Carrier
United Technologies

62DA,DB,DC,DD07-38
62RA,RB,RC,RD07-38
Design Series 3 (Revision E) Controls
Dedicated Outdoor Air Unit

Controls, Operation, and Start-Up

CONTENTS

Catalog No. 04-53620020-01 Printed in U.S.A. Form 62D,R-1T Pg 1 2-15 Replaces: 62D-1T

SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment. Untrained personnel can perform the basic maintenance functions of replacing filters. Trained service personnel should perform all other operations.

When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply. Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguishers available for all brazing operations.

⚠ WARNING

Before performing service or maintenance operation on unit turn off and lock off main power switch to unit. Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. The unit may have an internal non-fused disconnect or a field-installed disconnect. **Note that the unit may also be equipped with a convenience outlet, that this outlet is wired to the line side of the unit-mounted disconnect and will remain hot when the disconnect in the unit is off. There is a separate fuse/disconnect for the convenience outlet.**

⚠ CAUTION

This unit uses a microprocessor-based electronic control system. ***Do not*** use jumpers or other tools to short out components or to bypass or otherwise depart from recommended procedures. Any short-to-ground of the control board or accompanying wiring may destroy the electronic modules or electrical components.

⚠ WARNING

1. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury, or loss of life. Refer to the User's Information Manual provided with this unit for more details.
2. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

What to do if you smell gas:

1. DO NOT try to light any appliance.
2. DO NOT touch any electrical switch, or use any phone in your building.
3. IMMEDIATELY call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.

If you cannot reach your gas supplier call the fire department.

⚠ WARNING

DO NOT USE TORCH to remove any component. System contains oil and refrigerant under pressure.

To remove a component, wear protective gloves and goggles and proceed as follows:

a. Shut off electrical power to unit.
b. Recover refrigerant to relieve all pressure from system using both high-pressure and low pressure ports.
c. Traces of vapor should be displaced with nitrogen and the work area should be well ventilated. Refrigerant in contact with an open flame produces toxic gases.
d. Cut component connection tubing with tubing cutter and remove component from unit. Use a pan to catch any oil that may come out of the lines and as a gage for how much oil to add to the system.
e. Carefully unsweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame.

Failure to follow these procedures may result in personal injury or death.

⚠ CAUTION

DO NOT re-use compressor oil or any oil that has been exposed to the atmosphere. Dispose of oil per local codes and regulations. DO NOT leave refrigerant system open to air any longer than the actual time required to service the equipment. Seal circuits being serviced and charge with dry nitrogen to prevent oil contamination when timely repairs cannot be completed. Failure to follow these procedures may result in damage to equipment.

GENERAL

This book contains the Controls, Operation and Start-Up information for the Carrier 62D and 62R dedicated outdoor air units with Design Series 3 (Revision E) controls. Use this guide in conjunction with the Installation, Start-Up, and Maintenance instructions that are packaged with the unit. Refer to the unit wiring diagrams, located inside the unit control cabinet, for detailed wiring information. See Fig. 1 and 2 for unit model number nomenclature.

An accessory BACview device (BV6H, BACView[6], or Virtual BACview) will be required to configure, modify, and diagnose many of the unit control functions. At least one BACview device is recommended per jobsite.

The 62D and 62R are packaged heating, ventilation, and air conditioning (HVAC) units that specialize in conditioning and supplying high volumes of outdoor air, also known as dedicated outdoor air system (DOAS). The 62D unit is a packaged, air cooled unit with direct expansion (DX) cooling and optional heating. The 62R is a packaged, water source heat pump (WSHP) with DX cooling, DX heat pump heating, and optional heating. The 62R unit can be used in both geothermal, and boiler/tower applications.

The 62D and 62R units are typically utilized as part of make-up air or ventilation systems to provide "neutral air" or air that is supplied near the space drybulb temperature, but with a relative humidity below 60%. This allows the DOAS unit to handle the latent load of the outdoor air and the space, while leaving the remaining space sensible load for ancillary cooling/heating devices. In certain configurations, the DOAS unit may be set up to offset some of the space sensible loads, allowing it to act as a stage of cooling, but not completely replacing an ancillary device.

Airflow Process — Outdoor air enters 62DA,DB,RA, RB units through the outdoor air intake hood. The outdoor air passes through a filtration device and is conditioned using direct expansion (DX) cooling (with optional liquid subcooling and/or hot gas reheat), DX heat pump heating (62R only) or optional heating (electric, gas, or steam/hot water). The conditioned outdoor air is discharged from the supply fan through a vertical (62DA,RA) or horizontal (62DB,RB) supply opening. There is no return air opening on 62DA, DB,RA,RB Series units.

Outdoor air enters 62DC,DD,RC,RD units through the outdoor air intake hood or the optional energy recovery system. The optional energy recovery system uses a rotary energy conservation wheel (ECW) to transfer sensible and latent heat between the incoming air and the exhaust air (precondition). The energy recovery system can help to improve indoor conditions, reduce energy costs, and help reduce the amount of mechanical cooling and heating required.

For 62DC,DD,RC,RD units without the energy recovery system, the outdoor air passes through a filtration device and is conditioned using either direct expansion (DX) cooling (with optional liquid subcooling and/or hot gas reheat), DX heat pump heating (62R only) or optional heating (electric, gas, or steam/hot water). The conditioned outdoor air is discharged from the supply fan through a vertical (62DC, RC) or horizontal (62DD,RD) supply opening. Air is returned to the unit through a vertical (62DC,DD,RC,RD) return air opening and can be exhausted from the unit by an optional exhaust fan. There is no recirculation of return air to the space.

For 62DC,DD,RC,RD units with the energy conservation wheel, the outdoor air passes through a filtration device and enters the energy recovery device. The outdoor air is preconditioned by the energy recovery device by transferring energy to or from the return air. The outdoor air is then conditioned using direct expansion (DX) cooling (with optional liquid subcooling and/or hot gar reheat), DX heat pump heating (62R only) or optional heating (electric, gas, or steam/hot water). The conditioned outdoor air is discharged from the supply fan through a vertical (62DC,RC) or horizontal (62DD,RD) supply opening. Air is returned to the unit through a vertical (62DC,DD,RC,RD) return air opening and passes through a filtration device (if equipped). The return air passes through the energy recovery wheel, where heat is transferred to or from the supply air, and is exhausted from the unit. There is no recirculation of return air to the space.

Refrigeration System — All Carrier dedicated outdoor air units utilize highly efficient scroll compressors that have been optimally designed for use with Puron® refrigerant (R-410A). The 62D units can utilize standard scroll compressors or optional lead circuit digital scroll compressors. The 62R units will utilize digital scroll compressors on all circuits. Digital scroll type compressors utilize an external control board to provide compressor safeties and control compressor modulation (10 to 100%). An onboard solenoid is used to unload the compressor. When the solenoid is closed, the compressor is loaded. When the solenoid is open, the compressor is unloaded. The refrigeration system also includes a hot gas bypass valve with all standard scroll compressors (62D only). A TXV (thermostatic expansion valve) metering device is utilized on all systems.

EVAPORATOR — The 62D and 62R Series units utilize either a 6-row or a 4-row (if equipped with energy conservation wheel) aluminum/copper evaporator coil, with 12 fins per inch. Evaporator coils are available with optional harsh environment coating.

CONDENSER — The 62D Series units utilize a 2-row aluminum/copper condenser coil, with 12 fins per inch. Condenser coils are available with optional harsh environment coating. Condenser fans can be cycling type (on/off) or variable speed (VARISPEED). VARISPEED type fans utilize a variable frequency drive (VFD) to modulate speed based on head pressure.

The 62R Series units utilize a coaxial condenser coil with enhanced surface inner copper tube with outer steel tube shell (tube-in-tube). The coaxial coil, water lines, and refrigerant lines are all insulated. Head pressure control is accomplished by factory-installed water regulating valve that modulates water flow based on head pressure.

REHEAT SYSTEM — The 62D and 62R Series units are available with an optional liquid subcooling and/or hot gas reheat (HGRH) system. The HGRH system consists of a full faced coil that is fed hot refrigerant gas by the lead circuit or by all circuits. The HGRH can be cycling (on/off, 62D only) or modulating type control.

The liquid subcooling and HGRH system features two full faced coils. The first coil is used for liquid subcooling, and is fed warm liquid gas by all available circuits. The liquid subcooling coil uses cycling (on/off) type control. The second coil is used for HGRH, and is fed hot refrigerant gas by the lead circuit. HGRH can be cycling (on/off, 62D only) or modulating type control. Liquid subcooling or HGRH coils are available with optional harsh environment coating.

Heating System — The 62D and 62R Series units are available with optional electric, gas, hot water, or steam heating. Additionally, the 62R unit is capable of DX heat pump heating, and features a factory-installed refrigerant system reversing valve.

GAS HEAT — The optional gas heating system consists of a factory-installed natural gas or liquefied petroleum (LP) furnace insert with tubular, stainless steel heat exchangers and in-shot burners. All furnaces are 80% efficient and are available in multiple input ratings, ranging from 75 to 600 MBtuh. The furnace can utilize either a 2-stage (100 to 400 MBtuh), 4-stage (500 to 600 MBtuh) or modulating (100 to 600 MBtuh) gas control valve. Modulating valves can be 4:1 (25 to 100%), 5:1 (20 to 100%) or 10:1 (10 to 100%) turndown. Furnace heat exchangers are available with optional harsh environment coating. The furnace can be field converted between LP and natural gas.

ELECTRIC HEAT — The optional electric heating system consists of a factory-installed electric heat insert with low watt density coiled heating elements and stainless steel terminals. The electric heater is available in multiple output ratings, ranging from 10 to 100 kW. The heater control is accomplished by staging (1 to 3 stages) or by modulation silicon controlled rectifier (SCR).

HOT WATER HEAT — The optional hot water heating system consist of a factory-installed, two-row hot water coil. The hot water control valve must be field provided and installed. The hot water coil is available with optional harsh environmental coating.

STEAM HEAT — The optional steam heating system consists of a factory-installed, a single row, steam distributing coil for low pressure steam. The steam control valve and condensate trap are to be field provided and installed. The steam coil is available with optional harsh environment coating.

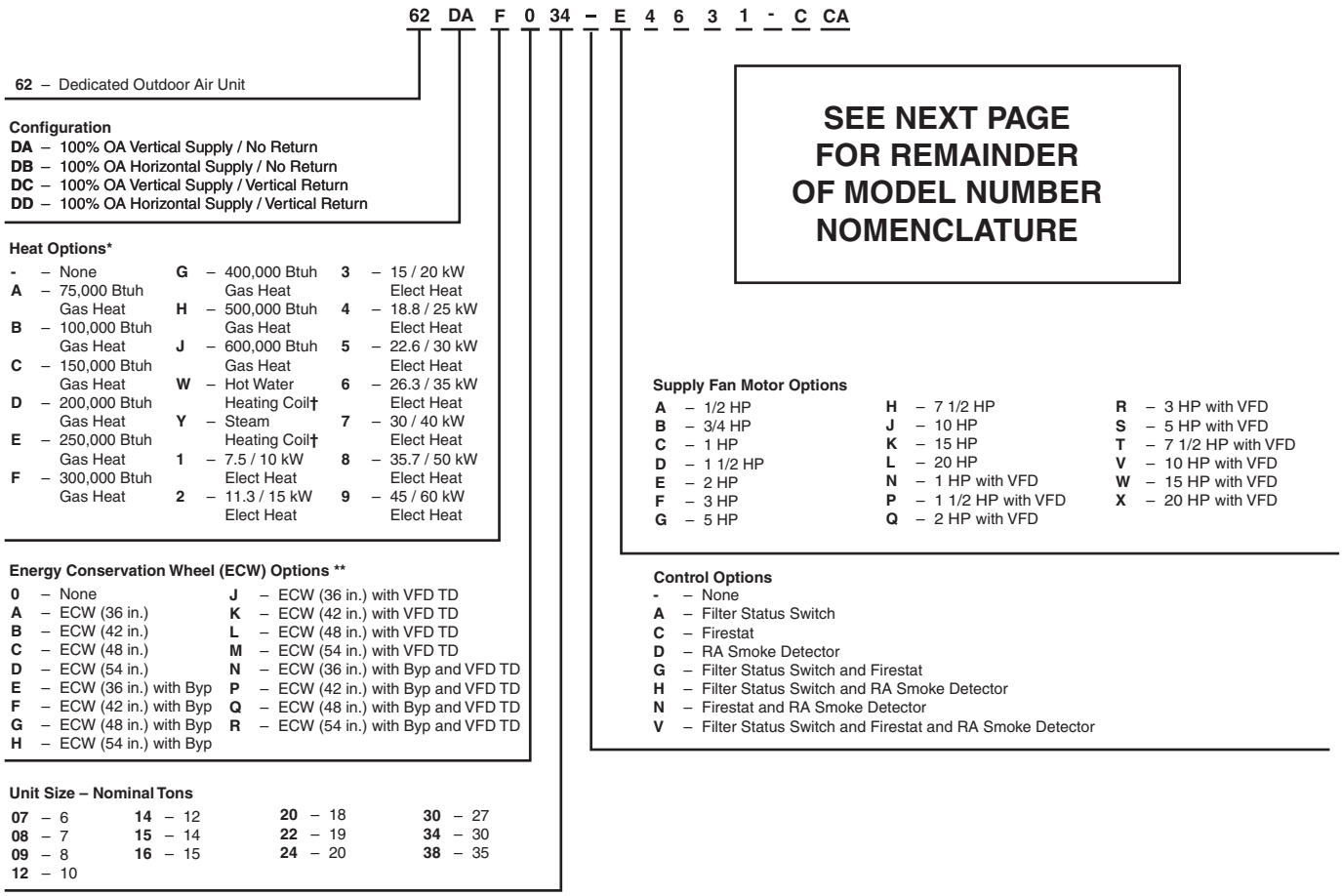


Fig. 1 — 62D Model Number Information

62 DA F 0 34 – E 4 6 3 1 - C CA

SEE PREVIOUS PAGE FOR REMAINDER OF MODEL NUMBER NOMENCLATURE

Coil Options
- **D** – Al/Cu Cond, Al/Cu 4-Row Evap, no HGRH, with Cycling Cond Fan
- **E** – Al/Cu Cond, Al/Cu 4-Row Evap, no HGRH, with Vari-Speed Cond Fan
- **H** – Al/Cu Cond, Al/Cu 4-Row Evap, Cycling HGRH on Lead Circuit with Vari-Speed Cond Fan
- **J** – Al/Cu Cond, Al/Cu 4-Row Evap, Cycling HGRH on Both Circuits, with Vari-Speed Cond Fan
- **M** – Al/Cu Cond, Al/Cu 4-Row Evap, Modulating HGRH on Lead Circuits, with Vari-Speed Cond Fan
- **N** – Al/Cu Cond, Al/Cu 4-Row Evap, Modulating HGRH on Both Circuits, with Vari-Speed Cond Fan
- **T** – Al/Cu Cond, Al/Cu 6-Row, no HGRH, with Cycling Cond Fan
- **V** – Al/Cu Cond, Al/Cu 6-Row Evap, no HGRH, with Vari-Speed Cond Fan
- **Y** – Al/Cu Cond, Al/Cu 6-Row Evap, Cycling HGRH on Lead Circuit with Vari-Speed Cond Fan
- **Z** – Al/Cu Cond, Al/Cu 6-Row Evap, Cycling HGRH on Both Circuits with Vari-Speed Cond Fan
- **3** – Al/Cu Cond, Al/Cu 6-Row Evap, Modulating HGRH on Lead Circuit with Vari-Speed Cond Fan
- **4** – Al/Cu Cond, Al/Cu 6-Row Evap, Modulating HGRH on Both Circuits, with Vari-Speed Cond Fan
- **7** – Al/Cu Cond, Al/Cu 6-Row Evap, Cycling HGRH on Both Circuits, with Vari-Speed Cond Fan, with Sub Cooling on All Circuits
- **8** – Al/Cu Cond, Al/Cu 6-Row Evap, Modulating HGRH on Both Circuits, with Vari-Speed Cond Fan, with Sub Cooling on All Circuits

Voltage Options
- **4** – 208-3-60 with Std Compressor
- **5** – 230-3-60 with Std Compressor
- **6** – 460-3-60 with Std Compressor
- **B** – 208-3-60 with Digital Compressor
- **C** – 230-3-60 with Digital Compressor
- **D** – 460-3-60 with Digital Compressor
- **F** – 208-3-60 with Std Compressor and LonWorks
- **G** – 230-3-60 with Std Compressor and LonWorks
- **H** – 460-3-60 with Std Compressor and LonWorks
- **K** – 208-3-60 with Digital Compressor and LonWorks
- **L** – 230-3-60 with Digital Compressor and LonWorks
- **M** – 460-3-60 with Digital Compressor and LonWorks

Factory Installed Options
Refer to price pages for available option codes

Fan Size
- **A** – Standard FC Supply Fan
- **B** – Standard BC Supply Fan
- **C** – Standard AF Supply Fan
- **D** – Oversize AF Supply Fan
- **E** – Standard BI Supply Fan
- **F** – Oversize BI Supply Fan
- **G** – Standard FC Supply Fan and Standard FC Exhaust Fan
- **H** – Standard FC Supply Fan and Oversize FC Exhaust Fan
- **J** – Standard FC Supply Fan and Standard BC Supply Fan
- **K** – Standard FC Supply Fan and Standard AF Exhaust Fan
- **L** – Standard BC Supply Fan and Standard FC Exhaust Fan
- **M** – Standard BC Supply Fan and Oversize FC Exhaust Fan
- **N** – Standard BC Supply Fan and Standard BC Exhaust Fan
- **P** – Standard BC Supply Fan and Standard AF Exhaust Fan
- **Q** – Standard AF Supply Fan and Standard FC Exhaust Fan
- **R** – Standard AF Supply Fan and Oversize FC Exhaust Fan
- **S** – Standard AF Supply Fan and Standard BC Exhaust Fan
- **T** – Standard AF Supply Fan and Standard AF Exhaust Fan
- **V** – Standard AF Supply Fan and Oversize AF Exhaust Fan
- **W** – Oversize AF Supply Fan and Standard BC Exhaust Fan
- **X** – Oversize AF Supply Fan and Standard AF Exhaust Fan
- **Y** – Oversize AF Supply Fan and Oversize AF Exhaust Fan
- **Z** – Standard BI Supply Fan and Standard FC Exhaust Fan
- **1** – Standard BI Supply Fan and Oversize FC Exhaust Fan
- **2** – Standard BI Supply Fan and Standard BC Exhaust Fan
- **3** – Standard BI Supply Fan and Standard AF Exhaust Fan
- **4** – Standard BI Supply Fan and Oversize AF Exhaust Fan
- **5** – Oversize BI Supply Fan and Standard FC Exhaust Fan
- **6** – Oversize BI Supply Fan and Oversize FC Exhaust Fan
- **7** – Oversize BI Supply Fan and Standard BC Exhaust Fan
- **8** – Oversize BI Supply Fan and Standard AF Exhaust Fan
- **9** – Oversize BI Supply Fan and Oversize AF Exhaust Fan

Exhaust Fan Motor Options
- **-** – None
- **A** – 1/2 HP
- **B** – 3/4 HP
- **C** – 1 HP
- **D** – 1 1/2 HP
- **E** – 2 HP
- **F** – 3 HP
- **G** – 5 HP
- **H** – 7 1/2 HP
- **J** – 10 HP
- **K** – 15 HP
- **L** – 20 HP
- **N** – 1 HP with VFD
- **P** – 1 1/2 HP with VFD
- **Q** – 2 HP with VFD
- **R** – 3 HP with VFD
- **S** – 5 HP with VFD
- **T** – 7 1/2 HP with VFD
- **V** – 10 HP with VFD
- **W** – 15 HP with VFD
- **X** – 20 HP with VFD

Packaging / Filter Options
- **1** – Domestic / 2" MERV 8 Filter
- **A** – Domestic / 2" Metal Mesh Filter
- **B** – Domestic / 4" MERV 8 Filter
- **C** – Domestic / 4" MERV 11 Filter
- **D** – Domestic / 4" MERV 14 Filter
- **E** – Domestic / 2" MERV 8 Filter and 2" MERV 8 ECW Filter
- **F** – Domestic / 2" Metal Mesh Filter and 2" MERV 8 ECW Filter
- **G** – Domestic / 4" MERV 8 Filter and 2" MERV 8 ECW Filter
- **H** – Domestic / 4" MERV 11 Filter and 2" MERV 8 ECW Filter
- **J** – Domestic / 4" MERV 14 Filter and 2" MERV 8 ECW Filter

Design Series
- **3** – Revision E Controls

LEGEND

AF	— Airfoil	**FC**	— Forward Curve
Al	— Aluminum	**HGRH**	— Hot Gas Reheat
BC	— Backward Curve	**OA**	— Outdoor Air
BI	— Backward Inclined	**RA**	— Return Air
Byp	— Bypass	**TD**	— Temperature Defrost
Cu	— Copper	**VFD**	— Variable Frequency Drive

* Horizontal units with heat require a BI fan.
† Control valves must be field supplied.
** Energy Conservation Wheel (ECW) options are not available on DA and DB models.

Fig. 1 — 62D Model Number Information (cont)

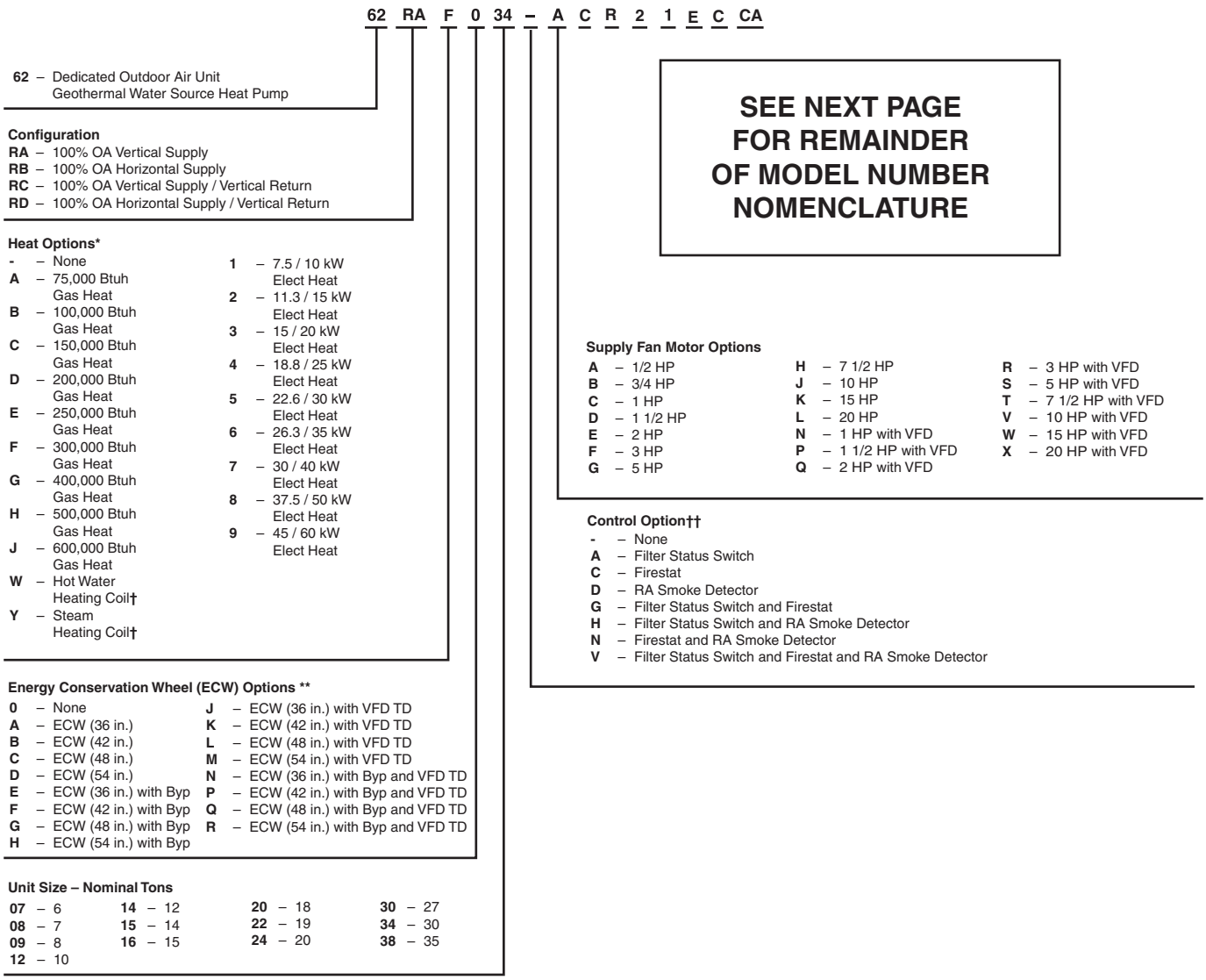
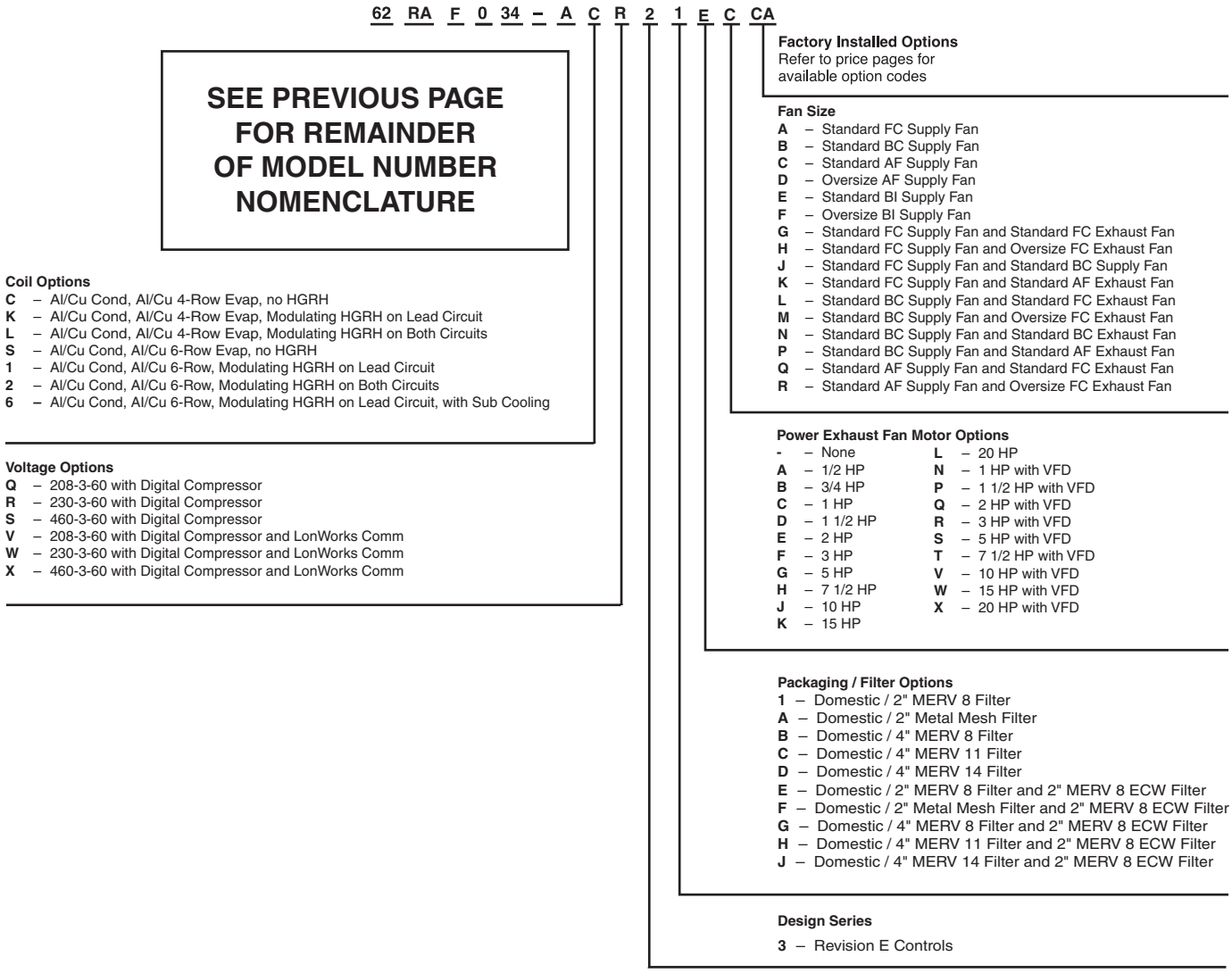


Fig. 2 — 62R Model Number Information



LEGEND

AF	— Airfoil	**FC**	— Forward Curve
Al	— Aluminum	**HGRH**	— Hot Gas Reheat
BC	— Backward Curve	**OA**	— Outdoor Air
BI	— Backward Inclined	**RA**	— Return Air
Byp	— Bypass	**SF**	— Supply Fan
Cu	— Copper	**TD**	— Temperature Defrost
ECW	— Energy Conservation Wheel	**VFD**	— Variable Frequency Drive
EF	— Exhaust Fan		

* Horizontal units with heat require a BI fan.
† Control valves must be field supplied.
** Energy Conservation Wheel (ECW) options are not available on RA and RB models.
†† Firestat and smoke detector not available on 62RA and 62RB units.

Fig. 2 — 62R Model Number Information (cont)

Filtration System — The 62D and 62R Series units are equipped with both a 2-in. pre-filter and 4-in. final filter rack (located before the DX coil). The 62D,R units can be equipped from the factory with 2-in. pre-filters (MERV 8 pleated or cleanable wire mesh) or 4-in. final filters (MERV 8, 11, or 14 pleated). A metal mesh screen is used on the outdoor air intake to prevent larger debris from entering the unit. For units equipped with the optional energy conservation wheel (ECW), 2-in. MERV 8 pleated filters are located on the outdoor air and return air entrances of the wheel.

Energy Recovery Wheel — The 62DC,DD and 62RC,RD units are available with an optional belt driven, rotary energy conservation wheel (ECW). The ECW can be 36-in. diameter (unit size 07-20), 42-in. diameter (unit size 22-38), 48-in. diameter (unit size 12-38), or 54-in. diameter (unit size 22-38). The ECWs are available with optional VFD defrost and optional wheel bypass.

Exhaust Fan — The 62DC,DD and 62RC,RD units are available with an optional factory-installed belt-driven exhaust fan. Exhaust fans can be airfoil (AF), forward-curved (FC), or backward-curved (BC) type and are available in multiple fan sizes. Exhaust fans are available with optional harsh environment coating. Fan motors range from $^1/_2$ to 20 hp and are available in open drip proof (OPD) or totally enclosed fan cooled (TEFC). An optional factory-installed exhaust fan variable frequency drive is also available.

Supply Fan — All 62D and 62R units include a factory-installed belt-driven supply fan. Supply fans can be airfoil

(AF), forward-curved (FC), backward-curved (BC), or backward incline (BI, plenum) type and are available in multiple fan sizes. Supply fans are available with optional harsh environment coating. Fan motors range from $^1/_2$ to 20 hp and are available in open drip proof (OPD) or totally enclosed fan cooled (TEFC). An optional factory-installed supply fan variable frequency drive is also available.

CONTROLS

Carrier 62D and 62R Series units are equipped with an ALC I/O Flex 6126 microprocessor-based controller that provides equipment control based on operating conditions and user configuration. The I/O Flex controller can directly control individual components (ex. supply fan, compressors, air damper, HGRH) or can enable optional components for individual control (condenser fans, ECW, water regulating valves, etc.). Controller configuration, set point adjustment, status monitoring, and troubleshooting are achieved using an accessory BACview display. At least one BACview display is recommended per jobsite. See Fig. 3 for typical control components.

Some of the features of the I/O Flex controller include:

- Easy access to set points, schedules, status, and unit configuration via local or remote interface
- Built-in password protection to prevent unauthorized access
- Built in timer for compressor protection
- Factory configured control program archive
- Service test and diagnostic mode
- Controller mounted on/off switch for easy power cycling
- Controller mounted DIP switched for easy communication configuration
- Integrated LEDs (light-emitting diodes) to display controller and I/O operation
- Battery back-up to maintain time and date in event of a power outage

NOTE: The I/O Flex controller uses a 3 volt, lithium battery (CR2032) for RAM and clock back-up. Check the battery voltage, prior to removing controller power. If the battery is below 3V, replace immediately.

Control Configuration — The I/O Flex controller is preprogrammed and prewired from the factory to reflect the factory configuration and factory installed options for each unit. Any field modifications of the unit must be updated in the unit control configuration. The I/O Flex controller is reprogrammable; however a newly re-programmed controller must have the configuration options set before the unit will operate.

The following controller configuration settings are default from the factory:

- Auxiliary Power Output (Aux Pwr Out) is set to +24V (left jumper setting).
- Analog outputs 1 and 2 (AO-1,2) are set to the output Voltage (right jumper setting).
- Universal inputs 2, 4, and 6 (UI-2, 4, 6) are set to read voltage (middle jumper setting). All other universal inputs are set to the middle jumper setting (read temperature/discrete input).
- The 10's module address is set to "0" and the 1's module address is set to "2". This yields a module address of "02". The address is field changeable, but will need to be reset to "02" in order to reprogram the controller.
- The communication rate is factory configured for 38.4 baud rate (dipswitch 1 is on, dipswitch 2 is off).

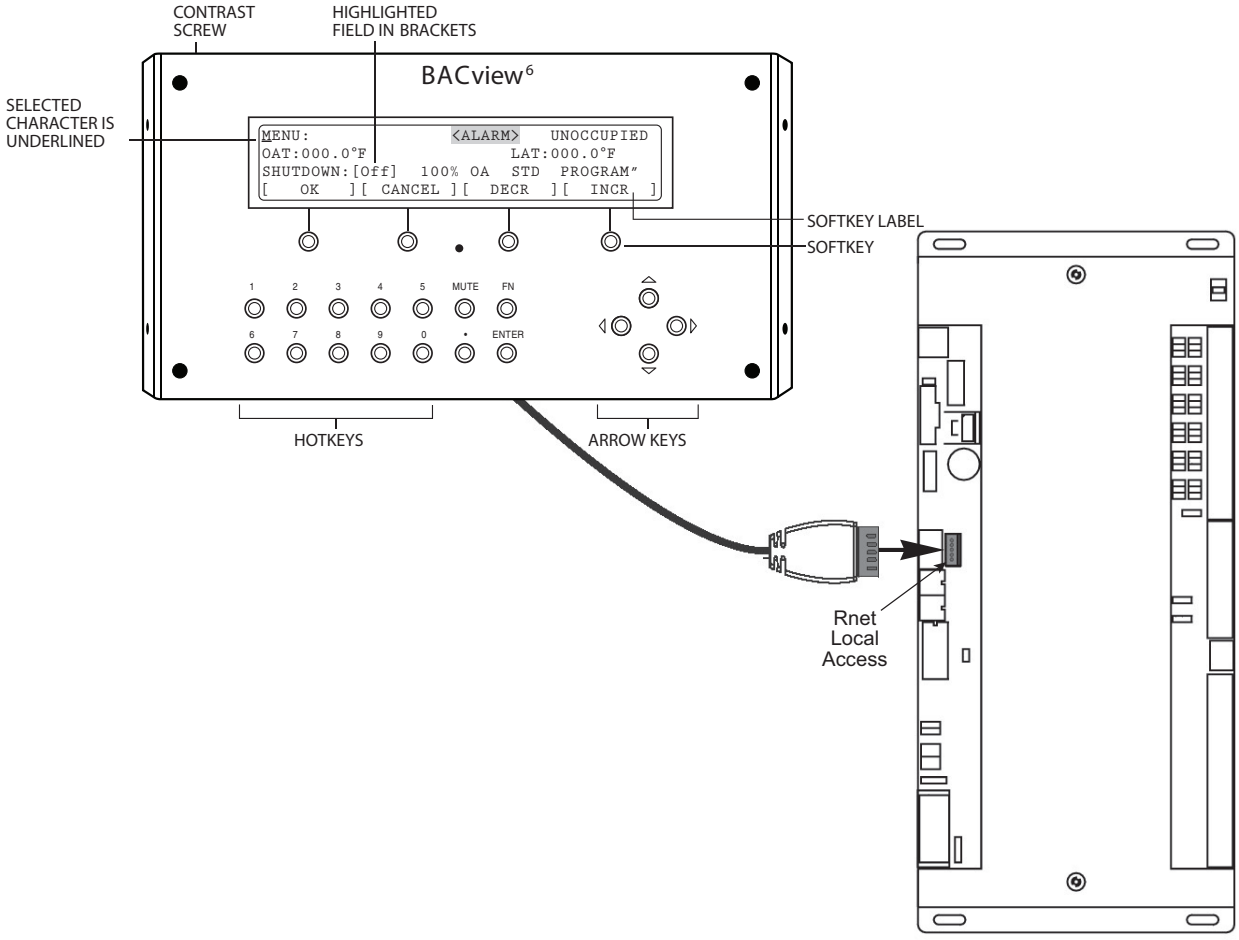


Fig. 3 — BACview Connection to Unit Controller

Controller Ports — The I/O Flex controller has six binary outputs (BO), twelve universal inputs (UI), and six analog outputs (AO). All of the input and output (I/O) settings are preconfigured from the factory to reflect the factory unit configuration. The controller's I/Os are field configurable to reflect field changes to the factory configurations. See Fig. 4 for typical controller layout.

BINARY OUTPUTS — The binary output relay contacts are rated at 5A resistive at 250V AC, and can be configured as dry contact, normally open or normally closed. The wiring configuration is used to determine the output type. Each output is equipped with three wiring terminals. The bottom terminal is used as the supply for normally closed (N/C). The middle terminal is used as the common. The top terminal is used as the normally open (N/O) supply. The binary outputs are configured from the factory to reflect the factory unit configuration. See Table 1 for typical binary outputs.

ANALOG OUTPUTS — All analog outputs are capable of outputting a 0 to 10V signal. Additionally, the first two analog outputs (AO-1, AO-2) can be configured to output a 4 to 20 mA signal. A jumper system, located to the right of AO-1 and AO-2, is used to determine the output type for the configurable analog outputs. The left jumper setting (jumper on pins 1 and 2) will configure the corresponding analog output to output a 4 to 20 mA signal. The right jumper setting (jumper on pins 2 and 3) will configure the corresponding analog output to output a 0 to 10V signal. All analog outputs are configured from the factory to reflect the correct unit configuration. See Table 2 for typical analog outputs.

UNIVERSAL INPUTS — All universal inputs can be set read voltage, amperage, resistance (temperature), and discrete contact. Additionally, universal inputs 1 and 2 (UI-1, UI-2) have pulse count ability. A jumper system located to the right of the input is used to determine the input type for each universal input. The outermost row of jumpers corresponds with the odd numbered universal inputs (UI-1, 3, 5, 7, 9, and 11). The innermost jumpers correspond to even number universal inputs (UI-2, 4, 6, 8, 10, 12). The top jumper setting (jumper on top two pins) will configure the corresponding universal input to read a 0 to 10 V signal. The middle jumper setting (jumper on middle two pins) will configure the corresponding universal input to read resistance (temperature) or discrete input. The bottom jumper setting (jumper on bottom two pins) will configure the corresponding universal input to read a 4 to 20 mA signal (typically not used on the 62D Series). See Table 3 for typical universal inputs.

NOTE: The universal inputs and analog outputs are preconfigured at the factory for each factory option package for the 62D series. Inputs UI-2, UI-4, UI-5, and UI-6 are set to read 0 to 10 V (top jumper position). All other UIs are set to read resistance (temperature) and dry contacts (middle jumper position). Outputs AO-1 and AO-2 are set to output voltage (right jumper position). See Fig. 5 and 6 for default controller configuration.

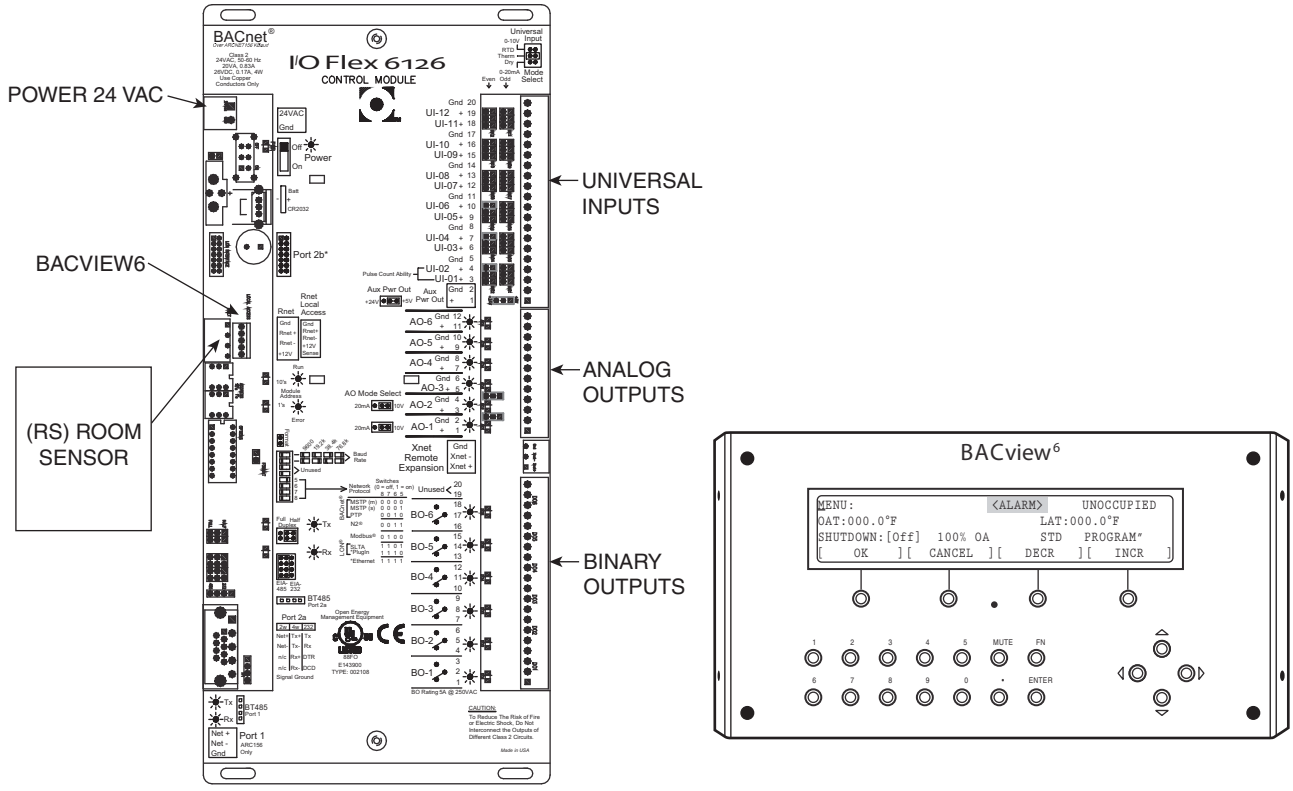


Fig. 4 — Typical Controller Components

Table 1 — Typical Binary Outputs

PORT NUMBER	NAME	OUTPUT TYPE
BO-1	Supply Fan, Exhaust Fan	Relay / Triac Output
BO-2	Compressor (Y1)	Relay / Triac Output
BO-3	Compressor (Y2)	Relay / Triac Output
BO-4	Hot Gas Reheat Valve (HGRH)	Relay / Triac Output
BO-5	Stage 1 Heat (W1) or Heat Pump Heat	Relay / Triac Output
BO-6	OA Damper, ECW Motor, ECW Damper, Exhaust Fan	Relay / Triac Output

Table 2 — Typical Analog Outputs

PORT NUMBER	NAME	OUTPUT TYPE
AO-1	Supply Fan VFD Modulation	0 - 10V DC
AO-2	Exhaust Fan VFD Modulation	0 - 10V DC
AO-3	Digital Compressor 2 Modulation	0 - 10V DC
AO-4	Hot Gas Reheat (HGRG)/Discharge Valve Modulation	0 - 10V DC
AO-5	Digital Compressor 1 Modulation	0 - 10V DC
AO-6	SCR Heat or Modulating Gas Heat	0 - 10V DC

Table 3 — Typical Universal Inputs

PORT NUMBER	NAME	INPUT TYPE	SENSOR TYPE
UI-1	Outside Air Temperature	Analog	Type II thermistor, 10kΩ at 77 F
UI-2	Outside Air Humidity	Analog	0-10 VDC
UI-3	Leaving Air Temperature	Analog	Type II thermistor, 10kΩ at 77 F
UI-4	Zone Relative Humidity	Analog	0-10 VDC
UI-5	Supply Fan Static Pressure Transmitter	Analog	0-10 VDC
UI-6	Exhaust Fan Static Pressure Transmitter	Analog	0-10 VDC
UI-7	—	—	—
UI-8	Compressor 2 Suction Line Temperature	Binary	Type II thermistor, 10kΩ at 77 F
UI-9	Compressor 1 Suction Line Temperature	Analog	Type II thermistor, 10kΩ at 77 F
UI-10	Smoke Detector (NC) EMR (NC) LP1 (NO) LP2 (NO)	Analog	LP1-5kΩ, LP2-10kΩ, SD-20kΩ, EMR-40kΩ
UI-11	Clogged Filter Indicator (NO) C1 Current Sensor (NO) C2 Current Sensor (NO)	Analog	C1CS-5kΩ, C2CS-10kΩ, CFD-20kΩ
UI-12	ECW Wheel Motion Sensor (NO) SF Air Proving Switch (NO) EF Air Proving Switch (NO), Condenser Water Flow (NO, 62R only)	Analog	ECWCS-5kΩ, SFAPS-10kΩ, EFAPS-20kΩ

LEGEND

ECW — Energy Conservation Wheel
EF — Exhaust Fan
EMR — Energy Management Relay
LP — Low Pressure Cutout
NC — Normally Closed
NO — Normally Open
SF — Supply Fan

Communication — See Fig. 5 and 6 for typical controller configuration.

LOCAL RNET ACCESS PORT — The I/O Flex controller is equipped with a Local Rnet Access port. Access to modify, configure, and diagnose the controller is achieved by attaching a BACview device to the Local Rnet Access port. The Local Rnet Access port provides power and communication to the BACview device.

RNET SENSOR PORT — The I/O Flex controller is equipped with an Rnet Sensor port. This port can be utilized with the included Carrier SPT space temperature sensor to monitor space temperature and to provide controller access using a BACview device via the Local Rnet Access port on the bottom of the sensor.

BAS COMMUNICATION — The I/O Flex controller Port 2a is configurable for EIA-232 or EIA-485 (2-wire or 4-wire). The controller can be configured for BACnet* (MS/TP or PTP), Modbus†, N2, and LonWorks** SLTA communication protocols for communication with external Building Automation Systems (BAS). See Appendix A for BAS integration guide.

Battery Back-Up — The I/O Flex controller uses a 3 volt, lithium battery (CR2032) for RAM and clock back-up. If controller power is lost and the battery cannot support the memory, controller data will be lost and will revert back to the control program archive. Always check the battery voltage, prior to removing controller power. If the battery is below 3V, replace immediately. The battery voltage must be checked while the battery is still in the holder. Checking battery voltage while outside of the battery holder will likely yield an incorrect reading.

Under normal operating conditions, the battery should last for 7 years. It is recommended to check the battery voltage during any service visit and recommend changing the battery every 5 years. Whenever the unit controller is powered, the battery is not being used. The battery will drain faster if the unit is not powered for extensive periods of time.

* Sponsored by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
† Registered trademark of Schnieder Electric.
** Registered trademark of Echelon Corporation.

