP	Current MSTP network number		1200
Note: + sign indicates what the current network is set to. Network not being used should be set to 0.				
Mac Address:				
ARC156		Current ARC 156 address set by dials	-	2
MSTP		Current MSTP Address set by dials	-	2
→Prev		Previous menu link	Menu Link	

CONFIGURATION MENU			
Control Display	Description	Range	Factory Default
→Current Cnfg	Current Cofiguration (Under development)	Menu Link	
→Edit Cnfg	Edit Configuration (Under development)	Menu Link	
→Prev	Previous menu link	Menu Link	

Current Config:
→Config Descr
This menu provides a test description of the installed system components. This include items like controller type, clg size, htg size, damper control, etc.
→A.I.N
This menu list the application identification number. This is the barcode used by the factory to install the controller application.

Edit Config:			
Control Dis-play	Description	Range	Factory Default
→Equipment			
SA Motor	Supply (Inlet) Air Fan motor option	SN2, SN10, SFD1	Per options ordered
SAF VFD	Supply (Inlet) Air Fan VFD option	SFC2, SFC3, SFC4	Per options ordered
EA Motor	Exhaust Air Fan motor option	EN2, EN10, EFD1	Per options ordered
EAF VFD	Exhaust Air Fan VFD option	EFC2, EFC3, EFC4	Per options ordered
Filter	Filter Installed	Yes/No	Per options ordered
Frost Cal	Frost control installed	Yes/No	Per options ordered
→Alarm Config			
Status Failure Timer	Adjust the failure timers	60 - 240	180 s
Bacview Alarm LED Config			
CommFail En	Communication Failure Alarm	Yes/No	Yes
Filter	Dirty Filter Alarm	Yes/No	No
→Sensr Config			
Pressure	This allows the user to rescale the pressure sensor ranges.		

ALARM MENU			
Control Display	Description	Range	Factory Default
Active Alarms	Shows all current alarms	Status Only	
Return-Normal	Log for all old alarms	Status Only	
→Prev	Previous menu link	Menu Link	

RESET ALARMS			
Control Display	Description	Range	Factory Default
System Shutdown			
Reset	Reset Shutdown alarm command	Yes/No	No
→Prev	Previous menu link	Menu Link	

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