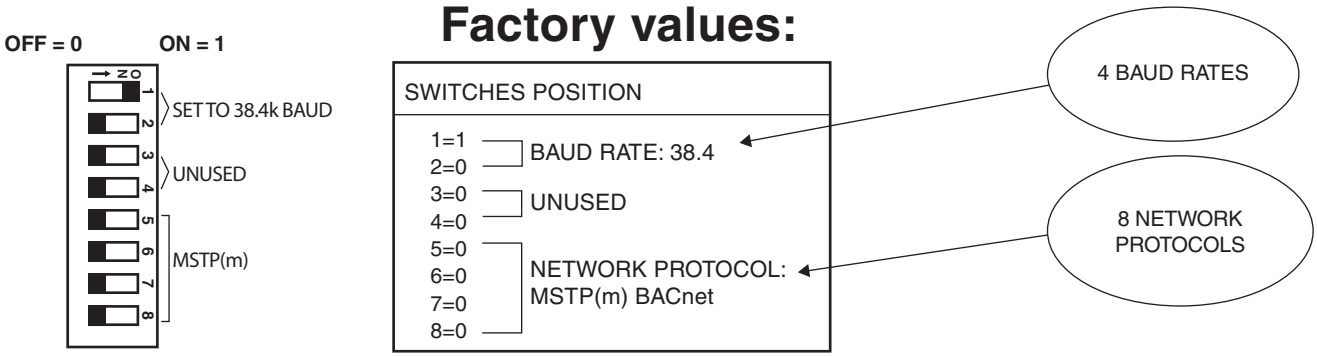


Fig. 5 — Control Module Switch Positions

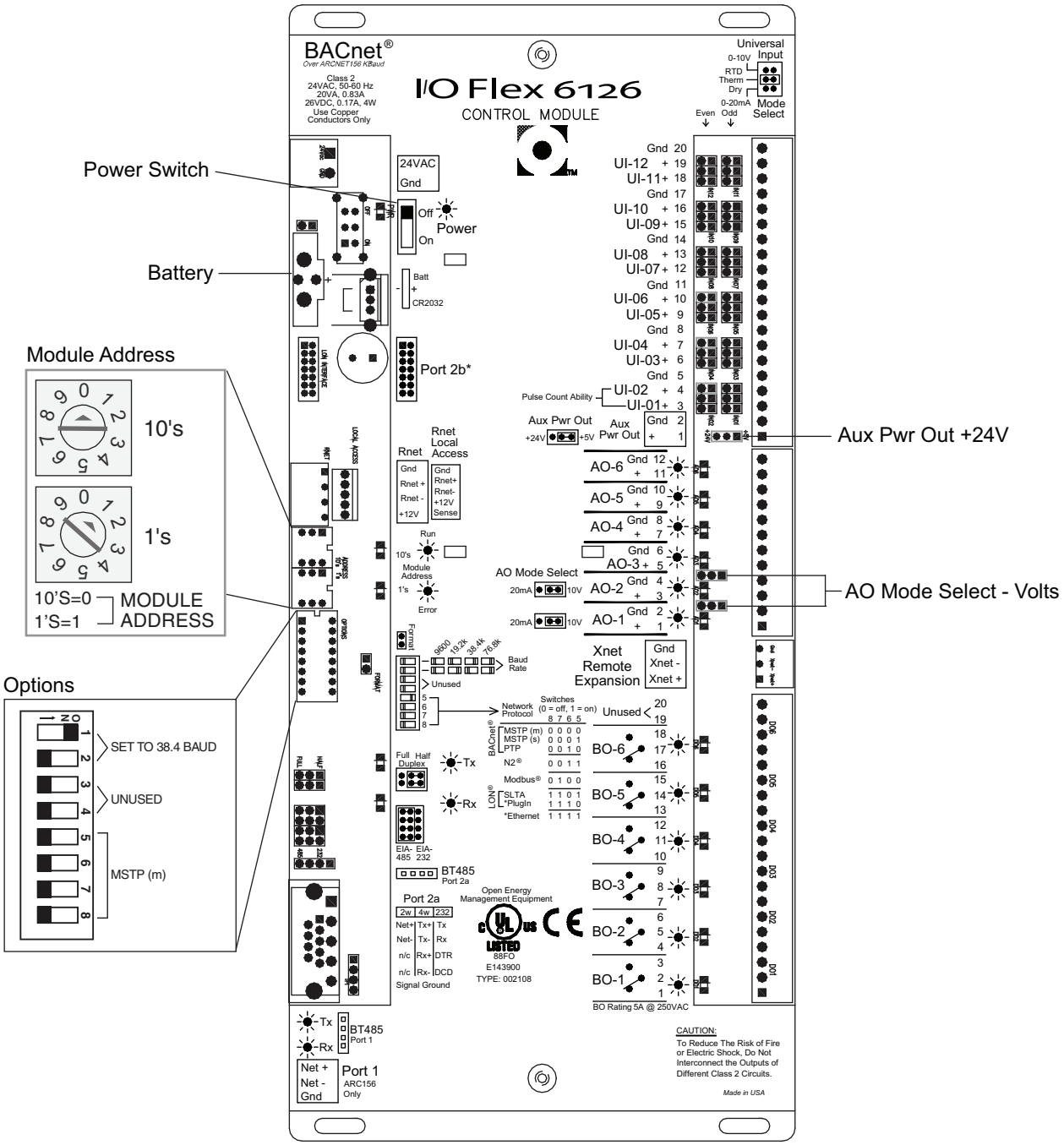


Fig. 6 — Control Module

BACVIEW DEVICE

General — The accessory BACview[6] device serves as the interface for the I/O Flex controller found in all 62D and 62R Series units, and can be used to configure, monitor, and control unit operation. The BACview[6] features a numeric keypad, direction keys, four multi-function keys, and a 4-line by 40-character backlit LCD (liquid crystal display) display. The BACView[6] is available as a portable handheld device (BV6H), an indoor panel mountable, field wired device (BACview[6]), or a computer-based interface (Virtual BACview). See Fig. 7 for BACview[6] layout.

NOTE: Two BACview devices cannot be used on a single controller simultaneously.

Device Connection — The BACview[6] handheld device (BV6H) and Virtual BACview USB cable plug directly into the Rnet Local Access port of the controller using attached cable, or they can be connected to the Rnet Local Access port on the bottom of the Rnet space temperature sensor. The BV6H is powered by the controller through the Rnet Local Access port or the Rnet space temperature sensor port. The BACview[6] panel mount (BACview[6]) can be wired directly to the Rnet Sensor Port or can be wired to a RS space temperature sensor. For installation details, see BACview[6] Installation Guide.

NOTE: The BACView[6] device requires the controller to be powered in order to communicate with the controller.

Device Buttons — Refer to Fig. 7 (BACview layout) for BACview[6] interface keypad layout.

ARROW KEYS — The arrow keys are the main navigation tools for the BACview[6]. The arrow keys allow the operator to scroll within a screen and navigate the cursor to an action item.

ENTER KEY — The enter key (ENTER) is used to select action items (such as editable values or links) and accept entries.

NUMBER AND DECIMAL KEYS — The number and decimal keys can be used to enter values in editable fields, enter passwords, or used in conjunction with the FN key as shortcuts to other screens (see Function Key section).

SOFT KEYS — The soft keys are four multi-function keys located below the display. The soft key function will change based upon the screen that is currently accessed. The current soft key function is indicated in brackets on the bottom line of the display directly above the soft key (ex. [OK] or [→HOME]). Pressing the below soft key will execute that function. Common soft key functions include:

- [OK] - accept change in value
- [CANCEL] - restore the original value
- [→HOME] - go to the Home screen
- [PREV] - go the previous screen
- [INCR] - increase a value or scroll upwards through a list
- [DEC] - decrease a value or scroll downwards through a list

FUNCTION KEY — The function key (FN) can be used in conjunction with the number keys (#) as a short cut to a screen from the Home screen. By pressing the FN button and a number button simultaneously, the following links can be quickly accessed (configuration specific):

Fan/Damper Status:	FN + 1
Cooling Status:	FN + 2
Hot Gas Reheat Status:	FN + 3
Heating Status:	FN + 4
Configuration Status:	FN + 5
Set Points:	FN + 6
Schedules:	FN + 7
Controls:	FN + 8
Technical Settings:	FN + 9
Alarm Settings:	FN + 0
Modstat:	FN + .

MUTE KEY — The mute key (MUTE) is used to silence an alarm. Pressing the (MUTE) and (FN) keys at the same time will clear the alarm and move the alarm to acknowledged status.

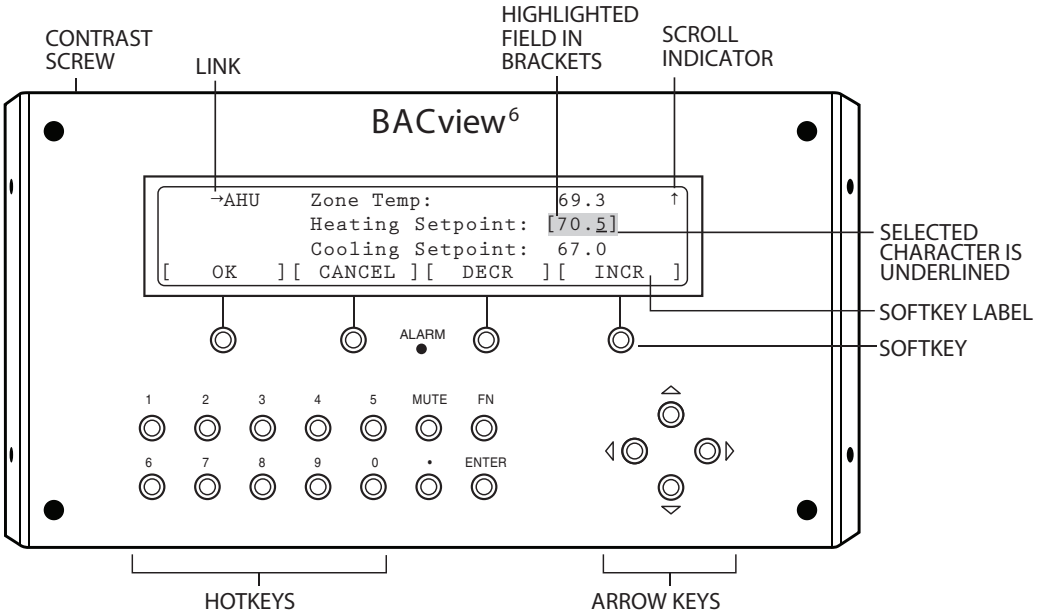


Fig. 7 — BACview Layout

BACView Operation

SCREENS — Screens are used to display relevant user information. A screen is defined as a single page of displayed information. This information can be text, values, links, or editable fields, and is typically related to other information on the same screen.

NAVIGATION — The ARROW KEYS can be used navigate the cursor with in a screen to an action item, such as a link, list, or editable field. Brackets will be displayed around the action item currently selected (ex. [MENU]).

NOTE: SOFT KEY functions will also be enclosed by brackets but cannot be navigated to. SOFT KEY functions are located on the bottom of the screen.

SCROLLING — If a screen contains more information than is available on the display, vertical arrow(s) will appear on the right hand side of the screen. Pressing the ARROW KEY in the direction of the arrows displayed will scroll the screen to display the additional information.

LINKS — Links can be utilized to navigate from the current screen to a different screen. Links are indicated by an arrow next to the link name (ex. →STATUS for the Unit Status screen or [→HOME] for the Home screen). To use a link, use the ARROW KEYS to navigate the cursor down to the desired link and press the ENTER key. If a link is displayed at the bottom of the screen with brackets (i.e., [→HOME]), press the SOFT KEY underneath the text to use the link.

CHANGING VALUES — Action items, such as lists or editable field, can be edited from the BACview. To select and item for editing, use the ARROW KEYS to navigate to the item and press the ENTER key to enable the item for editing.

If the item is a list, the list text will blink to indicate that editing is enabled. A list can contain multiple options or just yes/no. Use the [INCR] or [DECR] soft keys to scroll through the available options. Once the option that you want is displayed, press the [OK] soft key or the ENTER key to accept the change or the [CANCEL] soft key to cancel the change. The item will stop blinking to indicate that editing has been disabled and the current value applied.

If the item is an editable field, a blinking line will appear under the character currently enabled for editing. Use the ARROW KEYS to scroll to the desired character you want to change. Use the NUMBER KEYS to enter the desired figure or the [INCR] and [DECR] soft keys to scroll through all available values. Once the value that you want is displayed, press the [OK] soft key or the ENTER key to accept the change or the [CANCEL] soft key to cancel the change. The item will stop blinking to indicate that editing has been disabled and the current value applied.

LOGIN — Certain screens will require the operator to login to identify their level of access. The BACview has three levels of access.

CAPABILITY	OPERATOR LEVEL	DEFAULT PASSWORD
View non-password protected screens	Anyone	N/A
View/edit User level screens	User	1111
View/edit User and Admin levels screens, change user password	Admin	Contact Product Support Team

When prompted to login to a screen:

1. Use the number keypad to enter the password for the desired access level (User or Admin).
2. Press the ENTER key or the [OK] button.

ALARM MUTE — If an alarm is active the alarm LED on the will light up and the alarm on the BACview will sound. To silence the alarm, press the MUTE key.

CONTRAST ADJUSTMENT — Located on the top of the device is a contrast adjustment screw. This screw can be turned clockwise to lighten the contrast, or counterclockwise to darken the contrast.

BACKLIGHT TIMEOUT — The BACview screen backlight is preset to dim after 10 minutes of inactivity. Pressing any key (except for the MUTE or FN key) will reactivate the screen.

— If a field displays "#####", the value in the field is too large to be displayed on the current screen.

????? — If a field displays "?????", there is an error with the value or item that is trying to be accessed. If the value does display after 30 seconds, power cycle the controller.

NOTE: When a controller is powered up, "?????" may display in certain fields. If "?????" does not clear after 1 to 2 minutes, there may be an issue with the field.

CONTROL NAVIGATION

General — When using the BACview device to interface with the I/O Flex controller, the screens, text, and options displayed will be based upon the unit options and configuration for each unit. For example, if a unit does not have heat, the heating set point, heating status screen, heating PID screen, and heating related alarms will not be displayed The unit will not perform any heating related tests during test mode.

NOTE: The navigation tree for the 62D and 62R units will be the same. Screen menu and display options may differ, due to different base options between the two models. See Fig. 8.

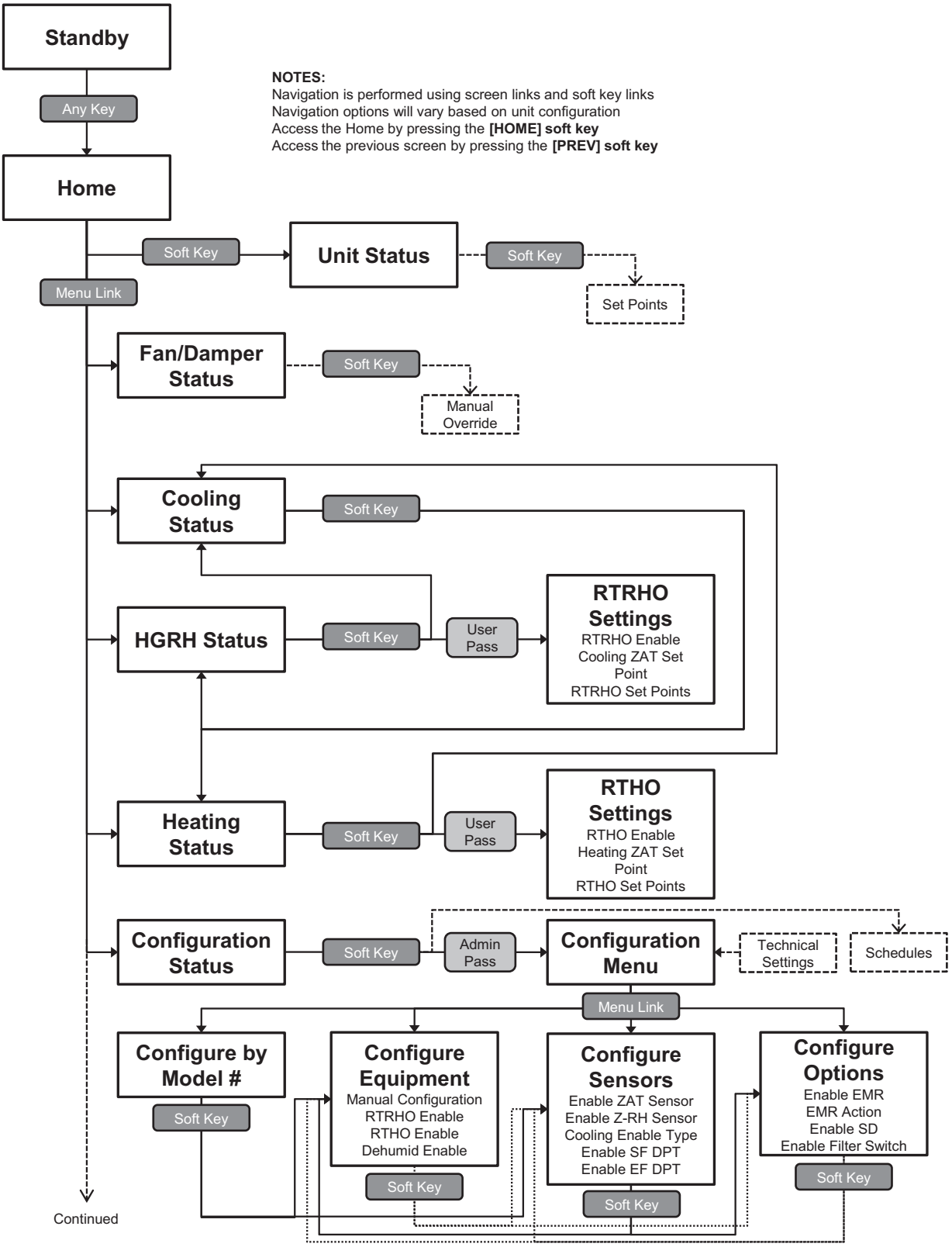


Fig. 8 — 62D Controls Navigation

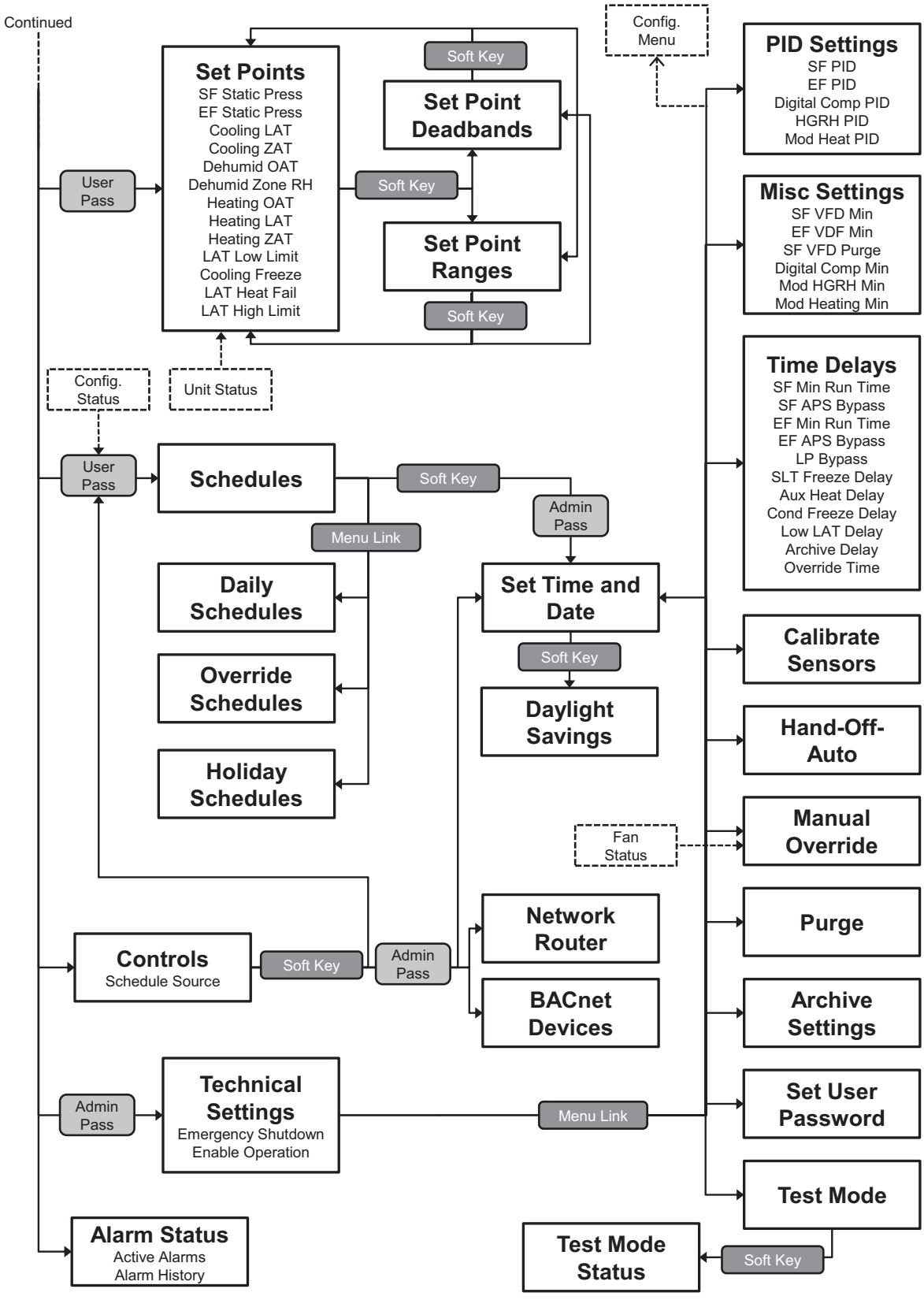


Fig. 8 — 62D Controls Navigation (cont)

Standby Screen — The first landing screen when a unit control has been powered on or a BACview device has is plugged in is the Standby screen. This screen will also display if no BACview activity occurs within 5 minutes.

```
    62D 100% OA  ASC REV:E.00 02/28/2013
  **********  STANDBY SCREEN   **********
          PRESS ANY KEY TO CONTINUE
       CONDITION:     ALARM/  DISABLE
```

The Standby screen displays the unit information (base model number, unit type), software version and date, screen type indicator, and unit status (mode/occupancy). Pressing any key when the Standby screen is active will bring the operator to the Home screen.

Home Screen — The Home screen can be accessed from other screens by pressing the [→HOME] soft key or by pressing any key from the Standby Screen.

```
                    OCCUPIED    ECAT: 94.0°F
MENU:               FAN ONLY     LAT: 92.6°F
   FANS/DAMPER STATUS:[→FANS]
       COOLING STATUS: →COOLING
          HGRH STATUS: →HGRH
       HEATING STATUS: →HEATING
 CONFIGURATION STATUS: →CONFIG STAT       ↓
[→STATUS]     05/17/2013        03:15:16 pm
```

The Home screen is the base navigation screen containing both unit operation information as well as navigation links. This screen displays the current time and date, occupancy, operating mode, OAT (outdoor air temperature)/ ORH (or ECAT/ECRH if equipped with ERW), LAT (leaving air temperature sensor), Unit Status ([→STATUS]) screen link, and the Alarm Status ([→ALARM]) screen link when an alarm is active. The RESET ALARM option will also appear in the menu when resettable alarms are active. The Home screen also displays the following menu links, depending on unit configuration:

- Fans/Damper Status
- Cooling Status
- HGRH (Hot Gas Reheat) Status
- Heating Status
- Configuration Status
- Set Points
- Schedules
- Controls
- Technical Settings
- Alarm Status
- Module Status

To access a menu link, use the ARROW KEYS to navigate to the desired link and press ENTER; or use shortcuts listed in the Function Key section of this manual.

Unit Status — From the Home screen, press the [→STATUS] soft key to access the Unit Status screen.

```
UNIT STATUS:            OCCUPIED/  FAN ONLY
 ECAT: 94.1°F   LAT: 92.6°F    ZAT: 83.2°F
EC-RH: 30.8%                  Z-RH: 25.7%
   62D 100%  OA  ASC  REV:E.00 02/28/2013
      CONTROL SOURCE:       BACVIEW
    OUTDOOR AIR DAMPER:  On     ECW: On
        SUPPLY FAN: On   SF-APS: On
[→PREV]  [→SETPOINTS]            [→HOME]
```

The Unit Status screen displays the current unit status (occupancy/mode), OAT/ECAT (outdoor air/entering coil temperature and relative humidity sensor), LAT, ZAT (zone air temperature sensor), OA/EC-RH, Z-RH, unit type, control revision and date, control source, equipment component status, safety status, alarm status, multiplexer reading, and Set Points ([→SETPOINTS]) screen link. This screen is not editable. To edit unit set points, go to the Set Points screen.

Fan/Damper Status — From the Home screen, use the ARROW KEYS to navigate to the →FANS link and press ENTER, or press FN + 1 simultaneously to go to the Fan/ Damper Status screen.

```
FANS/DAMPER:           OCCUPIED/  FAN ONLY
     OUTDOOR AIR DAMPER: On     ECW: On
        SF STATUS: On       SF-APS: On
    SF-DPT: 4.99″H20        SF-VFD: 30.0 Hz
  SFDPT SP: 0.75″H20     SFVFD MIN: 30.0 Hz
                    TIME UNTIL OFF: 0:00
 EF STATUS: On              EP-APS: On
[→PREV]              [→MAN. OVRD] [→HOME]
```

The Fan/Damper Status screen displays the current unit status (occupancy/mode), operating status of the supply fan and supply fan air proving switch (SP-APS), exhaust fan (if equipped) and exhaust fan air proving switch (EF-APS), outdoor air damper, and VFDs, Manual Override ([→MAN. OVRD]) screen link, and time until fan shut off. This screen is not editable. To edit fan VFD set points, go to the Set Points screen.

Cooling Status — From the Home screen, use the ARROW KEYS to navigate to the →COOLING link and press enter, or press FN + 2 simultaneously to go to the Cooling Status screen.

```
COOLING:             OCCUPIED   ECAT: 94.0°F
ZAT: 83.2°F       FAN ONLY      LAT: 92.6°F
  Y1 STATUS:Off          LAT SP: 70.0°F
     DCM1:  0.0%           SLT1: 51.0°F
                        SLT SP: 45.0°F
    MIN ON: 0:00        MIN OFF: 0:00

[→PREV]  [→HEATING]     [→HGRH]   [→HOME]
```

The Cooling Status screen displays the current unit status (occupancy/mode), OAT/ECAT, ZAT, LAT, LAT Set Point, Compressor 1 (Y1) status, SLT1, Compressor 2 (Y2) status, SLT2 (suction line temperature sensor), Digital Compressor Modulation (DCM%), minimum run timer, minimum off timer, and Reversing Valve Status (62R only). This screen is not editable. To edit cooling set points, go to the Set Points screen.

Hot Gas Reheat Status (if equipped) — From the Home screen, use the ARROW KEYS to navigate to the →HGRH link and press enter, or press FN + 3 simultaneously to go to the Hot Gas Reheat Status screen.

```
HGRH:               OCCUPIED    ECAT: 94.0°F
ZAT: 83.2°F         FAN ONLY     LAT: 92.6°F
      HGRH:ENABLED     HGRH STATUS:Off
    HGRH MOD:  0.0%       LAT SP: 70.0°F
  HGRH PURGE:Off       NEXT PURGE:  0:00
     RTRHO:ENABLED     RTRHO STATUS:Off
HGRH MOD:  0.0%    RTRHO LAT   SP: 55.0°F
[→PREV]  [→COOLING]    [→RTRHO]   [→HOME]
```

The Hot Gas Reheat Status screen displays the current unit status (occupancy/mode), OAT/ECAT, ZAT, LAT, LAT Set Point, HGRH status, HRGH Modulation, HGRH purge and purge time, Room Temperature Reheat Override (RTRHO) status and RTRHO LAT Set point, and the RTRHO ([→RTRHO]) screen link. This screen is not editable. To edit HGRH set points, go to the Set Points screen. To edit RTRHO set points, go to the RTRHO Settings screen.

Room Temperature Reheat Override Settings (if equipped with HGRH) — From the HRGH Status screen, press the [→RTRHO] soft key to go to the RTRHO Settings screen. The User or Admin password will be required to access this screen.

```
RM TEMP RH OVRD:        OCCUPIED/  FAN ONLY
      ROOM TEMP RH OVRD ENABLE: [ On]
     COOLING ZAT SET POINT:  72.0 °F
  RTRHO RATIO: FOR EVERY  1.0 °F OF ZAT
     CHANGE, ADJUST LAT SP BY  3.0 °F
    MAXIMUM LAT SP ADJUSTMENT: 15.0 °F

[→PREV]                              [→HOME]
```

The RTRHO Settings screen displays the current unit status (occupancy/mode), RTRHO settings, and RTRHO operation explanation, and Cooling ZAT (Space Temp) set point. RTRHO will adjust the effective LAT set point based on the difference between the zone air temperature and the cooling zone air temperature set point.

RTRHO OPERATION — When using the 62D or 62R unit on a single zone, RTRHO can be utilized to modify the unit operation, based on space temperature. When RTRHO mode is enabled, the unit will compare the current zone air temperature (ZAT) to the cooling ZAT set point. If the ZAT is above or below the cooling ZAT set point, the unit enter RTRHO mode and create a new effective cooling LAT set point. By default, for every 1° F (adjustable) the ZAT is above or below the cooling ZAT set point, the effective cooling LAT set point will increase or decrease by 3° F (adjustable) compared to the normal cooling ZAT set point. Once the ZAT set point is met, the cooling LAT set point will reset to normal.

To enable and adjust RTRHO operation:

1. Use the ARROW KEYS to navigate ROOM TEMP RH OVRD ENABLE: NO.
2. Press ENTER; use the [INCR] or [DECR] soft keys to change the value to YES to enable RTRHO operation, or NO to disable RTRHO operation.
3. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.
4. Use the ARROW KEYS to navigate to the COOLING ZAT SET POINT.
5. Press the ENTER key to enable editing. A line will appear under the digit being edited.
6. Use the NUMBER KEYS or [INCR] or [INCR] soft keys to adjust the value.
7. Press the ENTER or [OK] soft keys to accept the change; press [CANCEL] to restore the original value.
8. Use the ARROW KEYS to navigate to the RTRHO ratio item that you want to change.
9. Press the ENTER key to enable editing. A line will appear under the digit being edited.
10. Use the NUMBER KEYS or [INCR] or [INCR] soft keys to adjust the value.
11. Press the ENTER or [OK] soft keys to accept the change; press [CANCEL] to restore the original value.
12. Repeat Steps 8-11 for additional set point changes.

Heating Status — From the Home screen, use the ARROW KEYS to navigate to the →HEATING link and press enter, or press FN + 4 simultaneously to go to the Heating Status screen.

```
HEATING:          OCCUPIED     ECAT: 94.0°F
ZAT: 83.1°F       FAN ONLY      LAT: 92.6°F
    HEATING: ENABLED    W1 STATUS:Off
  HEAT TYPE:  GAS         ECAT SP: 58.0°F
   HEAT MOD:  0.0%          LAT SP: 72.0°F
     RTHO:ENABLED      RTHO STATUS:Off
   HEAT MOD:  0.0%     RTHO LAT SP: 57.0°F
[→PREV]  [→COOLING]     [→RTHO]   [→HOME]
```

The Heating Status screen displays the current unit status (occupancy/mode), OAT/ECAT, ZAT, LAT, LAT Set Point, Heating Status (W1), Heating Type, Heating Modulation, RTRHO Status, Run Timers, Reversing Valve Status (62R only) and Auxiliary Heat Status (62R only). To edit heating set points, go to the Set Points screen.

Room Temperature Heating Override Settings (if equipped with Heating) — From the Heating Status screen, press the [→RTHO] soft key to go to the RTHO Settings screen. The User or Admin password will be required to access this screen.

```
RM TEMP HTG OVRD:       OCCUPIED/  FAN ONLY
      ROOM TEMP HTG OVRD ENABLE: [ On]
     HEATING ZAT SET POINT:  72.0 °F
  RTHO RATIO: FOR EVERY  1.0 °F OF ZAT
     CHANGE, ADJUST LAT SP BY  3.0 °F
    MAXIMUM LAT SP ADJUSTMENT: 15.0 °F

[→PREV]                              [→HOME]
```

The RTHO Settings screen displays the current operating status of the unit, RTHO settings, and RTHO explanation, and Heating ZAT (Space Temp) set point. RTHO will adjust the effective LAT set point based on the difference between the zone air temp and the heating zone air temperature set point.

RTHO OPERATION — When using the 62D or 62R unit on a single zone, RTHO can be utilized to modify the unit operation, based on space temperature. When RTRHO mode is enabled, the unit will compare the current zone air temperature (ZAT) to the heating ZAT set point. If the ZAT is above or below the heating ZAT set point, the unit enter RTHO mode and create a new effective heating LAT set point. By default, for every 1° F (adjustable) the ZAT is above or below the heating ZAT set point, the effective heating LAT set point will increase or decrease by 3° F (adjustable) compared to the normal heating ZAT set point. Once the ZAT set point is met, the heating LAT set point will reset to normal.

To enable and adjust RTHO operation:

1. Use the ARROW KEYS to navigate ROOM TEMP HTG OVRD ENABLE: NO.
2. Press ENTER; use the [INCR] or [DECR] soft keys to change the value to YES to enable RTHO operation, or NO to disable RTHO operation.
3. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.
4. Use the ARROW KEYS to navigate to the Heating ZAT SET POINT.
5. Press the ENTER key to enable editing. A line will appear under the digit being edited.
6. Use the NUMBER KEYS or [INCR] or [INCR] soft keys to adjust the value.
7. Press the ENTER or [OK] soft keys to accept the change; press [CANCEL] to restore the original value.
8. Use the ARROW KEYS to navigate to the RTHO ratio item that you want to change.

9. Press the ENTER key to enable editing. A line will appear under the digit being edited.
10. Use the NUMBER KEYS or [INCR] or [INCR] soft keys to adjust the value.
11. Press the ENTER or [OK] soft keys to accept the change; press [CANCEL] to restore the original value.
12. Repeat Steps 8-11 for additional set point changes.

Configuration Status — From the Home screen, use the ARROW KEYS to navigate to the →CONFIG STATUS link and press ENTER, or press FN + 5 simultaneously to access the Configuration Status screen.

```
CONFIG STATUS:                ALARM/  ZAT FAIL
     CONTROL SOURCE:            BACVIEW
================================================
--------------- EQUIPMENT ------------------
              OA DAMPER INCLUDED: YES
                    ECW INCLUDED:  NO
         SUPPLY FAN VFD INCLUDED:  NO
[→PREV] [→SCHEDULES] [→CONF EQ]    [→HOME]
```

The Configuration Status screen displays the current unit status (mode/occupancy), program control source, control string used (if used), unit equipment, sensor, and option configuration; [→SCHEDULES] screen link, and the [→CONFIG] screen link. To edit the unit configuration, go to the Configuration Equipment screen.

Set Points — From the Home screen, use the ARROW KEYS to navigate to the →SETPOINT link and press ENTER, or press FN + 6 simultaneously, or press the [→SETPOINTS] soft key from the Set Point Deadbands, Set Point Ranges, or Unit Status screen to go to the Set Points screen. Access to this screen will require the User or Admin password.

```
SET POINTS:            ALARM      OAT: 83.8°F
 PARAMETER                SENSOR  SETPOINT
   COOLING                  LAT [ 70.0]°F
   COOLING                  SLT   45.0 °F
   CLG  OAT LOW LIMIT       OAT   55.0 °F
   SLT UPPER FREEZE         SLT   38.0 °F
   SLT MIDDLE FREEZE        SLT   32.0 °F
[→PREV]  [→DEADBANDS] [→RANGES]    [→HOME]
```

The Set Points screen displays the current unit status (occupancy/mode), OAT, current unit set points, set point ranges ([→RANGES]) screen link, and the set point deadbands ([→DEADBANDS]) screen link. All units are programmed from the factory with pre-set set points. These set points can be modified to adjust unit operation to meet the user's requirements.

The set points are used as a target for unit operating parameters. The unit will adjust its operation or the operation of an individual component to meet the required set point based on the sequence of operation.

NOTE: Reaction to meet a set point will not occur until the measured value is out of the set point deadband. The effective set point deadbands can be viewed and adjusted from the Set Point Deadbands screen.

To change a set point:

1. Use the ARROW KEYS to navigate to the set point to be changed.
2. Press ENTER to edit the value, a line will appear under the figure being edited.
3. Use the number keys to enter a new value or use the [DECR] or [INCR] soft keys to scroll through available values.
4. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.

   NOTE: If the entered set point is not accepted (changes automatically to the original value), the set point entered is not within the acceptable set point range. To view acceptable set point ranges, go to the Set Point Ranges screen or scroll through the available values using the [DECR] or [INCR] soft keys.
5. Repeat Steps 1-4 for additional set point changes.

Set Point Deadband — From the Set Points or Set Point Ranges screen, press the [→DEADBANDS] soft key to access the Set Points Deadbands screen.

```
DEADBANDS:                 ALARM    OAT: 83.9°F
 PARAMETER   SENSOR     UPPER(+)    LOWER(-)
  COOLING #1    LAT     [ 1.0]°F      1.0 °F
  COOLING #2    LAT       2.0 °F      2.0 °F



[→PREV]   [→SETPOINTS] [→RANGES]    [→HOME]
```

The Set Point Deadbands screen displays the current unit status (occupancy/mode), OAT, current set point deadbands, set point ranges ([→RANGES]) screen link, and the set point ([→SETPOINTS]) screen link. All units are programmed from the factory with pre-set set points deadbands. These deadbands can be modified to change unit operation to meet the user's requirements.

Set point deadbands are used as a buffer around a set point, to prevent the unit from cycling or from fighting against itself (i.e., turning on heating after cooling). Once the measured value of an item is outside the set point ± the deadband value, the unit will react accordingly.

To modify a set point deadband:

1. Use the ARROW KEYS to navigate to the deadband value to be changed.
2. Press ENTER to edit the value, a line will appear under the figure being edited.
3. Use the number keys to enter a new value or use the [DECR] or [INCR] to scroll through available values.
4. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.

   NOTE: If the entered set point deadband is not accepted (changes automatically to the original value), the set point deadband entered is not within the acceptable set point deadband range. Scroll through the available values using the [DECR] or [INCR] soft keys.
5. Repeat Steps 1-4 for additional set point changes.

Set Point Ranges — From the Set Points or Set Point Deadbands screen, use the ARROW KEYS to navigate to the [→RANGES] soft key to access the Set Points Ranges screen.

```
SP RANGES:             ALARM      OAT: 83.9°F
PARAMETER                SENSOR      RANGE
   COOLING                  LAT   55-90°F
   COOLING                  SLT   32-60°F
   CLG  OAT LOW LIMIT       OAT   55-65°F
   SLT UPPER FREEZE         SLT   35-40°F
   SLT MIDDLE FREEZE        SLT   30-40°F
[→PREV]  [→SETPOINTS] [→DEADBANDS][→HOME]
```

The Set Point Ranges screen displays the current unit status (mode/occupancy), OAT, set point ranges; set point deadbands ([→DEADBANDS]) screen link, and the set

point ([→SETPOINTS]) screen link. The set point ranges are not editable.

Schedules — From the Home screen, use the ARROW KEYS to navigate to the →SCHEDULES link and press ENTER, or press FN + 7 simultaneously, or press the [→SCHEDULES] soft key from the "Controls" screen to access the Schedules screen. Access to this screen will require the User or Admin password.

```
SCHEDULES:                OCCUPIED/  FAN ONLY
  TUESDAY         05/14/2013         12:24:00
           SET DAILY: [→DAILY]
         SET HOLIDAY: →HOLIDAY
        SET OVERRIDE: →OVERRIDE


[→PREV]  [→ClockSet]  [→CONTROLS] [→HOME]
```

The Schedules screen displays the current unit status (occupancy/mode), day/date/time, set daily schedule (→DAILY) screen link, set holiday schedule (→HOLIDAY) screen link, set override schedule (→OVERRIDE) screen link, set current time and date ([→ClockSet]) soft key, and controls ([→CONTROLS]) soft key.

The unit operating mode (occupancy) is controlled by user programmed schedules, either from the scheduling function built in to the controller (Resident Program Schedule) or from an external building automation system (BAS). When using the resident program scheduler, three types of schedules are available: Daily Schedules are used to program normal weekly occupancy (Mon-Sun), Holiday Schedules are used to override a Daily Schedule for a specific date, and Override Schedules are used to temporarily extent Daily Schedules. When the current time is between the scheduled start time and stop time for each day of an active Daily or Override Schedule, the unit will be occupied. When the current time is outside of the start time, stop time, or day of a Daily or Override Schedule, the unit will be unoccupied. However, if a Holiday Schedule is active, it will override any Daily or Override schedule for both occupied and unoccupied mode.

NOTE: The Daily Schedule 1 is enabled by default, and is schedule for occupied mode from 7 A.M. to 6 P.M., Monday to Friday.

DAILY SCHEDULES — From the Schedules screen, use the ARROW KEYS to navigate to the →DAILY menu option and press ENTER to go to the Daily Schedule 1 edit screen.

```
Daily Sch 1-    Use?[YES]   Stat: ON (24hr)
Start Time  7 : 00      Stop Time 18 : 00
DAYS: MON   TUE   WED   THU   FRI   -    -


[→PREV]  [→NEXT]                    [→HOME]
```

Daily schedules are used to enable unit occupancy for normal operating schedules. If a daily schedule is active, the unit will be in occupied mode from the start time to the end time for the weekdays selected in the daily schedule. The unit can also be scheduled for 24/7 operation.

NOTE: Daily Schedules can only enable occupied mode (cannot force unoccupied mode). If two or more Daily Schedules conflict, the unit will be occupied whenever either schedule is occupied.

To set Daily Schedule:

1. From the Schedules screen, use the ARROW KEYS to navigate to the →DAILY menu option and press ENTER to go to the Daily Schedule 1 edit screen.
2. Use the ARROW KEYS to navigate to the Use ? option and press ENTER.
3. Use the [INCR] or [DECR] soft keys to change the option to YES to enable this schedule.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to navigate to the Start Time: HH:MM parameter to edit the starting time of occupancy.
6. Press ENTER to adjust the schedule starting time hour HH. The hour section will blink to indicate that it is currently being edited.
7. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.
8. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
9. Use the ARROW KEYS to navigate to the minutes MM entry. Repeat Steps 6-8.
10. Use the ARROW KEYS to navigate to the Stop Time: HH:MM entry. Repeat Steps 4-9.
11. Use the ARROW KEYS to navigate to DAYS: - - - - - - - and press ENTER.
12. Use the [INCR] or [DECR] soft key to change the - to MON to make this schedule active every Monday.
13. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
14. Use the ARROW KEYS navigate to the next - to add additional days of the week to the schedule. Repeat Steps 12 and 13 for TUE-SUN.
15. Optional: to enable an additional Daily Schedule (2-4), press the [→NEXT] soft key to go to the next available daily schedule. Repeat Steps 2-15.

Enable 24/7 Operation:

1. From the Daily Schedule 1 edit screen, press the [→NEXT] soft key three (3) times, to get the Daily Schedule 4 edit screen.
2. Use the ARROW KEYS to navigate to the Cont? [N] option and press ENTER.
3. Use the [INCR] or [DECR] soft keys to change the option to [Y] to enable 24/7 operation. Change the value to [N] to disable 24/7 operation.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.

HOLIDAY SCHEDULE — From the Schedules screen, use the ARROW KEYS to navigate to the →HOLIDAY menu option and press ENTER to go to the Holiday Schedule 1 edit screen.

```
Holiday Sch 1- Use? [ NO]  Stat:OFF  (24hr)
Start Time  0 : 00      Stop Time:  0 : 00
   Month:  0  (1-12)  Day:   0 (1-31)


[→PREV]  [→NEXT]                    [→HOME]
```

Holiday schedules are used to enable occupied or unoccupied mode for holiday (non-standard) operating schedules. When a holiday schedule is in effect, the unit will be occupied from the start time to the end time for the date selected. The unit will be unoccupied for all other times during the date specified in the holiday schedule.

NOTE: A holiday schedule will override any simultaneously occuring daily schedule or override schedule.

To set a Holiday Schedule:

1. From the Schedules screen, use the ARROW KEYS to navigate to the →HOLIDAY menu option and press ENTER to go to the Holiday Schedule 1 edit screen.
2. Use the ARROW KEYS to scroll down to the Use ? option and press ENTER.
3. Use the [INCR] or [DECR] soft keys to change the option to YES to enable this schedule.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to scroll down to the Start Time: HH:MM parameter to edit the starting time of occupancy.
6. Press ENTER to adjust the schedule starting time hour HH. The hour section will blink to indicate that it is currently being edited.
7. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.
8. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
9. Use the ARROW KEYS to navigate to the minutes MM entry. Repeat Steps 6-8.
10. Use the ARROW KEYS to navigate to the Stop Time: HH:MM entry. Repeat Steps 4-9.
11. Use the ARROW KEYS to scroll down to Month 0 (1 to 12) and press ENTER.
12. Use the [INCR] or [DECR] soft key or NUMBER KEYS to change the 0 to the desired month number (1 to 12).
13. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
14. Use the ARROW KEYS to scroll down to Day 0 (1 to 31) and press ENTER.
15. Use the [INCR] or [DECR] soft key or NUMBER KEYS to change the 0 to the desired month number (1 to 12).
16. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
17. Optional: To enable an additional Holiday Schedule (2 to 12), press the [→NEXT] soft key to go to the next available daily schedule. Repeat Steps 2-16.

OVERRIDE SCHEDULE — From the Schedules screen, use the ARROW KEYS to navigate to the →OVERRIDE menu option and press ENTER to go to the Override Schedule 1 edit screen.

```
Override Sch 1- Use?[ NO]  Stat:OFF  (24hr)
Start Time  0 : 00      Stop Time:  0 : 00
   Month:  0  (1-12)  Day:   0 (1-31)


[→PREV]  [→NEXT]                      [→HOME]
```

Override schedules are used to temporarily extend a daily schedule (extend occupied mode). When an override schedule is effective, the unit will be in occupied mode from the start time to the end time for the selected dates. An override schedule can only enable occupied mode, it cannot force unoccupied mode.

To set an Override Schedule:

1. From the Schedules screen, use the ARROW KEYS to navigate to the →OVERRIDE menu option and press ENTER to go to the Override Schedule 1 edit screen.
2. Use the ARROW KEYS to scroll down to the Use ? option and press ENTER.
3. Use the [INCR] or [DECR] soft keys to change the option to YES to enable this schedule.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to scroll down to the Start Time: HH:MM parameter to edit the starting time of occupancy.
6. Press ENTER to adjust the schedule starting time hour HH. The hour section will blink to indicate that it is currently being edited.
7. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.
8. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
9. Use the ARROW KEYS to navigate to the minutes MM entry. Repeat Steps 6-8.
10. Use the ARROW KEYS to navigate to the Stop Time: HH:MM entry. Repeat Steps 4-9.
11. Use the ARROW KEYS to scroll down to Month 0 (1 to 12) and press ENTER.
12. Use the [INCR] or [DECR] soft key or NUMBER KEYS to change the 0 to the desired month number (1 to 12).
13. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
14. Use the ARROW KEYS to scroll down to Day 0 (1 to 31) and press ENTER.
15. Use the [INCR] or [DECR] soft key or NUMBER KEYS to change the 0 to the desired month number (1 to 12).
16. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
17. Optional: to enable Override Schedule 2, press the [→NEXT] soft key to go to the next available daily schedule. Repeat Steps 2-16.

Set Time and Date — From the Schedules screen, press the [→ClockSet] soft key or from the Technical Settings or Controls screen, use the ARROW KEYS to navigate to the →Set Time and Date link and press ENTER to go to the Set Current Time/Date screen.

```
Set Current Time/Date  (24 hr clock)
Time (hh:mm:ss):    [14]: 32: 03
Date (dd-mmm-yy):    16 - May - 13


[→PREV]     [→DST]
```

In order for the unit scheduler to function properly, the current unit time and date must be set. Once the unit power is energized, the time will default to EST.

To set Current Time and Date:

1. In the Set Current Time/Date screen, scroll down to Time (hh:mm:ss): HH:MM:SS.
2. Press ENTER. The hour section will blink to indicate that it is currently selected for editing.
3. Use the NUMBER KEYS or the [INCR] and [DECR] soft keys to enter the current hour (use 24 hour clock).
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to navigate to the minutes MM and seconds SS entry. Repeat Steps 2-4.

6. Use the ARROW KEYS to scroll down to Date (dd:mm:yy): DD:MM:YY.
7. Press ENTER. The day section will blink to indicate that it is currently selected for editing.
8. Use the NUMBER KEYS or the [INCR] and [DEC] soft keys to enter the current day of the month.
9. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
10. Use the ARROW KEYS to scroll to the month and year entries. Repeat Steps 7-9.
11. Press the [→DST] soft key to go to the Daylight Savings Time screen or go to the Home screen by pressing the [→PREV] softkey then the [→HOME] softkey or the [→PREV] soft key.

SET DAYLIGHT SAVINGS TIME — From the Set Current Time and Date screen, press the [→DST] soft key.

```
DST  Start Time:[02]: 00     Amount: 060
 Entry#  Beg  (mm-dd-yy)  End  (mm-dd-yy)
    0    Mar   10  2013   Nov  03  2013
    1    Mar   09  2014   Nov  02  2014
    2    Mar   08  2015   Nov  01  2015
    3    Mar   13  2016   Nov  06  2016
    4    Mar   12  2017   Nov  05  2017
[→PREV]
```

This screen is used to adjust the effective dates for Daylight Savings Time (DST) for the next ten (10) years. Typical DST start time is 02:00 or 2:00 A.M.

1. In the Daylight Savings Time screen, navigate to Entry 0 - Start Time: HH:MM.
2. Press ENTER to adjust the DST starting time hour HH.
3. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to navigate to the minutes MM entry. Repeat Steps 2-4.
6. Use the ARROW KEYS to scroll down to Entry 0 under the DST beginning date Beg Date: MM-DD-YYYY.
7. Press ENTER. The month section will blink to indicate that it is currently selected for editing.
8. Use the [INCR] and [DEC] soft keys to enter the current month.
9. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
10. Use the ARROW KEYS to scroll to the day and year entries. Repeat Steps 7-9.
11. Use the ARROW KEYS to scroll to the DST ending date End Date: MM-DD-YYYY. Repeat Steps 7-10.
12. Repeat Steps 2-11 on entries 1-9 as necessary.
13. Press the [→PREV] soft key to go back to the Set Time and Date screen.

Controls — From the Home screen, use the ARROW KEYS to navigate to the →CONTROLS link and press ENTER, or press FN + 8 simultaneously to go to the Control Settings screen. The User or Admin password is required to access this screen.

```
CONTROLS:                 OCCUPIED/  FAN ONLY
       CONTROL SOURCE:[       BACVIEW]
            SCHEDULES: →SCHEDULES
    SET TIME AND DATE: →ClockSet
       BACNET DEVICES: →BACnet
       NETWORK ROUTER: →Router

[→PREV]                                [→HOME]
```

The Controls screen displays the current unit status (mode/occupancy), control source, Schedules screen link (→SCHEDULES), Set Time and Date screen link (→ClockSet), BACnet Settings screen (→BACnet), and the Network Router Settings screen link (→Router).

Control Source — The control source parameter dictates where control of occupancy and schedules originate. The following control sources are available:

- BACVIEW - Select if the BACview is the control source (Default). The unit will use the built in Residential Program Scheduler to determine occupancy.
- BAS - Select if a building automation system (BAS) is the control source. The BAS system can provide the time clock and utilize the built in scheduler to determine unit occupancy. The BAS system can also write directly to the occupancy point to control occupancy.
- CLOCK - Select to override scheduled unoccupied conditions and place the unit in occupied mode for an adjustable amount of time (default is 30 minutes).
- MANUAL OVRD - Put the unit in permanent occupied mode (system schedules are ignored until this setting is changed to another value).
- DIGITAL INPUT - Select if control source is from a separate ALC input (not used).

To select the control source:

1. From the Controls screen, use the ARROW KEYS to navigate down to the CONTROL SOURCE: BACNET menu item and press ENTER to enable editing.
2. Use the [INCR] or [DECR] soft keys to scroll to the desired control source.
3. Press ENTER or the [OK] soft key to accept the selection; press CANCEL to restore the original value.

Network Router — From the Controls screen, use the ARROW KEYS to navigate to the →BACnet link and press ENTER to access the Configure Sensors screen. This screen requires the Admin password.

```
BACnet Network #             MAC Address
   ARC156:[    0]                   2
+   MS/TP:   100                    2

[→PREV]
```

The Network Router screen is used to adjust the network information of the controller.

To change the Device Instance or ID:

1. Use the ARROW KEYS to scroll down to the value to be changed.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] and [DECR] soft keys to scroll to the desired value.
4. Press ENTER or the [OK] soft key to accept the change, or the [CANCEL] soft key to restore the original value.
5. Press the [→PREV] soft key to go back to the previous screen.

BACnet Device — From the Controls screen, use the ARROW KEYS to navigate to the →BACnet link and press ENTER to access the Configure Sensors screen.

```
      BACnet Device Instance:[   1602]
       Base BACnet Device ID:    1600
      Autogenerate Device ID?  Y

[→PREV]
```

The BACnet Device screen displays the BACnet device instance and BACnet Device ID used for networking with BACnet devices. The controller can auto-generate a device ID or accept manual entry.

To change the Device Instance or ID:

1. Use the ARROW KEYS to scroll down to the value to be changed.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] and [DECR] soft keys to scroll to the desired value.
4. Press ENTER or the [OK] soft key to accept the change, or the [CANCEL] soft key to restore the original value.

Technical Settings — From the Home screen, use the ARROW KEYS to navigate to the →TECHNICAL link and press ENTER, or press FN + 9 simultaneously to go to the Technical Settings screen. The Admin password is required to access this screen.

```
TECH SETTINGS:         UNOCCUPIED/  SCHEDULE
ENABLE UNIT OPERATION: [YES]
   SET UNIT EQUIPMENT:  →CONFIG EQ
     SET UNIT SENSORS:  →CONFIG SENS
 PID CONTROL SETTINGS:  →PID
MISC CONTROL SETTINGS:  →MISC
          TIME DELAYS:  →TIME DELAYS

[→PREV]                                [→HOME]
```

The Technical Settings screen contains links to advanced unit functions and adjustment.

⚠ WARNING

Technical settings are used to perform advanced control operations and should only be modified by authorized Carrier personnel. Changes to these settings could potentially cause unit damage or render the unit inoperable.

DISABLE/ENABLE UNIT OPERATION — From the Technical Settings screen, use the ARROW KEYS to navigate to the ENABLE UNIT OPERATION: [YES] option and press ENTER to change the value using the [INCR] or [DECR] soft keys. NO will disable unit operation and YES will enable unit operation. Press ENTER or the [OK] soft key to accept changes; press [CANCEL] to restore the original value.

EMERGENCY SHUTDOWN — From the Technical Settings screen, use the ARROW KEYS to navigate to the EMERGENCY SHUTDOWN: [NO] option and press ENTER to change the value using the [INCR] or [DECR] soft keys. Changing the value to YES will shutdown the unit within 30 seconds. Changing the value to NO will enable unit operation. Press ENTER or the [OK] soft key to accept changes; press [CANCEL] to restore the original value.

Equipment Configuration — From the Technical Settings screen, use the ARROW KEYS to navigate to the →CONFIG EQ link and press ENTER to access the Equipment Configuration screen.

```
CONFIG EQUIP:                 ALARM/ Z-RH FAIL
CODE STRING:                #:digit not needed
    62D#[-] 0  07  -  A   C   6 3# - ###
USE CODE STRING TO CONFIGURE:  NO
================================================
--------------- EQUIPMENT ----------------
                OA DAMPER INCLUDED: YES
[→PREV] [→SCHEDULES]     [→SENSORS][→HOME]
```

The Equipment Configuration screen contains all of the configuration settings for the unit options and equipment. The unit operation and control configuration is based on the selections and settings within this screen.

IMPORTANT: The unit controller is preconfigured from the factory to reflect the unit order configuration. Any changes to the subsequent screens may result in changes to unit operation and possible equipment damage. Changes should only be made to reflect field changes to the factory configuration or if the controller is replaced. Please contact service engineering prior to editing this screen.

CONFIGURE BY CODE STRING — The unit code string is used by the factory to configure the unit options and equipment. By entering the unit model number into the code string, the unit equipment and sensors will be automatically configured.

IMPORTANT: The code string configuration is preconfigured from the factory to reflect the unit order configuration. Any changes to the code string may result in changes to unit operation and possible equipment damage. Changes should only be made to reflect field changes to the factory configuration or if the controller is replaced. Please contact service engineering prior to editing this screen.

To configure the unit code string:

1. From the Code String screen, use the ARROW KEYS to navigate to the Code String entry section (after 62D#).
2. Use the ARROW KEYS to navigate to the character to be changed.
3. Press ENTER. The character being modified will blink.
4. Use the [INCR] and [DECR] soft keys to scroll through the available values.
5. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.
6. Repeat Steps 2-5 for the additional model number characters.
7. After code string has been entered, use the ARROW KEYS to scroll down to USE CODE STRING TO CONFIGURE: [NO].
8. Press ENTER and use the [INCR] or [DECR] soft keys to change value to [YES].
9. Press ENTER or the [OK] soft key to accept the code string or press the [CANCEL] soft key restore the original value.
10. Use the ARROW KEYS to scroll down to ENABLE UNIT OPERATION: [NO].
11. Press ENTER; use the [INCR] or [DECR] soft keys to change the value to YES.

NOTE: Some of the digits of the model number code string do not impact the equipment controlled and monitored by the system program; these are represented by # or are not editable.

MANUAL EQUIPMENT CONFIGURATION — If a field change is made to the unit configuration or an additional unit function needs to be enabled, the unit equipment can be manually configured. After the equipment has been configured, unit sensors and unit operation will be adjusted accordingly.

```
CONFIG EQUIP:            OCCUPIED/  FAN ONLY
----------------EQUIPMENT-----------------
      OA DAMPER INCLUDED:  YES
            ECW INCLUDED:   NO
 SUPPLY FAN VFD INCLUDED:   NO
    EXHAUST FAN INCLUDED:   NO
EXHAUST FAN VFD INCLUDED: [ NO]
[→PREV] [→SCHEDULES]   [→SENSORS] [→HOME]
```

IMPORTANT: The equipment configuration is preconfigured from the factory to reflect the unit order configuration. Any changes to the equipment configuration may result in changes to unit operation and possible equipment damage. Changes should only be made to reflect field changes to the factory configuration or if the controller is replaced. Please contact service engineering prior to editing this screen.

Equipment can be manually configured by selecting the applicable equipment from the list below:

- Outdoor Air Damper (motorized): OA DAMPER INCLUDED: [YES] or [NO]
- Energy Conservation Wheel: ECW INCLUDED: [YES] or [NO]
- Supply Fan VFD: SUPPLY FAN VFD INCLUDED: [YES] or [NO]
- Exhaust Fan: EXHAUST FAN INCLUDED: [YES] or [NO]
- Exhaust Fan VFD: EXHAUST FAN VFD INCLUDED: [YES] or [NO]
- Digital Compressor #1: COMPRESSOR #1 DIGITAL: [YES] or [NO]
- Compressor #2: COMPRESSOR #1 INCLUDED: [YES] or [NO]
- Hot Gas Reheat: HOT GAS REHEAT: [LEAD], [BOTH] or [NO]
- Modulating Hot Gas Reheat: MODULATING HGRH INCLUDED: [YES] or [NO]
- Room Temp Reheat Override: RM TEMP REHEAT OVRD ENABLE: [YES] or [NO] (NO by default, only available if HGRG is included)
- Dehumidification Enable: DEHUMIDIFICATION ENABLE: [YES] or [NO] (NO by default, only available if HGRG is included). See Sequence of Operations flow charts on pages 34 and 38 for details on Dehumidification mode operation. Must use Z-RH (zone relative humidity) sensor.
- Heating: HEATING INCLUDED [YES] or [NO]
- Heating Source: HEATING SOURCE: [NONE], [ELEC], [GAS], [WATER], or [STEAM].
- Room Temp Heating Override: ROOM TEMP HTG OVRRD ENABLE: [YES] or [NO] (NO by default, only available if heating is included)
- Smoke Detector: SMOKE DETECTOR INCLUDED: [YES] or [NO]
- Clogged Filter Indicator: CLGD FILTER IND INCLUDED: [YES] or [NO]
- Energy Management Relay: ENERGY MGMT RELAY INCLUDED: [YES] or [NO]
- Emergency Shutdown: ENBLING EMR WILL: [EMER SHTDWN] or [UNOCC MODE]

To manually configure equipment:

1. From the Configure Equipment screen, use the ARROW KEYS to scroll down to USE CODE STRING TO CONFIGURE: [YES] and press the ENTER key to enable editing.
2. Use the [INCR] and [DECR] soft keys to change the value to NO to enable manual equipment configuration.
3. Use the ARROW KEYS to scroll to the equipment option to be changed, press ENTER.
4. Use the [INCR] and [DECR] soft keys to change the value to YES if the equipment exists in the unit, NO if the equipment does not exist, or select the option describing the desired component functionality.
5. Press ENTER or the [OK] soft key to accept the option or press the [CANCEL] soft key to restore the original value.
6. Repeat Steps 3-5 for additional equipment options.
7. Use the ARROW KEYS to scroll down to ENABLE UNIT OPERATION: [NO].
8. Press ENTER; use the [INCR] or [DECR] soft keys to change the value to YES.

Configure Sensors — From the Technical Settings screen, use the ARROW KEYS to navigate to the [→CONFIG SENS] link and press ENTER; or from the Configure Equipment screen, use the [→SENSORS] soft key to access the Configure Sensors screen.

```
CONFIG SENSORS:          OCCUPIED/  FAN ONLY
            RS ZONE AIR TEMP:[ ON]
      PUSH-BUTTON OVRD ENABLE:  ON
      ALTERNATE ZONE AIR TEMP: OFF
             ZONE AIR HUMIDITY: OFF
              LEAVING AIR TEMP:  ON
              OUTDOOR AIR TEMP:  ON
[→PREV]   [→SCHEDULE]   [→EQUIP]  [→HOME]
```

Unit sensors can be manually configured by selecting the applicable equipment. After the sensors have been manually configured, the controller will be automatically programmed for those sensors.

IMPORTANT: The unit sensor configuration is preconfigured from the factory to reflect the unit order configuration. Any changes to the sensor configuration may result in changes to unit operation and possible equipment damage. Changes should only be made to reflect field changes to the factory configuration or if the controller is replaced. Please contact service engineering prior to editing this screen.

Sensors can be manually configured by selecting the applicable equipment from the list below:

- Space Temperature Sensor: RS ZONE AIR TEMP: [ON] or [OFF] (ON by default).
- Push Button Unoccupied Override: PUSH-BUTTON OVRD ENABLE: [YES] or [NO] (NO by default).
- Alternate Zone Air Temp: ALTERNATE ZONE AIR TEMP: [ON] or [OFF] (OFF by default).
- Zone Air Humidity: ZONE AIR HUMIDITY: [ON] or [OFF] (ON by default).
- Leaving Air Temperature: LEAVING AIR TEMP: [ON] or [OFF] (ON by default).
- Outdoor Air Temperature: OUTDOOR AIR TEMP: [ON] or [OFF] (ON by default).
- Leaving Air Humidity: OUTDOOR AIR HUMIDITY: [ON] or [OFF] (ON by default).
- Cooling Enable Temperature: COOLING ENABLE BY: [OAT & LAT] or [OAT] (OAT & LAT by default).
- Supply Fan Differential Pressure Transducer: SUPPLY FAN DPT: [ON] or [OFF] (ON if supply fan equipped with VFD).
- Exhaust Fan Differential Pressure Transducer: EXHAUST FAN DPT: [ON] or [OFF] (ON if exhaust fan equipped with VFD).

- Suction Line Temp #1: SUCTION LINE TEMP #1: [ON] or [OFF] (ON by default).
- Suction Line Temp #2: SUCTION LINE TEMP #2: [ON] or [OFF] (ON by default only if equipped with 2 compressors).
- Low Pressure Switch #1: LOW PRESSURE SWITCH #1: [ON] or [OFF] (ON by default).
- Low Pressure Switch #2: LOW PRESSURE SWITCH #2: [ON] or [OFF] (ON by default on if unit has 2 compressors).

To manually configure sensors:

1. From the Configure Sensors screen, use the ARROW KEYS to scroll down to the configuration list.
2. Use the ARROW KEYS to scroll to the equipment option to be changed, press ENTER.
3. Use the [INCR] and [DECR] soft keys to change the value to YES if the equipment exists in the unit, NO if the equipment does not exist, or select the control option desired.
4. Press ENTER or the [OK] soft key to accept the option or press the [CANCEL] soft key to restore the original value.
5. Repeat Steps 2-4 for additional equipment options.
6. Use the ARROW KEYS to scroll down to ENABLE UNIT OPERATION: [NO].
7. Press ENTER; use the [INCR] or [DECR] soft keys to change the value to YES to enable unit operation.

PID Control Settings — From the Technical Settings screen, use the ARROW KEYS to navigate to the →PID link and press ENTER to access the PID Settings screen. The PID Settings screen will only be displayed if the unit is configured with a item that contains PID controls.

```
PID SETTINGS:                ALARM/ SLT2 FAIL
            SUPPLY FAN:[→SF PID]
           EXHAUST FAN: →EF PID
       HOT GAS REHEAT: →HGRH PID
              HEATING: →HEAT PID

[→PREV]                                [→HOME]
```

The proportional-integral-derivative (PID) control settings are used as a control loop feedback mechanism for certain control functions. The PID measures the difference between a system output and desired system set point and attempts to minimize that different based on the PID settings.

PROPORTIONAL GAIN — The proportional gain affects the speed of the control system output response to achieve a desired set point. Increasing the proportional gain will increase the speed of the response. Setting the proportional gain too high can cause output oscillation and unstable operation. Too low of a proportional gain will cause slow control reaction.

INTEGRAL GAIN — The integral gain attempts to minimize the offshoot caused by the proportional gain by constantly adjusting the output overtime to meet the desired set point. Setting the integral gain too high will cause the set point to overshoot and can cause unstable operation. Too low of an integral gain will cause slow control reaction.

DERIVATIVE GAIN — The derivative gain forces a more dramatic change in the output based on the system deviation from set point. Setting the derivative gain too high will cause the set point to overshoot and can cause unstable operation. The derivative gain should always be set at 0, or a low value.

SUPPLY FAN VFD PID — From the PID Settings screen, use the ARROW KEYS to navigate to the →SF PID link and press ENTER to access the Supply Fan VFD PID screen.

```
SF PID SETTINGS:              ALARM/ SLT2 FAIL
    SF-DPT:4.990"H20    SF-VFD:  0.0 Hz
                P GAIN:[ 5.00]%
                I GAIN:  1.00 %
                D GAIN:  0.00 %
       DEADBAND(+/-):  0.00 "H20
             INTERVAL:  3.00 SEC
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- SF Proportional Gain (P Gain)
- SF Integral Gain (I Gain)
- SF Derivative Gain (D Gain)
- SF Set Point Deadband (Deadband)
- SF Calculation Interval (Interval)
- SF 0 to 100% Minimum Ramp Time (Ramp Time)

To adjust a supply fan PID setting:

1. Use the ARROW KEYS to scroll to the parameter you want to adjust.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.
5. Repeat Steps 1-4 as necessary.

EXHAUST FAN VFD PID — From the PID Settings screen, use the ARROW KEYS to navigate to the →EF PID link and press ENTER to access the Exhaust Fan VFD PID screen.

```
EF PID SETTINGS:              ALARM/ SLT2 FAIL
    EF-DPT:0.000"H20    EF-VFD:  0.0 Hz
                P GAIN:[ 5.00]%
                I GAIN:  1.00 %
                D GAIN:  0.00 %
       DEADBAND(+/-):  0.00 "H20
             INTERVAL:  3.00 SEC
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- EF Proportional Gain (P Gain)
- EF Integral Gain (I Gain)
- EF Derivative Gain (D Gain)
- EG Set Point Deadband (Deadband)
- EF Calculation Interval (Interval)
- EF 0-100% Minimum Ramp Time (Ramp Time)

To adjust an exhaust fan PID setting:

1. Use the ARROW KEYS to scroll to the parameter you want to adjust.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.
5. Repeat steps 1-4 as necessary.

DIGITAL COMPRESSOR #1 PID — From the PID Settings screen, use the ARROW KEYS to navigate to the →C1 PID

link and press ENTER to access the Digital Compressor #1 PID screen.

```
DCM1 PID SETTINGS:          OCCUPIED/FAN ONLY
        DXLAT1: 46.2°F    DCM1:  0.0%
                P GAIN:[ 5.00]%
                I GAIN:  0.50 %
                D GAIN:  0.00 %
        DEADBAND (+/-):  0.00 °F
              INTERVAL:  3.00 SEC
            RAMP TIME:  1.00 SEC
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- DC1 Proportional Gain (P Gain)
- DC1 Integral Gain (I Gain)
- DC1 Derivative Gain (D Gain)
- DC1 Set Point Deadband (DeadBand)
- DC1 Calculation Interval (Interval)
- DC1 0-100% Minimum Ramp Time (Ramp Time)

To adjust a digital compressor #1 PID setting:

1. Use the ARROW KEYS to scroll to the parameter you want to adjust.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

HGRH PID — From the PID Settings screen, use the ARROW KEYS to navigate to the →HGRH PID link and press ENTER to access the Modulating HGRH PID screen.

```
HGRH PID SETTINGS:           ALARM/ SLT2 FAIL
      LAT: 77.3°F       HGRH MOD:  0.0%
                P GAIN:[10.00]%
                I GAIN:  0.20 %
                D GAIN:  0.00 %
         DEADBAND(+/-):  0.00 °F
               INTERVAL:  5.00 SEC
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- HGRH Proportional Gain (P Gain)
- HGRH Integral Gain (I Gain)
- HGRH Derivative Gain (D Gain)
- HGRH Set Point Deadband (Deadband)
- HGRH Calculation Interval (Interval)
- HGRH 0-100% Minimum Ramp Time (Ramp Time)

To adjust a heating modulation PID setting:

1. Use the ARROW KEYS to scroll to the parameter you want to adjust.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

Modulating Heat PID — From the PID Settings screen, use the ARROW KEYS to navigate to the →HEATING PID link and press ENTER to access the Modulating Heat PID screen.

```
HEAT PID SETTINGS:           ALARM/ SLT2 FAIL
      LAT: 77.3°F       HGRH MOD:  0.0%
                P GAIN:[10.00]%
                I GAIN:  0.20 %
                D GAIN:  0.00 %
         DEADBAND(+/-):  0.00 °F
               INTERVAL:  5.00 SEC
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- Heating Proportional Gain (P Gain)
- Heating Integral Gain (I Gain)
- Heating Derivative Gain (D Gain)
- Heating Set Point Deadband (Deadband)
- Heating Calculation Interval (Interval)
- Heating 0-100% Minimum Ramp Time (Ramp Time)

To adjust a heating modulation PID setting:

1. Use the ARROW KEYS to scroll to the parameter you want to adjust.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

Misc Control Settings — From the Technical Settings screen, use the ARROW KEYS to navigate to the →MISC link and press ENTER to access the Miscellaneous Control Settings screen.

```
MISC. CONTROL:                ALARM/ SLT2 FAIL
       SFVFD MINIMUM SETTING: [30.0] Hz
     SFVFD GAS PURGE SETTING:  80.0  Hz
       EFVFD MINIMUM SETTING:  20.0 Hz
        HGRH MINIMUM SETTING:   0.0 %
        HEAT MINIMUM SETTING:   0.0 %
[→PREV]                                [→HOME]
```

This screen can be utilized to adjust the following parameters:
- Supply Fan (SF) VFD Minimum Setting
- Supply Fan (SF) VFD Gas Purge Setting
- Exhaust Fan (EF) VFD Minimum Setting
- Hot Gas Reheat Minimum Setting
- Heating Minimum Setting
- Digital Compressor #1 Minimum Setting

To adjust a miscellaneous setting:

1. Use the ARROW KEYS to scroll to the desired sensor to offset.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

Time Delays — From the Technical Settings screen, use the ARROW KEYS to navigate to the →TIME DELAYS link and press ENTER to access the Time Delays screen.

```
TIME DELAYS:       OCCUPIED       OAT: 83.8°F
 PARAMETER         FAN ONLY          VALUE
  SF MIN RUN TIME                 [  2] MIN
  SF-APS BY-PASS  TIME              60  SEC
  LP BY-PASS TIME                   90  SEC
  SLT FREEZE DELAY                  15  MIN
  LOW LAT DELAY SETTING             15  MIN
[→PREV]          LAT: 77.3°F        [→HOME]
```

This screen can be utilized adjust the minimum run time, pass time, and time delay for the following:
- Supply Fan (SF) Minimum Run Time
- Supply Fan (SF) Air Pressure Switch (APS) Bypass Time
- Low Pressure (LP) Bypass Time
- Suction Line Temperature (SLT) Freeze Delay
- Low Leaving Air Temperature (LAT) Delay
- Exhaust Fan (EF) Minimum Run Time
- Exhaust Fan (EF) Air Pressure Switch (APS) Bypass Time
- Cooling #2 Time Delay
- Heat Fail Delay

- Archive Time Delay
- Override Time Setting (for clock control of unoccupied mode override)

To adjust a time setting:

1. Use the ARROW KEYS to scroll to the time setting to be modified.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

Calibrate Sensors — From the Technical Settings screen, use the ARROW KEYS to navigate to the →CALIBRATE link and press ENTER to access the Calibrate Sensors screen.

```
CALIBRATION:              OCCUPIED/  FAN ONLY
       SENSOR    OFFSET +/-    FINAL
   OAT:  83.8°F   [  0.00]°F    83.8°F
   LAT:  77.3°F   [  0.00]°F    77.3°F
   ZAT:  83.1°F   [  0.00]°F    83.1°F
  SLT1:  80.3°F   [  0.00]°F    80.3°F
[→PREV]                                [→HOME]
```

This screen can be utilized to view actual sensor value, the offset amount (editable), and the final adjusted sensor value for the following sensors:

- Outdoor Air Temperature - OAT
- Leaving Air Temperature - LAT
- Zone Air Temperature - ZAT
- Suction Line Temperature #1 - SLT1
- Suction Line Temperature #2 - SLT2
- Outdoor Air Relative Humidity - OA-RH
- Zone Relative Humidity - Z-RH
- Supply Fan Differential Pressure Transducer - SF-DPT
- Exhaust Fan Differential Pressure Transducer - EF-DPT

To adjust a sensor offset:

1. Use the ARROW KEYS to scroll to the desired sensor to offset.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the offset value.
4. Press ENTER or the [OK] soft key to accept the offset value or press [CANCEL] to restore the original value.

Hand-Off-Auto — From the Technical Settings screen, use the ARROW KEYS to navigate to the →HOA link and press ENTER to access the Hand-Off-Auto screen.

```
HAND-OFF-AUTO:              ALARM/  SLT2 FAIL
          EQUIPMENT:  OVERRIDE  ON/OFF
          OA DAMPER:    [AUTO]    Off
        SUPPLY FAM:      AUTO     Off
      EXHAUST FAN:       AUTO     Off
    COMPRESSOR #1:       ????     ???
    COMPRESSOR #2:       ????     ???
[→PREV]          [→MAN. OVRD]          [→HOME]
```

This screen can be utilized to manually operate (hand mode) unit equipment for a preset period of time. The following unit components can be put into hand mode (if equipped):

- OA Damper
- Supply Fan
- Exhaust Fan
- Compressor #1
- Compressor #2
- Heating

To enable hand mode:

1. From the Hand-Off-Auto screen, use the ARROW KEYS to scroll down to the desired component to be modified (ex: SUPPLY FAN: AUTO OFF).
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the AUTO value to HAND.
4. Press ENTER or the [OK] soft key to enable hand mode; press [CANCEL] to restore the original value.
5. Use the ARROW KEYS to scroll to the on/off entry.
6. Press ENTER to enable editing of the parameter.
7. Use the [INCR] or [DECR] soft keys to change the value to ON to run the component, or OFF to stop the component.
8. Press ENTER or the [OK] soft key to accept the new value; press [CANCEL] to restore the original value.
9. Use the ARROW KEYS to scroll to the AUTO RESET TIME:15 MIN.
10. Press ENTER to enable editing of the parameter.
11. Use the [INCR] or [DECR] soft keys to change the reset time.
12. Press ENTER or the [OK] soft key to accept the new value or press [CANCEL] to restore the original value.
13. Press the [→MAN. OVRD] soft key to go to the Manual Override screen.

To manually reset hand mode:

1. Use the ARROW KEYS to scroll to the RESET ALL: NO.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the value to YES.
4. Press ENTER or the [OK] soft key to disable override mode for all components; press [CANCEL] to restore the original value.

Manual Override — From the Technical Settings screen, use the ARROW KEYS to navigate to the →MANUAL link and press ENTER to access the Manual Override screen.

```
MANUAL OVERRIDE:              ALARM/  SLT2 FAIL
          EQUIPMENT:   ON/OFF    OVERRIDE
   SUPPLY FAN VFD:    [Off]       0.0 Hz
  EXHAUST FAN VFD:     Off        0.0 Hz
  MODULATING HGRH:     Off        0.0 %
          HEATING:     Off        0.0 %
        RESET ALL?:     NO
[→PREV]                  [→HOA]          [→HOME]
```

This screen can be utilized to manually set the operational parameters of the following unit components (if equipped) for unit start-up, troubleshooting or for test and balancing:

- Supply Fan VFD
- Exhaust Fan VFD
- Modulating HGRH
- Heating
- Digital Compressor #1

To manually set component operating parameters:

1. From the Manual Override screen, use the ARROW KEYS to scroll down to the desired component to be modified (ex: SUPPLY FAN VFD: OFF).
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the value to ON.
4. Press ENTER or the [OK] soft key to enable override mode; press [CANCEL] to cancel override mode.

5. Use the ARROW KEYS to scroll to the value entry (ex. 0.0 Hz).
6. Press ENTER to enable editing of the parameter.
7. Use the [INCR] or [DECR] soft keys to change the value.
8. Press ENTER or the [OK] soft key to accept the new value; press [CANCEL] to restore the original value.

To reset override mode:

1. Use the ARROW KEYS to scroll to the RESET ALL: NO.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the value to YES.
4. Press ENTER or the [OK] soft key to disable override mode for all components; press [CANCEL] to restore the original value.

Hot Gas Reheat Purge — From the Technical Settings screen, use the ARROW KEYS to navigate to the →Purge link and press ENTER to access the HGRH Purge screen.

```
PURGE:                          ALARM/  SLT2 FAIL
  HGRH PURGE CYCLE                    [120] MIN
  HGRH PURGE TIME ON                    2  MIN

[→PREV]                                 [→HOME]
```

This screen allows for the editing of HGRH purge parameters. The HGRH purge is used to flush oil and refrigerant from the reheat coil. The HGRH valve is modulated to 100% open for a specific period of time (HGRH Purge Time On) after the HGRH has on for a specific period of time (HGRH Purge Cycle).

To modify HGRH purge settings:

1. From the HGRH Purge screen, use the ARROW KEYS to scroll down to HGRH PURGE CYCLE.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] and [DECR] keys to scroll through the available values.
4. Press ENTER or the [OK] soft key to accept the testing location, press [CANCEL] to restore the original value.
5. Use the ARROW KEYS to scroll down to HGRH PURGE TIME ON.
6. Press ENTER to enable editing of the parameter.
7. Use the [INCR] and [DECR] keys to scroll through the available values.
8. Press ENTER or the [OK] soft key to accept the testing location, press [CANCEL] to restore the original value.

Archive Program Settings — From the Technical Settings screen, use the ARROW KEYS to navigate to the →ARCHIVE link and press ENTER to access the Archive Settings screen.

```
ARCHIVE:                        ALARM/  SLT2 FAIL
          ARCHIVE STATUS:         VALID
   CURRENT ARCHIVE NUMBER: 001
     CURRENT ARCHIVE DATE: 05/13/2013
          UPDATE ARCHIVE: [ NO]
   TIME BEFORE ARCHIVE ENABLE:   0.0 MIN
    MINIMUM 10 MINUTES BETWEEN ARCHIVING

[→PREV]                                 [→HOME]
```

The archive function can be used to back up the current program, in the event of memory loss (battery failure) or program corruption. The archive will back up the controller configuration, set points, scheduled, and settings. The controller can store two archives in memory. One archive slot is taken by the base program and cannot be overwritten. The second archive contains the factory unit configured archive and can be overwritten by a field initiated archive.

NOTE: The controller will check the memory configuration of the program during power up. If the program is identified as corrupt, the controller restores it from the last archive. In addition, if the battery fails to power the device during a power outage and controller memory is lost, the controller will restore the program from the last archive upon power up.

To archive a program:

1. From the Archive Settings screen, use the ARROW KEYS to scroll down to UPDATE ARCHIVE: NO.
2. Press ENTER to enable editing of the parameter.
3. Use the [INCR] or [DECR] soft keys to change the value to YES.
4. Press ENTER or the [OK] soft key to initiate the archive. Press [CANCEL] to stop the archive.

An archiving event can take up to a minute to complete. The green Run and red Error LEDs (located on the middle left side of the controller) will alternately flash then return to normal operation (Run flashing green). The screen may also display question marks during the process. After the archive event is complete, the Archive Status will display Unsupported if the controller firmware does not support archiving (i.e., firmware version prior to 4.02; see Module Status), Invalid if the archive event was unsuccessful, or Valid if the archive event completed successfully. If the archive status returns Valid, the Current Archive Number will increase by 1 and the Current Archive Date will update to reflect the date on which the archive event occurred. If the archive status returns Invalid, another archive event can be initiated after the Time Before Archive Enable goes to zero.

Restore the archive:

1. Power down the controller using the power switch.
   a. To restore the base program archive: turn the rotary address switches to: 0, 0 (zero, zero).
   b. To restore the factory configured or field archive: turn the rotary address switches to: 0, 1 (zero, one).
2. Place a jumper on the Format jumper pins.
3. Power up the controller, the Run and Error LEDs should alternately flash 2 or 3 times.

After the program is restored from archive, the controller will initiate another archive event indicated by the Run and Error LEDs alternately flashing and then returning to normal operation (Run flashing green). Verify a successful archive restoration by performing a Modstat (press the FN + '.' buttons simultaneously). At this point, power down the controller, remove the jumper from the Format jumper pins, return the rotary address switches to 0, 2 (zero, two), then power up the controller. When there is a power and battery failure and a program has been restored from archive, the controller time and date must be reset for proper schedule operation (see Set Time and Date section). If the controller is connected to a BACnet BAS, the time and date will be set automatically via the communication network.

Change User Password — From the Technical Settings screen, scroll down to the →UserPw link and press ENTER to access the Change User Password screen. This screen will require the Admin password for access.

```
View/Set User
Password: [1111]

[→PREV]
```

This screen can be utilized to change the user password.

To change the user password:

1. Use the ARROW KEYS to scroll to the leftmost digit of the current password.
2. Press ENTER to enable editing of the parameter.
3. Use the NUMBER KEYS to enter a new four (4) digit password.
4. Press ENTER or the [OK] soft key to accept the new password, or the [CANCEL] soft key to restore the original Password.

Module Status — From the Home screen, press the FN and . keys simultaneously to go to the Module Status screen.

```
---------------- Modstat -----------------
  06/04/2013   09:23:05            CM: 2
  Device Instance: 0001602
  Downloaded by: OEM_TOOLS AppLoader 05/2
  2/13 16:14 AF682250
  Application Software Version: PRG:carri
  er_62d_rev_e

[→PREV]
```

The Module Status screen displays technical information about the program, controller, and unit status. This information may be used when troubleshooting a controller.

Test Mode — All 62D and 62R units equipped with Revision E controls is equipped with a test mode feature. The Test Mode allows for the testing of individual components or a complete test of all unit components.

NOTE: Test Mode will not issue a pass/fail notification, only an alarm indicating that the component has failed to operate.

From the Technical Settings screen, use the ARROW KEYS to navigate to the →Test Mode link and press ENTER to access the Test Mode screen.

```
TESTING MODE:                ALARM/ SLT2 FAIL
   ITEMS TO TEST:                ON/OFF
      TESTING LOCATION        [ SELECT]
      SUPPLY FAN                 On
      SUPPLY FAN VFD            Off
      EXHAUST FAN                On
      EXHAUST FAN VFD           Off
[→PREV]     [→TEST STATUS]          [→HOME]
```

The Test Mode screen allows for testing of various unit components. The testing is performed automatically by the controller and can include all available equipment or a manually selected list of equipment. The TOTAL TIME for the test is automatically calculated based on the test parameters and is displayed on the screen.

To perform a test:

1. From the Test Mode screen, use the arrow keys to scroll down to TESTING LOCATION: SELECT.
2. Press ENTER to enable editing of the parameter use the [INCR] and [DECR] soft keys to scroll through the following options:

   SELECT - no testing location selected

   FACTORY - turns on testing of all included equipment with additional testing time

   FIELD - turns on testing of all included equipment with no additional testing time

   CLEAR - clears all selections, allows for individual component testing
3. Press ENTER or the [OK] soft key to accept the testing location, press [CANCEL] to restore the original value.
4. Use the ARROW KEYS to scroll down to the item to be tested. The following items are available for testing:
   a. Supply Fan
   b. Supply Fan VFD (if included)
   c. Exhaust Fan
   d. Exhaust Fan VFD (if included)
   e. Compressor #1
   f. Compressor #1 with DCM (digital compressor module) (if included)
   g. Compressor #2 (if included, 62D only)
   h. Compressor #2 with DCM (if included, 62R only)
   i. Heat Pump #1 with DCM (62R only)
   j. Heat Pump #2 with DCM (if included, 62R only)
   k. Add Factory Comp Time (adds 15 minutes to compressor testing)
   l. Hot Gas Reheat
   m. Modulating HGRH (if included)
   n. Heating
   o. Add Factory Heat Time (adds 5 minutes to heat test)
5. Press ENTER to enable editing of the parameter.
6. Use the [INCR] or [DECR] soft keys to change the value to YES to test the item or NO to exclude the item from testing.
7. Press ENTER or the [OK] soft key to accept changes or press [CANCEL] to restore the original value.
8. Use the ARROW KEYS to scroll down to ENABLE TEST MODE: OFF.
9. Press ENTER to enable editing of the parameter.
10. Use the [INCR] and [DECR] soft keys to change the value to ON.
11. Press ENTER or the [OK] soft key to start the test or press [CANCEL] to cancel the test. Press the [→TEST STATUS] soft key to go to the Test Status screen.

NOTE: If a unit component fails the equipment test, an alarm will be issued. The test will continue unless the component prevents further testing, such as the supply fan.

TEST STATUS — From the Test Mode screen, press the [→TEST STATUS] soft key to go to the Test Status screen.

```
TEST MODE STATUS:              ALARM/ SLT2 FAIL
          TESTING MODE ENABLED:Off
 TOTAL TIME:  5:00          REMAINING:  5:00
   STATUS:UNOCCUPIED    OA DAMPER:CLOSED
   SF STATUS:Off    SFVFD STATUS:  0.0 Hz
   EF STATUS:Off    EFVFD STATUS:  0.0 Hz
[→PREV]                                [→HOME]
```

This screen displays test status, including: test status, testing mode enabled, total test time, test time remaining, and status of individual components. Only those items included in the test will be displayed on this screen.

TEST MODE SEQUENCE OF OPERATIONS — Testing Mode overrides all inputs and should only be used for testing whether or not signals sent from the ALC controller will turn on, turn off, or control the various components of the unit. Testing Mode is activated from the BACview device. Items for testing can be selected from the Testing Mode menu. Testing Mode can run for up to 23.75 minutes (automatically adjusted, depending on the unit configuration).

- Upon Testing Mode activation, the unit is taken out of Occupied Mode, the Supply Fan and the Exhaust Fan (if existing) turn off, and the Outdoor Air Damper closes. Following a 30-second delay, a trigger signal is issued that switches the unit back into Occupied Mode. The

trigger signal also activates time delays for the various selected steps in the Testing Mode.

- Outdoor Air Damper: Thirty seconds after the trigger signal, the OA damper will begin to open. As the OA damper opens, OADA auxiliary switches close. The OD will remain open until the end of the testing sequence.
- Supply Fan: Approximately $2^1/_2$ minutes after the trigger signal, the SF will turn on. If it is equipped with a VFD it will be cycled from 30Hz (50%) up to 48 Hz (80%), back down to 30 Hz, and finally up to 48 Hz (80%). This process will take about 3 minutes. The SF will remain at 48 Hz (80%) until the end of the testing sequence.
- Exhaust Fan: At the same time the SF starts, the EF, if existing, will turn on. If it is equipped with a VFD it will be cycled from 30 Hz (50%) up to 48 Hz (80%) then back down to 30 Hz. This process will take about 2 minutes. The EF will remain at 30 Hz (50%) until the end of the testing sequence.
- Cooling: Approximately $5^1/_2$ minutes after the trigger signal, Y1 will turn on and compressor #1 turns on. If the compressor is digital, after 30 seconds at 100% loading, the DCM will cycle the loading of the compressor from 100%, down to 10%, and finally up to 100%. This process will take about $2^1/_2$ minutes. Approximately $8^1/_2$ minutes (automatically adjusted) after the trigger signal, Y2 (compressor #2, if existing) will turn on. The compressor(s) will remain at 100% until the end of the Cooling Mode phase of the testing sequence.
- Hot Gas Reheat: Approximately 9 minutes (automatically adjusted) after the trigger signal, the HGRH (RH), if existing, is enabled. If it has modulating control, it will modulate from 0% up to 100%, back down to 0%, and finally up to 100%. This process will take about 3 minutes. The HGRH will remain at 100% until the end of the Cooling Mode phase of the testing sequence.
- Heating Mode: Approximately 13 minutes (automatically adjusted) after the trigger signal, heating, if existing, is enabled. Heating will be modulated from 0% (first Stage) up to 100% (fourth Stage), back down to 0%, and finally up to 100%. This process will take about 6 minutes.
- When the sequence timer reaches $19^1/_2$ minutes (automatically adjusted) elapsed time, all equipment will be turned off, except the OA damper, the SF, and the EF, if existing, and the unit will switch into Unoccupied Mode. The OA damper, the SF, and the EF, if existing, will remain open or continue to run for an additional 2 minutes and then turn off or close. Upon final termination of all equipment (max. 23.75 minutes, automatically adjusted) the testing sequence will be terminated and Testing Mode will be automatically turned off in the BACview.

OPERATION

General — See Fig. 9-18 for sequence of operation flow charts. Several options exist for scheduling unit operation, such as the scheduling program built in to the controller (Resident Program Scheduler) or a Building Automation System. The occupancy control source options can be selected from the BACview display pad on the Control Settings screen (requires User or Admin password). The Resident Program has an adjustable scheduler that uses the internal time clock to allow for separate Sequences for Occupied and unoccupied periods. This scheduling function can be accessed from the BACview display pad on the Schedules screen (requires User password).

NOTE: All temperature related events have an additional 30-second (fixed) delay on make to allow temperatures to settle.

Occupied Mode

- When the program control source calls for the start of the Occupied Mode, and the ALC controller has verified that there are no fault or shutdown conditions, a 60-second (fixed) delay timer begins.
- After the delay time expires, the unit goes into Occupied Mode and the following happens.

FAN ONLY MODE:

Outdoor Air Damper (OD):

- Controlled by OA damper actuator (OADA).
- Approximately 5 seconds (fixed) after the unit goes into Occupied Mode, the ALC controller sends 24 vac to terminal OD on the control terminal strip, which energizes the OADA, causing the OA (outdoor air) damper to open.
- When the OA damper reaches 10 degrees open (fixed), the OADA auxiliary switch no. 2 closes.
- When the OA damper reaches 60 degrees open (adjustable), the OADA auxiliary switch no. 1 closes.
- The OA damper shall remain open while the unit is in Occupied Mode.
- When the system reaches the end of the Occupied Mode, it will remain open for 2 minutes (adjustable) after which time the ALC controller stops sending 24 vac to terminal OD which causes the OA damper to close.

Supply Fan (SF):

- Controlled by SF contactor or VFD.
- Approximately 2 minutes (fixed) after the ALC controller sends 24 vac to terminal OD on the control terminal strip, the ALC controller sends 24 vac to terminal G on the control terminal strip and then through the OADA auxiliary switch no. 1, energizing the SF contactor coil or relay.
- To permit SF start-up, the ALC controller bypasses the SF-APS verification status for 60 seconds (adjustable) after it sends 24 vac to terminal G on the control terminal strip.
- If verification of airflow from the SF-APS is not received by the ALC controller following the SF-APS bypass time, the ALC controller will issue an alarm (Supply Fan Alarm), including an audible alarm from BACview display pad, and the unit will cease operation. The alarm can be reset in the BACview display pad or by cycling the power of the ALC controller.
- Supply Fan Variable Frequency Drive (SF-VFD, Optional):
  - The ALC controller requires a 0 to 10 vdc signal from a SF-DPT that measures supply duct static pressure differential. The SF-DPT is factory supplied, field installed, and connected to the ALC controller during installation.
  - The ALC controller sends a 0 to 10 vdc signal to the SF-VFD which modulates the speed of the SF motor to maintain the SF-DPT set point (adjustable). Minimum speed for the SF-VFD is 30 Hz (adjustable; at 5 vdc); maximum speed of 60 Hz (fixed; at 10 vdc).
- The SF shall operate continuously while the unit is in the Occupied Mode.
- When the system reaches the end of the Occupied Mode period, the SF will continue to run for 2 minutes (adjustable) before turning off.

Exhaust Fan (EF, Optional):

- Controlled by EF contactor or VFD.
- Approximately 2 minutes (fixed) after the ALC controller sends 24 vac to terminal OD on the control terminal strip, the ALC controller sends 24 vac to terminal G on the control terminal strip and then through the OADA auxiliary switch no. 1, energizing the EF contactor coil or relay.

- To permit EF start-up, the ALC controller bypasses the EF-APS verification status for 60 seconds (adjustable) after it sends 24 vac to terminal G on the control terminal strip.
- If verification of air flow from the EF-APS is not received by the ALC controller following the EF-APS bypass time, the ALC controller will issue an alarm (Exhaust Fan Alarm), including an audible alarm from BACview display pad. The alarm can be reset in the BACview display pad.
- Exhaust Fan Variable Frequency Drive (EF-VFD):
  - The ALC controller requires a 0 to 10 vdc signal from an EF-DPT that measures space static pressure differential. The EF-DPT is factory supplied, field installed, and connected to the ALC controller during installation.
  - The ALC controller sends a 0 to 10 vdc signal to the EF-VFD which modulates the speed of the EF motor to maintain the EF-DPT set point (adjustable). Minimum speed for the EF-VFD is 20 Hz (adjustable; at 3.33 vdc); maximum speed of 60 Hz (fixed; at 10 vdc).
  - The EF shall operate continuously while the unit is in the Occupied Mode. When the system reaches the end of the Occupied Mode period, the EF will continue to run for 2 minutes (adjustable) before turning off.

Energy Conservation Wheel (ECW):

- Controlled by WM contactor or VFD.
- The ALC controller sends 24 vac to terminal WM (connected to terminal OD) on the control terminal strip, through the OADA auxiliary switch no. 2, and energizes the JCI C450CCN-2C control module. The control module responds to the OAT and RAT sensors. At this point, the ECW becomes an independently controlled piece of equipment.
- ECW without Defrost:
  - When the OAT is more than 3° F (adjustable) above the RAT (return air temperature), LNO1 closes sending 24 vac to energize the WMC (wheel master contactor) contactor coil, which turns on the ECW. Otherwise LNO1 is open and the ECW is off.
  - When the OAT is more than 3° F (adjustable) below the RAT, LNO2 closes sending 24 vac to energize the WMC contactor coil, which turns on the ECW. Otherwise LNO2 is open and the ECW is off.
- ECW with On/Off Defrost:
  - The JCI C450SBN-1C relay output expansion module is connected to the control module and contains relay LNO3. If the OAT is greater than 15 F (adjustable), LNO3 is closed.
  - When the OAT is more than 3° F (adjustable) above the RAT, LNO1 closes sending 24 vac to energize the WMC contactor coil, which turns on the ECW. Otherwise LNO1 is open and the ECW is off.
  - When the OAT is more than 3° F (adjustable) below the RAT, LNO2 closes sending 24 vac to energize the WMC contactor coil, which turns on the ECW. Otherwise LNO2 is open and the ECW is off.
  - When the OAT drops to 15 F (adjustable) or less, LNO3 opens, the control module stops sending 24 vac to the WMC contactor coil, and the ECW turns off.
  - When the OAT rises above 15 F, LNO3 closes, the control module sends 24 vac to the WMC contactor coil, and the ECW turns on.
- ECW with VFD Controlled Defrost (WM-VFD):
  - The JCI C450SPN-1C analog output expansion module is connected to the control module and contains analog output AO3. If the OAT is greater than 15 F (adjustable), AO3 outputs 10 vdc.
  - When the OAT is more than 3° F (adjustable) above the RAT, LNO1 closes and enables the WM-VFD which will run at full speed (60 Hz at 10 vdc). Otherwise LNO1 is open and the WM-VFD is off.
  - When the OAT is more than 3° F (adjustable) below the RAT, LNO2 closes and enables the WM-VFD which will run at full speed (60 Hz at 10 vdc). Otherwise LNO2 is open and the WM-VFD is off.
  - When the OAT drops to 15 F (adjustable) or less, the 0 to 10 vdc signal from AO3 (in the JCI C450SPN-2 module) decreases, which modulates the speed of the wheel down to allow for defrosting (60 Hz at 10 vdc, 45 Hz at 7.5 vdc, 30 Hz at 5 vdc, etc.).
  - When the OAT drops to 0° F or less, the 0 to 10 vdc analog signal goes to 0 vdc, the WM-VFD turns off, and the ECW will stop.
  - When the OAT rises above 0° F, the 0 to 10 vdc signal increases, the WM-VFD turns on, and the ECW speeds up.
  - When the OAT rises above 15 F, the 0 to 10 vdc signal increases to 10 vdc and the WM-VFD runs at full speed (60 Hz).

COOLING MODE:

- When the OAT (ECAT, if wheel exists) is 1° F (adjustable) or more above the Cooling LAT set point (70 F,adjustable) and after the 5-minute (fixed) minimum time-off delay, the ALC controller sends 24 vac to terminal Y1 on the control terminal strip. If there are no open safety switches, the CC1A contactor coil is energized, and the CM1A turns on.
- Condenser Fan Motor (62D)
  - At the same time, CC1A-A1 closes sending 24 vac to the OF1C contactor coil and the OFM1 turns on. The outdoor fan is controlled by a LA pressure switch (on-off), a P266 FSC, or VFD (OF-VFD) using a pressure transducer installed on the discharge line going to the condenser coil and connected to the OF-VFD. As pressure increases or decreases the OFM1 speed increases or decreases respectively.
- Reversing Valve (62R)
  - At the same time the reversing valve is energized (reversing valve is ON in cooling mode),
- Water Regulating Valve (62R)
  - At the same time the ALC controller sends 24-v power to terminal "O" of the terminal strip control. This will energize the water interlock relay (WIR). When the WIR is energized, the JCI C450 controller for the water regulating valve will be enabled. The JCI C450 controller will send an analog signal to the water regulating valve actuator based on the signal coming from a pressure transducer. The water regulating valve will modulate open and closed to control the refrigerant head pressure. As the head pressure goes higher the water regulating valve opens up to 100% as necessary to keep the system from cutting off on head pressure. As pressure increases or decreases the signal from the JCI 450 increases or decreases, respectively.
- Dual Circuit Units (Sizes 12-38):
  - When the OAT is 2° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), then after the 5-minute (fixed) minimum time-off delay, the ALC controller sends 24 vac to terminal Y2 on the control terminal strip.
  - If there are no open safety switches, CC2A is energized.
  - When the OAT is 0° F (adjustable) or more below the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal Y2 on the control terminal strip, CC2A de-energizes which

turns off CM2A, opens CC2A-A1, de-energizes OF2C, and turns off OFM2.
  - Compressor enabling logic includes a 4-minute (fixed) minimum run-time as well as the 5-minute (fixed) minimum time-off delay.
- Digital Compressor (Optional):
  - The digital compressor (standard on 62R, optional on 62D units) is controlled by a DCM (digital compressor module). The DCM will modulate capacity by rapidly loading and unloading the digital compressor in 15-second intervals.
  - Units with HGRH: The DCM control will be based upon the SLT sensor, attached to the suction line near the suction header of the DX coil, and SLT cooling set point (45 F, adjustable). The ALC controller sends a 1 to 5 vdc signal to the DCM which will modulate capacity to maintain the SLT cooling set point (45 F, adjustable).
  - Units without HGRH: The DCM control will be based upon the LAT sensor and Cooling LAT set point (70 F, adjustable). The ALC controller sends a 1 to 5 vdc signal to the DCM which will modulate capacity to maintain the Cooling LAT set point (70 F, adjustable).
  - If the SLT drops below the SLT Freeze 2 set point (32 F, adjustable) for 15 minutes (adjustable), the DCM will fix the compressor at 10% (1.4 vdc) loading to prevent the DX coil from freezing.
- Cycling Hot Gas Reheat (CHGRH, Optional):
  - When the LAT is 1° F (adjustable) or more below the Cooling LAT set point (70 F, adjustable), the ALC controller sends 24 vac to terminal RH on the control terminal strip which energizes the RHR. The N.O. switch of the RHR is closed, which energizes the RHS, and valve opens.
  - When the LAT is 2° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal RH on the control terminal strip, RHR de-energizes which de-energizes the RHS and the valve closes.
  - For systems with two compressors, this sequence is the same.
- Modulating Hot Gas Reheat (MHGRH, Option):
  - When the LAT is 1° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), the ALC controller sends 24 vac to terminal RH on the control terminal strip and energizes the RHR. The N.C. switch of the RHR is opened, which enables the MRC (modulating reheat control board).
  - The ALC controller sends a 0 to 10 vdc signal to the MRC. The MRC then sends a stepping signal to the MRV to modulate open or closed to maintain the Cooling LAT set point (70 F, adjustable).
  - For every step the MRV is opened, the MDV is closed by the same amount.
  - When the LAT is 2° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal RH on the control terminal strip, RHR de-energizes, the N.C. switch closes, and the MRV is driven closed and the MDV is driven open.
  - For systems with two compressors, this sequence is the same.
- If the SLT drops below the SLT Freeze 3 set point (28 F, adjustable) for 15 minutes (adjustable), the ALC controller will issue an alarm (SLT no. 1 Alarm), cease sending 24 vac to terminal Y1 on the control terminal strip, and compressor no. 1 will be stopped.
- When the SLT warms back to 50 F or more, and after the 5-minute minimum time-off delay, the ALC controller will send power to terminal Y1 or T2. If there are no open safety switches, the compressor contactor coil will be energized and the compressor will turn on.
- For dual circuit units, if there is a current call for first stage cooling and compressor no. 1 is shut down due to an alarm (HP1, LP1, or SLT1), compressor no. 2 will be turned on to take its place until it returns.
- When the OAT (ECAT, if wheel exists) is 1° F (adjustable) or more below the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal Y1 on the control terminal strip, CC1A de-energizes which turns off CM1A, opens CC1A-A1, de-energizes OF1C, and turns off OFM1.
- The unit now returns to Fan Only Mode.

DEHUMIDIFICATION MODE (FIELD ENABLED):

- Available only if HGRH (Cycling or Modulating) is included (default is "ON").
- When OAT (ECAT, if wheel exists) is more than 60 F (adjustable), the Z-RH is 1% (adjustable) or more above the Z-RH set point (55% RH, adjustable), and there is no call for heating, Dehumidification Mode no. 1 is enabled.
- After the 5-minute (fixed) minimum time-off delay, the ALC controller sends 24 vac to terminal Y1 on the control terminal strip. If there are no open safety switches, the CC1A contactor coil is energized, CM1A turns on.
- Condenser Fan Motor (62D)
  - At the same time, CC1A-A1 closes, sending 24 vac to the OF1C contactor coil and the OFM1 turns on. The outdoor fan is controlled by a LA pressure switch (on-off), a P266 FSC, or VFD (OF-VFD) using a pressure transducer installed on the discharge line going to the condenser coil and connected to the OF-VFD. As pressure increases or decreases the OFM1 speed increases or decreases, respectively.
- Reversing Valve (62R)
  - At the same time the reversing valve is energized (reversing valve is ON in cooling mode).
- Water Regulating Valve (62R)
  - At the same time the ALC controller sends 24-v power to terminal "O" of the terminal strip control. This will energize the water interlock relay (WIR). When the WIR is energized, the JCI C450 controller for the water regulating valve will be enabled. The JCI C450 controller will send an analog signal to the water regulating valve actuator based on the signal coming from a pressure transducer. The water regulating valve will modulate open and closed to control the refrigerant head pressure. As the head pressure goes higher the water regulating valve opens up to 100% as necessary to keep the system from cutting off on head pressure. As pressure increases or decreases the signal from the JCI 450 increases or decreases, respectively.
- Dual Circuit Units (Sizes 12-38):
  - If the Z-RH is 2% (adjustable) or more above the Z-RH set point (55% RH, adjustable), Dehumidification Mode #2 is enabled.
  - After the 5-minute (fixed) minimum time-off delay, the ALC controller sends 24 vac to terminal Y2 on the control terminal strip. If there are no open safety switches, CC2A is energized. Both compressors will respond in sequence and run at full cooling.
- Digital Compressor:
  - The digital compressor runs at 100% capacity when there is a call for dehumidification.
  - During dehumidification mode, if the SLT drops below the SLT Freeze 1 set point (38 F, adjustable), the DCM will begin modulating the loading of the digital compressor from 100% (for SLT of 38 F, adjustable) down to 10% (for SLT of 32 F, adjustable). Operation at 32 F (adjustable) or less will be the same as during normal cooling mode operation.

- Cycling Hot Gas Reheat (CHGRH, Optional):
  - When the LAT is 1° F (adjustable) or more below the Cooling LAT set point (70 F, adjustable), the ALC controller sends 24 vac to terminal RH on the control terminal strip which energizes the RHR. The N.O. switch of the RHR is closed, which energizes the RHS, and valve opens.
  - When the LAT is 2° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal RH on the control terminal strip, RHR de-energizes which de-energizes the RHS and the valve closes.
  - For systems with two compressors this sequence is the same.
- Modulating Hot Gas Reheat (MHGRH, Option):
  - When the LAT is 1° F (adjustable) or more below the Cooling LAT set point (70 F, adjustable), the ALC controller sends 24 vac to terminal RH on the control terminal strip and energizes the RHR. The N.C. switch of the RHR is opened, which enables the MRC.
  - The ALC controller sends a 0 to 10 vdc signal to the MRC. The MRC then sends a stepping signal to the MRV to modulate open or closed to maintain the Cooling LAT set point (70 F, adjustable).
  - For every step the MRV is opened, the MDV is closed by the same amount.
  - When the LAT is 2° F (adjustable) or more above the Cooling LAT set point (70 F, adjustable), the ALC controller stops sending 24 vac to terminal RH on the control terminal strip, RHR de-energizes, the N.C. switch closes, and the MRV is driven closed and the MDV is driven open.
  - For systems with two compressors, this sequence is the same.
- If the ZAT is 2° F (adjustable) or more above the ZAT set point (72 F, adjustable), the unit goes into Room Temperature Reheat Override (if enabled, see below), and Dehumidification Mode is disabled.
- When the Z-RH is 2% (adjustable) or more below the Z-RH set point (55% RH, adjustable), the Dehumidification Mode is disabled. The unit then returns to the normal Cooling Mode with LAT control.

ROOM TEMPERATURE REHEAT OVERRIDE (FIELD ENABLED):

- Room Temperature Reheat Override mode is selectable using the BACview display pad or BAS, and operates in cooling mode and dehumidification mode when HGRH is included (default is "OFF").
- When HGRH is on and the ZAT is 2° F (adjustable) or more above the ZAT cooling set point (72 F, adjustable), the increasing ZAT will decrease the Cooling LAT set point (72 F, adjustable) by a ratio (to a maximum) and decrease HGRH modulation (or turn off HGRH, if On/Off control) in order to lower the ZAT.
- When the ZAT equals the ZAT cooling set point (72 F, adjustable) or less, the unit will go back to normal cooling mode with LAT control.
- When the ZAT is 2° F (adjustable) or more below the ZAT cooling set point (72 F, adjustable), the decreasing ZAT will increase the Cooling LAT set point (72 F, adjustable) by a ratio (to a maximum), turn on HGRH (if off), and increase HGRH modulation (if included) in order to raise the ZAT. When the ZAT equals the ZAT cooling set point (72 F, adjustable) or more, the unit will go back to normal cooling mode with LAT control.
- Example: A ZAT:LAT ratio of 1:3 means for every 1° F of ZAT increase the LAT set point will decrease by 3° F; maximum 15° F (ZAT = 74 F, LAT = 69 F; ZAT = 75 F, LAT = 66 F; ZAT = 76 F, LAT = 63 F; etc.).

HEATING MODE:

- When the OAT (ECAT, if wheel exists) is 1° F (adjustable) or more below the OAT (ECAT, if wheel exists) Heating Enable set point (58 F, adjustable), the ALC controller sends 24 vac to terminal W1 on the control terminal strip and enables heating.
- Heat Pump (62R):
  - Reversing Valve is OFF in Heating Mode.
  - At the same time the reversing valve is de-energized, the ALC controller stops the 24-v to terminal "O" of the terminal strip control (TB1). This will disable the JCI C450 controller for the water regulating valve. The water regulating valve actuator is a spring return to open actuator. On heating mode the water valve is open 100%.
  - After the 5-minute (fixed) minimum time-off delay, the ALC controller sends 24 vac to terminal Y1 on the control terminal strip.
  - If there are no open safety switches, the CC1A contactor coil is energized and the CM1A turns on.
  - The DCM control will be based upon the LAT sensor and Heating LAT set point (72 F, adjustable). The ALC controller sends a 1 to 5 vdc signal to the DCM which will modulate capacity to maintain the Heating LAT set point.
- Dual Circuit Units (Sizes 12-38):
  - After a 10-second (fixed) time delay, the ALC controller sends 24 vac to terminal Y2 on the control terminal strip. If there are no open safety switches, CC2A is energized. Both compressors will respond in sequence to maintain the Heating LAT set point.
  - When the LAT is 1° F (adjustable) or more above the LAT heating set point, the ALC controller stops sending 24 vac to terminal Y2 on the control terminal strip, CC2A de-energizes which turns off CM2A.
- Auxiliary Heat (62D,R):
  - The ALC controller also sends a 0 to 10 vdc signal to terminal AO6 on the control terminal strip which controls the heating to maintain Heating LAT set point (72 F, adjustable).
  - Two-Stage Heat (Gas or Electric):
    - ° The 24 vac sent to terminal W1 on the control terminal strip turns on first-stage heating.
    - ° As the LAT goes further below the Heating LAT set point (72 F, adjustable), the 0 to 10 vdc signal value will increase to 3 vdc which energizes the HAR and turns on terminal W2 (second-stage heating).
    - ° As the LAT rises, the signal value decreases. If the signal decreases below 3 vdc, terminal W2 will turn off.
    - ° If the LAT is 2° F (adjustable) or more above the Heating LAT set point (72 F, adjustable), the ALC controller stops sending 24 vac to terminal W1 on the control terminal strip and heating is turned off.
  - Four-Stage Heat (Gas or Electric)
    - ° The 24 vac sent to terminal W1 on the control terminal strip enables the HARM on the control panel. The HARM has multiple individual relays that activate the different stages of heating and are energized based on the 0 to 10 vdc signal.
    - ° As the LAT goes further below the Heating LAT set point (72 F, adjustable), the 0 to 10 vdc signal value will increase. First-stage relay will energize at 2.5 vdc, second-stage energizes at 5 vdc, third-stage energizes at 7.5 vdc, and fourth-stage energizes at 9.5 vdc. As the 0 to 10 vdc signal value decreases, the different stages will turn off.

- Modulating Electric Heat (SCR):
  - ° On demand for heating, the ALC controller sends a 0 to 10 vdc signal to terminal AO6 on the control terminal strip which is connected to the electric heating SCR.
  - ° The SCR will modulate to maintain the Heating LAT set point (72 F, adjustable).
- Modulating Gas Heat (5:1 or 10:1 Turndown):
  - ° On demand for heating, the ALC controller sends a 0 to 10 vdc signal to terminal AO6 on the control terminal strip which is connected to the modulating heater controller (SC30). The gas furnace controller sends a 0 to 10 vdc signal to the modulating gas valve. The modulating gas valve will control the gas flow to maintain the Heating LAT set point (72 F, adjustable).
- Modulating Hot Water or Steam (SCR):
  - ° On demand for heating, the ALC controller sends a 0 to 10 vdc signal to terminal AO6 on the control terminal strip which is connected to the control valve (field provided and installed).
  - ° The ALC controller will modulate to maintain the Heating LAT set point (72 F, adjustable).

- When the OAT (ECAT, if wheel exists) is 1° F (adjustable) or more above the OAT (ECAT, if wheel exists) heating set point (58 F, adjustable), the heating is disabled and the unit returns to Fan Only Mode.

ROOM TEMPERATURE HEATING OVERRIDE (FIELD ENABLED):

- Room Temperature Heating Override mode is selectable using the BACview display pad or BAS, and operates in heating mode when included (default is "OFF").
- When the ZAT is 2° F (adjustable) or more below the ZAT heating set point (72 F, adjustable), the Heating LAT set point (72 F, adjustable) will increase by a ratio (to a maximum) and increase heat modulation in order to raise the ZAT. When the ZAT is equal to or more than the ZAT heating set point (72 F, adjustable), the unit will go back to normal heating operation.
- When the ZAT is 2° F (adjustable) or more above the ZAT heating set point (72 F, adjustable), the Heating LAT set point (72 F, adjustable) will decrease by a ratio (to a maximum) and decrease heat modulation in order to lower the ZAT. When the ZAT is equal to or less than the ZAT heating set point (72 F, adjustable), the unit will go back to normal heating operation.
- Example: A ZAT:LAT ratio of 1:3 means for every 1° F of ZAT decrease the LAT set point will increase by 3° F; maximum +15° F (ZAT = 70 F, LAT = 75 F; ZAT = 69 F, LAT = 78 F; ZAT = 68 F, LAT = 81 F).

UNOCCUPIED MODE:

- When the system has reached the end of its Occupied Mode, cooling or heating sources are disabled.
- The SF and EF (if existing) will continue to run for 2 minutes (adjustable, if in Cooling Mode - subject to minimum run-time) before turning off.
- After this, the ECW (if existing) will turn off and the OA damper will close.
- Unit is now off.

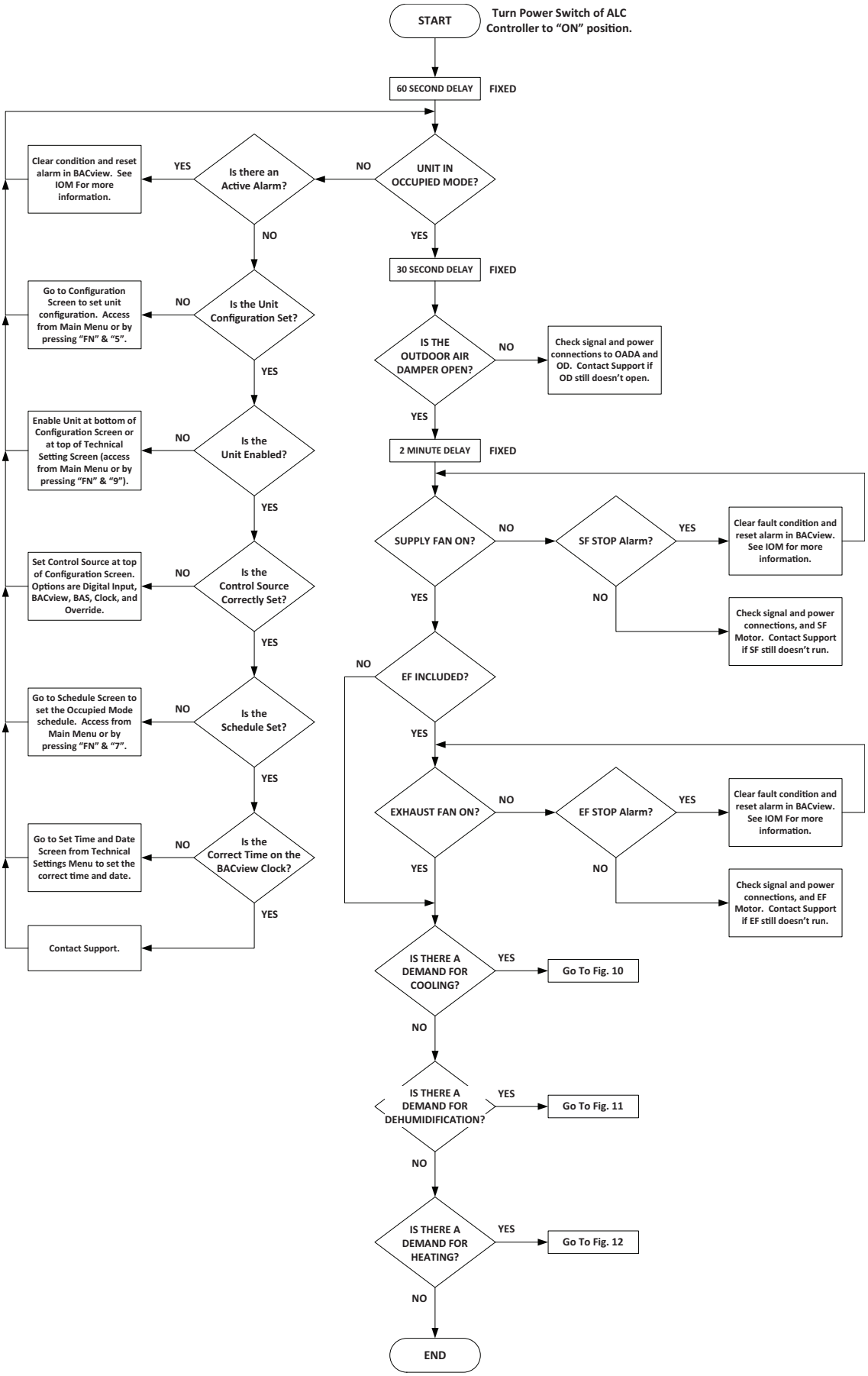


Fig. 9 — 62D Sequence of Operations Flow Chart

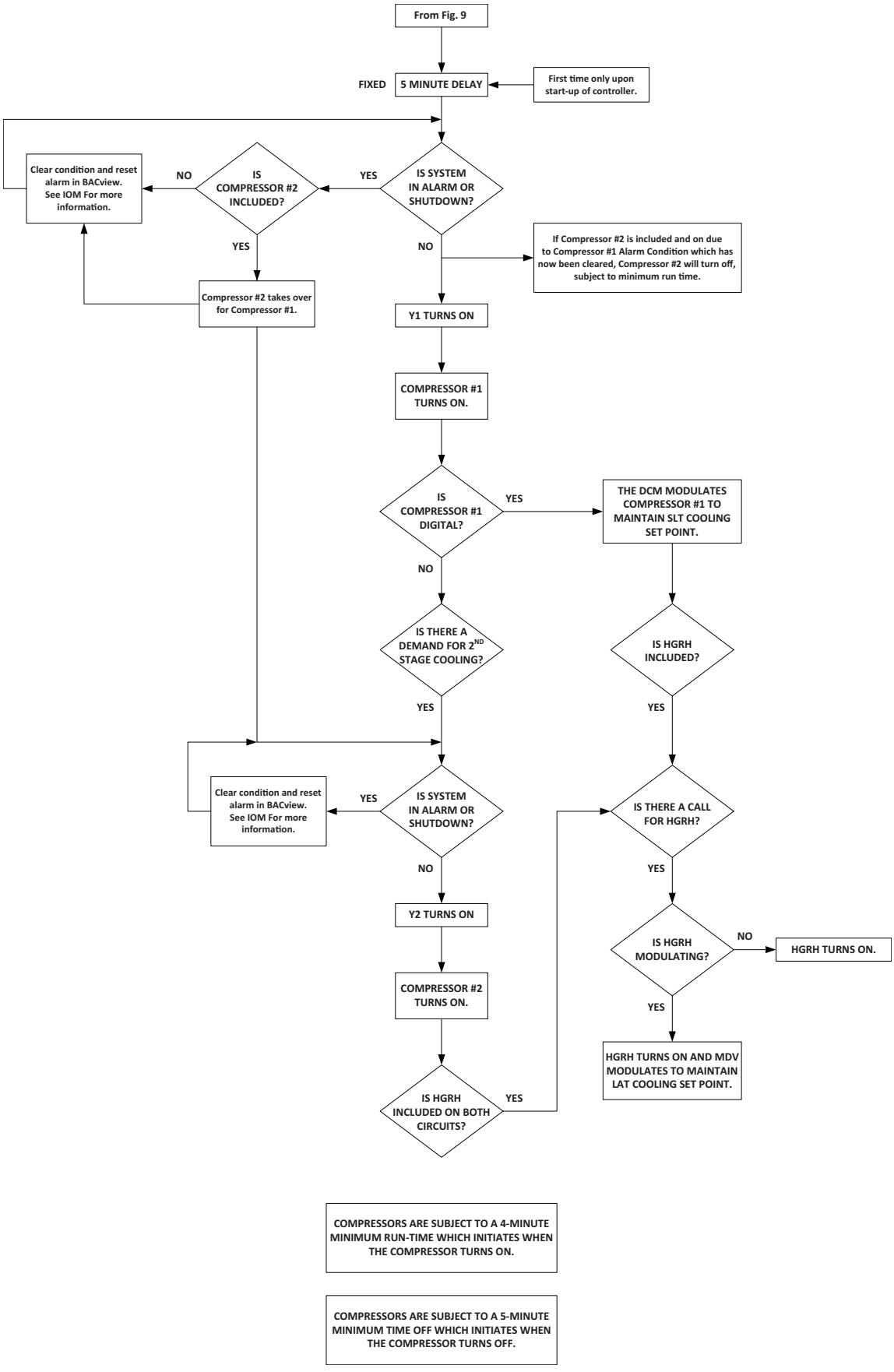


Fig. 10 — 62D Sequence of Operations Flow Chart, Cooling Mode

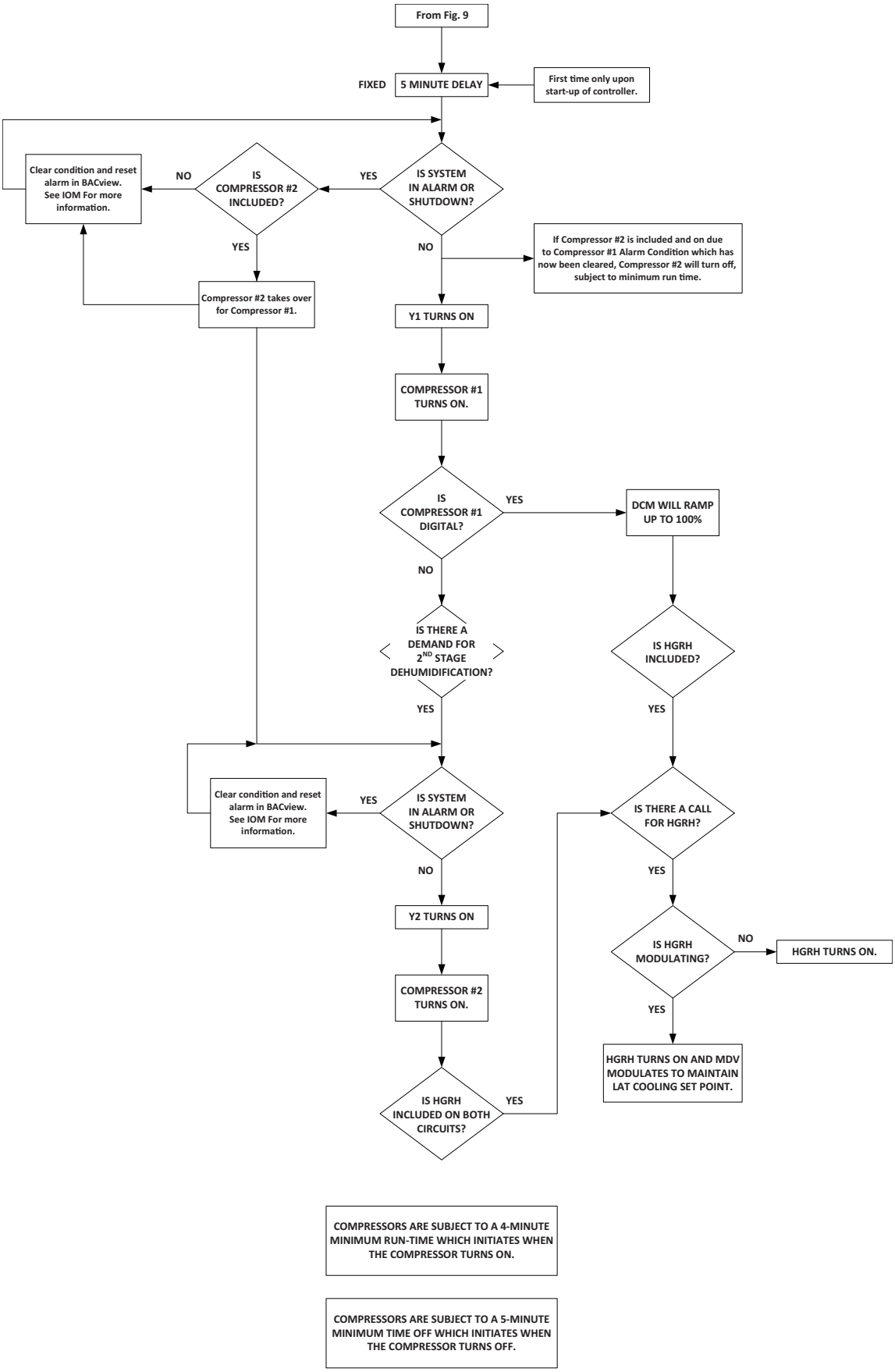


Fig. 11 — 62D Sequence of Operations Flow Chart, Dehumidification Mode

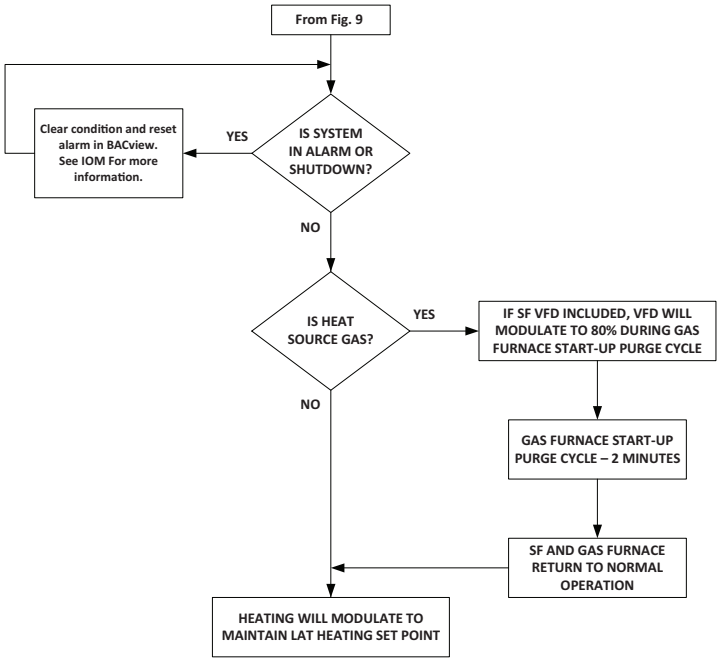


Fig. 12 — 62D Sequence of Operations Flow Chart, Heating Mode

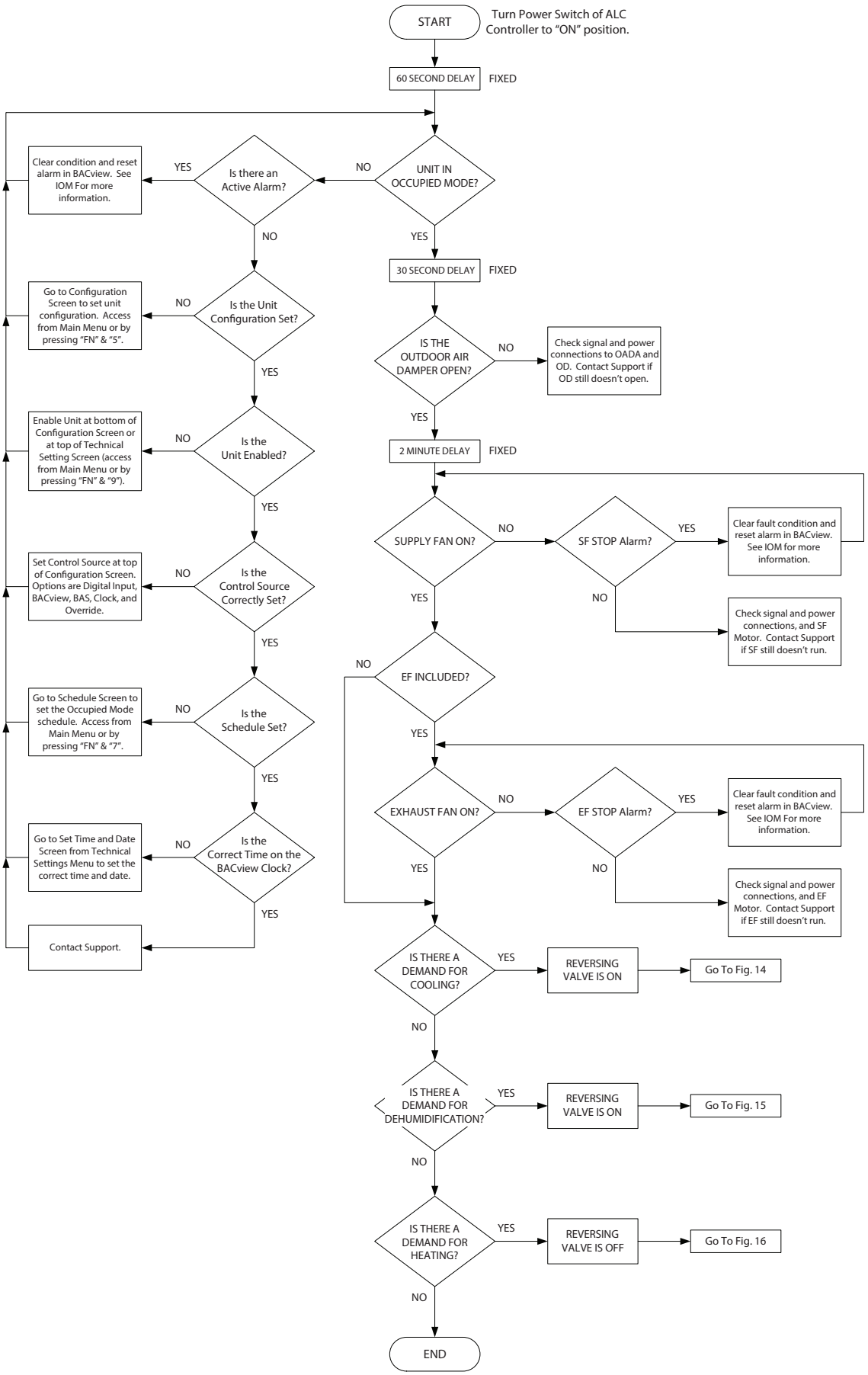


Fig. 13 — 62R Sequence of Operations Flow Chart

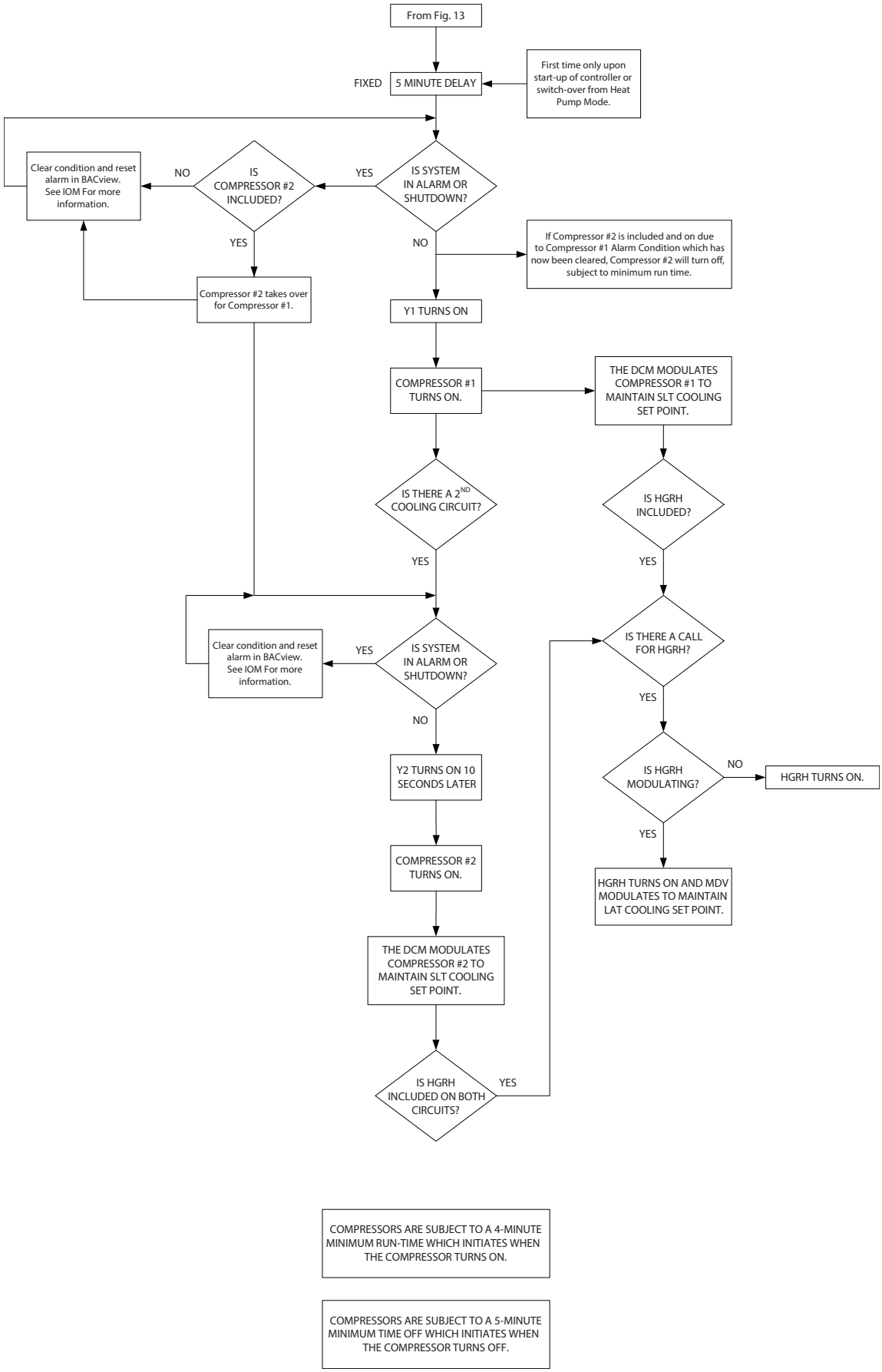


Fig. 14 — 62R Sequence of Operations Flow Chart, Cooling Mode

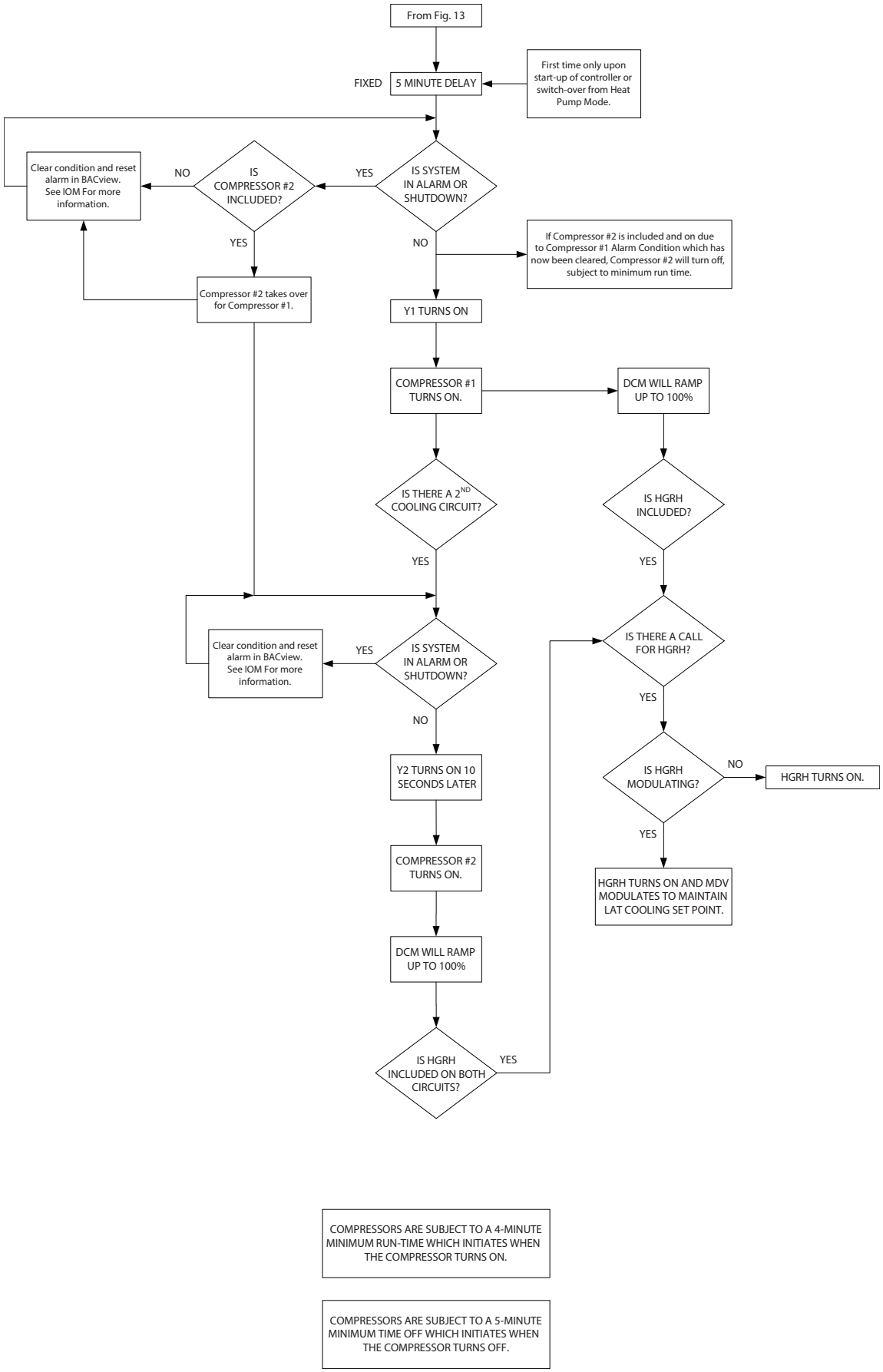


Fig. 15 — 62R Sequence of Operations Flow Chart, Dehumidification Mode

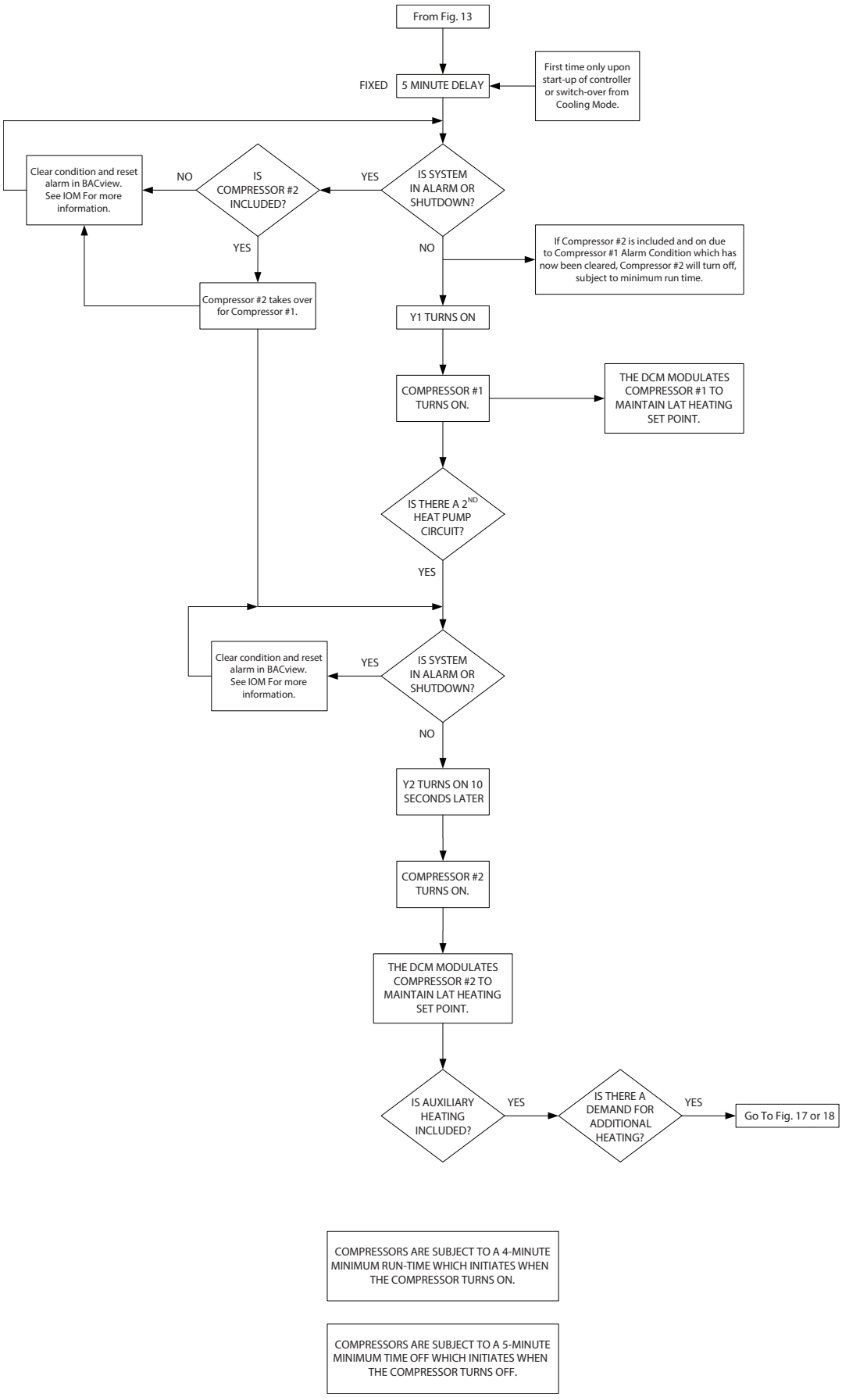


Fig. 16 — 62R Sequence of Operations Flow Chart, Heat Pump Mode

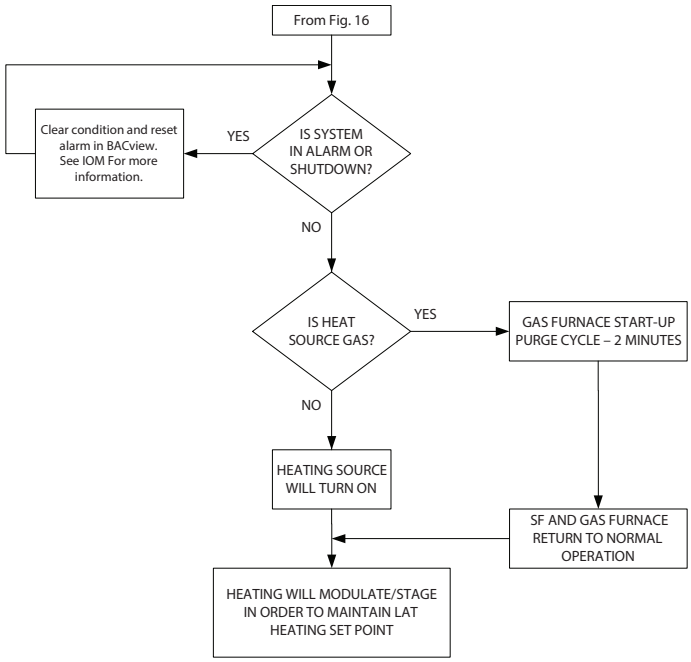


Fig. 17 — 62R Sequence of Operations Flow Chart, Auxiliary Heat Mode

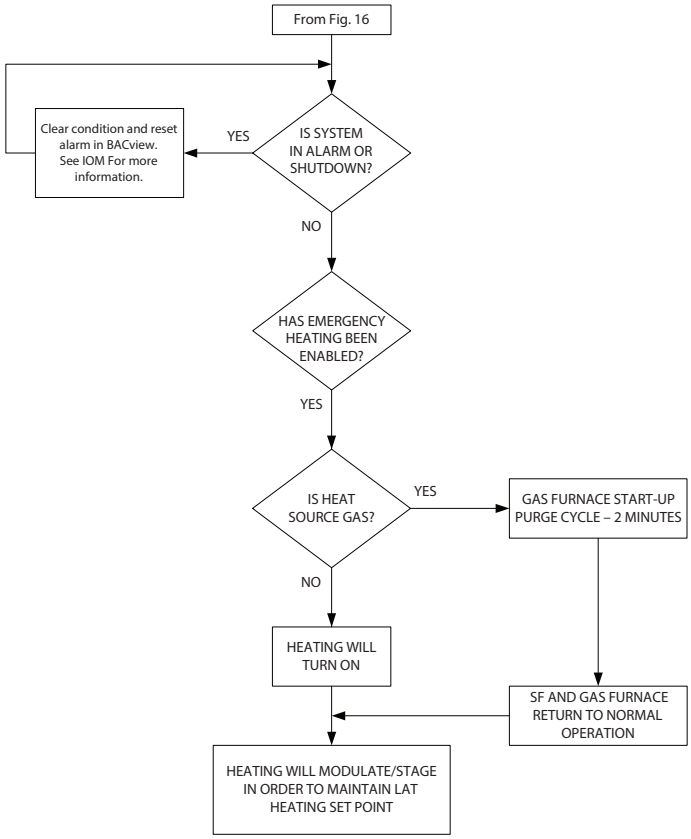


Fig. 18 — 62R Sequence of Operations Flow Chart, Emergency Heat Mode

LEGEND FOR FIG. 9-18

DCM	—	Digital Compressor Module
EF	—	Exhaust Fan
HGRH	—	Hot Gas Reheat
IOM	—	Installation and Operation Manual
LAT	—	Leaving Air Temperature
MDV	—	Modulating Discharge Valve
OADA	—	Outdoor Air Damper/Actuator
OD	—	Outside Air Damper
SF	—	Supply Fan
SLT	—	Suction Line Temperature
VFD	—	Variable Frequency Drive

ALARMS

General — The alarm function is used to indicate a problem with the equipment, sensors, unit operation. There are multiple conditions that would cause and alarm to occur. Some alarms are displayed for information purposes and will not affect the unit function, while other alarms can disable unit components or unit operation entirely. There are two main types of alarms, automatic reset alarms, and manual reset alarms.

NOTE: Available alarm functions will depend on the unit configuration and control settings.

Silencing an Alarm — If an alarm is active, the Alarm LED on the BACview display will turn on, the alarm horn will sound (BACview[6] and BV6H) on the BACview device, and the alarm link will display in the upper left hand corner of the screen. To silence the alarm horn, press the MUTE key while the alarm is active. This action will automatically bring you to the ALARM STATUS screen.

Automatic Reset Alarms — Automatic reset type alarms are generally used to indicate non-emergency issues with the unit, such as clogged filter or a high leaving air temperature. These alarms can interfere with the function of unit components, but will automatically clear from active status after the condition that caused the alarm is rectified, or they can be manually cleared by resetting the alarm or power cycling the controller.

NOTE: If an alarm is manually cleared, the alarm will return if the controller is restarted if the condition has not been corrected. See Table 4 for automatic reset alarm list.

Manual Reset Alarms — Manual reset type alarms are generally used to indicate critical issues with the unit, such as supply fan failure or compressor failure. These alarms require a manual reset, either by power cycling the controller or by resetting the alarm from the BACview interface (certain alarms).

NOTE: If an alarm reset from the BACview or by power cycling the controller, the alarm will return if the condition causing the alarm has not been corrected. See Table 5 for manual reset alarm list.

```
[→ALARM]              SHUTDOWN   ECAT: 54.5°F
MENU:                 SF STOP     LAT: 63.6°F
            RESET ALARMS:   NO
      FANS/DAMPER STATUS: →FANS
          COOLING STATUS: →COOLING
             HGRH STATUS: →HGRH
          HEATING STATUS: →HEATING
[→STATUS]       06/13/2013      09:19:59 am
```

To reset an alarm:

1. Power cycle the controller (turn the power switch on the controller off, then on).

Or:

1. From the Home screen, use the ARROW KEYS to navigate to navigate to the RESET ALARMS: NO menu option.
2. Press the ENTER key to enable editing; use the [INCR] or [DECR] key to change the value to YES.
3. Press ENTER or the [OK] soft key to accept the reset; press [CANCEL] to restore the original value.
4. The RESET ALARMS function will automatically default back to NO and will eventually clear from the screen.

NOTE: It may take a few seconds for the alarm link and the reset alarm menu option to disappear from the Home screen.

Alarm Status — To access the Alarm Status screen, press the MUTE key when an alarm is active; or from the Home screen, use the ARROW KEYS to navigate to the →ALARM link and press ENTER.

```
 Module Event History (100 most recent)
 ========== ACTIVE ALARMS ==============
Supply Fan Alarm
  06/13 09:12:03a      * ACTIVE *
SLT2 Sensor Failure
  06/13 09:09:24a      * ACTIVE *
ZAT Sensor Failure
[→PREV]
```

This screen will list any Active Alarms, Active Faults, Returned-to-Normal (RTN) alarms, and Manually Cleared (CLR) alarms. From this screen you can clear alarms, reset active alarms, and view the alarm history. The alarm will display the alarm name (i.e., ZAT FAILURE), the alarm date and time, and alarm status (i.e., *ACTIVE*). The alarm history will track the 100 latest alarms.

To clear an alarm:

1. Use the ARROW KEYS to scroll down the alarm to reset.
2. If the alarm is automatically resettable type, the alarm will clear as soon as the condition that caused the alarm has cleared. The alarm will move from the Active Alarm section to the Return-to-Normal (RTN) section. For a list of automatically resetting alarms, see Table 4.
3. To manually reset an alarm, press the FN and MUTE keys simultaneously. The alarm will be moved from the Active Alarm section to the Manually Cleared (CLR) section. For a list of non-automatically resetting alarms, see Table 5.

Table 4 — Automatic Reset Alarm List

ALARM NAME	CONDITION/MODE	TROUBLESHOOTING	COMMENTS
High LAT	Alarm/High LAT	Check LAT sensor, check heating source	LAT is above High LAT set point (130 F, adjustable). If High LAT exists after 2-minute delay (fixed), ALC controller will issue High LAT Alarm. The alarm will clear after the LAT is below the High LAT set point.
Low LAT	Alarm/Low LAT	Check LAT sensor, check cooling source	LAT is below Low LAT set point (40 F, adjustable). If Low LAT exists after 2-minute delay (fixed), ALC controller will issue Low LAT Alarm. The alarm will clear after the LAT is above the Low LAT set point.
Low Refrigerant Pressure	Alarm/LP1 or LP2	Check LPS, refrigerant charge	Low refrigerant pressure detected in circuit (1 or 2), LPS1/2 opens. If LPS1/2 is open after 90-second (adjustable) delay, the ALC controller will issue Low Refrigerant Pressure alarm and compressor turns off. After 30 seconds (fixed), the LPS will reset. Following the minimum time-off delay, the compressor will turn on (if commanded) and the alarm will clear.
Low SLT (Freeze)	Alarm/SLT1 or SLT2	Check SLT sensor, refrigerant charge, coil condition	SLT reading below Low SLT Freeze set point. If SLT is below Low SLT Freeze set point after 15-minute delay (adjustable), the ALC controller will issue SLT1/2 Alarm and compressor turns off. Once SLT is above Low SLT Freeze set point, the SLT1/2 alarm will clear. Following the minimum time-off delay, the compressor will turn on (if commanded).
Clogged Filter	Alarm/Clgd Fltr	Change filter, check pressure transducer	The pressure drop across the filter is greater than the clogged filter indicator (CFI) set point (adjustable on the CFI). Once the filter is changed, press the reset button on the CFI. The alarm will automatically clear once the CFI is reset.
Heat Failure	Alarm/Heat Fail	Check heating source, control outputs	LAT below Heat Failure LAT Set Point (adjustable), indicating an issue with the heating source. After a 2-minute delay (fixed), the controller will issue the Heat Fail alarm. After the LAT returns to above the low LAT set point, the alarm will clear.
OAT/ECAT Sensor Failure	Alarm/OAT Fail	Check OAT/ECAT sensor and wiring	OAT/ECAT reads -60.2 F (open) or 296 F (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the OAT/ECAT Sensor Failure Alarm. After the OAT/ECAT sensor reading is corrected, the alarm will clear.
OA-RH/EC-RH Sensor Failure	Alarm/OA-RH Fail	Check OA-RH sensor and wiring	OA-RH/EC-RH reads <1% (open) or over >100% (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the OA-RH/EC-RH Sensor Failure Alarm. After the OA-RH/EC-RH sensor reading is corrected, the alarm will clear.
ZAT Sensor Failure	Alarm/ZAT Fail	Check ZAT sensor and wiring	ZAT reads <45.1 F (open) or >98 F (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the ZAT Sensor Failure Alarm. After the ZAT sensor reading is corrected, the alarm will clear.
Z-RH Sensor Failure	Alarm/Z-RH Fail	Check Z-RH sensor and wiring	Z-RH reads <1%F (open) or >100% (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the Z-RH Sensor Failure Alarm. After the Z-RH sensor reading is corrected, the alarm will clear.
Suction Line Temp Sensor Failure	Alarm/SLT1 or SLT2 Fail	Check SLT 1 sensor and wiring	SLT 1 reads -60.2 F (open) or 296 F (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the SLT1 Sensor Failure Alarm. After the SLT1 sensor reading is corrected, the alarm will clear.
Water Flow Switch Alarm	WFS Alarm	Check water flow, switch, and wiring	WFS reads open (N.O.), indicating no water flow through the condenser. After a 30-second delay (fixed), the controller will issue the WFS Alarm. After flow has been restored, the alarm will clear.
Condenser Freeze Alarm	FZT Alarm	Check condenser temp, freeze stat, wiring	WFS reads open (N.C.) indicating no water flow through the condenser. After a 30-second delay (fixed), the controller will issue the WFS Alarm. After flow has been restored, the alarm will clear.

Table 5 — Manual Reset Alarm List

ALARM NAME	CONDITION/MODE	DELAY	TROUBLESHOOTING	COMMENTS
Exhaust Fan Alarm	Alarm/EF Stop	1 minute	Check Exhaust Fan and EF-APS	The Exhaust Fan Air Proving Switch (EF-APS) is open, due to insufficient or no supply airflow. If EF-APS is open after 1-minute delay (adjustable), the supply fan and the unit will shut down.
Compressor Fault	Alarm C1 or C2 Fault, HP1 or HP2	30 Seconds	Check the HPS, CCS, DMC, CPM, compressor contactor, condenser coil and condenser fan operation	The compressor is commanded on, but the compressor current switch did not detect that the compressor is operating. After a 30-second time delay, the unit will issue a C1/C2 fault. The compressor may be locked out due to the high pressure switch, the compressor protection module, or the digital compressor control module.
Low Refrigerant Pressure Lockout	Alarm/LP1 or LP2 Stop	3x LPS alarm per hour	Compressor #1 shut down due to LP1 lock out.	If the Low Refrigerant Pressure alarm occurs 3 times within one hour for either circuit, the controller will issue the Low Refrigerant Pressure Lockout alarm and the associated compressor will be locked out.
Low Suction Line Temperature Lockout	Alarm/SLT1 or SLT 2 Stop	3x SLT alarm per hour	Compressor #1 shut down due to SLT1 lock out.	If the Low Suction Line Temperature alarm occurs 3 times within one hour for either circuit, the controller will issue the Low Suction Temperature Lockout alarm and the associated compressor will be locked out.
LAT Sensor Failure	Alarm/LAT Fail	30 Seconds	Compressor #2 shut down due to HP2 lock out.	LAT reads -60.2 F (open) or 296 F (short) indicating an issue with the sensor or wiring. After a 2-minute delay (fixed), the controller will issue the LAT Sensor Failure Alarm and the unit will shut down.
Low LAT Alarm	Alarm/Low LAT	30 Seconds	Compressor #2 shut down due to LP2 lock out.	LAT is below Low LAT set point (40 F, adjustable). If Low LAT exists after 2-minute delay, the ALC controller will issue Low LAT Alarm and the unit will shut down.
Smoke Detector Alarm	Alarm/SD Stop	30 Seconds	Compressor #2 shut down due to SLT2 lock out.	The Smoke Detector is active, causing the smoke detector input on the controller to read open. After a 30-second delay, the controller will issue the Smoke Detector alarm and the unit will shut down.
Supply Fan Alarm	Shutdown/LAT Stop	2 minutes	Unit shut down; LAT sensor value of -60.2 F or 296 F.	The Supply Fan Air Proving Switch (SF-APS) is open, due to insufficient or no supply airflow. If SF-APS is open after 1-minute delay (adjustable), the controller will issue the Supply Fan alarm and the supply fan and the unit will shut down.

SENSORS

See Table 6 for a list of all sensors.

Table 6 — Sensor List

NAME	DESCRIPTION	FACTORY-INSTALLED	VENDOR	MODEL
ZAT	Zone Air Temperature Sensor	No	ALC (alternate, Carrier)	RS (alternate, SPT)
Z-RH	Zone Relative Humidity Sensor	No (optional)	Greystone	RH100A03J
LAT	Leaving Air Temperature Sensor	Yes, if no heating exists	Greystone	TE200B-24D2
OAT (ECAT)/ OA-RH (EC-RH)	Outdoor Air/Entering Coil Temperature and Relative Humidity Sensor	Yes	Greystone	RH300A03J
SLT	Suction Line Temperature Sensor	Yes	Greystone	TE200ER24A2
CS	Current Sensor (Compressor, ECW)	Yes	Veris Industries	Hawkeye 900
APS	Air Proving Switch (SF, EF)	Yes	Huba Controls	604
SD	Smoke Detector	Yes (optional)	Greystone	SL-2000-P
DPT	Duct Pressure Transmitter (SF, EF)	Yes (optional)	Sentra	DPT260
CFI	Clogged Filter Indicator	Yes (optional)	Honeywell	S830A1062
FIRESTAT	Firestat	Yes	Honeywell	L4029E1011/U
LVM	Phase/ Line Voltage Monitor	Yes	ICM Controls	ICM408
WFS	Water Flow Switch	Yes (62R)	JCI	P74F-10C

Zone Air Temperature Sensor — The zone air temperature (ZAT) sensor is factory provided, but requires field installation and wiring. The ZAT sensor is typically only utilized for single zone applications and is not required for 62D operation.The Rnet communication wire (4 conductor) should be wired to the Rnet Communication Port on the ALC 6126 controller. The shield wire and ground wire should be inserted into the controller's GND terminal. Do not mount the sensor in the same electrical box with line voltage devices. Mount the sensor 5 ft from the floor. Do not mount the sensor near any doors, windows, supply air diffusers, or other air disturbances. See Table 7 for ZAT specifications. See Fig. 19 for ZAT mounting specifications.

Table 7 — Zone Air Temperature Sensor

SENSOR NAME	ALC RS Space Temperature Sensor (same as Carrier SPT sensor)
SENSOR TYPE	Precision Thermistor. Standard accuracy ±0.45 F (0.25 C). Less than ±0.18 F (0.1 C) drift over a 10-year period
SENSOR RANGE	50 F - 95 F (10 C - 35 C).
POWER	Supplied by the 4-conductor cable (+12 vdc at 210 mA) from the controller.
COMMUNICATION	115 kbps
ACCESS PORT	Local Rnet Port, for local access to start up and troubleshoot system
OPERATING RANGE	32-122 F (0-50 C), 10-90% relative humidity, non-condensing
MOUNTING	Standard 4 x 2-in. electrical box using provided 6-32 by 1/2 in. mounting screws.
WIRE	Shielded 4 conductor plenum rated, CMP, 18-22 AWG. Maximum 500 ft
DIMENSIONS	Width: 2 3/4 in. Height: 4 3/4 in. Depth: 5/8 in.

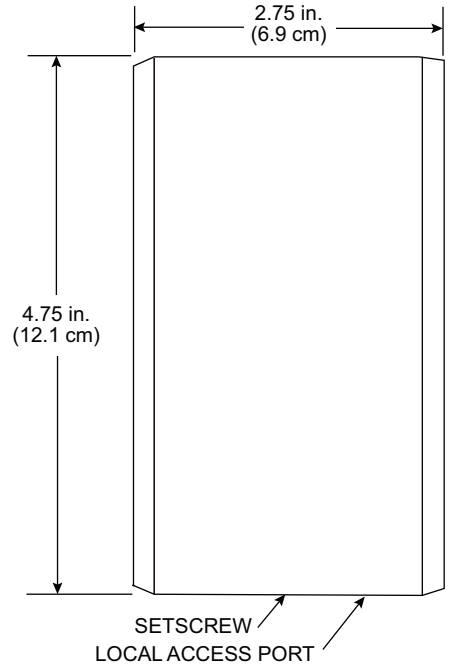


Fig. 19 — Zone Air Temperature Sensor Details

INSTALLATION

1. Verify wall or outlet box has been installed.
2. Turn off controller power.
3. Connect Rnet wiring to the Rnet port of the controller. See Fig. 20 for wiring instructions.
4. Pull the back plate off the RS sensor. The setscrew in the bottom of the sensor may need to be turned clockwise until the back plate can be removed.
5. Pull the Rnet communication cable through the wire guide in the back plate.

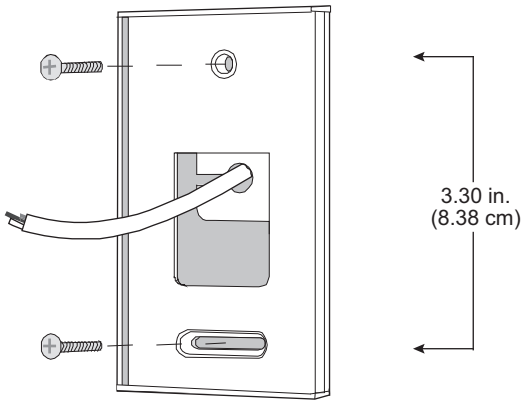


Fig. 20 — Rnet Cable Installation

6. Use 2 screws to mount the back plate to the wall or outlet box.
7. Partially cut, then bend and pull off the outer jacket of the Rnet cable(s). Do not nick the inner insulation.
8. Strip about 0.25 in. (0.6 cm) of the inner insulation from each wire. See Fig. 21.

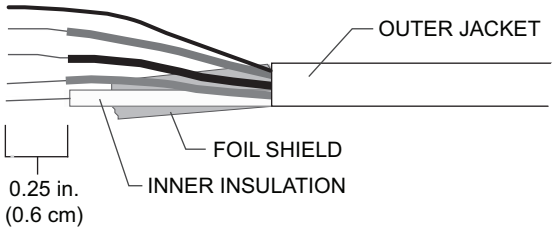
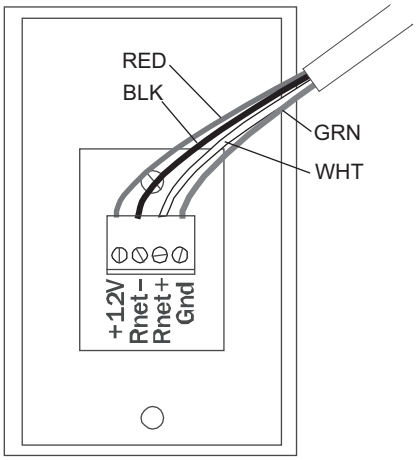


Fig. 21 — Rnet Cable

9. Cut the shield wire off at the outer jacket and then wrap the cable with tape at the outer jacket to cover the end of the shield wire.
10. Insert the other 4 wires into the RS sensor's screw terminal connector. See Fig. 22.



THE FOLLOWING WIRE SCHEME IS RECOMMENDED:	
CONNECT THIS WIRE...	**TO THIS TERMINAL...**
Red	+12V
Black	Rnet-
White	Rnet+
Green	Gnd

Fig. 22 — Rnet Terminal Connections

⚠CAUTION

Allow no more than 0.06 in. (1.5 mm) bare communication wire to protrude. If bare communication wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, the sensor may not communicate correctly which could cause unit damage. See Fig. 23.

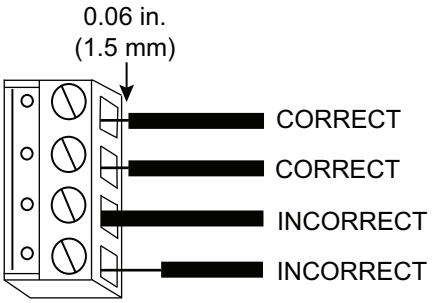


Fig. 23 — Proper Wire Positioning

11. Attach the sensor's cover and circuit board to the mounted back plate, inserting the top first.
12. Turn the setscrew one full turn counterclockwise so that the cover cannot be removed.

NOTE: Use the same polarity throughout the Rnet communication port on the controller. See Table 8 for troubleshooting.

Table 8 — ZAT Troubleshooting

IF THE LED ON THE BACK OF THE CIRCUIT BOARD...	THEN THE SENSOR...
Is not lit.	Has no power.
Blinks 1 time per second	Has no communication.
Blinks 2.5 times per second	Is communicating properly

Zone Humidity Sensor — The zone relative humidity (Z-RH) sensor is factory provided, but requries field installation and wiring. The Z-RH sensor is typically only utilized for single zone applications and is not required for 62D operation. The 2-conductor wire should be wired to UI-4 on the ALC 6126 controller. Do not mount the sensor in the same electrical box with line voltage devices. Mount the sensor 5 ft from the floor. Do not mount the sensor near any doors, windows, supply air diffusers, or other air disturbances. See Table 9 and Fig. 24 for Z-RH specifications.

Table 9 — Zone Humidity Sensor

SENSOR NAME	Greystone RH100A03J Space Relative Humidity Sensor
SENSOR TYPE	Thermoset Polymer Capacitive Sensor. 3% Accuracy at 25 C. ±0.005 % RH/ C
SENSOR RANGE	0 to 100% RH
POWER	24 vdc (18-35 vdc, 15-26 vac)
OUTPUT SIGNAL	0 to 10 vdc (jumper selectable)
INTERNAL ADJUSTMENT	Zero and Span adjustment
OPERATING RANGE	32-122 F (0-50 C), 10-95% relative humidity, non-condensing
RESPONSE TIME	15 seconds
MOUNTING	Standard 4x2-in. electrical box using provided 6-32 by $^1/_2$ in. mounting screws.
WIRE	Shielded 3 conductor, 14-22 AWG.
OVERALL DIMENSIONS	Width: 2.9 in. Height: 4.7 in. Depth: 1.25 in.

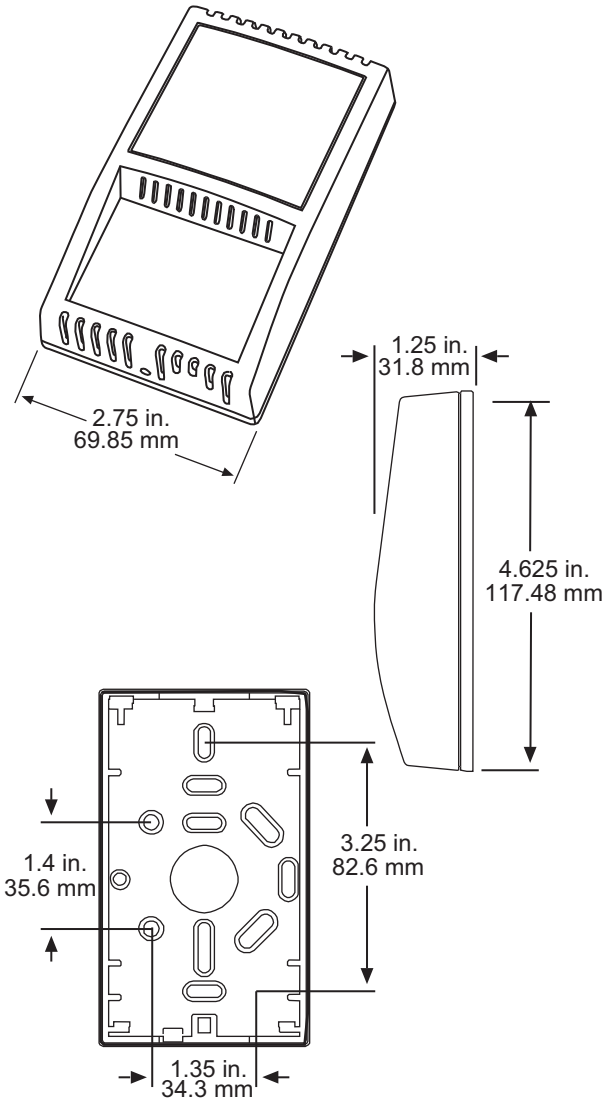


Fig. 24 — Zone Humidity Sensor Dimensions

INSTALLATION

1. Verify wall or outlet box has been installed.
2. Turn off controller power.
3. Connect the humidity sensor wiring to the controller.
   a. Connect the ground wire to ground.
   b. Connect the power wire to the +24 vdc output.
   c. Connect the signal wire to UI-4.
4. Remove the front cover by grasping the bottom of the cover and gently pulling outward.
5. Gently grasp the top of the circuit board while lifting up on the latch and pull the circuit board outward.
6. Place the circuit board in the supplied anti-static bag to prevent damage.
7. Feed at least 6 in. of wire out of the wall or junction box.
8. Feel the wires through the hole in the back plate.
9. Attach the back plate to the junction box or wall using field-supplied screws.
10. Remove the circuit board from the anti-static bag and feel the wire through the center hole.
11. Snap the circuit board back onto the back plate. See Fig. 25 for proper installation.

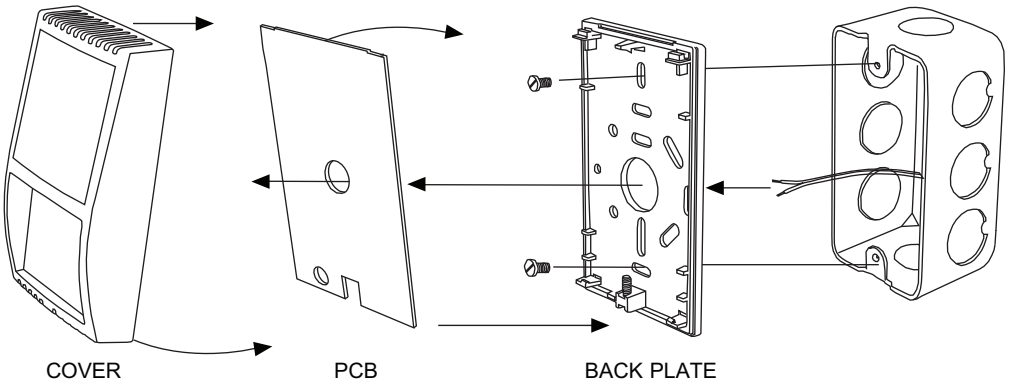


Fig. 25 — Zone Relative Humidity Sensor Installation

12. Partially cut, then bend and pull off the outer jacket of the wire. Do not nick the inner insulation.
13. Strip about 0.25 in. (0.6 cm) of the inner insulation from each wire.
14. Cut the shield wire off at the outer jacket and then wrap the cable with tape at the outer jacket to cover the end of the shield wire.
15. Insert the 2 wires into the RH sensor's screw terminal connector and tighten the screw. See Fig. 26.

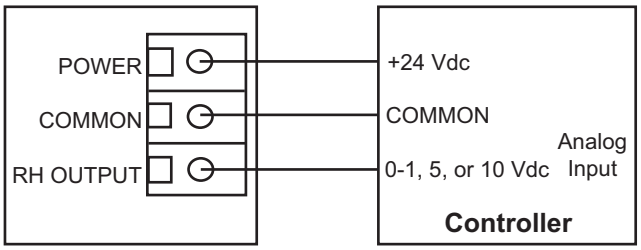


Fig. 26 — Zone Humidity Sensor Wire Connections

⚠ CAUTION

Allow no more than 0.06 in. (1.5 mm) bare communication wire to protrude. If bare communication wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, the sensor may not communicate correctly which could cause unit damage. See Fig. 23.

16. Verify the sensor is set up for 0 to 10-v output using the jumpers included on the circuit .
    a. Verify the top jumper is in the 0 to 10 vdc setting (jumper on the top two pins).
    b. Verify the bottom jumper is in the voltage output setting (jumper on top and middle left pin and jumper on top and middle right pin).
    c. See Fig. 27 for jumper settings.
17. Attach the sensor's cover and circuit board to the mounted back plate, inserting the top first.
18. Using a $^{1}/_{16}$ in. Allen wrench, turn the setscrew on the bottom of the cover 2 to 3 full turns counterclockwise so that the cover cannot be removed.

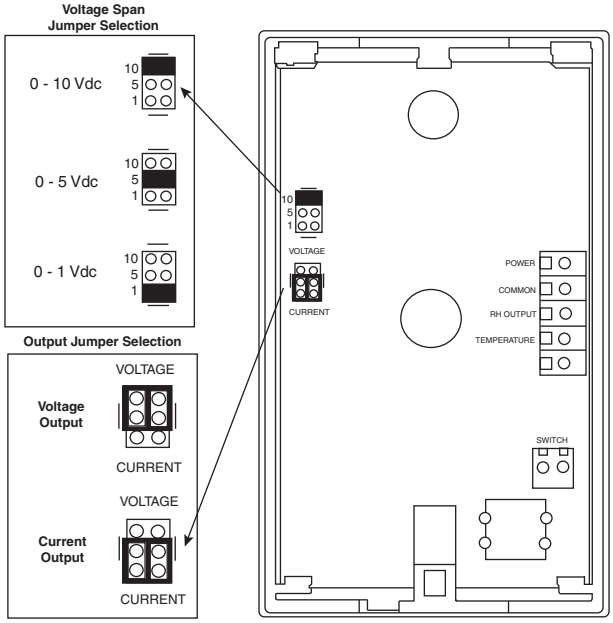


Fig. 27 — Zone Humidity Sensor Jumper Settings

Leaving Air Temperature Sensor — The leaving air temperature (LAT) sensor is factory provided, and is factory mounted and wired in all 62D,R units **without** factory-installed heating (gas, electric, steam, hot water). All units with factory-installed heating will require field installation and wiring of the LAT sensor. The LAT is required for 62D operation. The 2-conductor wire should be wired to UI-3 on the ALC 6126 controller. See Table 10 for LAT specifications. See Fig. 28 for dimensional details. See Table 11 for thermistor resistance chart.

Table 10 — Leaving Air Temperature Sensor

SENSOR NAME	Greystone TE200B-24D2 Duct Temperature Sensor
SENSOR TYPE	Thermistor, 10KΩ (at 77 F), 6-in. probe
SENSOR RANGE	-4 to 221 F (-20 to 105 C)
ENVIRONMENTAL OPERATING RANGE	-4 to 221 F (-20 to 105 C)
MOUNTING	Duct Mount (2 screws)
WIRE	Shielded twisted pair, 18-22 AWG.
OVERALL DIMENSIONS	Width: 3.32 in. Height: 4.56 in. Depth: 2.11 in.

INSTALLATION

1. Turn off controller power.
2. Connect the LAT to the controller.
   a. Connect the ground wire to ground.
   b. Connect the input to the UI-3.
3. Remove the front cover of the LAT sensor by removing the two screws and pulling the cover off the base.
4. Connect the ground wire to the NEG terminal and the input wire to the SEN terminal.
5. Reinstall the front cover.
6. Drill a $^1/_4$ in. hole in the middle of the supply duct, approximately 3 to 5 in. away from the unit.
7. Slide the foam gasket over the LAT probe and insert the probe into the hole (so that the foam gasket forms a seal between the LAT sensor and the duct.
8. Use 2 field-provided screws in the LAT sensor mounting tabs to securely attach the LAT senor to the duct.

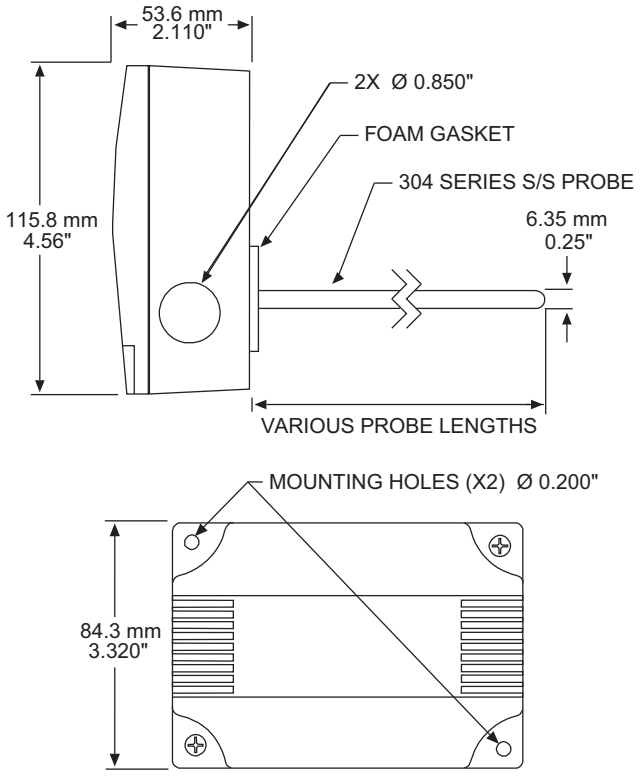


Fig. 28 — Leaving Air Temperature Sensor Details

Table 11 — Thermistor

TEMP (C)	RESISTANCE (Ohms)	TEMP (F)
–40.0	337,200	–40.0
–39.0	315,500	–38.2
–38.0	295,400	–36.4
–37.0	276,700	–34.6
–36.0	259,300	–32.8
–35.0	243,100	–31.0
–34.0	228,000	–29.2
–33.0	213,900	–27.4
–32.0	200,800	–25.6
–31.0	188,600	–23.8
–30.0	177,200	–22.0
–29.0	166,500	–20.2
–28.0	156,600	–18.4
–27.0	147,300	–16.6
–26.0	138,600	–14.8
–25.0	130,500	–13.0
–24.0	122,900	–11.2
–23.0	115,800	–9.4
–22.0	109,200	–7.6
–21.0	103,000	–5.8
–20.0	97,130	–4.0
–19.0	91,660	–2.2
–18.0	86,540	–0.4
–17.0	81,730	1.4
–16.0	77,220	3.2
–15.0	72,980	5.0
–14.0	69,000	6.8
–13.0	65,260	8.6
–12.0	61,750	10.4
–11.0	58,450	12.2
–10.0	55,340	14.0
–9.0	52,420	15.8
–8.0	49,670	17.6
–7.0	47,080	19.4
–6.0	44,640	21.2
–5.0	42,340	23.0
–4.0	40,170	24.8
–3.0	38,120	26.6
–2.0	36,200	28.4
–1.0	34,380	30.2
0.0	32,660	32.0
1.0	31,040	33.8
2.0	29,510	35.6
3.0	28,060	37.4
4.0	26,690	39.2
5.0	25,400	41.0
6.0	24,180	42.8
7.0	23,020	44.6
8.0	21,920	46.4
9.0	20,890	48.2
10.0	19,900	50.0
11.0	18,970	51.8
12.0	18,090	53.6
13.0	17,260	55.4
14.0	16,470	57.2
15.0	15,710	59.0
16.0	15,000	60.8
17.0	14,320	62.6
18.0	13,680	64.4
19.0	13,070	66.2
20.0	12,490	68.0
21.0	11,940	69.8
22.0	11,420	71.6
23.0	10,920	73.4
24.0	10,450	75.2
25.0	10,000	77.0
26.0	9,572	78.8
27.0	9,165	80.6
28.0	8,777	82.4
29.0	8,408	84.2
30.0	8,056	86.0
31.0	7,721	87.8
32.0	7,402	89.6
33.0	7,098	91.4
34.0	6,808	93.2
35.0	6,531	95.0
36.0	6,267	96.8
37.0	6,015	98.6
38.0	5,774	100.4
39.0	5,545	102.2
40.0	5,326	104.0
41.0	5,116	105.8
42.0	4,916	107.6
43.0	4,725	109.4
44.0	4,543	111.2
45.0	4,368	113.0
46.0	4,201	114.8
47.0	4,041	116.6
48.0	3,888	118.4
49.0	3,742	120.2
50.0	3,602	122.0
51.0	3,468	123.8
52.0	3,340	125.6
53.0	3,217	127.4
54.0	3,099	129.2
55.0	2,987	131.0
56.0	2,878	132.8
57.0	2,775	134.6
58.0	2,675	136.4
59.0	2,580	138.2
60.0	2,489	140.0
61.0	2,401	141.8
62.0	2,317	143.6
63.0	2,236	145.4
64.0	2,158	147.2
65.0	2,084	149.0
66.0	2,012	150.8
67.0	1,944	152.6
68.0	1,878	154.4
69.0	1,814	156.2
70.0	1,753	158.0
71.0	1,695	159.8
72.0	1,638	161.6
73.0	1,584	163.4
74.0	1,532	165.2
75.0	1,482	167.0
76.0	1,433	168.8
77.0	1,387	170.6
78.0	1,342	172.4
79.0	1,299	174.2
80.0	1,258	176.0
81.0	1,218	177.8
82.0	1,179	179.6
83.0	1,142	181.4
84.0	1,106	183.2
85.0	1,072	185.0
86.0	1,039	186.8
87.0	1,007	188.6
88.0	975.9	190.4
89.0	946.1	192.2
90.0	917.4	194.0
91.0	889.7	195.8
92.0	863.0	197.6
93.0	837.2	199.4
94.0	812.3	201.2
95.0	788.2	203.0
96.0	765.0	204.8
97.0	742.6	206.6
98.0	720.9	208.4
99.0	700.0	210.2
100.0	679.8	212.0
101.0	660.2	213.8
102.0	641.3	215.6
103.0	623.1	217.4
104.0	605.4	219.2
105.0	588.4	221.0
106.0	571.9	222.8
107.0	555.9	224.6
108.0	540.4	226.4
109.0	525.5	228.2
110.0	511.0	230.0
111.0	497.0	231.8
112.0	483.5	233.6
113.0	470.4	235.4
114.0	457.7	237.2
115.0	445.4	239.0
116.0	433.5	240.8
117.0	421.9	242.6
118.0	410.8	244.4
119.0	399.9	246.2
120.0	389.4	248.0

Outdoor/Entering Coil Temperature and Relative Humidity Sensor (OAT/OA-RH, ECAT/EC-RH) — The outdoor air temperature and relative humidity sensor (OAT/OA-RH) is factory wired and mounted in the outdoor air intake hood for all units without an energy recover wheel (ECW). When an ECW exists, the sensor is moved inside the unit, on the downstream side of the ECW. This sensor is now called the Entering Coil Air Temperature and Relative Humidity sensor (ECAT/EC-RH). See Table 11 for thermistor resistance chart. See Table 12 for OAT/OA-RH specifications. See Fig. 29 for dimensional details.

Table 12 — Outdoor/Entering Coil Temperature and Relative Humidity Sensor (OAT/OA-RH, ECAT/EC-RH)

SENSOR NAME	Greystone RH300A03J Outdoor Temperature and Relative Humidity Sensor
SENSOR TYPE	Thermoset Polymer Capacitive Sensor. 3% Accuracy at 25 C ±0.005 % RH/ C
SENSOR RANGE	0 to 100% RH
POWER	24 vdc (18-35 vdc, 15-26 vac)
OUTPUT SIGNAL	0 to 10 vdc (jumper selectable)
INTERNAL ADJUSTMENT	Zero and Span adjustment
ENVIRONMENTAL OPERATING RANGE	-40-158 F (-40-70 C)
RESPONSE TIME	15 seconds
TEMPERATURE SENSOR TYPE	Thermistor, 10KΩ (at 77 F)
MOUNTING	Standard 4x2-in. electrical box using provided 6-32 by 1/2 in. mounting screws.
WIRE	Shielded 3-conductor plenum rated, 14-22 AWG.
OVERALL DIMENSIONS	Width: 5.7 in. Height: 3.95 in. Depth: 2.5 in.

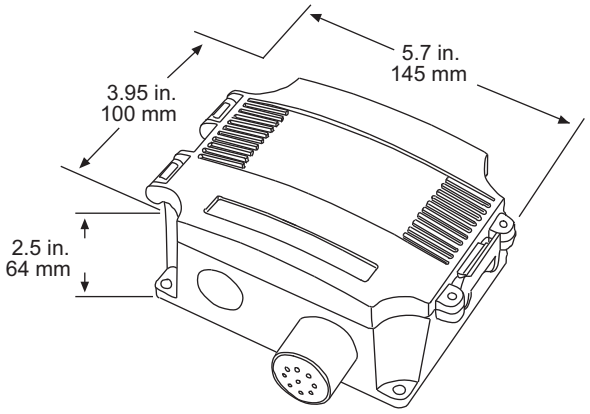


Fig. 29 — Suction Line Temperature Sensor Dimensions

Suction Line Temperature Sensor — The suction line temperature sensor (SLT) is factory installed and wired to the ALC controller. The SLT sensor probe is mounted to the suction line of the compressor. The SLT sensor is used in the control of the optional digital scroll compressor and in evaporator freeze protection. See Table 11 for thermistor resistance chart. See Table 13 for SLT specifications.

Table 13 — Suction Line Temperature Sensor

SENSOR NAME	Greystone TE200ER24A2
SENSOR TYPE	Thermistor, 10KΩ (at 77 F), 2 in. probe
SENSOR RANGE	-4 to 221 F (-20 to 105 C)
ENVIRONMENTAL OPERATING RANGE	-4 to 221 F (-20 to 105 C)
MOUNTING	Strapped to component
WIRE	Shielded twisted pair, 18-22 AWG
OVERALL DIMENSIONS	Length: 2 in. Diameter: 0.25 in.
SENSOR TYPE	Thermistor, 10KΩ (at 77 F), 6 in. probe

Current Sensor — Each compressor is equipped with a current sensor, installed on one of the legs of the compressor power feeds and on the optional energy conservation wheel power feed. When the motor is operating, the power feed through the leg trips the current sensor, which sends a signal back to the unit controller to indicate the compressor/ECW is operating. See Table 14 for sensor specifications. See Fig. 30 for current sensor dimensional data.

Table 14 — Current Sensor

SENSOR NAME	Veris Industries Hawkeye 900 Current Sensor
OPERATING TEMPERATURE RANGE	5-140 F (-15-60 C)
OPERATING RH	10% to 90%, non-condensing
AMPERAGE RANGE	0.15-200 A
OUTPUT RANGE	N.O, 1 A at 30 VDC
TRIP POINT	1.5 A or less
POWER REQUIREMENTS	Induced from monitored currents
OVERALL DIMENSIONS	Width: 2.8 in. Height: 3.1 in. Depth: 1.4 in.

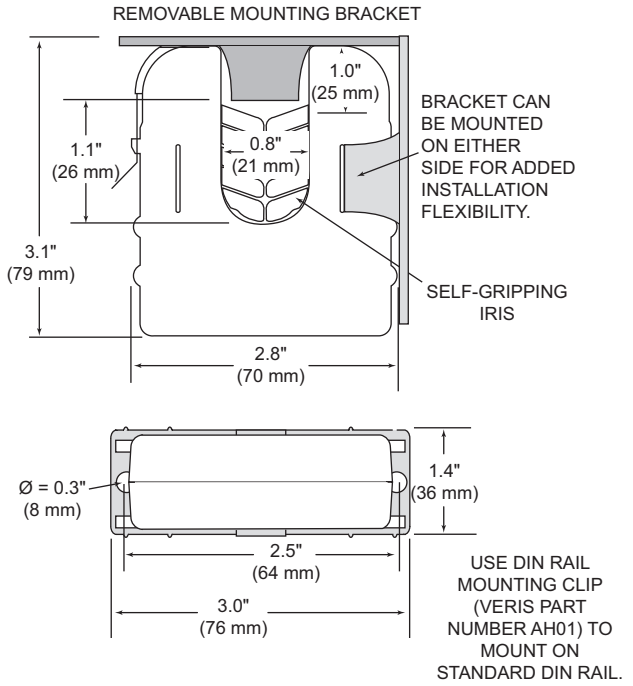


Fig. 30 — Current Sensor Details

Air Proving Switch — The air proving switch (APS) is installed in the supply or exhaust airstream, and is used to monitor supply fan and exhaust fan operation. The air proving switch is factory installed and wired to the ALC controller. See Table 15 for APS specifications. See Fig. 31 for dimensional details.

Table 15 — Air Proving Switch

SENSOR NAME	Huba Controls 604 Pressure Switch
OPERATING TEMPERATURE RANGE	-22-140 F (-30-85 C)
OPERATING RH	10% to 90%, non-condensing
AMPERAGE RANGE	0.15-200 A
OUTPUT RANGE	N.C., 2 A at 30 vdc
SETTING RANGE	0.2 to 2 in. wg
OVERALL DIMENSIONS	Diameter: 3.46 in. Height: 1.74 in.

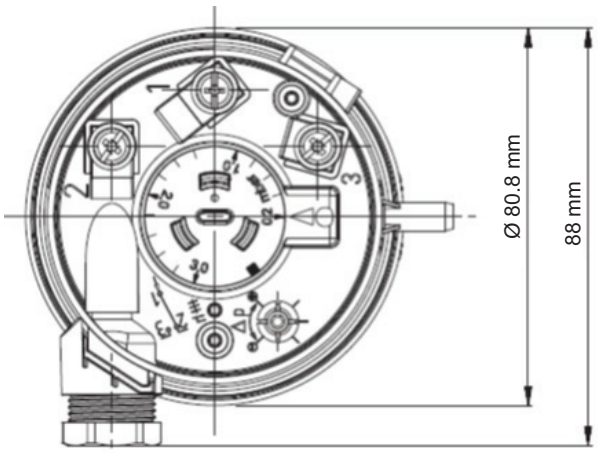


Fig. 31 — Air Proving Switch Dimensional Details

Return Air Smoke Detector — A return air smoke detector is available on all 62DC and DD units with exhaust fan or ECW. The smoke detector is factory installed and wired into the multiplexor feeding UI-10. The smoke detector is wired as a normally closed contact. Carrier Corporation assumes no liability for improperly installed or maintained smoke detectors. See Table 16 for specifications. See Fig. 32 for dimensional data.

OPERATIONAL TESTING — To determine the correct operation of the SL-2000 duct smoke detector, ensure power is connected and the green pilot LED is illuminated. The LED on the detector head flashes during the standby mode. The LED on the detector head will be permanently illuminated when smoke is detected and the head is in alarm. With the air-handling unit shut down and the clear cover removed, press and hold the test/reset button and the cover removal switch on the SL-2000 duct unit. The red alarm LED on the circuit board will be illuminated and the alarm relay outputs will change state. Using a multimeter set to OHMS (or continuity buzzer function on the meter) place the meter probes on the following terminals and ensure the contacts are closed (continuity): (18, 8), (6, 17). When releasing the test/reset button these contacts will open.

FUNCTIONAL TESTING — Once operational testing is concluded the unit requires functional testing to determine the correct operation of the detector head.

Magnetic Testing — Place the magnet provided with the instruction kit on top of the housing between the raised sections above the detector head (as indicated on the unit cover). Allow at least five (5) seconds for alarm initiation. Remove magnet and reset detector.

Smoke Testing — Using smoke test canister with testing nozzle (available from Air Products and Controls Inc. Part Number TG-2001), insert the test gas nozzle into the test point on the unit cover. Press can against cover to release gas into chamber.

⚠ CAUTION

Do not spray gas for more than $^1/_2$ second. Overuse of test gas facility will result in detector contamination.

After 15 to 20 seconds the detector head will go into alarm, illuminating the detector head LED and causing the duct unit functions to operate; relays will change state. Please allow several minutes for the gas to evacuate the chamber before the detector may be reset. If no test gas is available to conduct the testing, remove cover and, while holding the cover removal switch, blow smoke from a cotton wick or punk directly at the head to cause alarm. The alarm indicator will illuminate within one minute. Should testing be required for simulated fire conditions, smoke bombs placed in the duct may not be suited for the particular detector head selected and installed. Photoelectric Detector Head 5500-328APO operates on the principle of light scatter and will detect smoke particles of between 1 and 10 microns in size. When purchasing smoke bombs for functional testing, ensure smoke particle sizes comply with the criteria as described above.

MAINTENANCE — Each installation location must be assessed on its own merits. If the protected area is of a very dirty nature then the SL-2000 duct units will have to be checked and cleaned on a quarterly basis or when cleaning is required. As a guideline the detector head should be cleaned every six months or as required. The best methods of cleaning are to vacuum the detector head thoroughly or to blow the detector head out using compressed air. Do not use chemicals to clean the detector head housing as this could contaminate the detector head and damage the casing. Sensing tubes must be inspected and cleaned in accordance with the schedule as determined above, to allow the free flow of air through the sensing tube.

Table 16 — Return Air Smoke Detector

SENSOR NAME	Greystone /ACI SL-2000-P Smoke Detector
RELAY CONTACT RATING	Alarm Contacts: 2 sets form "C" rated at 10 amps at 115 vac resistive 1 set form "A" rated at 2 amps Trouble Contacts: 1 set form "C" rated at 10 amps at 115 vac resistive
AIR VELOCITY	100 to 4000 FPM (0.50 to 20 M/S)
OPERATING TEMPERATURE RANGE	32-140 F (0-60 C)
OPERATING RH	10% to 85%, non-condensing
POWER REQUIREMENTS (STANDBY)	230 vac-7.9 mA 115 vac-13.8 mA 24 vac-39.4 mA 24 vdc-13.5 mA
POWER REQUIREMENTS (ACTIVE)	230 vac-16.0 mA 115 vac-27.0 mA 24 vac-59.3 mA 24 vdc-128.7 mA
MOUNTING	Standard 4x2-in. electrical box using provided 6-32 by $^1/_2$ in. mounting screws.
WIRE	Shielded 3-conductor plenum rated, 14-22 AWG.
OVERALL DIMENSIONS	Width: 13.5 in. Height: 4.5 in. Depth: 2.25 in.

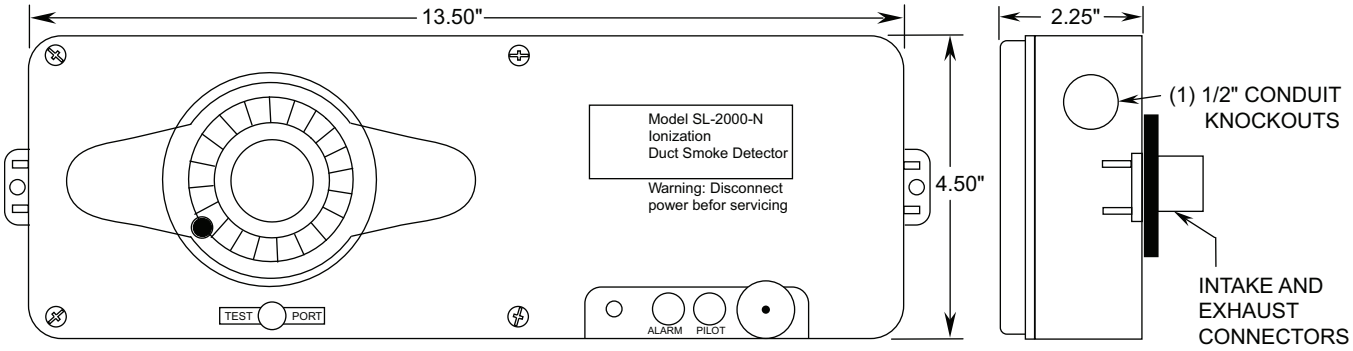


Fig. 32 — Return Air Smoke Detector Details

Duct Pressure Transmitter — The duct pressure transmitter (DPT) sensor is factory provided, but requires field installation and wiring on 62D units equipped with optional supply fan or exhaust fan VFDs. The duct pressure transmitter can be mounted on the sidewall of the control cabinet, with tubing run to the necessary pressure pick-up location. See Table 17 for DPT specifications. See Fig. 33 for dimensional details.

Table 17 — Duct Pressure Transmitter

SENSOR NAME	Setra DPT260
POWER	13-30 VDC
OUTPUT	0-10 VDC
PRESSURE RANGE	-1 to 1 in. wg (adjustable)
OPERATING TEMPERATURE RANGE	32 - 122 F (0- 50 C)
ACCURACY	± 1%
OPERATING RH	0-95%, non-condensing
WIRE	Shielded 3-conductor, 18-22 AWG
PRESSURE FITTING	3/16 in. OD barbed brass
OVERALL DIMENSIONS	Width: 2.25 in. Height: 3.25 in. Depth: 2 in.

INSTALLATION

1. Turn off controller power.
2. Connect the DPT to the controller.
   a. Connect the com wire to controller ground near UI-6 (Supply Pressure) or ground near UI-5 (Exhaust Pressure). See Fig. 34.
   b. Connect the power wire (EXC) wire to the controller +24VDC power supply.
   c. Connect the out wire to UI-6 (Supply Pressure) or UI-5 (Exhaust Pressure).

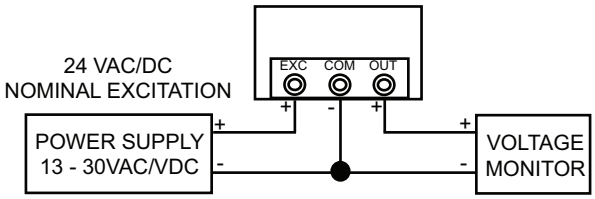


Fig. 34 — Three-Wire, 0-5, 0-10 Vdc Configuration

3. Mount the DPT sensor in the desired location, using 2 field-provided screws. The unit must be in the vertical position.
4. Open the side panel of the DPT sensor.
5. Pull the wire through the wire guide on the bottom of the sensor.
6. Remove the terminal block from the sensor, and attach the wires to the corresponding terminals.
7. Reinstall the terminal block.
8. Verify the adjustment switches are in the correct position:
   a. Range Switch: 1 in. recommended, adjustable as needed.
   b. Directional Jumper: unidirectional for supply, bidirectional for return
   c. Output Switch: Voltage
   d. Output Range Jumper: 10V

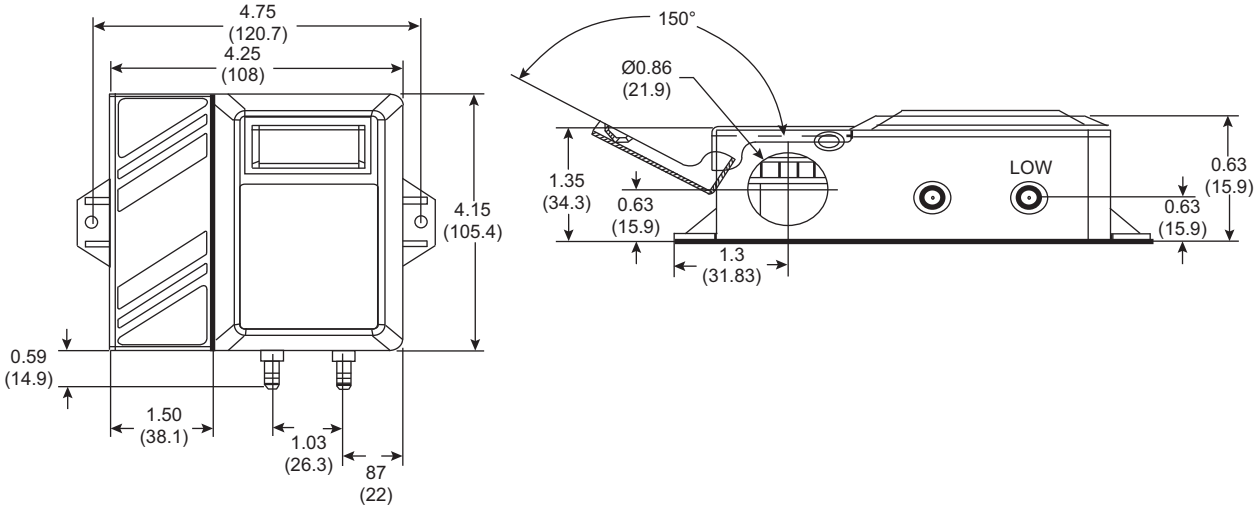


Fig. 33 — Leaving Air Temperature Sensor Details

9. Restore power to the controller and DPT sensor.
10. Leaving the pressure tubing disconnect, press the Zero button for 5 seconds to zero the sensor.
11. Install the pressure tubing to the Hi side of the sensor (for supply) or low side of the sensor (for exhaust).
12. Install the other end of the pressure tubing to the ductwork, using an approved probe device.

Clogged Filter Indicator — The optional clogged filter indicator (CFI) is factory mounted and wired, and is located inside the control cabinet. The CFI switch is wired back to a multiplexor feeding the ALC controller. The CFI is only included on the final filter section, and not on the ECW filter section. See Table 18 for CFI specifications.

Table 18 — Clogged Filter Indicator

SENSOR NAME	Honeywell S830A1062
POWER	1.5A at 24 VAC (7.5 LRA)
PRESSURE SETTING	Adjustable
RESET	Manual
OPERATING TEMPERATURE RANGE	-40 - 149 F (-40 - 65 C)
OPERATING RH	0-95%, non-condensing
OVERALL DIMENSIONS	Width: 2.25 in. Height: 3.25 in. Depth: 2 in.

SETUP

1. Turn the adjusting screw on the front clockwise until tight (do not strip threads).
2. Turn the fan on at high speed.
3. Reset the flag, if showing.
4. Turn the screw clockwise, until the flag shows.
5. Turn the screw clockwise $1^1/_2$ turns and reset the flag.

RESET — Turn the red knob on the front of the switch, until the flag disappears.

Firestat — The optional firestat is factory mounted and wired, and is available on all 62DC and DD units. When the return-air temperature of the unit exceeds the firestat trip point, the firestat switch trips, signaling the unit to shut down. The firestat must be manually reset after tripping. See Table 19 for firestat specifications.

Table 19 — Firestat

SENSOR NAME	Honeywell L4029E1011/U
ELECTRICAL RATINGS	Limit- (AFL)-- 2 A at 30 vac: 10 A at 120 Vac: 5 A at 240 vac; Limit- (ALR)-- 60 A at 120 vac: 30 A at 240 vac
RESET TYPE	Manual (front switch)
PHASE REVERSAL CUTOUT	Yes
OPERATING TEMPERATURE RANGE	At Element: 350 F (177 C) At Switch: 190 F (88 C)
OPERATING RH	0-95%, non-condensing
SWITCHING ACTION	Normally closed SPST switch opens on temperature rise to the set point. Switch must be manually reset to operate.
OVERALL DIMENSIONS	Width: 2.31 in. Height: 3.75 in. Depth: 2 in.

Power Monitor — A power monitor is included on all 62D and 62R units with Revision E controls. The power monitor is used to monitor the input power for phasing, balance, over/under voltage, and power loss to protect the unit components from damage. If any of the above conditions are detected by the phase monitor, unit control power will be interrupted and the unit will be unable to operate. When the power state returns to normal, the power monitor will allow control operation. The power monitor features adjustable delay on make, delay on break, and voltage unbalance dials on the top of the monitor. See Table 20 for power monitor specifications. See Fig. 35 for power monitor details.

Table 20 — Power Monitor

SENSOR NAME	ICM Controls ICM408 Power Monitor
RELAY CONTACT RATING	N.C. Contact, 10 A resistive at 250 vac N.O. Contact, 10 A resistive at 250 vac
VOLTAGE CUTOUT	High Voltage: +12% Low Voltage: - 12% Voltage Unbalance: 2-8%, adjustable On power loss
PHASE REVERSAL CUTOUT	Yes
OPERATING TEMPERATURE RANGE	-40 - 149 F (-40 - 65 C)
OPERATING RH	0-95%, non-condensing
LED INDICATOR	Green: On Red: Solid - Phase Reversal Fault 1 Flash - Delay on Mark Time 2 Flash - Low Voltage Fault 3 Flash - High Voltage Fault 4 Flash - Unbalance Voltage Fault
OVERALL DIMENSIONS	Width: 2.41 in. Height: 2.89 in. Depth: 1.79 in.

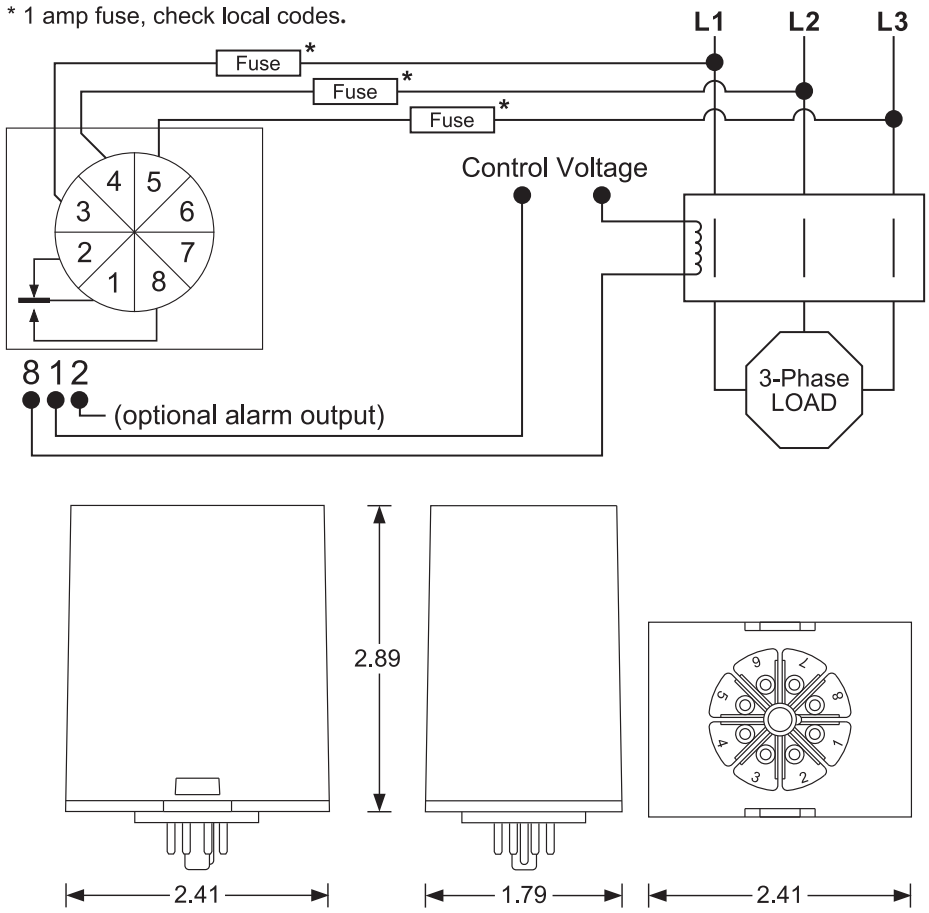


Fig. 35 — Power Monitor Details

Condenser Flow Switch — The 62R unit utilizes a condenser flow switch on all units to verify condenser flow before enabling compressor operation. The flow switch is installed between the return and supply headers of the 62D units. When flow is detected, a signal is sent to Multiplexor B (TB-E) and input to UI-11. When flow is detected, the compressors are allowed to enable. See Table 20 for condenser flow switch specifications.

Table 21 — Condenser Flow Switch

SENSOR NAME	Johnson Controls P74FA-10C
SWITCH ACTION	Single Pole, Dual Throw (snap-acting)
DIFFERENTIAL RANGE	2-26 psi (14-207 kPa)
SWITCH DIFFERENTIAL	3.5 psi (10 kPa)
POWER RATINGS	125 VA, 120-277 vac Ratings: 120V/208V/240V/277V Full Load: 6A/3.4A/3A/-- Locked Rotor: 36A/20.4A/18A/-- Non-Inductive: 10A/10A/10A/10A
OPERATING TEMPERATURE RANGE	–40 to 149 F (–40 to 65 C) non-condensing
LED INDICATOR	Green: On Red: Solid - Phase Reversal Fault 1 Flash - Delay on Mark Time 2 Flash - Low Voltage Fault 3 Flash - High Voltage Fault 4 Flash - Unbalance Voltage Fault
OVERALL DIMENSIONS	Width: 2.41 in. Height: 2.89 in. Depth: 1.79 in.

Multiplexor — The 62D and 62R units utilize multiplexor input for certain unit functions. This allows the unit to expand the functionality of a single ALC control input (AI) to monitor up to four control points (BI). Based on the inputs to the multiplexor from unit sensors and devices, the multiplexor will output a specific resistance range, which is interoperated by the ALC controller as a temperature. Within a preset amount of temperature ranges, the unit can determine the condition of the sensors inputting to the multiplexor. To see the temperature input resulting from the multiplexor, go to the "Unit Status" screen. See Table 22 for multiplexor output combinations and resistance readings. See Table 23 for multiplexor resistance calculating.

Table 22 — Multiplexor Inputs

MULTIPLEXOR A (TB-D) – UI-12			
Input	**Sensor Name**	**Sensor Type**	**Resistance Output**
1	ECW Motion Switch (Optional)	N.O.	5 kΩ
2	SF Air Flow Switch	N.O.	10 kΩ
3	EF Air Flow Switch (Optional)	N.O.	20 kΩ
4	Condenser Freeze Stat (62R)	N.C.	40.2 kΩ
MULTIPLEXOR B (TB-E) – UI -11			
Input	**Sensor Name**	**Sensor Type**	**Resistance Output**
1	Comp #1 Current Switch	N.O.	5 kΩ
2	Comp #2 Current Switch (Optional)	N.O.	10 kΩ
3	Clogged Filter Indicator (Optional)	N.O.	20 kΩ
4	Condenser Flow Switch (62R)	N.O.	40.2 kΩ
MULTIPLEXOR C (TB-F) – UI- 10			
Input	**Sensor Name**	**Sensor Type**	**Resistance Output**
1	Comp #1 Low Press. Switch	N.O.	5 kΩ
2	Comp #2 Low Press. Switch (Optional)	N.O.	10 kΩ
3	Smoke Detector	N.C.	20 kΩ
4	Energy Management Relay	N.C.	40.2 kΩ

Table 23 — Multiplexor Resistance Calculator

ACTIVE INPUT 1 = 5Ω 2 = 10Ω 3 = 20Ω 4 = 40.2Ω	OUTPUT (Ω)	TEMP (F)
1	5,000	106.8
1,2	3,333	125.7
1,3	4,000	111.7
1,4	4,447	107.9
1,2,3	2,857	133.2
1,2,4	3,078	129.5
1,3,4	3,638	121.5
1,2,3,4	2,354	98.4
2	10,000	77.0
2,3	6,667	94.1
2,4	8,008	86.3
2,3,4	5,718	100.8
3	20,000	49.8
3,4	13,355	65.4
4	40,200	24.8

NOTE: Temperature range will be within ± 2% of listed temperature.

Energy Management Relay — The 62D and 62R units have built in Energy Management Relay (EMR) functionality built in to the unit controller. The EMR can act as an occupancy switch or as an emergency shutdown. Use of the energy management relay requires a field provided and installed relay. For occupancy switch applications (example, enabling unit operation via exhaust fan signal) a normally open (N.O.) relay is recommended. For Emergency Shutdown applications, a normally closed (N.C.) relay is recommended. The typical wiring connection for the relay is from UI-10 to TB-F5. Consult the unit wiring diagram for specific wiring locations.

Supply/Exhaust VFD Control — An AC Tech (Lenze) VFD may be used to control the speed of various motors.

If the supply fan if equipped with a VFD, the supply fan VFD speed will be controlled by a duct pressure sensor (DPT 260 low pressure transducer, see Fig. 36.) The modulation is controlled by a reverse acting PID module (0 to 10 vdc). When the controller receives a signal (UI-06) from the differential pressure transmitter the PID module sends a command signal to modulate the supply fan speed to maintain the supply fan ESP (external static pressure) set point.

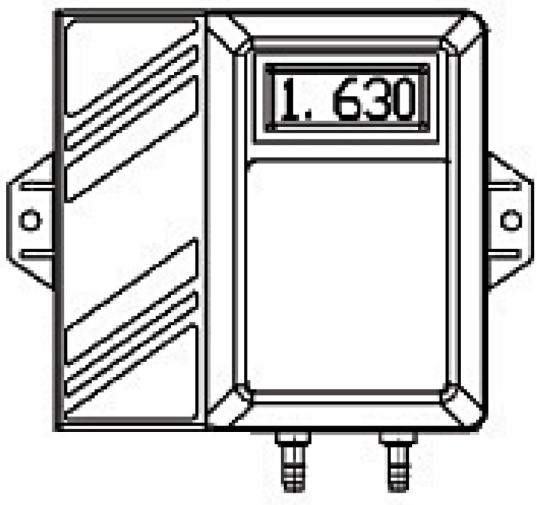


Fig. 36 — DPT 260 Pressure Sensor

If the power exhaust fan is equipped with a VFD, the power exhaust fan VFD speed will be controlled by a building pressure transducer (DPT 260 low pressure transducer) and the ECW if equipped with VFD Temperature Defrost. The modulation is controlled by a reverse acting PID module (0 to 10 vdc). When the controller receives a signal (UI-09) from the differential pressure transmitter the PID module sends a command signal to modulate the exhaust fan speed to maintain the exhaust fan ESP set point.

Steam/Hot Water Heating Control — The control valve for units equipped with either a steam or hot water coils is to be field provided and installed. The control valve will also require field provided power (not from unit). The control signal for the control valve will be provided by the ALC controller by wiring the valve input signal to AO6 (0 to 10V signal). Valve selection is to be determined by power requirements, pipe size, and steam pressure or water flow and temperature.

Digital Scroll Compressor — The 62D unit may be optionally equipped with a digital scroll compressor. The digital compressor's capacity is modulated by rapidly switching a normally closed (N.C.) unloader solenoid on and off. When the solenoid is energized, i.e., open, the compressor is unloaded. When the solenoid valve is not energized, the compressor is loaded. By varying the length of time the solenoid is energized provides a modulating effect and determines the average capacity of the compressor. Units equipped with the digital compressor will incorporate a digital compressor controller; see Fig. 37. The digital compressor controller provides the interface between the 62D controller and the digital compressor. The device provides control, protection and diagnostics. The control can detect faults and provides 3 levels of protection: reduced capacity, trip, and lockout.

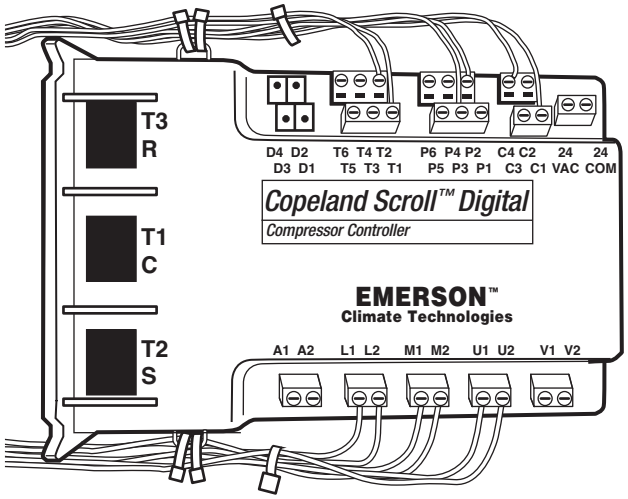


Fig. 37 — Digital Compressor Control

Compressor Controller Inputs/Outputs, see Fig. 38.

- Controller power input
  - 24 VAC
  - 24 Common
- Capacity demand signal - 0 to 5 VDC input from the 62D controller
  - C1 - Common
  - C2 - +5 VDC signal
  - Less than 0.5 VDC is considered a loss of signal
  - 1.4 VDC to 5.0 VDC corresponds to 10% to 100% com pressor capacity (see Table 24)
  - Compressor controller updates the demand once every 20 seconds
- Suction pressure transducer - 0 to 5 VDC input from suction pressure transducer
  - P1 - Common
  - P2 - Signal
  - P3 - +5 VDC supply
- Discharge temperature transducer T1/T2
- Compressor contactor coil - M1/M2
- Unloader solenoid - U1/U2

Table 24 —15-Second Cycle Controller 543-0024-001

DEMAND SIGNAL (VDC)	LOADED %	UNLOADED %	TIME LOADED	TIME UNLOADED
1.00	Off	Off	Off	Off
1.44	10%	90%	1.5 seconds	13.5 seconds
3.00	50%	50%	7.5 seconds	7.5 seconds
4.20	80%	20%	12 seconds	3 seconds
5.00	100%	0%	15 seconds	0 seconds

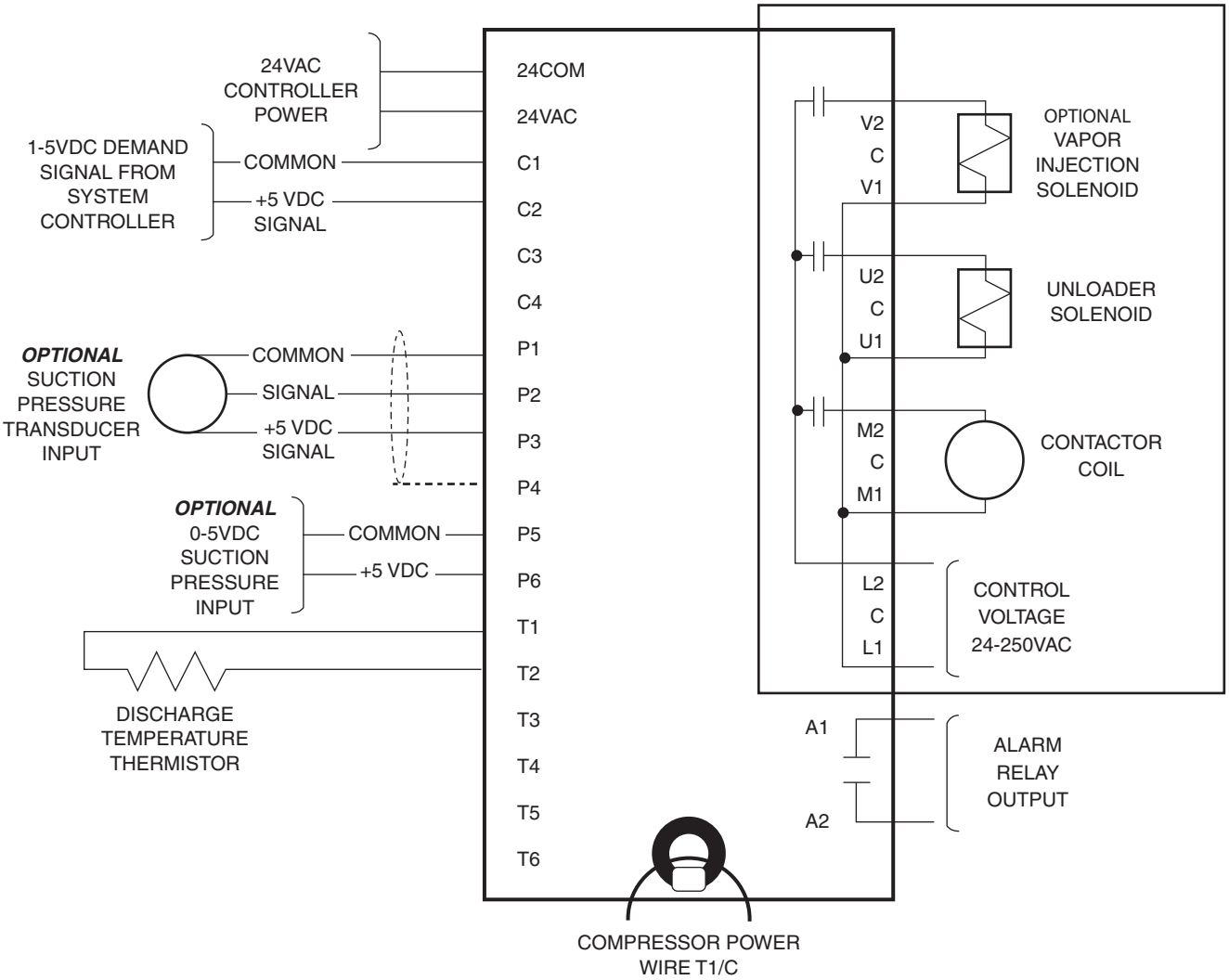


Fig. 38 — Controller Inputs/Outputs

The controller has three LEDs, see Fig. 39.

- Green Power LED
  - On when 24 VAC is supplied to the compressor controller
  - Flashes during 2-minute anti-short cycle timer
- Yellow Unloader LED
  - On when the unloader solenoid is energized
  - Off when the unloader solenoid is de-energized
- Red Alert LED
  - Off - no faults detected
  - Blinking - fault detected
  - Flashes code indicating which alert is active
  - The code is interpreted by counting the number of flashes (1 to 9). See Table for LED Alert codes.
  - Flash codes are separated by a 2-second pause

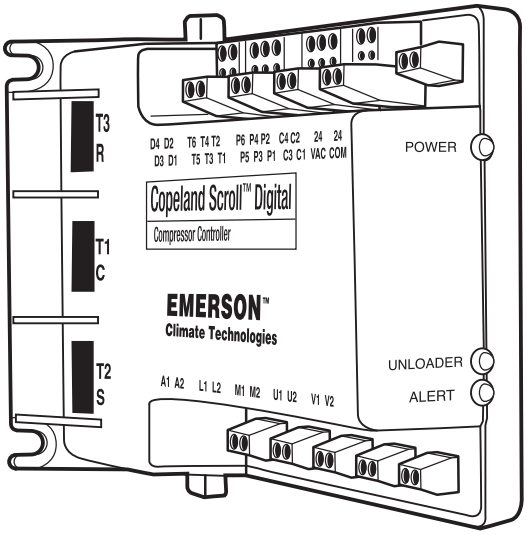


Fig. 39 — LEDs on Controller

Table 25 — LED Alert Codes

NO. OF FLASHES	ALERT NAME	EVENT TRIGGER	ACTION TAKEN	REQUIRED TO RESET/ RESTART COMPRESSOR	REQUIRED TO CLEAR ALERT CODE AND OPEN ALARM RELAY CONTACTS
1	None	None	None	None	None
2	High Discharge Temperature Trip	Discharge temperature greater than 268 F or Discharge Thermistor is short circuited	De-energize compressor contactor. Close alarm relay contacts. De-energize unloader solenoid.	30-minute cool down timer and discharge temperature below 250 F	60-minutes of un-interrupted, alert free minutes of run time
2	High Discharge Temperature Lockout	5 High Discharge Temperature Trips within 4 hours	De-energize compressor contactor. Close alarm relay contacts. De-energize unloader solenoid.	Controller 24 VAC power must be cycled off/on.	Controller 24 VAC power must be cycled off/ on.
3	Compressor Protector Trip	Demand signal 1.4 VDC or higher AND compressor internal overload protector open OR power not available at the compressor (fuse, breaker, loose wire)	De-energize compressor contactor. Close alarm relay contacts. De-energize unloader solenoid.	Wait for 2 minute anti-short cycle timer to reset	Demand signal 1.4 VDC or higher AND compressor current detected
4	Locked Rotor	Controller senses a locked rotor in compressor	De-energize compressor contactor. Close alarm relay contacts. De-energize unloader solenoid.	Controller 24 VAC power must be cycled off/on.	Controller 24 VAC power must be cycled off/ on.
5	Demand Signal lost	Demand signal below 0.5 VDC	De-energize compressor contactor. Close alarm relay contacts. De-energize unloader solenoid.	Demand signal above 0.5 VDC AND 2-minute anti-short cycle timer has reset	Demand signal above 0.5 VDC
6	Discharge Thermistor Fault	Discharge Thermistor is not connected to the compressor controller	Limit maximum capacity of compressor to 50% unloader modulation. Close alarm relay contacts.	Thermistor re-connected.	Thermistor re-connected.
7	None	None	None	None	None
8	Compressor contactor fault	Compressor current is detected when demand signal is less than 1.4 VDC.	Re-energize compressor contactor. Close alarm relay contacts. Unloader solenoid is energized. Compressor runs unloaded until demand signal rises above 1.4 VDC.	Compressor continues to run.	Demand signal is above 1.4 VDC or no compressor current is detected.
9	Low 24 VAC supply	Compressor controller 24 VAC supply is below 18.5 VAC	Trip compressor. Close alarm relay contacts.	24 VAC supply above 19.5 VAC AND anti-short cycle timer is complete.	24 VAC supply above 19.5 VAC AND anti-short cycle timer is complete.

Condenser Fan Motors and Head Pressure Control — The 62D unit may be equipped with head pressure (discharge pressure) control. This control may be one of the following dependent on unit configuration:

- Non Cycling - no head pressure control, uses 3 phase motor(s)
- Fan Cycling - based on discharge pressure, controlled by a discharge pressure switch, uses 3 phase motor(s)
- Vari-Speed - Variable Speed condenser fan control

SIZES 07 TO 20 — Use a single-phase condenser fan motor (OFM) with either a P66 or P266 controller.

P66 Controller (last used on S/N 4210Vxxxxx) — Condenser fan is off if discharge pressure is less than 380 psig. The condenser fan motor is at full speed if discharge pressure is greater than 430 psig. See Fig. 40.

Setup and Adjustments — To adjust the operating range:

1. Apply a reliable pressure gauge to the controlled system to monitor the pressure adjustments.
2. Access the operating range adjustment screw through the opening in the top left corner of the P66. See Fig. 41.
3. Turn the adjustment screw ½ turn or less clockwise to increase the operating range pressure or ½ turn or less to decrease the operating range pressure.

   NOTE: $^1/_2$ turn = approximately 35 psig.

IMPORTANT: Do not adjust the operating range screw more than $^1/_2$ turn without allowing the system pressure to stabilize. Check the system and repeat as necessary to obtain the desired operating range.

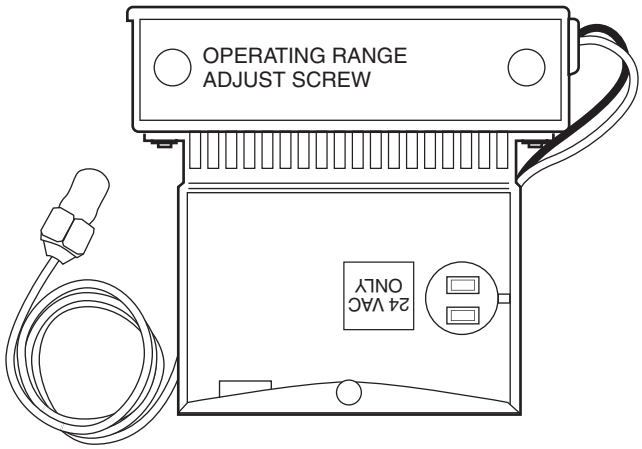


Fig. 41 — Operating Range Adjustment Screw Location

P266 Controller (first used on S/N 4310Vxxxxx) — Condenser fan is off if discharge pressure is less than 305 psig. The condenser fan motor is at full speed if discharge pressure is greater than 405 psig.

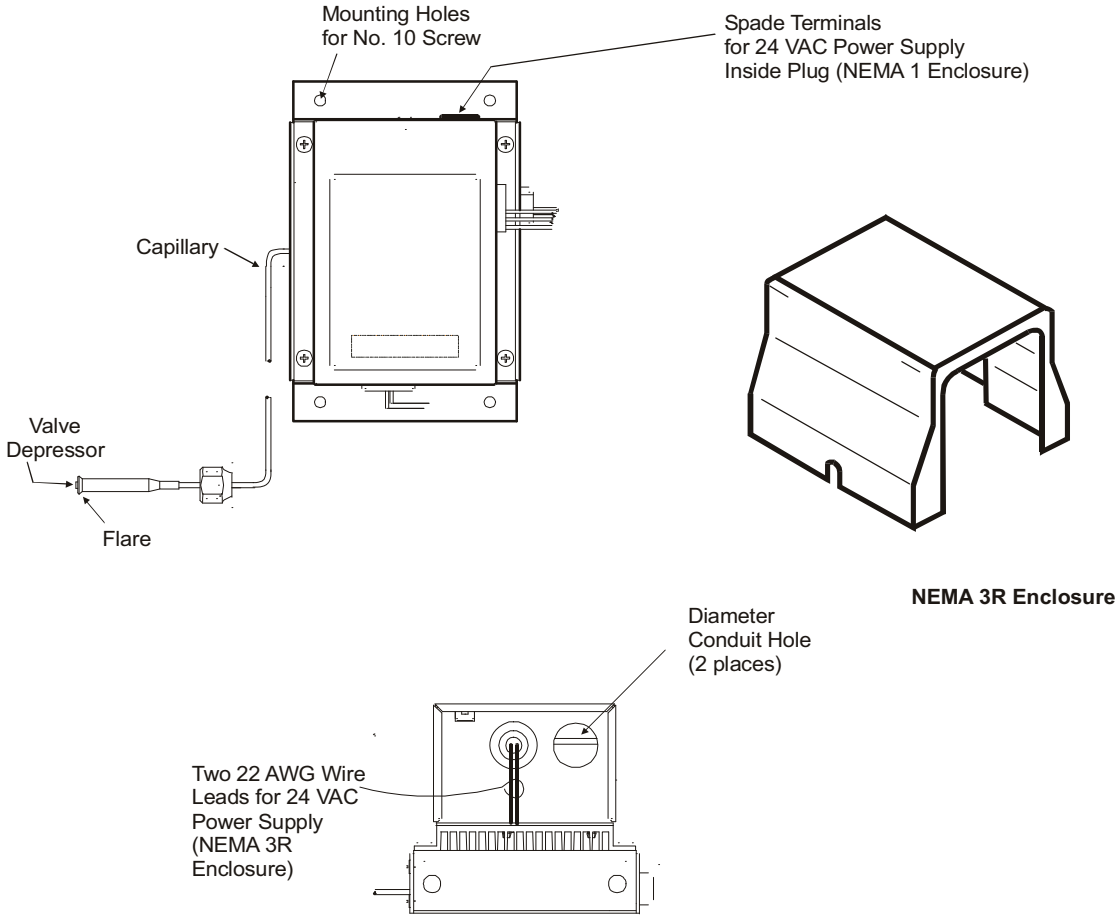


Fig. 40 — P66 Controller

Replacing the P266 controller — It may be necessary to set up the controller's Start pressure and End Pressure values. All other values should be left at the default value. See Fig. 42-44. To change settings and values on the P266 controller:

1. Position all the switches on the DIP block to the OFF position.
2. Position the following numbered switches to the ON position: 128, 16, 4, and 2 (value = 150). See Table 26 for LED flash values.

Press and hold the push button until the LED flashes 3 times to save the Start pressure value.

Position all the switches on the DIP block to the OFF position. See Fig. 43.

Position the following numbered switches to the ON position: 128, 64, and 8 (value = 200).

Press and hold the push button until the LED flashes 4 times to save the End pressure value.

SIZES 22 TO 38 — Use three-phase condenser fan motors (OFM). If equipped with variable-speed head pressure control, the condenser fan VFD speed will be controlled by a discharge pressure transducer (0 to 500 psig, 2 to 10 VDC pressure transducer). The motor speed is controlled by an AC Tech VFD. Condenser fan is off if discharge pressure is less than 310 psig. The condenser fan motor is at full speed if discharge pressure is greater than 410 psig.

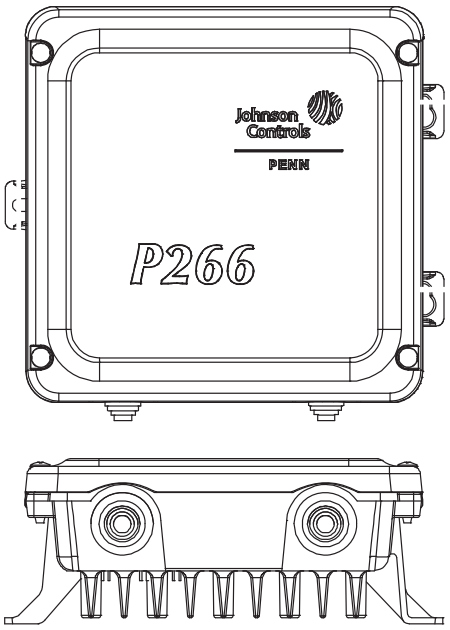


Fig. 42 — P266 Controller

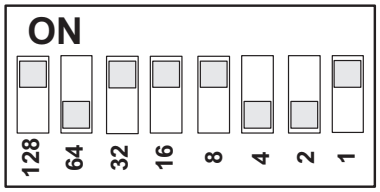


Fig. 43 — DIP Block to OFF position

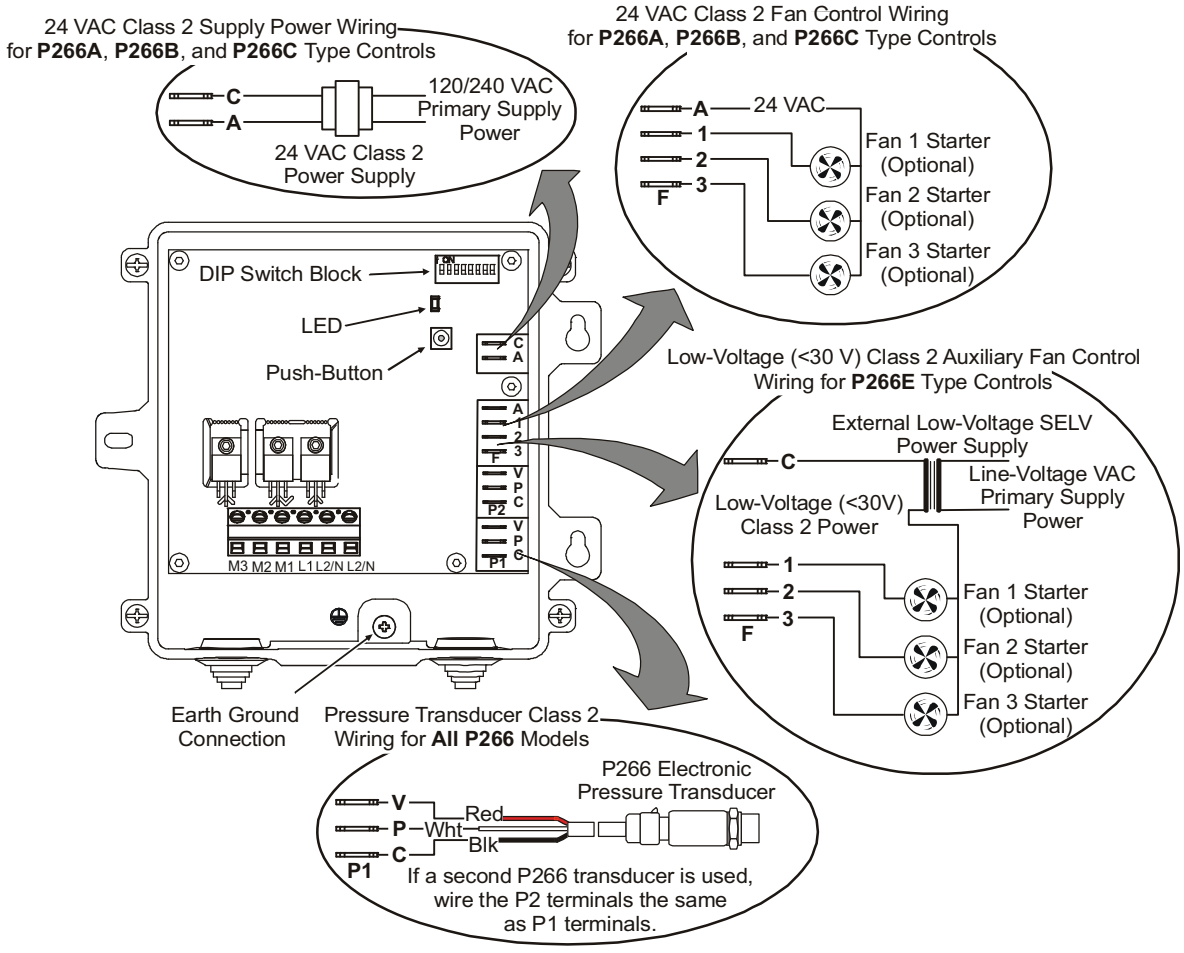
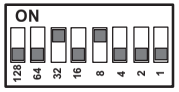
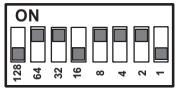
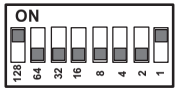
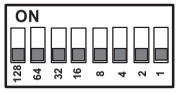
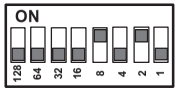
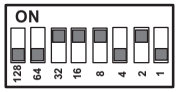


Fig. 44 — P266 Replacement

Table 26 — R266 LED Flash Sequence

RELEASE PUSH BUTTON AFTER...	VALUE/MODE NAME (BINARY SWITCH NUMBER)	VALUE RANGE/MODE SETTINGS (EXAMPLE DEFAULT SETTINGS)	SWITCH NUMBER AND POSITION DESCRIPTION OF VALUE/SETTING	DIP SWITCH BLOCK EXAMPLE DEFAULT SETTINGS
Two Flashes	**Low Speed Mode** (Switch 128)	Settings: ON or Off (Default Setting: **Off**)	Switch 128 Off = No voltage to motor when sensed pressure is below start pressure. Switch 128 ON = Start voltage to motor when sensed pressure is at or below start pressure.	
	Start Voltage Value (Switches 1 to 64)	Value Range: 10 to 90 (Default Value: **40**)	Position Switches 1 to 64 ON or Off so that the sum of the switches set to ON equals the Start Voltage Value.	
Three Flashes	**Start Pressure Value** (Switches 1 to 128)	Value Range: 10 to 230 (Default Value: **110**)	Position Switches 1 to 128 ON or Off so that the sum of the switches set to ON equals the Start Pressure Value.	
Four Flashes	**End Pressure Value** (Switches 1 to 128)	Value Range: [Start Pressure + 8] to 240 (Default Value: **129**)	Position the Switches 1 to 128 ON or Off so that the sum of the switches set to ON equals the End Pressure Value.	
Five Flashes (Switches 64 and 128 Off)	**Split Winding Mode** (Switch 32)	Settings: ON or Off (Default Setting: **Off**)	Switch 32 ON = M2 Triac enabled to power split windings. Switch 32 Off = M2 Triac is disabled.	
	End Voltage Mode (Switch 16)	Settings: ON or Off (Default Setting: **Off**)	Switch 16 ON = Provides 95% of P266 input voltage to motor. Switch 16 Off = Provides 97% of P266 input voltage to motor.	
	Digital Scroll Compressor Algorithm (Switch 8)	Settings: ON or Off (Default Setting: **Off**)	Switch 8 ON = Digital Scroll algorithm enabled. Switch 8 Off = Digital Scroll algorithm disabled.	
	Low Speed Capacitor Mode (Switch 4)	Settings: ON or Off (Default Setting: **Off**)	Switch 4 ON = Low-speed capacitor is available. Switch 4 Off = Low-speed capacitor is not available.	
	Number of Auxiliary Fan Stages (Switches 1 and 2)	Settings: ON or Off (Default Setting: **Off - Off**)	Position switches 1-Off and 2-Off for no auxiliary fans. Position switches 1-On and 2-Off for auxiliary fan 1. Position switches 1-Off and 2-On for auxiliary fans 1 and 2. Position switches 1-On and 2-On for auxiliary fan 1, 2, and 3.	
Six Flashes (Switch 128 Off)	**Auxiliary Fan Overlap** (Switches 1 to 64)	Value Range: 1 to 90 (Default Value: **10**)	Position Switches 1 to 64 ON or Off so that the sum of the switches set to ON equals the Auxiliary Fan Overlap Value.	
Seven Flashes (Switch 128 Off)	**Changeover Voltage Value** (Switch 1 to 64)	Value Range: 10 to 80 (Default Value: **60**)	Position Switches 1 to 64 ON or Off so that the sum of the switches set to ON equals the Changeover Voltage value.	

Water Regulating Valve (WRV) Control (62R)

WATER REGULATING CONTROL — The JCI 450 controller is used to control the water regulating valve actuator, based on refrigerant pressure in the condenser (P266 transducer). The controller is configured at the factory for each specific unit configuration, but is field adjustable to account for job site condition requirements. See Water Regulating Controller Navigation for adjustment procedure. See Fig. 45 for controller layout and Table 27 for specifications. The WRV controller does not interface with the ALC controller.

NOTE: Changes to parameters within the water regulating valve controller could cause improper unit operation or potential unit damage. Please consult service engineering before making any adjustments.

Table 27 — Water Regulating Controller

CONTROLLER NAME	Johnson Controls C450CQN-3C Control Module with Analog Outputs
CONTROLLER POWER	24 VAC (20-30 VAC), 10 VA minimum
INPUT SIGNAL	0-5 VDC
OUTPUT SIGNAL (VOLTAGE MODE)	0-10 VDC, 10 mA maximum output current NOTE: The AO operates in Voltage Mode when connected to devices with impedances greater than 1,000 ohm. Devices that drop below 1,000 ohm may not operate as intended for Voltage Mode applications.
OUTPUT SIGNAL (CURRENT MODE)	4-20 mA NOTE: The AO operates in Current Mode when connected to devices with impedances less than 300 ohm. Devices that exceed 300 ohm may not operate as intended for Current Mode applications.
SIGNAL RESOLUTION	14 Bit
OPERATING RANGE	-40-150 F (-40-80 C), 10-95% relative humidity, non-condensing
OVERALL DIMENSIONS	Width: 2.375 in. Height: 5 in. Depth: 2.375 in.
DEFAULT SETTINGS	Sn1: P500, Sn2: P500 (if 2 circuit unit) SP: 360 EP: 410 OSP: 80 OEP: 0 I-C: 2 SNF: On

Water Regulating Controller Navigation

START-UP SCREEN — When the JCI 450 control module is powered on, the LCD displays the control module's current firmware version for approximately 5 seconds before it displays the Main (Input Status) screen. The number on the bottom of the screen identifies the Johnson Controls firmware. See Table 28 for controller details.

MAIN SCREEN — During normal operation, the Main screens automatically scroll through the current status of each input sensor in the control system and display the sensor number, the unit of measurement, and the sensed condition value. Main screens are view-only; selections are not made in Main screens. The Main screens are the JCI 450 default screens. After 2 minutes of inactivity in any screen, the UI reverts to the Main screens. While the Main screens are scrolling, press the next button key repeatedly to scroll through and view the System Status screens for all inputs and outputs in the control system. While the Main screens are scrolling, press and hold the up and down buttons for 5 seconds to access the control system's Setup Start screens.

SYSTEM STATUS SCREENS — The System Status screens display current status of all inputs and outputs in the control system. System Status screens is view-only; selections are not made in Status screens. Relay output status screens display output number and relay status (On/Off). Analog output status screens display output number, signal strength, and control ramp icon. Press the right next button repeatedly to scroll and view the System Status screens for the inputs and outputs in the control system. When you stop pressing the button, the displayed Status screen refreshes its value and remains displayed for 2 minutes before returning to the Main Screens.

Table 28 — Control Valve with Actuator

ACTUATOR NAME	Johnson Controls VG1241####+92#GGA 62R-07-08: (1) VG1241CP+923GGA 62R-12-22: (2) VG1241CP+923GGA 62R-24: (2) VG1241DR+938GGC 62R-30: (2) VG1241ES+938GGC 62R-34-38: (2) VG1241FT+928GGA
CONTROLLER POWER	24 VAC (20-30 VAC), 40 VA minimum
INPUT SIGNAL	0-10 VDC
TYPE	Spring Return Open (CW to open)
CLOSEOFF (PSIG)	200
FLUID TEMPERATURE LIMITS	23 - 203 F (-5 to 95 C)
OPERATING RANGE	-22-140 F (-30-60 C), 10-95% relative humidity, non-condensing

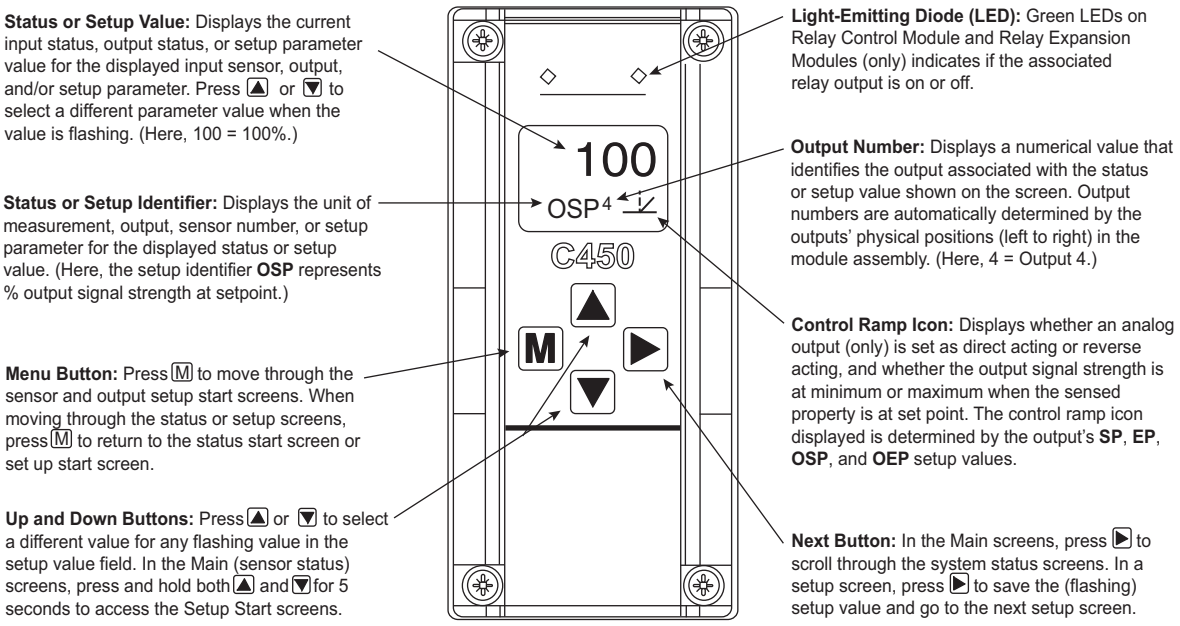


Fig. 45 — Water Regulating and ECW Controller Navigation

HEATING

The 62D,R units may be equipped with gas or electric heat. The gas heat may be staged or modulating control. The electric heat may be staged or SCR (Silicon Controlled Rectifier) control.

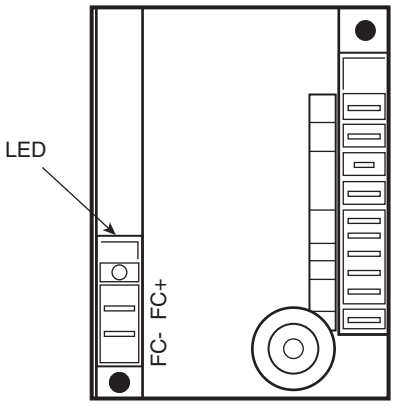
Set Points — The control set points are the same for gas or electric heat but are dependent on the type of unit, 100% outdoor air (62DA, DB, DC, DD).

100% OA Units — Heating mode will be initiated based upon the outdoor air temperature (OAT) heating set point (default is 55 F).

If the unit has modulating gas heat or SCR controlled electric heat, the control will modulate to maintain a LAT (default is 90 F) and RAT set point.

If the supply fan is set to enable only for cooling or heating, it will continue to operate for two minutes after a heating mode.

Ignition Control — Units equipped with gas heat have an electronic ignition control. The control is equipped with an LED for diagnostics and service. See controller diagram Fig. 46.



SERIES 35-61 IGNITION CONTROL MODULE

Fault Conditions and LED Key

LED Steady On	System Control Fault
1 Flash	Combustion Air Flow Fault
2 Flash	Flame with No Call for Heat
3 Flash	Ignition Lockout

NOTE: LED flashes on for 1/4 second, and off for 1/4 second during default condition. Pause between fault codes is 3 seconds.

Fig. 46 — Controller Diagram

Flame Current Sensor — The flame current sensor may be tested by the following procedure:

SERVICE CHECKS — Flame current is the current which passes through the flame from the sensor to ground. The minimum flame current necessary to keep the system from lockout is 0.7 microamps. To measure flame current, connect analog DC microammeter to the FC– and FC+ terminals per Fig. 47. Meter should read 0.7 μA or higher. If the meter reads below "0" on scale, meter leads are reversed. Disconnect power and reconnect meter leads for proper polarity.

See Table 29 for a detailed explanation of the LED codes.

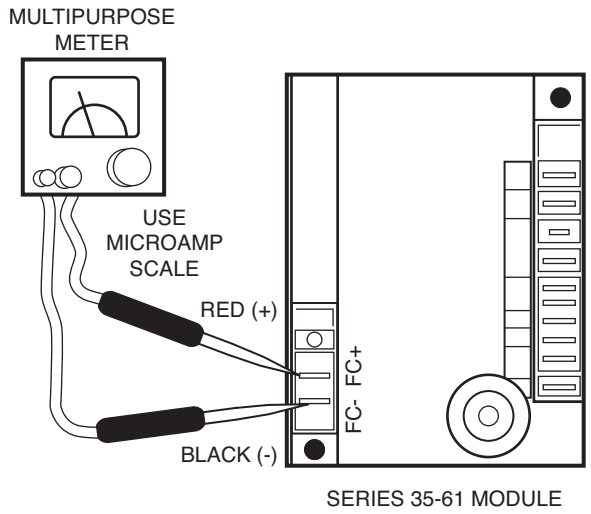


Fig. 47 — Flame Current Detection

Table 29 — LED Codes

LED CODE	SYSTEM	DESCRIPTION	ACTIONS
None	No Power to T1	On call for heat nothing happens.	1. Check for open fuse or circuit breaker. 2. Check for poor wiring connection. 3. Check for failed 24V transformer.
Steady On	No Operation	24 VAC across terminal 24 VAC/V2-Gnd when thermostat calling for heat.	1. System fault. Repeated lockouts (5) during continuous call for heat. 2. Check input voltage and inlet gas pressure during system operation. 3. Check for condensate or blockage in air tube or pressure switch. 4. Check for blocked vent condition or obstruction in heat exchanger tube. 5. If sequencer is used check delay time setting. 6. Control fault. Replace control.
None	Open Limit Switch	Thermostat call for heat. No power across terminals V1/V2 on control.	1. Check for proper operation of circulating air supply system and for air filter blockage. 2. Check manifold pressure when limit cools and closes. Natural gas 3.5 in. wg / LP gas 10.0 in. wg Low combustion blower air output. Flue gas temp exceeds 550 F. Inspect for debris accumulation, proper wheel attachment, proper voltage to blower.
1 Flash	Air Flow Fault	Pressure switch contacts in **closed** position for 30 seconds with no output to combustion blower. Remains in this mode with combustion blower off.	1. Check for short in wiring to pressure switch. 2. Check pressure switch for closed contacts (with leads disconnected). 3. Replace pressure switch.
		Open pressure switch or flame rollout switch when inducer (IND terminal) is energized. If switch remains open for more than 30 seconds after combustion blower is energized, control will remain in this mode with IND terminal (blower) energized.	1. Failed combustion blower. 2. Check connections and air tube from draft inducer to air switch for leaks. 3. Check rollout switch manual reset - depress reset. 4. Check supply tube from draft inducer housing to pressure switches for condensate - drain line and reconnect. 5. Check pressure switch for condensate accumulation. 6. Replace pressure switch.
2 Flash	Flame Fault	Flame sense failure/flame present with no call for heat.	1. Check for voltage to gas valve with thermostat in off position. Valve should not be powered. 2. If valve is not energized, check for gas flow (manifold pressure reading greater than 0). If gas flow, turn off main shut-off valve or replace gas valve.
3 Flash	Lockout	Failure to light and or carryover, loss of flame or flame signal during ignition or operating cycle. Control will initiate up to 3 igntion re-trials before lockout.	1. Verify gas supply available and operation of gas valve - manifold pressure at start of ignition cycle. Check for power to valve terminals LO and COM while spark is energized. 2. Is spark present? If not check igniter for debris between electrodes, cracked ceramic and check ignition wire for short to ground. 3. Check flame sensor wiring connections to electrode and control and for any abrasions. 4. Check for cracked ceramic on flame sensor or grounded sensor rod. 5. Verify that ample air supply and proper venting of flue gases occurs during operating cycle. 6. Check for circulating air leaks into burner compartment during operation. 7. Check for re-circulation of flue gases into combustion air supply. 8. If all conditions satisfactory - replace ignition control.

Staged Heat — If the OAT is below OAT heating setpoint, first stage heating will be initiated. If the leaving air temperature (LAT) is below the LAT setpoint (default is 72 F), the second stage of heating will be initiated.

When system is powered up 24 VAC will be applied to the ignition control (IC) terminals 24VAC / R and to the Timer Relay Control (TR1). The ignition control will reset, perform a self check routine, initiate full time flame sensing, flash the diagnostic LED for up to four seconds and enter the thermostat scan standby state. The amber light on the TR1 will be lit indicating it is in the ready position.

See Fig. 48-50 for staged heat wiring diagram and typical horizontal and vertical installation.

CALL FOR HEAT

1. Controller (first stage or first and second stage) closes on call for heat.
2. 24 VAC to is supplied to IC terminal TH, provided limit switch is in closed position.
3. The control will check that pressure switch contacts are open (IC terminal PSW is not powered).
4. Combustion blower is then energized at high speed.
5. When the Air Switch (APS1) closes, a 15-second prepurge period begins.
6. At end of pre-purge period, the spark commences and the first and second stage gas valves are energized for the trial for ignition period.
7. Burners ignite and cross light, operating at maximum input rate (manifold pressure 3.5 in. wg).
8. The TR1 is powered (terminal 7) simultaneously (SR LED lit) and begins timing a 90-second warm-up period while maintaining the combustion blower at high speed (FR LED lit). The TR1 will maintain this mode of operation, regardless of status of thermostat second stage.
9. When flame is detected by flame sensor, the spark is shutoff immediately and gas valves and combustion blower remain energized.
10. When the initial timer in TR1 times out, it defaults the gas valve to low fire and the combustion blower to low speed and returns control of the operating mode to the temperature controller. The SR LED turns off and the MR LED is lit.
11. If the controller is calling for second stage heat TR1 terminal 6 is powered. After a short time delay (approximately 15 seconds), the system switches the combustion blower to high speed (FR LED lit) and the second stage gas valve at 3.5 in. wg manifold pressure (CR LED lit), provided the High Air Pressure Switch (APS2) is proved.
12. During heating operation, the thermostat, pressure switch and main burner flame are constantly monitored by the IC to assure proper system operation.
13. Operation continues on High fire until the second stage thermostat is satisfied, opening the second stage contact and de-energizes terminal 6 on the TR1, turning off the second stage gas valve and returning the combustion blower to low speed.
14. When the thermostat (controller) is satisfied and the demand for heat ends, the first stage valve is de-energized immediately, the control senses loss of flame and a 30-second post-purge occurs (at high speed) before de-energizing the combustion blower.

IGNITION AND OPERATIONAL FAILURES DURING A CALL FOR HEAT RESULT IN "LOCKOUT" OF THE IGNITION CONTROL

1. If flame is lost during an operational cycle, the control will respond within 0.8 seconds. The spark will be energized for a trial for ignition period to attempt to relight burners and prove flame sensor. If flame is re-established, normal operation resumes.
2. If the burners fail to light or carryover during a trial for ignition, the control will attempt two additional ignition trials. If no flame is present at the flame sensor within 10 seconds, the spark and gas valve will be de-energized. A 15-second inter-purge period begins and the combustion blower continues to run. After the inter-purge period another ignition trial will take place.
3. If burner fails to light or prove the flame sensor following the two additional trials the control will go into lockout. The valve relay in the IC will be de-energized, shutting of the gas valve immediately and the combustion blower following a 30-second post-purge period.

Recovery from Lockout

1. If the thermostat (controller) is still calling for heat one hour after a lockout occurs, the control will automatically reset and initiate a call for heat sequence.
2. The ignition control may also be manually reset, by turning the thermostat (controller) down and back up to previous temperature setting or removing power (24V) to IC terminal 24VAC.

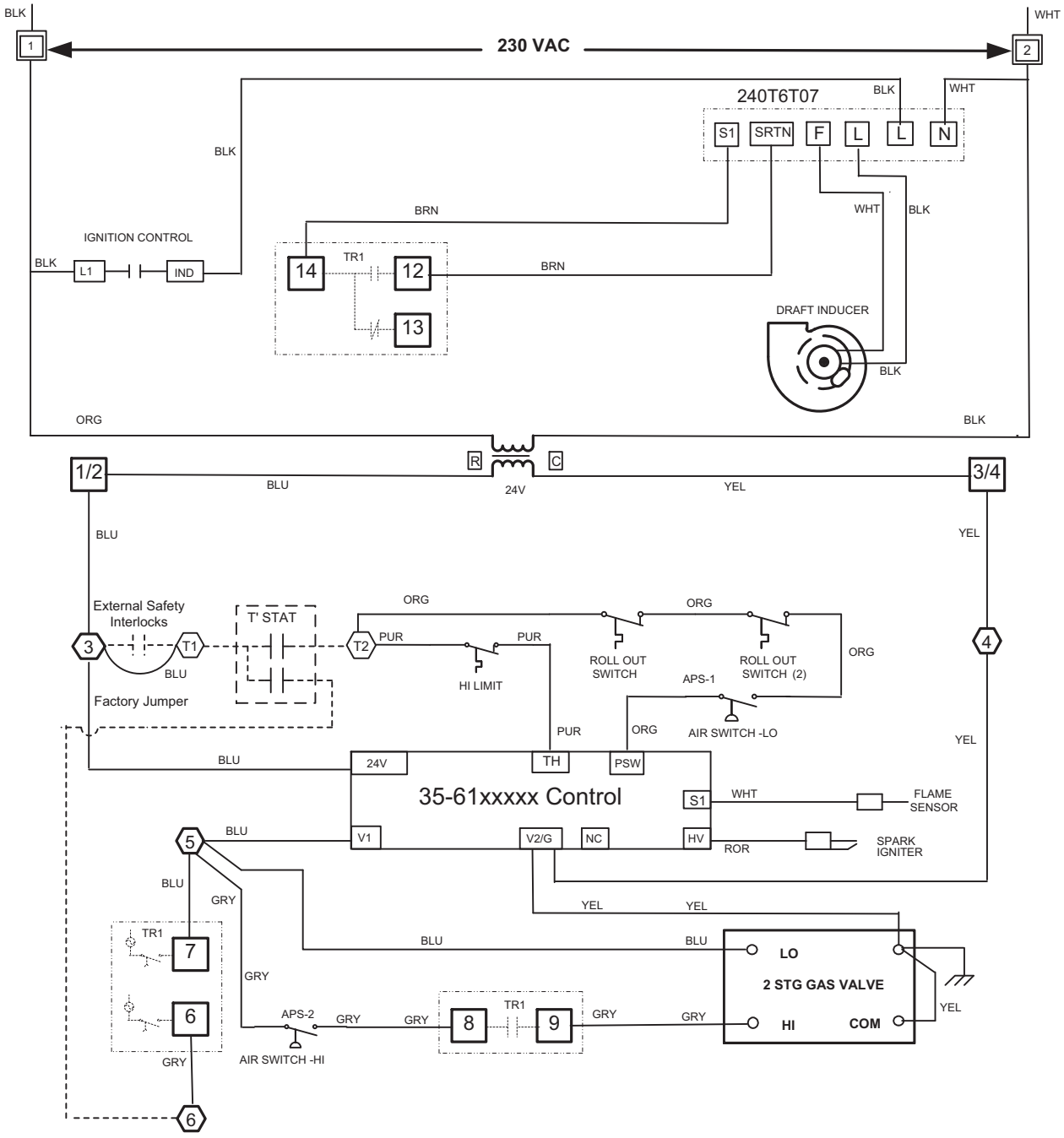
IC Fault Conditions and LED Key — Table 30 shows a list of LED flashing codes and their meanings.

Table 30 — LED Codes

LED	MEANING
LED Steady On	Internal Control Fault
1 Flash	Combustion Air Flow Fault
2 Flash	Flame with No Call for Heat
3 Flash	Ignition Lockout

NOTE: LED flashes on for $^1/_4$ second, and off for $^1/_4$ second during fault condition. Pause between fault codes is 3 seconds.

1. If during the initial call for heat the air switch contacts are closed for 30 seconds without an output to the combustion blower, an airflow fault occurs (one LED flash) and control will remain in this mode.
2. If the airflow switch remains open (or a rollout switch is open) for more than 30 seconds after the combustion blower output (IND) is energized, an airflow fault occurs (one LED flash), and control will stay in this mode with combustion blower on, waiting for airflow switch (or rollout) to close.
3. If the airflow signal is lost during operation, the control immediately de-energizes the gas valve and maintains blower operation. If the call for heat remains and proper airflow is not detected, and airflow fault occurs (one LED flash). If proper airflow is detected at any time, the normal sequence will begin with pre-purge.
4. If the main valve fails to close properly at the end of a heating cycle and a flame is maintained, the combustion blower will continue in operation. If the valve does close completely later removing the flame signal, the blower will run for the post purge period and shut off.



CUSTOMER PROVIDED COMPONENT

CUSTOMER / FIELD WIRING

1 INTERNAL TERMINAL CONNECTION

3 EXTERNAL TERMINAL CONNECTION

(2) 2nd ROLLOUT SWITCH ON HORIZONTAL BURNER TRAY ONLY

TIMER RELAY – TR1-090HH15

1/2 TR1 TIMER RELAY TERMINAL CONNECTION

Fig. 48 — Staged Heat Wiring Diagram

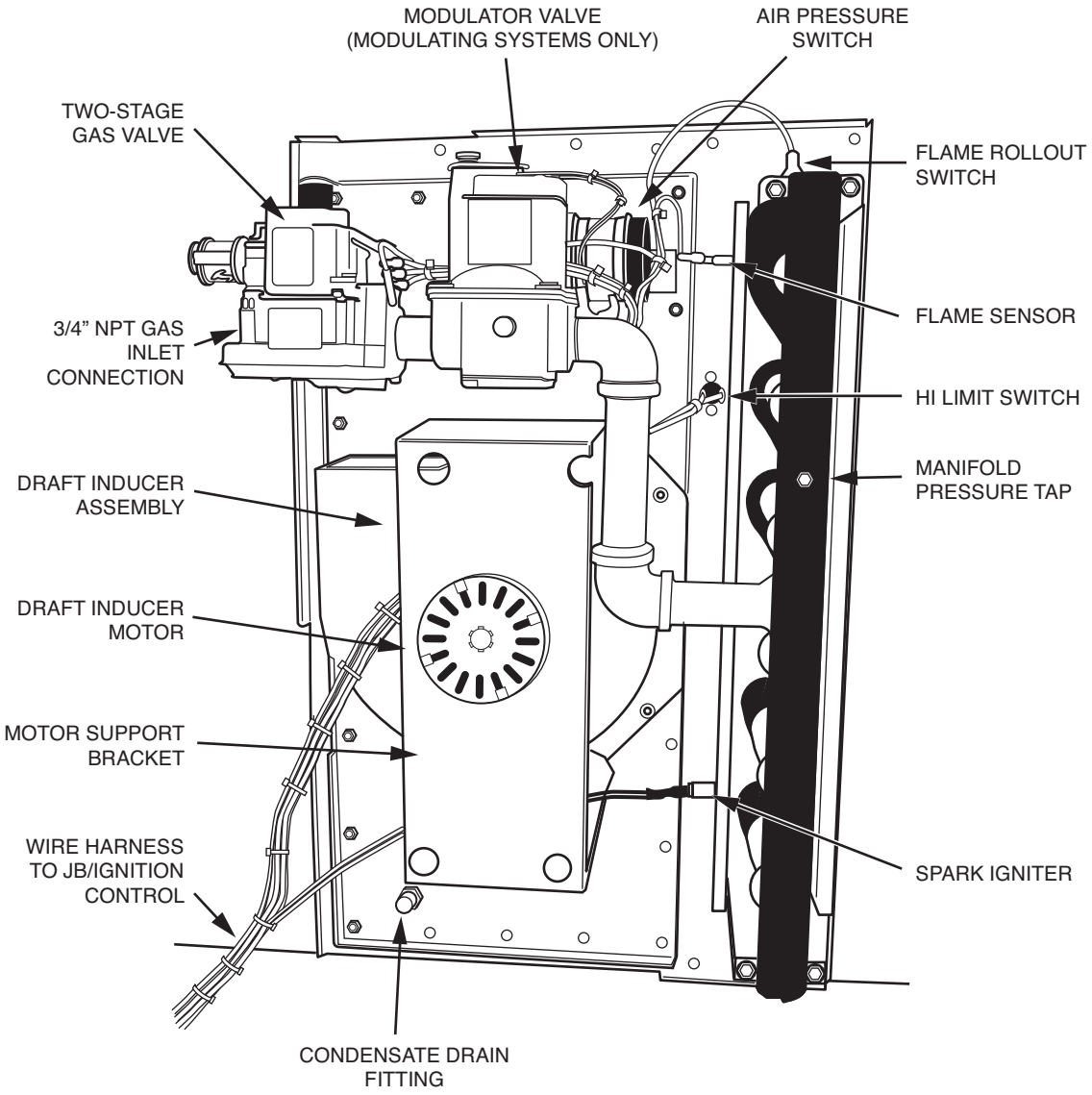


Fig. 49 — Horizontal Unit with Modulating Gas Heat

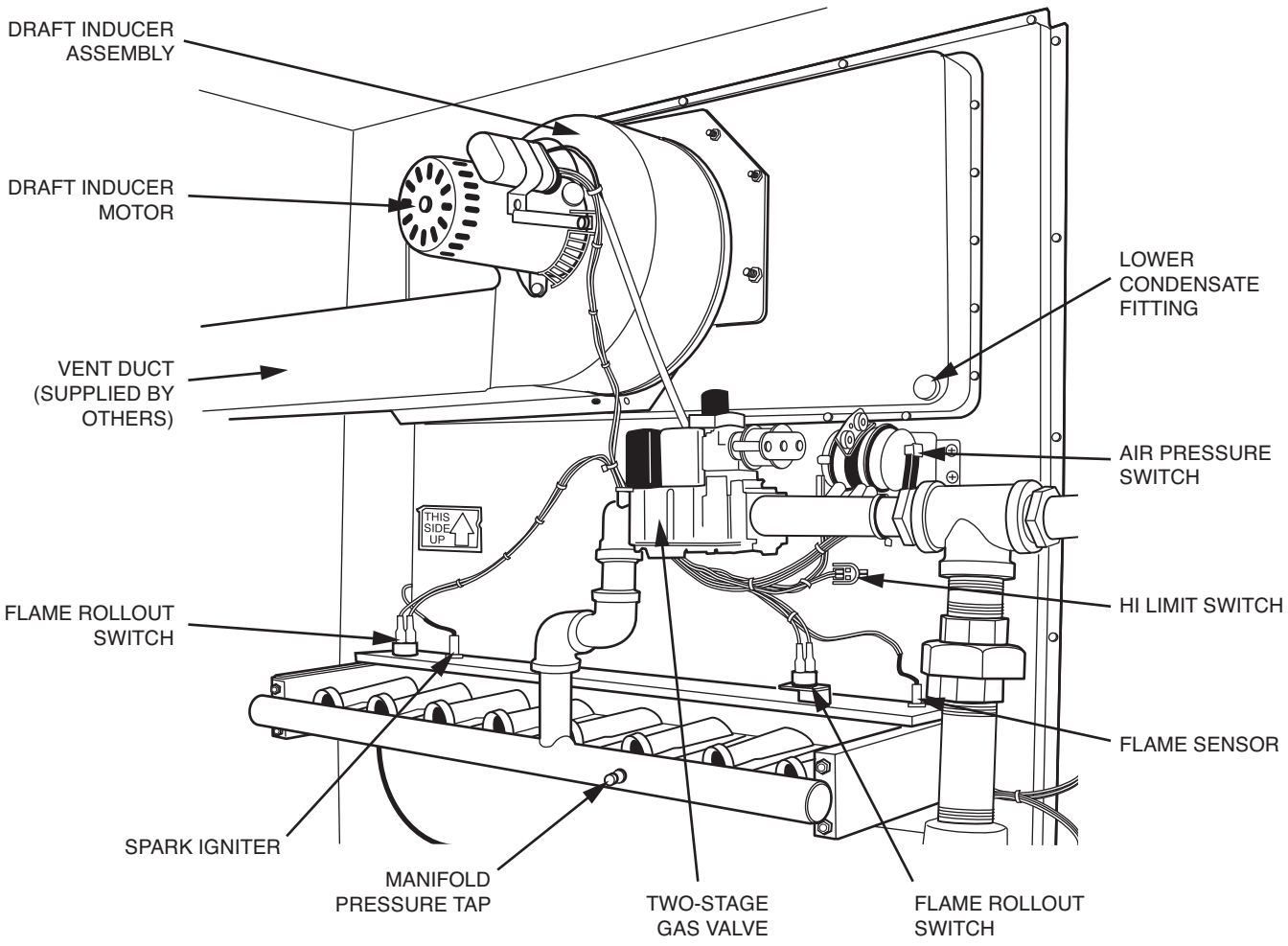


Fig. 50 — Vertical Unit with Staged Gas Heat

Draft Fan Pressure Measurement HM Series Furnace Module

1. Remove air pressure supply tube from fan at pressure switch connection. See Fig. 51, A.
2. Insert "T" into supply tube. See Fig. 51, B.
3. Attach additional piece of tubing from "T" to pressure switch. See Fig. 51, C.
4. Connect remaining leg of "T" to pressure measuring device (measure in. wg). See Fig. 51, D.

   NOTE: Connect to "low" side of digital monometer as combustion blower pressure is negative at test point.
5. Place system in operation and observe pressure reading. Check chart below to ensure that pressure is greater than noted for ambient operation.
6. After heater fires, allow unit to operate for 10 to 15 minutes. Observe pressure reading and check Table 31 to verify pressure is greater than noted for "steady state."

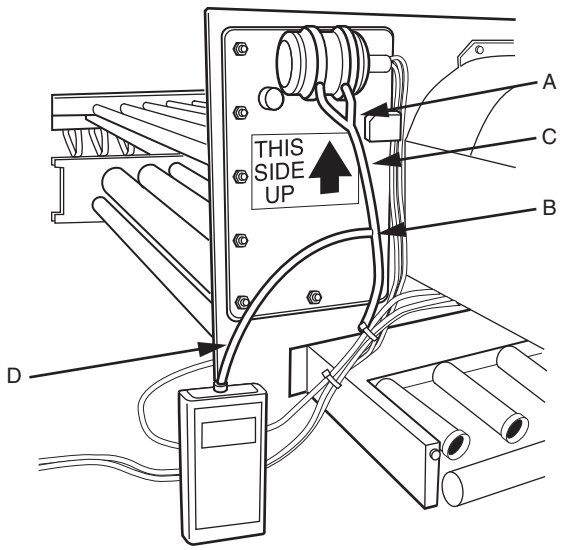


Fig. 51 — Draft Fan Pressure Measurement

Table 31 — Pressure Reading

SERIES	AMBIENT (Min. in. wg)	HIGH FIRE STEADY STATE (Min. in. wg)
HMA	-3.50	-1.70
HMB	-3.50	-1.90
HMG	-2.80	-1.70

NOTE: Readings below those noted indicate a potential problem with the installation and may be the result of low voltage to combustion blower motor, a loose or damaged blower wheel, restriction in the vent piping, inadequate vent system, or negative pressure in the building (indoor applications only).

Manifold Pressures — The gas valve manifold pressures may be measured at the gas valve test ports, see Fig. 52. See Tables 32 and 33 for typical gas heat data points and modulating gas heat data points.

Modulating Gas Heat — If the OAT is below OAT heating set point, heating will be initiated. The modulating heat valve(s) will control to a LAT of 72 F. Units with modulating gas heat may also have 'Override' control. Override control (sometimes called high fire override) is used to quickly raise the space temperature. For example, if the space is cold early in the morning, the unit will sense the low space temperature and go into high fire override even if the outdoor temperature is not that cold. After the space temperature is in the normal range, the unit will then go back to the modulating output mode.

Units equipped with the optional modulating gas heat control will have several components in addition to the standard gas valve. These components includes the following:

MODULATING GAS VALVE — For an example of a modulating gas valve, see Fig. 53.

SIGNAL CONDITIONER (SC30) — See Fig. 54. The signal conditioner has three functions:

1. Convert the 62D,R controller's DC output signal of 0 to 10 VDC to a 0 to 20 VDC signal to provide compatibility with the modulating gas valve.
2. Controls the normally open relay used to switch inducer speed and gas valve stage. Closes or opens the relay based on the 62D,R controller's DC output to the SC30. Relay closes at approximately 5.3 VDC input. Relay opens at approximately 4.7 VDC input.
3. Provides an adjustable timer (0 to 30 secs) and adjustable VDC (5 to 15 VDC) output to the modulating gas valve at start up (powering of the SC30). Adjustment potentiometers:
   - R18 - 0 to 30 sec timer
   - R22 - 5 to 15 VDC output voltage

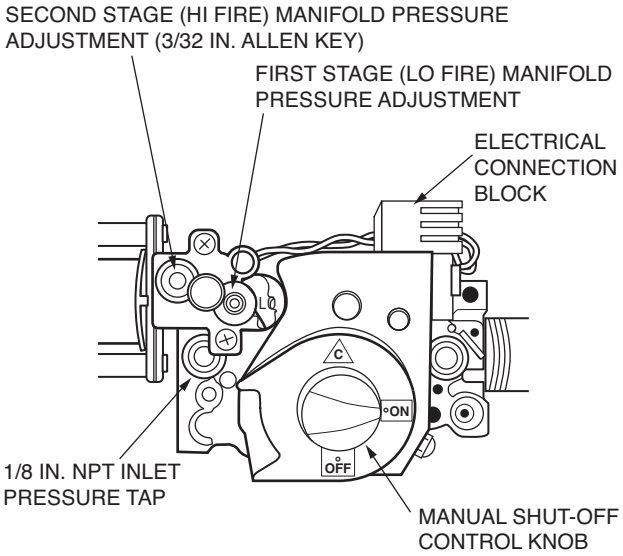


Fig. 52 — Gas Valve Manifold Pressure Ports

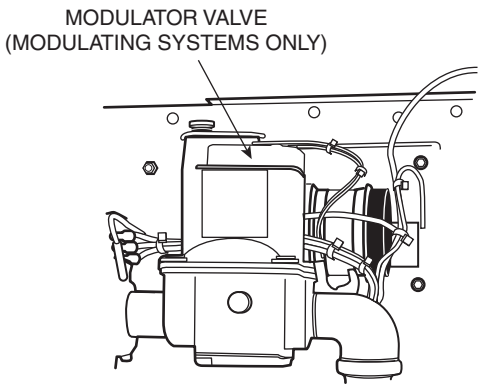


Fig. 53 — Modulating Gas Valve

Table 32 — Typical Gas Heat Data Points

Type of Gas: Natural Gas Pressure at Inlet (burner off): 13.5 in. wg max. Supply voltage at JB: Marked VAC ± 5%

HEATER OPERATING DATA	LOW FIRE	HIGH FIRE
Gas Pressure at Train Inlet	13.3 in. wg	13.0 in. wg (See rating plate for minimum)
Gas Pressure at Burner Manifold	1.1 to 1.3 in. wg	3.3 to 3.5 in. wg
Gas Input Rate	25 to 35% Maximum Input	Rated input less 5% Max.
CO2 in Flue Gas	1.8 to 3.2%	6.2 to 7.2%
CO in Flue Gas	<300 ppm	<50 ppm
Flue Gas Temperature at Discharge	>200 F	420 to 520 F Ambient Temperature: –40 to 70 F
Draft Fan at Discharge	–0.80 to –2.00 in. wg	–1.75 to –2.40 in. wg

Table 33 — Additional Data Points for Modulating Gas Heat

MODULATING SYSTEM OPERATION	ANALOG SIGNAL TO SC30	VDC TO MOD VALVE	MANIFOLD PRESSURE
(if applicable)	Initial Call for Heat 0 VDC 5 VDC 10 VDC	12.5 to 13.0 VDC 0.5 to 1.0 VDC 9.5 to 10.0 VDC 18.0 to 19.0 VDC	1.1 to 1.4 in. wg 0.4 to 0.6 in. wg 0.9 to 1.2 in. wg 3.2 to 3.5 in. wg

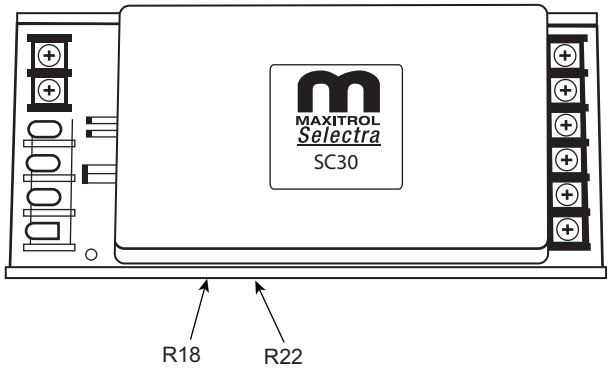


Fig. 54 — Signal Conditioner SC30

IMPORTANT: To avoid internal damage to the SC30 Signal Conditioner the transformer's secondary must not be grounded in any portion of the circuit external to the SC30 Signal Conditioner. If existing transformer is grounded, a separate isolated transformer must be used.

INDUCER FAN SPEED CONTROL — For an example of an inducer fan speed control, see Fig. 55.

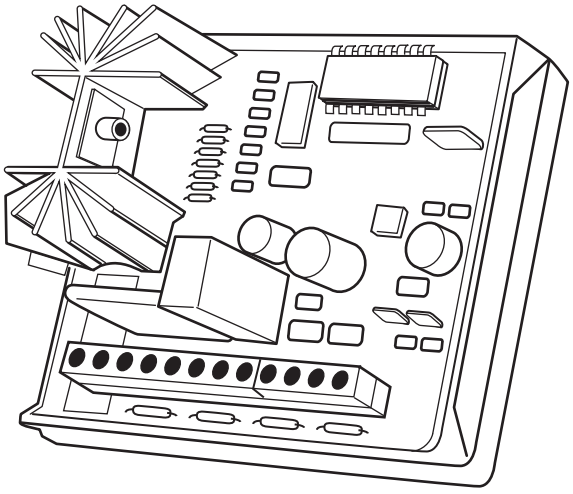


Fig. 55 — Inducer Fan Speed Control

TIMER RELAY CONTROL (TR1) — See Fig. 56. The timer function is as follows:

1. The TR1 receives a 24 vac signal (terminal 7), normally from the ignition control MV gas valve output or the thermostat circuit (see Note 1). Upon receiving the signal the TR1 begins multiple tasks. It starts Timer No. 1, lights the SR LED, places the 2-stage gas valve in either the high or low pressure stage (terminal 9), places the inducer in either the high or low speed (terminal 12, 13) and powers the Series 3 or SC30 (terminal 10).

   The TR1 maintains this mode throughout Timer No. 1's duration, regardless of the temperature controller input (it is ignoring terminal 6). The initial gas valve stage, intial inducer stage, and legth of time are customer specified and programmed into the TR1. Specifying these factors can eliminate problems associated with lighting the burner at an undesirable input and condensation occuring at start-up. (When using the Maxitrol modulating system, the SC30 and Series 3 controllers output a constant voltage to the modulating gas valve thereby fixing an approximate input rate during the set time after power up. The time, which is often set equal to the TR1 Timer No.1 duration, and the output voltage are fixed or adjustable. See SC30 and Series 3 literature.)
2. When Timer No. 1 expires, the TR1 defaults the gas valve and inducer to low pressure/speed mode and hands control of the required mode, high or low, to the temperature control system. The MR LED lights and the SR LED goes out. The terminal 6 input signal (0 to 24 VAC) now determines if the gas valve and inducer will remain in the low pressure/speed mode or switch over to the high pressure/speed mode.

   When the terminal 6 input signals the TR1 to switch to the high output mode, it starts Timer No. 2. Timer No. 2 is programmed to a customer specified time and is used to buffer the low to high switch point. When Timer No. 2 expires, the system switches from low output mode to high output mode (see Note 2).
3. The FR LED lights when the inducer operates in high speed.
4. The CR LED lights when the gas valve operates in the high pressure stage.
5. Use terminal 8 to accept a "made" inducer high air flow switch (HAFS) signal. If the 24 VAC signal is not received, the TR1 keeps the gas valve in the low pressure stage, regardless of the terminal 6 input signal.

NOTE 1: Timer No. 1 resets each time power is removed from terminal 7. Tip: By reseting each time power is removed from terminal 7, the fan purge setting and time do not need to be considered, and the start time duration will be the same, even after failed ignition attempt(s).

NOTE 2: Immediate low mode to high mode changeover after Timer #1 expiration, or upon recieving required terminal 6 signal, can be accomplished by specifying Timer No. 2 to zero seconds.

⚠ WARNING

To avoid internal damage to the TR1, Transformer No. 2 (see Fig. 57) secondary must not be gounded in any portion of the circuit external to the A1093/SC30. A separate, independent transformer is recommended.

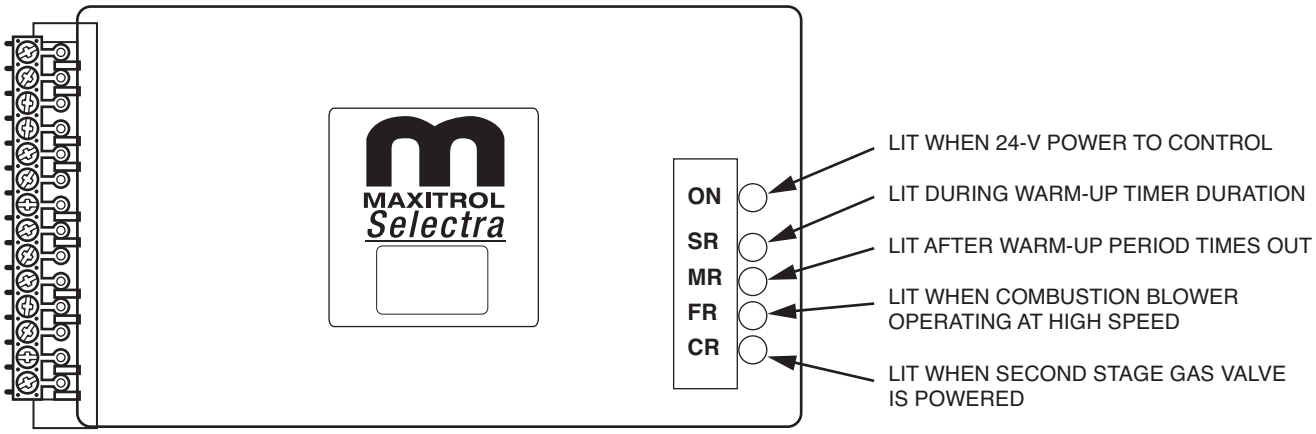


Fig. 56 — Timer Relay Control (TR1)

SEQUENCE OF OPERATION FOR ELECTRONIC MODULATION WITH INDUCER SPEED CONTROL — When the system is powered up 24 VAC will be applied to the ignition control (IC) terminals 24VAC/R and to the Timer Relay Control (TR1). The ignition control will reset, perform a self check routine, initiate full time flame sensing, flash the diagnostics LED for up to four seconds and enter the thermostat scan standby state. The amber light on the TR1 will be lit indicating it is in the ready position. See Fig. 56.

Call for Heat

1. Thermostat (heat enable) closes on call for heat.
2. 24 VAC to is supplied to IC terminal TH, provided limit switch is in closed position.
3. The control will check that pressure switch contacts are open (IC terminal PSW is not powered).
4. Combustion blower is then energized at high speed.
5. When the Air Switch (APS1) closes, a 15-second pre-purge period begins.
6. At end of pre-purge period, the spark commences and the first stage gas valve is energized for the trial for ignition period.
7. TR1 is powered (terminal 7) simultaneously (SR LED lit) and begins timing a 90-second warm-up period while maintaining the combustion blower at high speed (FR LED lit) and powers the SC30. The SC30 will output 12 to 13 VDC to the modulating control valve during the timing duration (90 seconds) of TR1, regardless of the analog input signal to SC30 terminals 7 and 8.
8. Burners ignite and cross light, operating at the adjusted mid-fire input rate (manifold pressure set at 1.2 in. to 1.5 in. wg).
9. When flame is detected by flame sensor, the spark is shutoff immediately and gas valve(s) and combustion blower remain energized.
10. When the initial timer in TR1 times out, it defaults the gas valve to low fire and the combustion blower to low speed and returns control of the operating mode to the building temperature controller. The SR LED turns off and the MR LED is lit.
11. If the controller is providing an analog signal between 0.5 and 5.3 VDC to the SC30 control, the system will continue to run at low speed combustion blower and with only the first stage valve open. The modulating valve will be powered proportional to the input voltage signal from the controller, and will open or close changing the gas manifold pressure. Manifold pressure will vary from 0.3 to 1.2 in. wg operating in this mode.
12. If the signal increases above 5.3 VDC, the SC30 relay closes powering terminal 6 on the TR1, and starts a second time delay of 15 seconds. At the end of this time delay the fan switches to high speed (FR LED lit) and the second stage gas valve opens (CR LED lit) through the TR1 (terminal 9) provided the High Air Switch contacts are closed. The manifold pressure will vary from 1.4 to 3.5 in. wg in this mode.
13. During heating operation, the thermostat, pressure switch and main burner flame are constantly monitored by the IC to assure proper system operation.
14. Operation continues in the high fire mode until the controller input signal to the SC30 control drops to 4.7 VDC. At this point the SC30 relay circuit opens (SC30 terminal 5 has no output) de-energizing the second stage valve and the TR1 switches the combustion blower to low speed operation. Low-fire modulation will continue as in Step 11.
15. When the thermostat (temperature controller) is satisfied and the demand for heat ends, the heat enable contact opens and the first stage valve is de-energized immediately, the control senses loss of flame and a 30-second post-purge occurs (at high speed) before de-energizing the combustion blower.

Ignition and Operational Failures during a call for Heat Result in “lockout” of theIgnition Control

1. If flame is lost during an operational cycle, the control will respond within 0.8 seconds. The spark will be energized for a trial for ignition period to attempt to relight burners and prove flame sensor. If flame is re-established, normal operation resumes.
2. If the burners fail to light or carryover during a trial for ignition, the control will attempt two additional ignition trials. If no flame is present at the flame sensor within 10 seconds, the spark and gas valve will be de-energized. A 15-second inter-purge period begins and the combustion blower continues to run. After the inter-purge period another ignition trial will take place.
3. If burner fails to light or prove the flame sensor following the two additional trials the control will go into lockout. The valve relay in the IC will be de-energized shutting of the gas valve immediately and the combustion blower following a 30-second post-purge period.

Recovery from Lockout

1. If the thermostat (controller) is still calling for heat one hour after a lockout occurs, the control will automatically reset and initiate a call for heat sequence.
2. The ignition control may also be manually reset, by turning the thermostat (controller) down and back up to

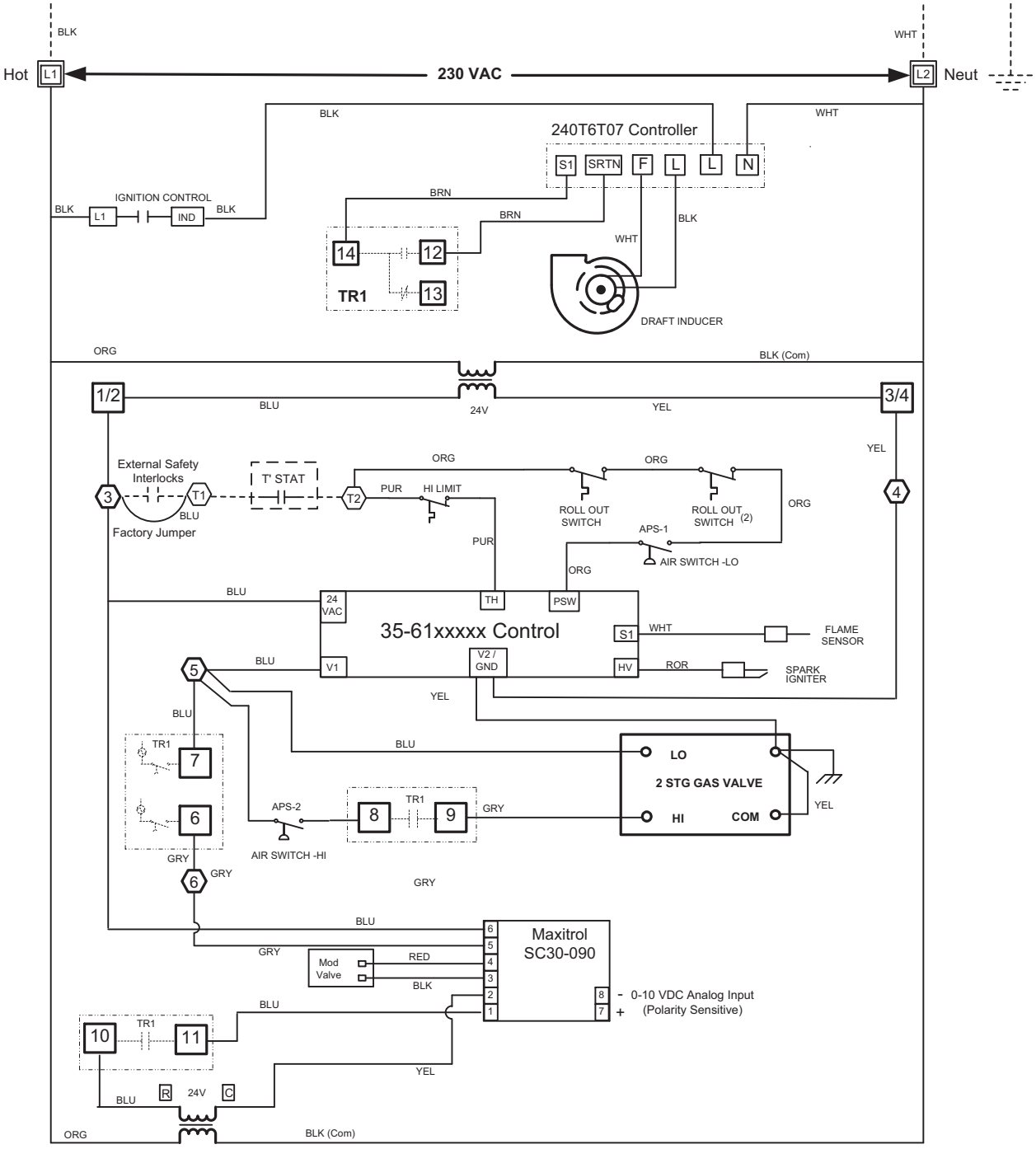
previous temperature setting or removing power (24V) to IC terminal 24VAC.

Fault Conditions and LED Key — Table 34 shows a list of LED flash codes and their meanings.

Table 34 — LED Codes

LED	MEANING
LED Steady On	Internal Control Fault
1 Flash	Combustion Air Flow Fault
2 Flash	Flame with No Call for Heat
3 Flash	Ignition Lockout

NOTE: LED flashes on for ¼ second, and off for ¼ second during fault condition. Pause between fault codes is 3 seconds.



CUSTOMER PROVIDED COMPONENT

CUSTOMER / FIELD WIRING

INTERNAL TERMINAL CONNECTION

EXTERNAL TERMINAL CONNECTION

TR1 TERMINAL CONNECTION

TIMER RELAY – TR1-090LH15

(2) 2nd ROLLOUT SWITCH ON HORIZONTAL BURNER TRAY ONLY

Fig. 57 — Modulating Heat Wiring Diagram

Electric Heat — The 62D units may be equipped with electric heat. The electric heat control may be staged or SCR control. Staged electric heat units with nominal heater capacity of 10 to 25 kW are two stages, 30 kW and larger staged heaters are four stage. SCR control is available on all heater sizes. See Fig. 58-62 for electric heater wiring diagrams.

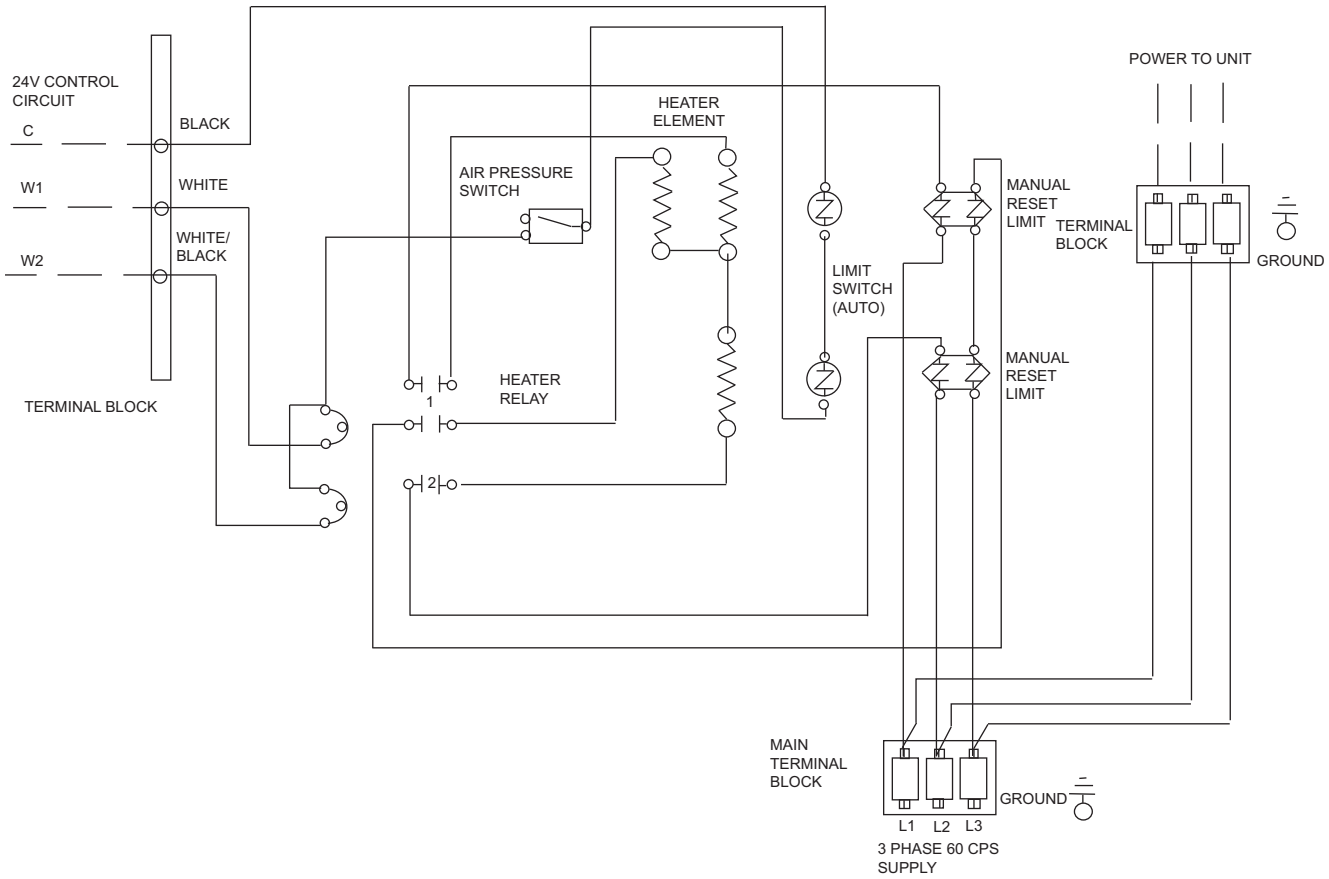


Fig. 58 — Two-Stage, 3-Element Electric Heat

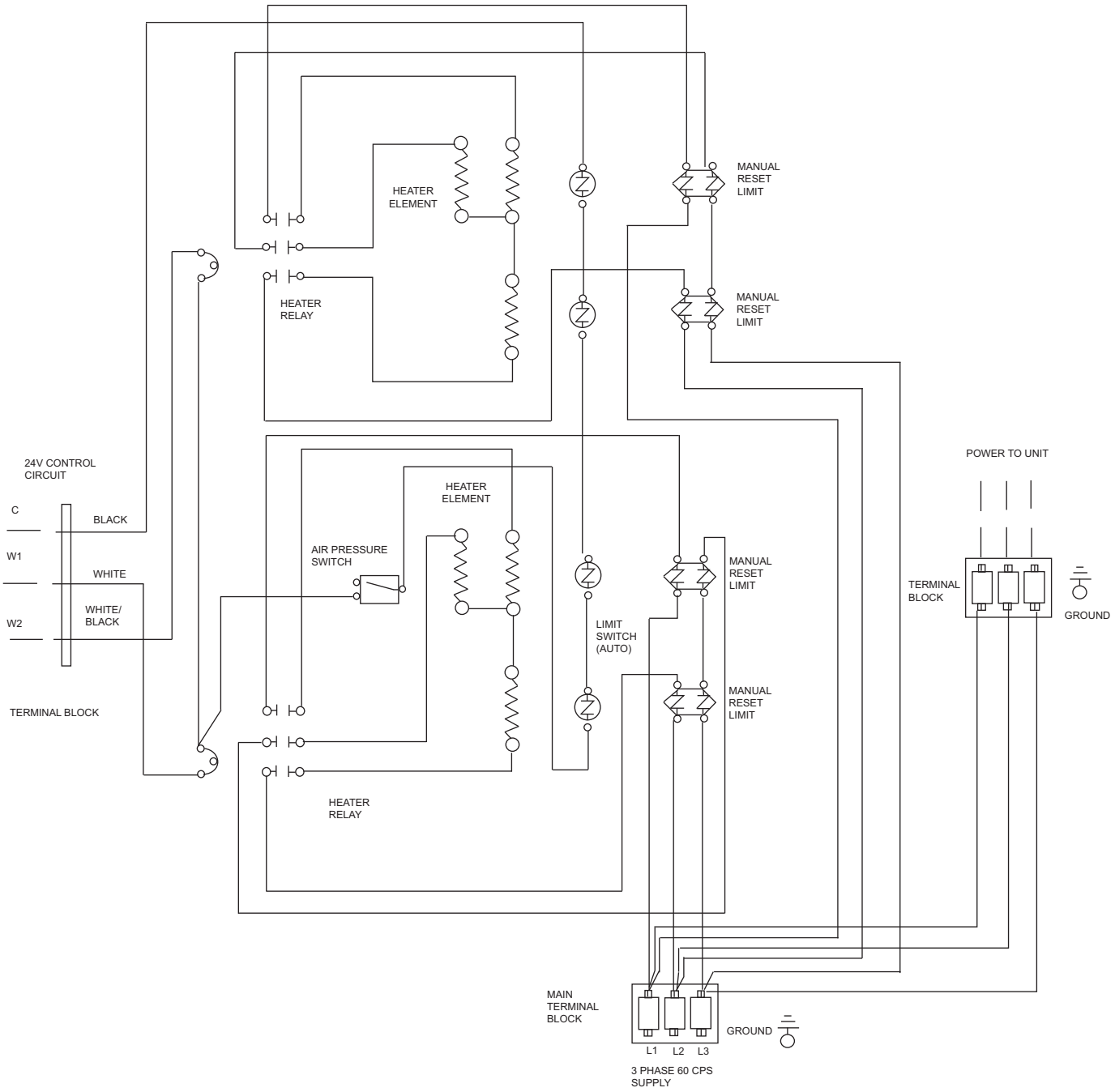


Fig. 59 — Two-Stage, 6-Element Electric Heat

SCR Controlled Electric Heat — If the OAT is below OAT heating setpoint, heating will be initiated. The SCRs will control to a LAT of 72 F.

Units equipped the optional SCR controlled electric heat will utilize a SCR power control, see Fig. 61 and 62. This power control will convert a 0 to 10 VDC input signal from the 62D controller to vary the heater output to maintain the desired leaving-air temperature (LAT). The power control has a DIP switch configuration for the type of input signal. See Table 35 for proper switch settings.

Table 35 — Power Switch Settings

INPUT SIGNAL	SWITCH #1	SWITCH #2	SWITCH #3	SWITCH #4
0 to 10 Vdc Control Signal (2 to 10 Vdc Control Range)	Off	Off	Off	On

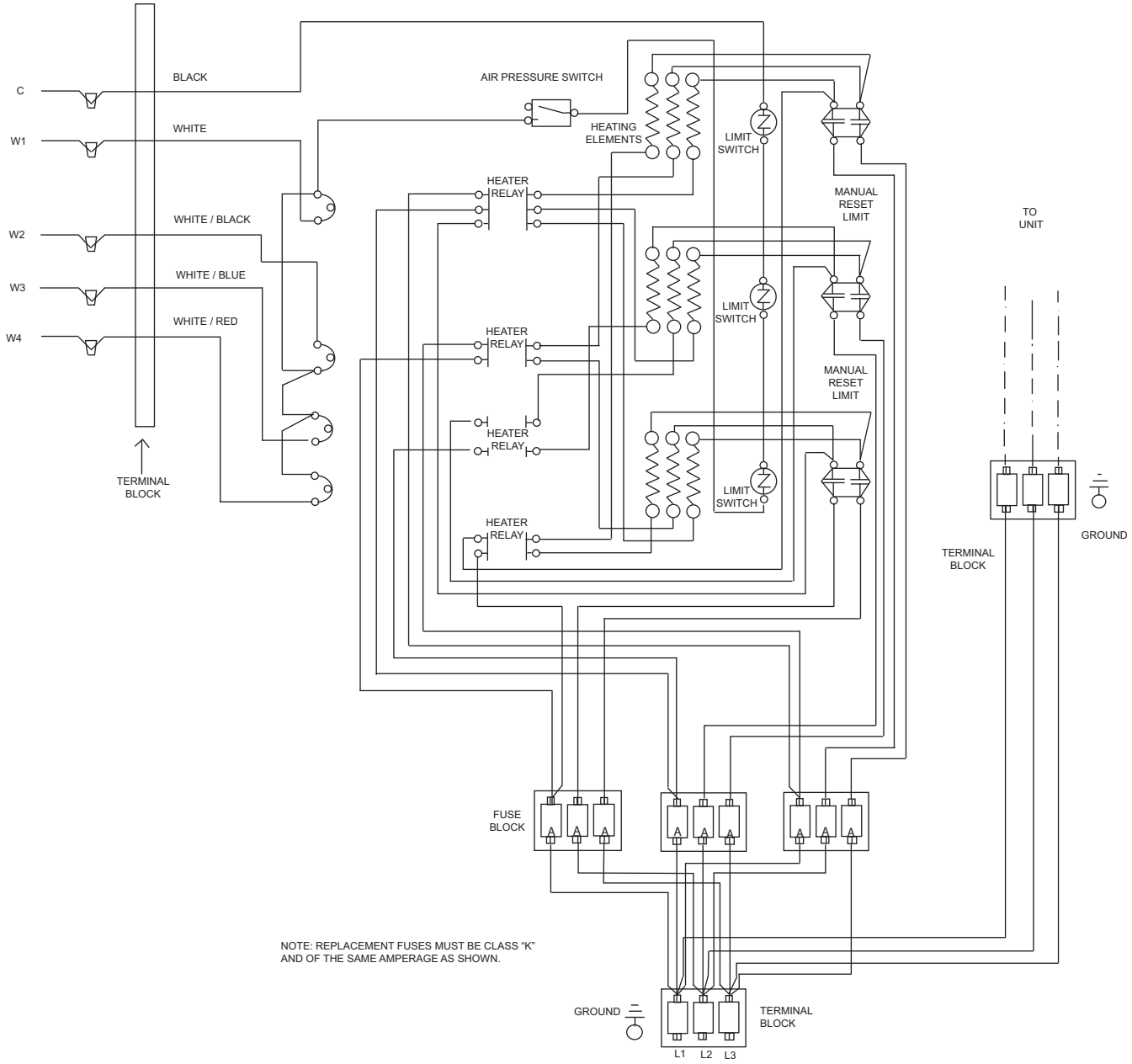


Fig. 60 — Four-Stage, Nine-Element Electric Heat

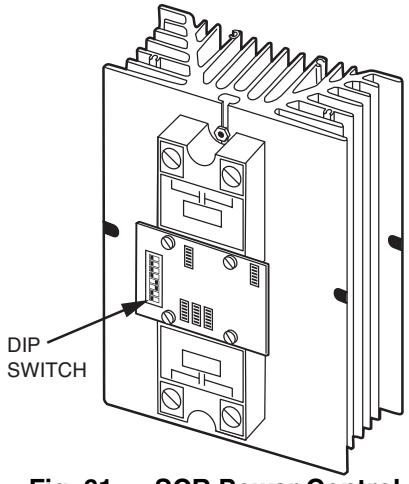


Fig. 61 — SCR Power Control

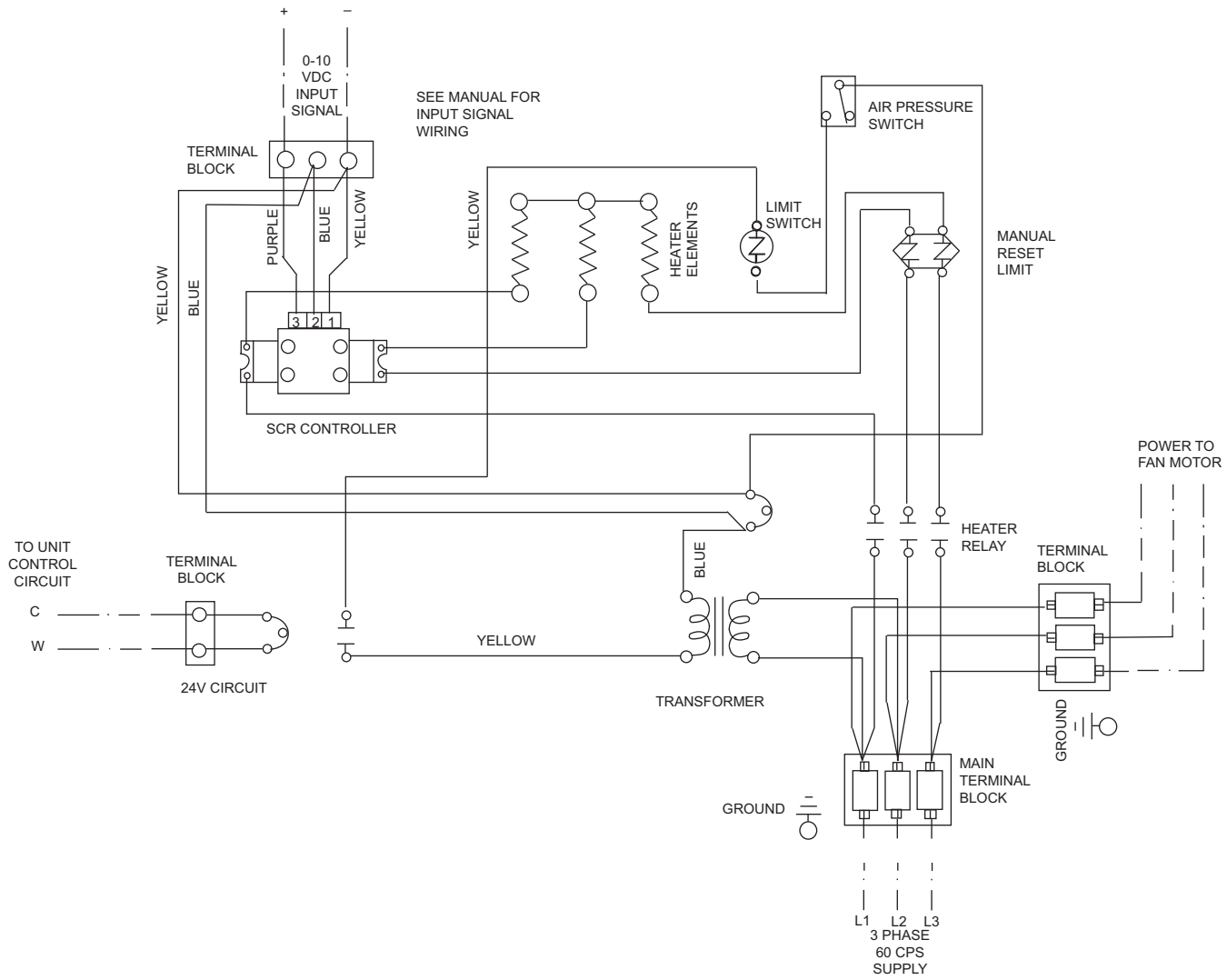


Fig. 62 — SCR Control Electric Heat

ENERGY CONSERVATION WHEEL CONTROL

The 62DC,DD and 62RC,RD units can be equipped with an optional enthalpy type Energy Conservation Wheel (ECW). ECW operation is enabled whenever the unit is in occupied mode. See the Operation section of this manual for ECW operating sequence. The ECW operates stand alone and is only enabled by the ALC controller. All other wheel functions (Defrost, Bypass, etc.) are controlled by the ECW controller.

The JCI 450 controller is used to control the ECW and ECW VFD based on outdoor-air temperature. The controller is configured at the factory for each specific unit configuration, but is field adjustable to account for job site condition requirements. See ECW Controller Navigation for adjustment procedure. See Fig. 63 for controller layout.

NOTE: Changes to parameters within the water regulating valve controller could cause improper unit operation or potential unit damage. Please consult service engineering before making any adjustments.

START-UP SCREEN — When the JCI 450 control module is powered on, the LCD displays the control module's current firmware version for approximately five seconds before it displays the Main (Input Status) screen. The number on the bottom of the screen identifies the Johnson Controls firmware.

MAIN SCREEN — During normal operation, the Main screens automatically scroll through the current status of each input sensor in the control system and display the sensor number, the unit of measurement, and the sensed condition value. Main screens are view-only; selections are not made in Main screens. The Main screens are the JCI 450 default screens. After 2 minutes of inactivity in any screen, the UI reverts to the Main screens. While the Main screens are scrolling, press the next button key repeatedly to scroll through and view the System Status screens for all inputs and outputs in the control system. While the Main screens are scrolling, press and hold the up and down buttons for 5 seconds to access the control system's Setup Start screens.

Table 36 — ECW Controller

Controller Name	Johnson Controls C450CQN-3C Control Module with Analog Outputs						
Controller Power	24 VAC (20-30 VAC), 10 VA minimum						
Input Signal	0-5 VDC						
Output Signal (Voltage Mode)	0-10 VDC, 10 mA maximum output current NOTE: The AO operates in Voltage Mode when connected to devices with impedances greater than 1,000 ohm. Devices that drop below 1,000 ohm may not operate as intended for Voltage Mode applications.						
Output Signal (Current Mode)	4-20 mA NOTE: The AO operates in Current Mode when connected to devices with impedances less than 300 ohm. Devices that exceed 300 ohm may not operate as intended for Current Mode applications.						
Signal Resolution	14 Bit						
Operating Range	-40-150 F (-40-80 C), 10-95% relative humidity, non-condensing						
Overall Dimensions	Width: 2.375 in. Height: 5 in. Depth: 2.375 in.						
Default Settigns (No VFD)	Sn-1: F	SEN1: Sn-d	dON: 4	dOff: 3	ONT: 0	OFFT: 0	SNF: OFF
	Sn-2: F	SEN2: Sn-d	dON: -4	dOff: -3			
Default Settings (VFD)	Sn-1: F	SEN1: Sn-d	dON: 4	dOff: 3	ONT: 0	OFFT: 0	SNF: OFF
	Sn-2: F	SEN2: Sn-d	dON: -4	dOff: -3			
	Sn-3: -	SENS3: Sn-1	SP3: 15	EP3: 0	OSP:100	OEP/I-C3: 0	SNF3: OFF

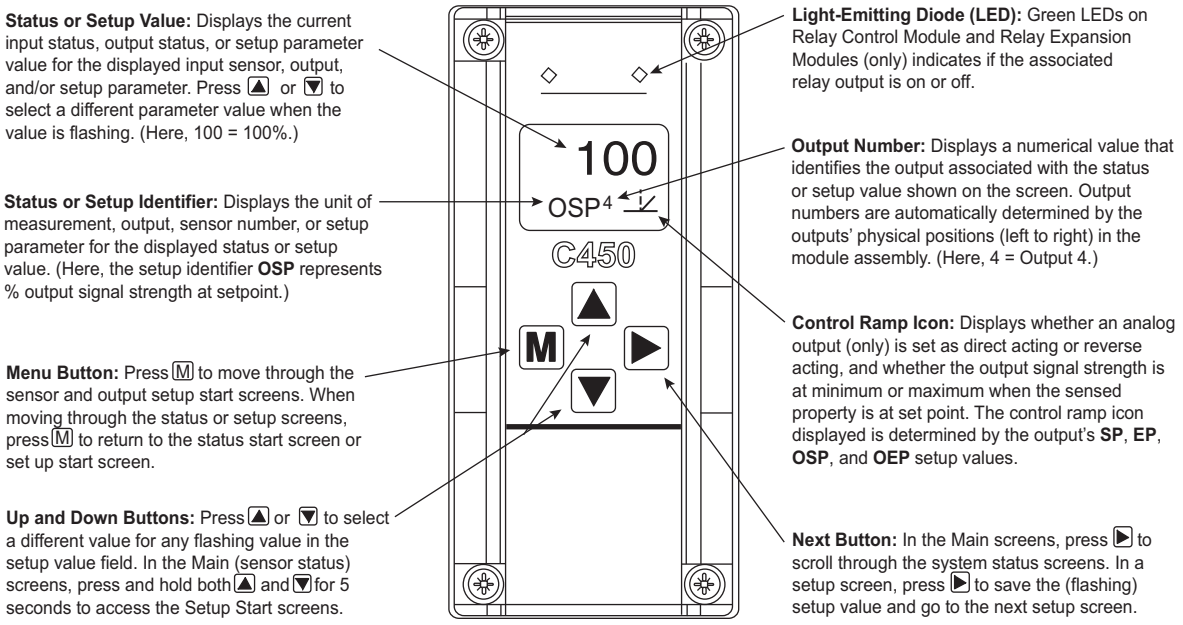


Fig. 63 — ECW Controller Navigation

ECW Controller Navigation

SYSTEM STATUS SCREENS — The System Status screens display current status of all inputs and outputs in your control system. System Status screens is view-only; selections are not made in Status screens. Relay output status screens display output number and relay status (On/Off). Analog output status screens display the output number, signal strength, and control ramp icons. Press the right next button repeatedly to scroll and view the System Status screens for the inputs and outputs in the control system. When you stop pressing the button, the displayed Status screen refreshes its value and remains displayed for 2 minutes before returning to the Main Screens.

VFD Defrost — The ECW may be equipped with a VFD for frost control. The VFD will slow the rotating speed to the configured minimum speed when the temperature of the return air coming off the wheel is equal to or less than 40 F (configurable in the VFD controller). Slowing the wheel with inhibit the formation of frost. Refer to the VFD section for additional information on the VFD.

ECW Maintenance

BEARINGS — All units will be equipped with permanently lubricated inboard bearings. These bearings should require no maintenance for the life of the equipment. If the ECW is equipped with external flanged bearings, lubricate annually with a petroleum based lubricant.

ECW Motor — Verify motor alignment and electrical connections.

Belt — Check motor alignment, belt tension and wear. Replace belt as required.

VFD — Check electrical connections, tighten as required.

Bypass — Check operation for binding, lubricate as required. Check actuator electrical connections.

Filters — Replace as required.

Seals — Check seal alignment, check for wear and cracking, Clean if required.

Wheel — The wheel is designed to last the life of the equipment. It should be protected by a MERV 8 filter to keep dust and dirt from the heat transfer surface. The wheel is somewhat self cleaning through its normal action of rotating in and out of countercurrent air flow streams. If the wheel becomes dirty, it

may be cleaned by blowing out the wheel with compressed air (20 psig maximum). In cases of severe contamination, the wheel may be washed with water following the procedures outlined below:

1. Turn off the unit and disconnect power.
2. Open the ECW access door and slide the cassette assembly out of the unit until the stop is reached.
3. With the wheel out, wash the media carefully with water.

IMPORTANT: DO NOT USE A PRESSURE WASHER, as it may damage the wheel and impede proper operation.

4. Once clean allow the media to dry. This may take several hours.
5. Re-install the ECW in the unit and close the access door.
6. Operate the unit. It may take several hours for the desiccant to completely dry and operate at full efficiency.

ENERGY MANAGEMENT RELAY

All 62D,R units have energy management relay (EMR) functionality built into the unit. The EMR can force the unit into unoccupied mode or force the unit into emergency shutdown. NOTE: If the unit is in emergency shutdown, a manual reset alarm will be issue. The unit will not function until the alarm has been manually cleared. To enable and configure EMR operation, see Configure Equipment section in controls navigation.

When the EMR relay is enabled, the ALC controller will look for a normally closed contact at multiplexor TB-F, F5 (UI-10). Consult wiring diagrams for wiring layout and tie in point. When the contact is closed, the EMR relay will not be active and the unit will operate normally. When the contact is open, the EMR will be active and the unit will go into unoccupied mode or emergency shutdown, depending on the configuration. The contact signal can come from a BAS system or external switch.

EVAPORATOR FAN

All 62 Series units are shipped with factory-installed fan belts and fixed pulleys. See Fig. 64-73 for fan curves. Ensure proper fan rotation prior to start up.

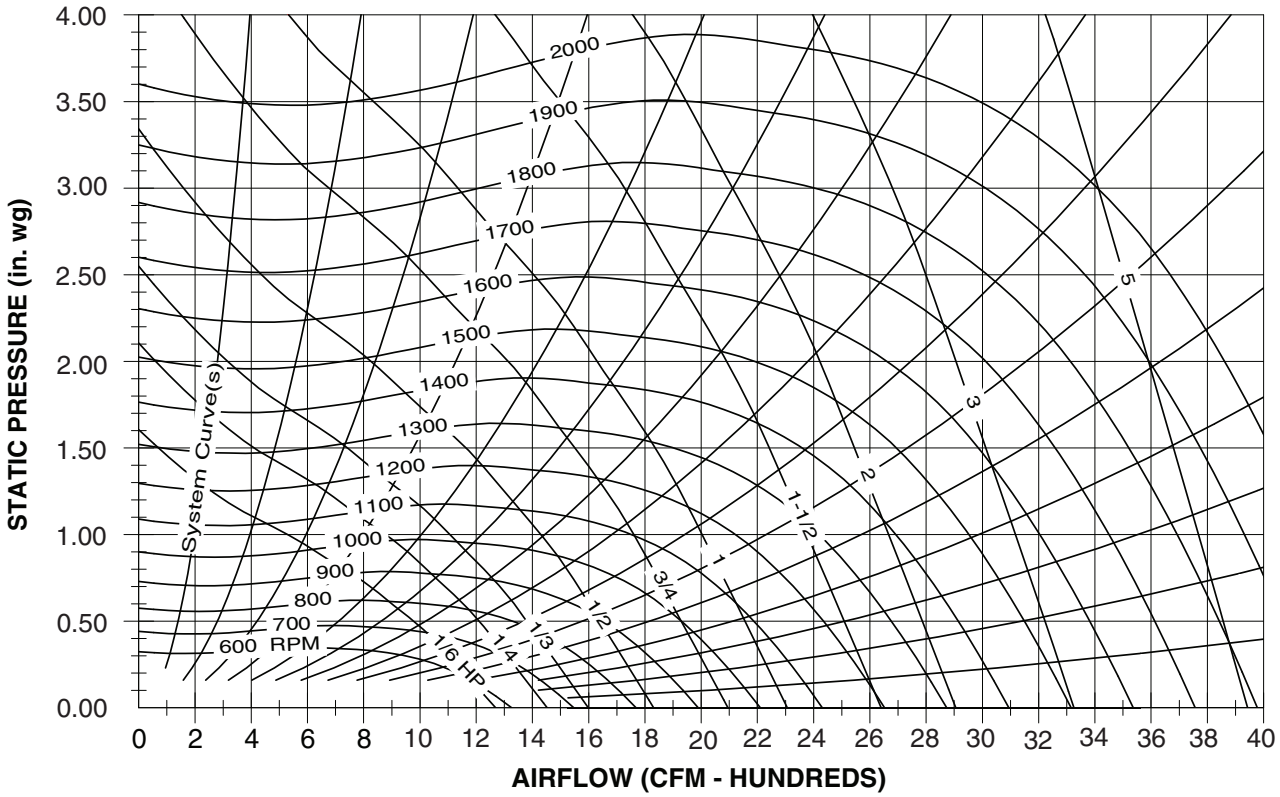


Fig. 64 — Forward Curved Fan Performance (9 x 7 in.)

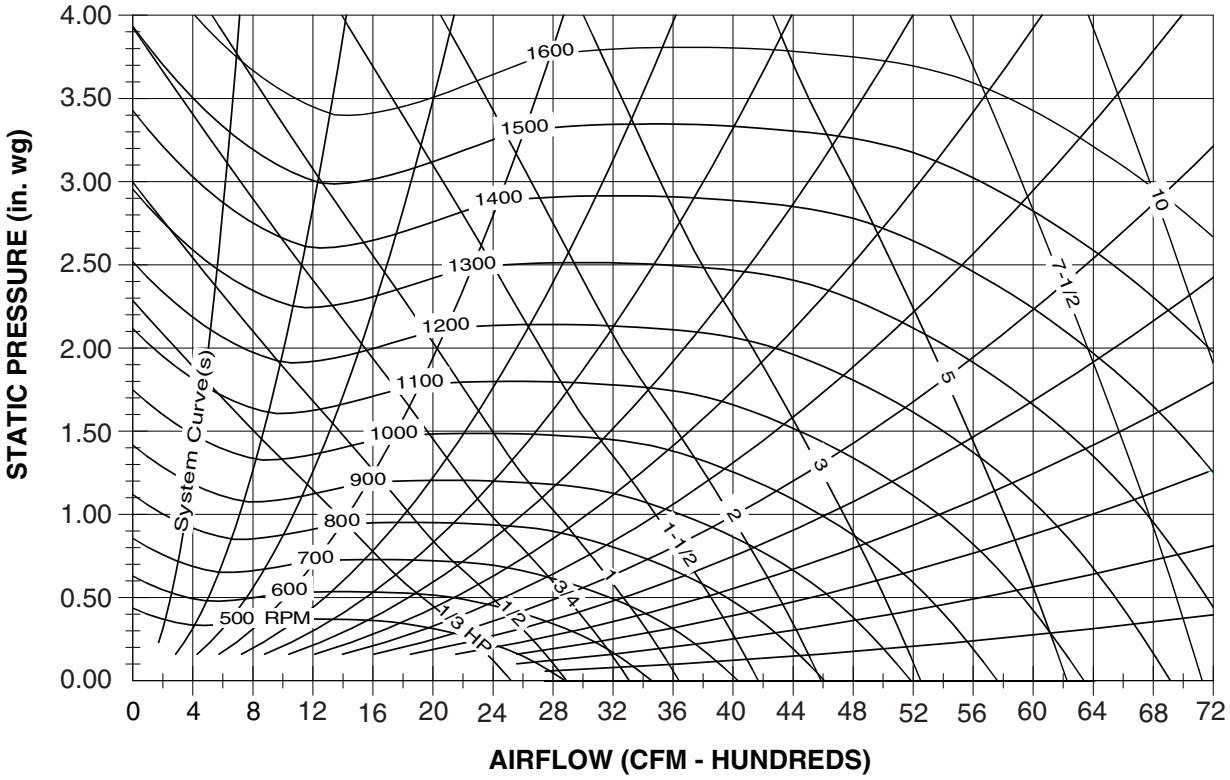


Fig. 65 — Forward Curved Fan Performance (12 x 9 in.)

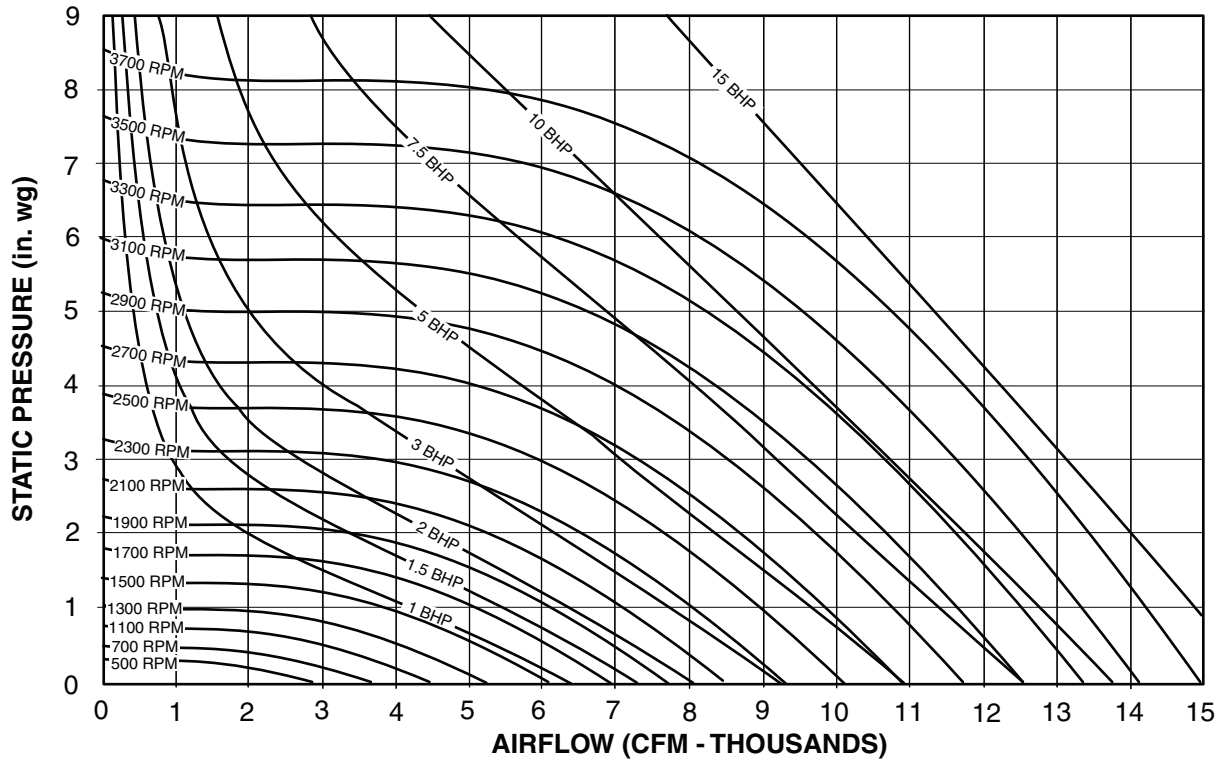


Fig. 66 — Airfoil Fan Performance (12 in.)

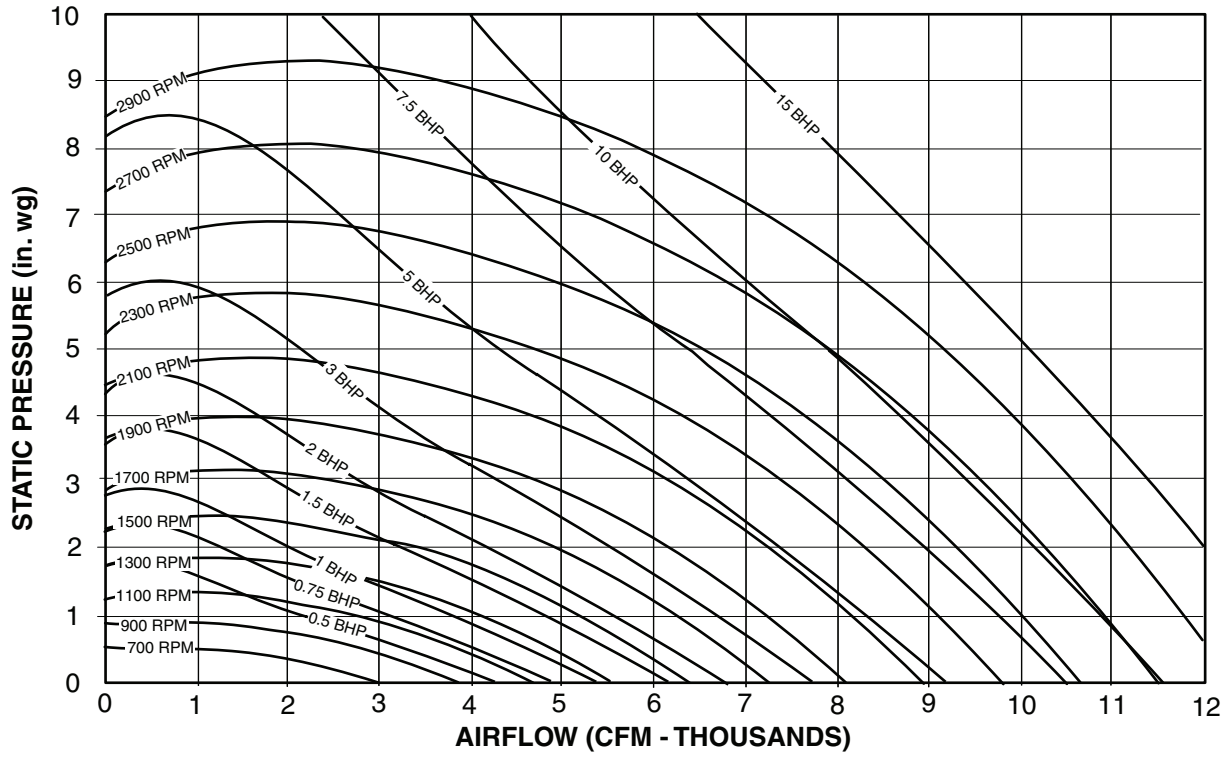


Fig. 67 — Airfoil Fan Performance (15 in.)

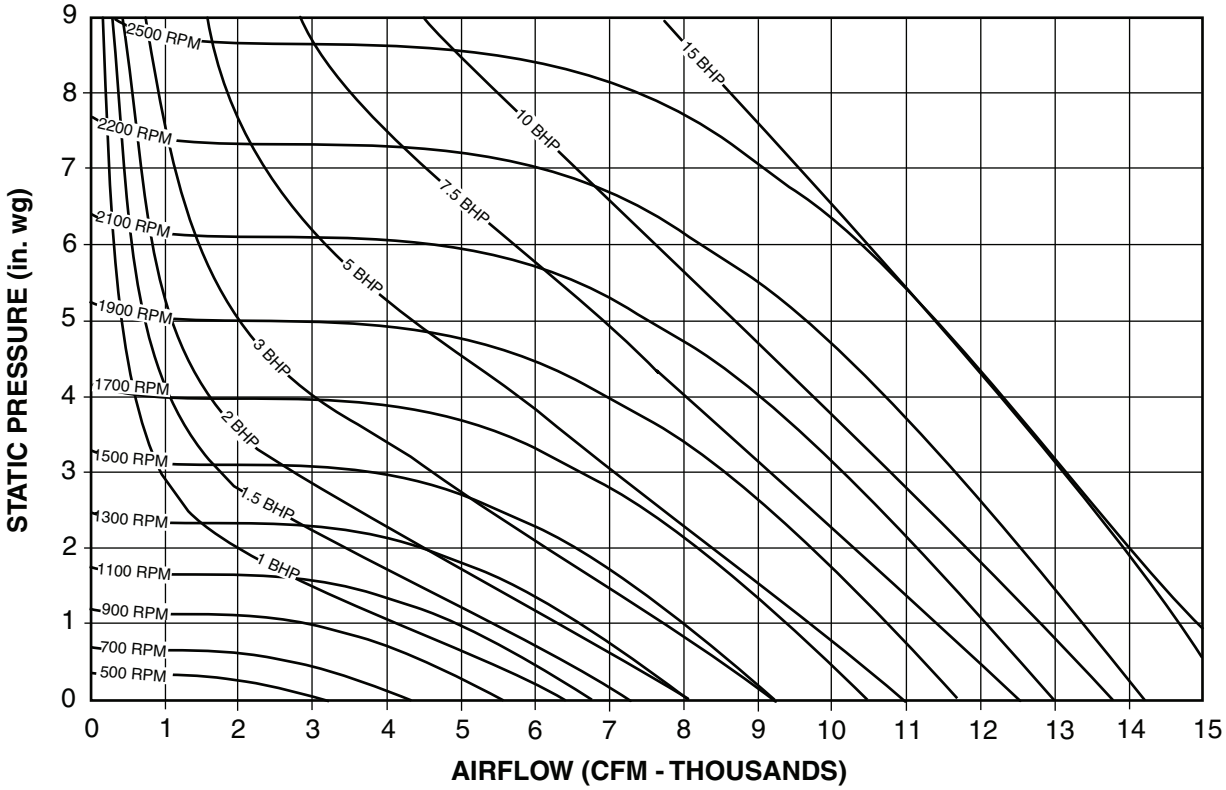


Fig. 68 — Airfoil Fan Performance (18 in.)

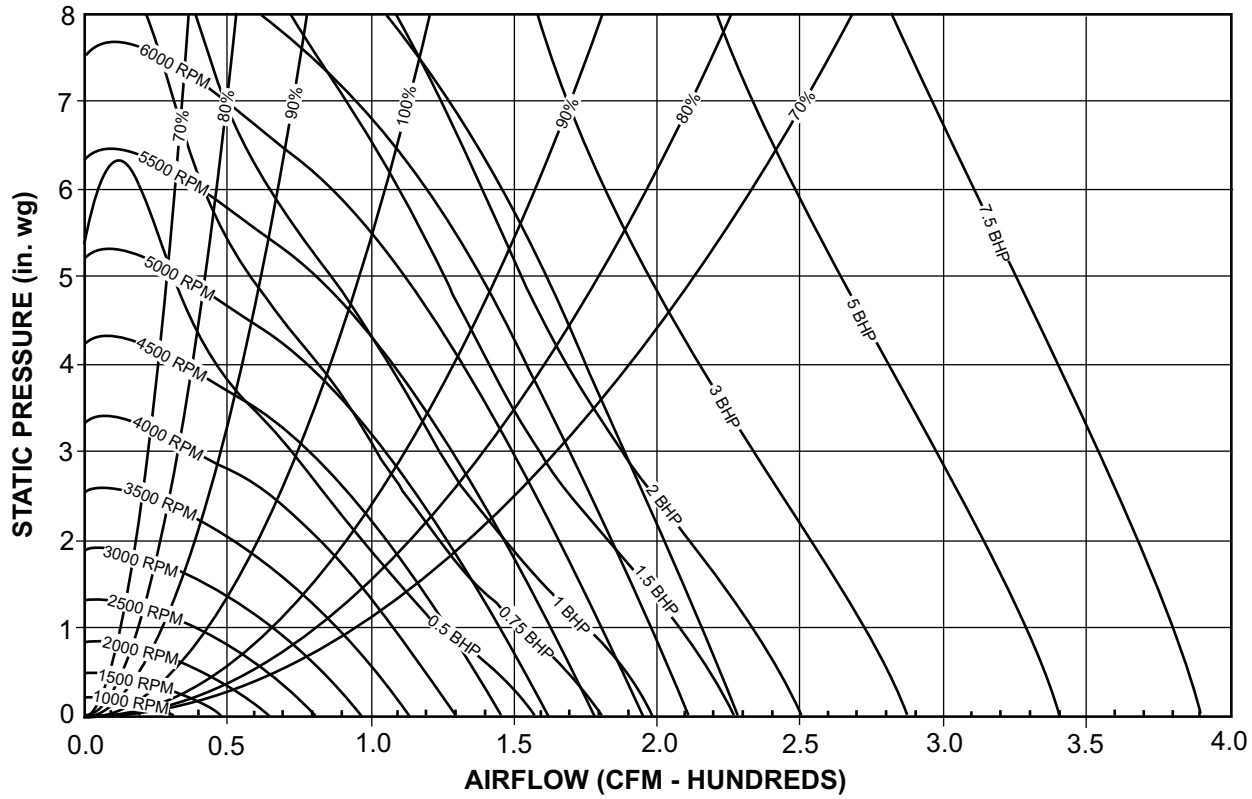


Fig. 69 — Backward Curved Fan Performance (180 mm)

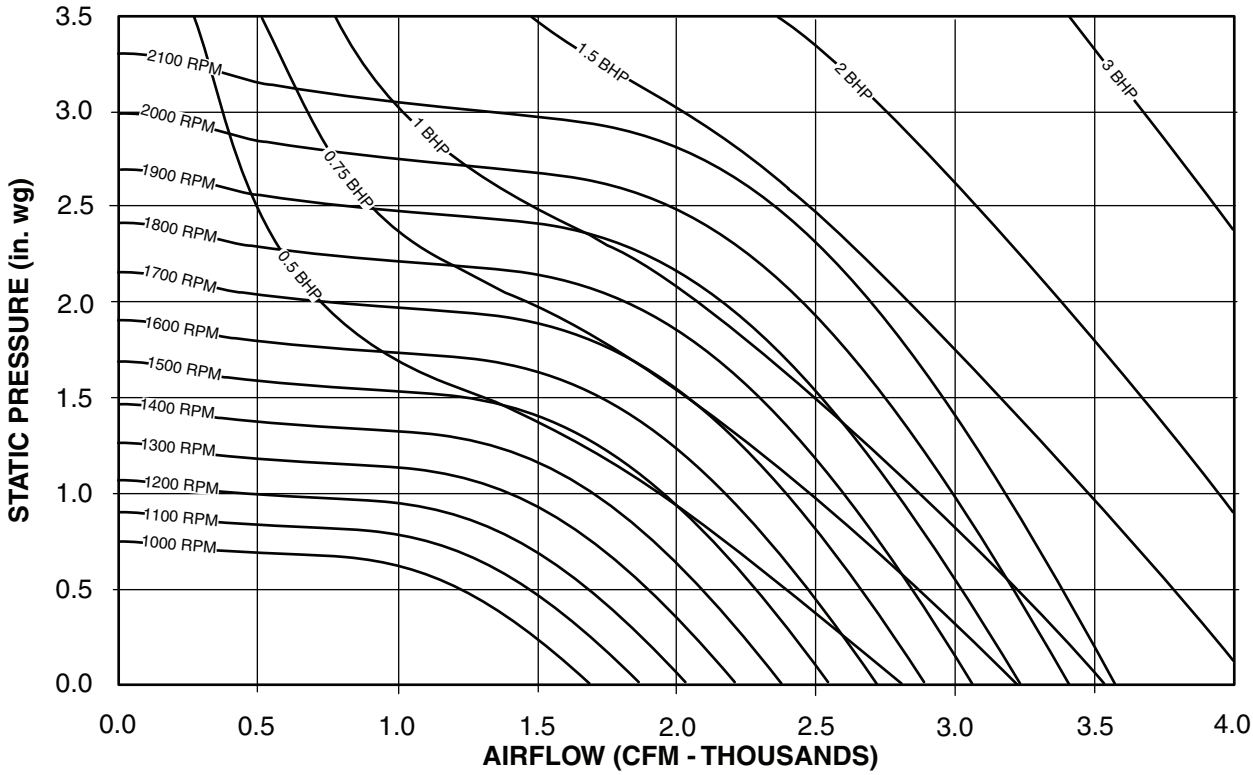


Fig. 70 — Backward Inclined Fan Performance (15 in.)

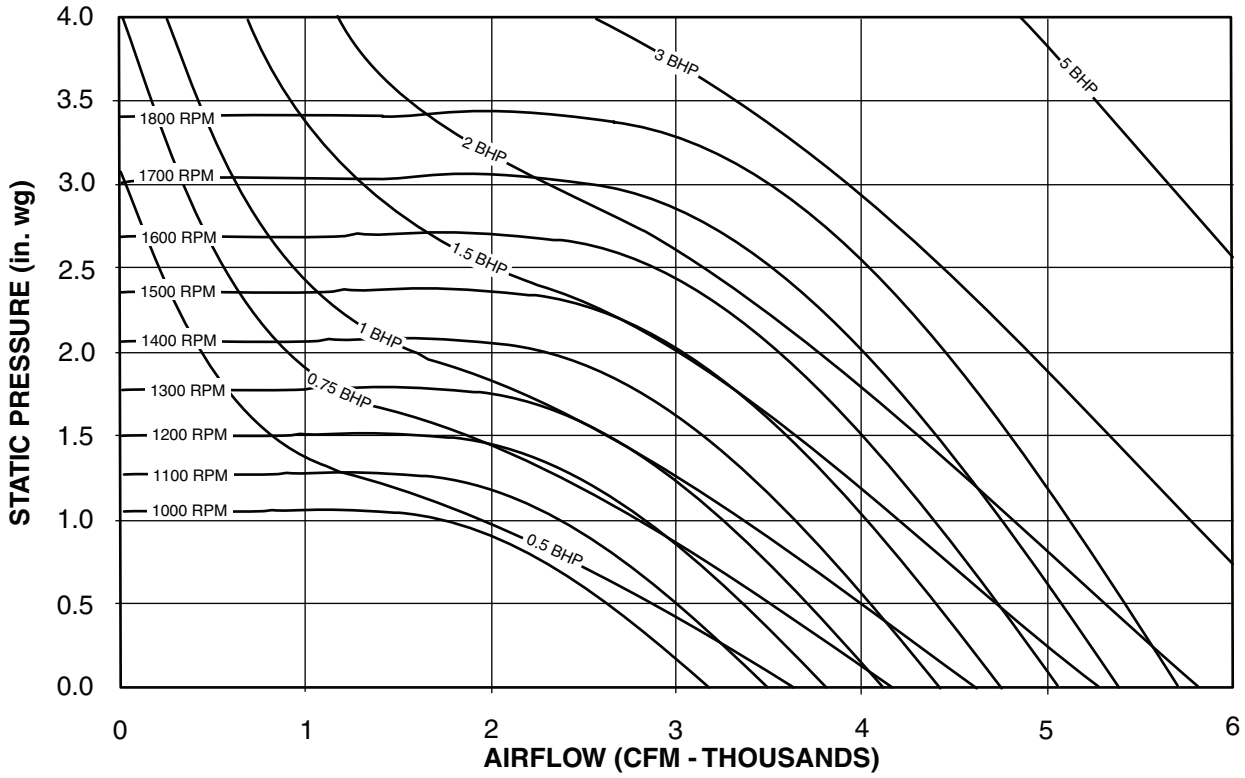


Fig. 71 — Backward Inclined Fan Performance (18.5 in.)

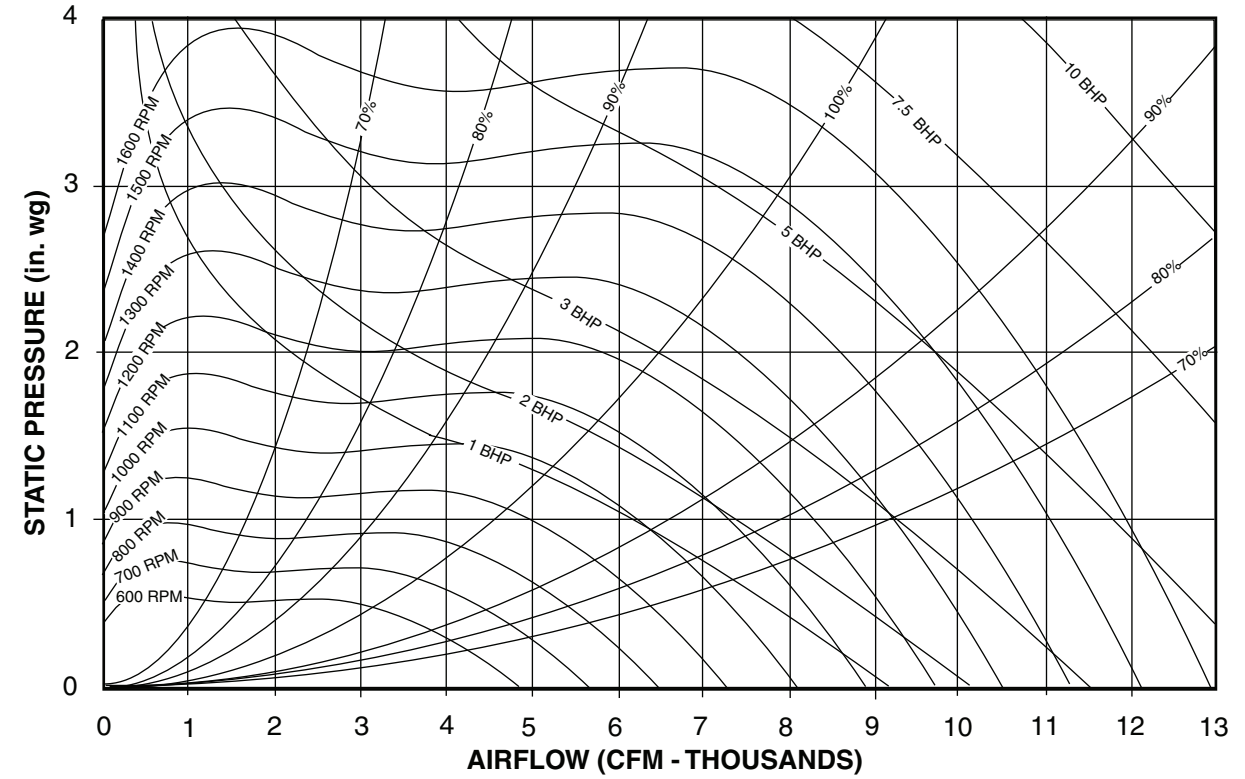


Fig. 72 — Backward Inclined Fan Performance (24.5 in.)

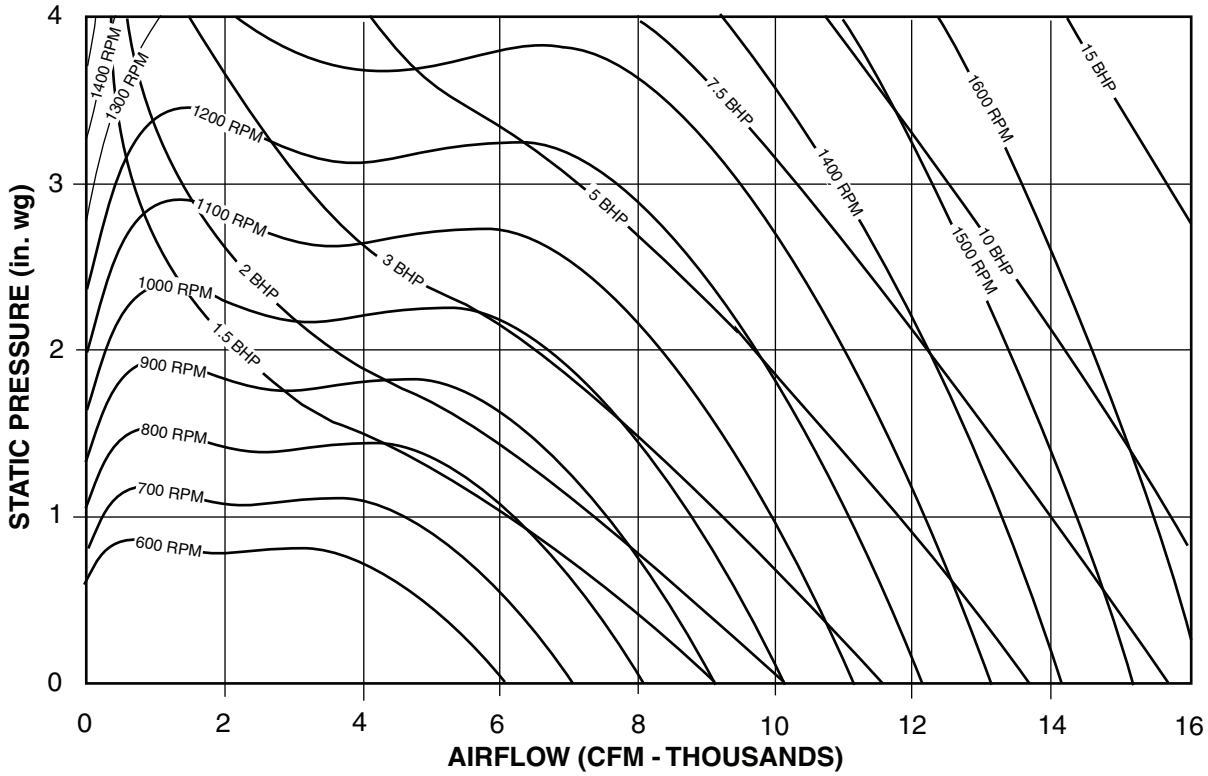


Fig. 73 — Backward Inclined Fan Performance (27 in.)

ELECTRICAL DATA

Wiring Diagrams — See Fig. 74 for typical wiring information. See Tables 37-43 for additional electrical data.

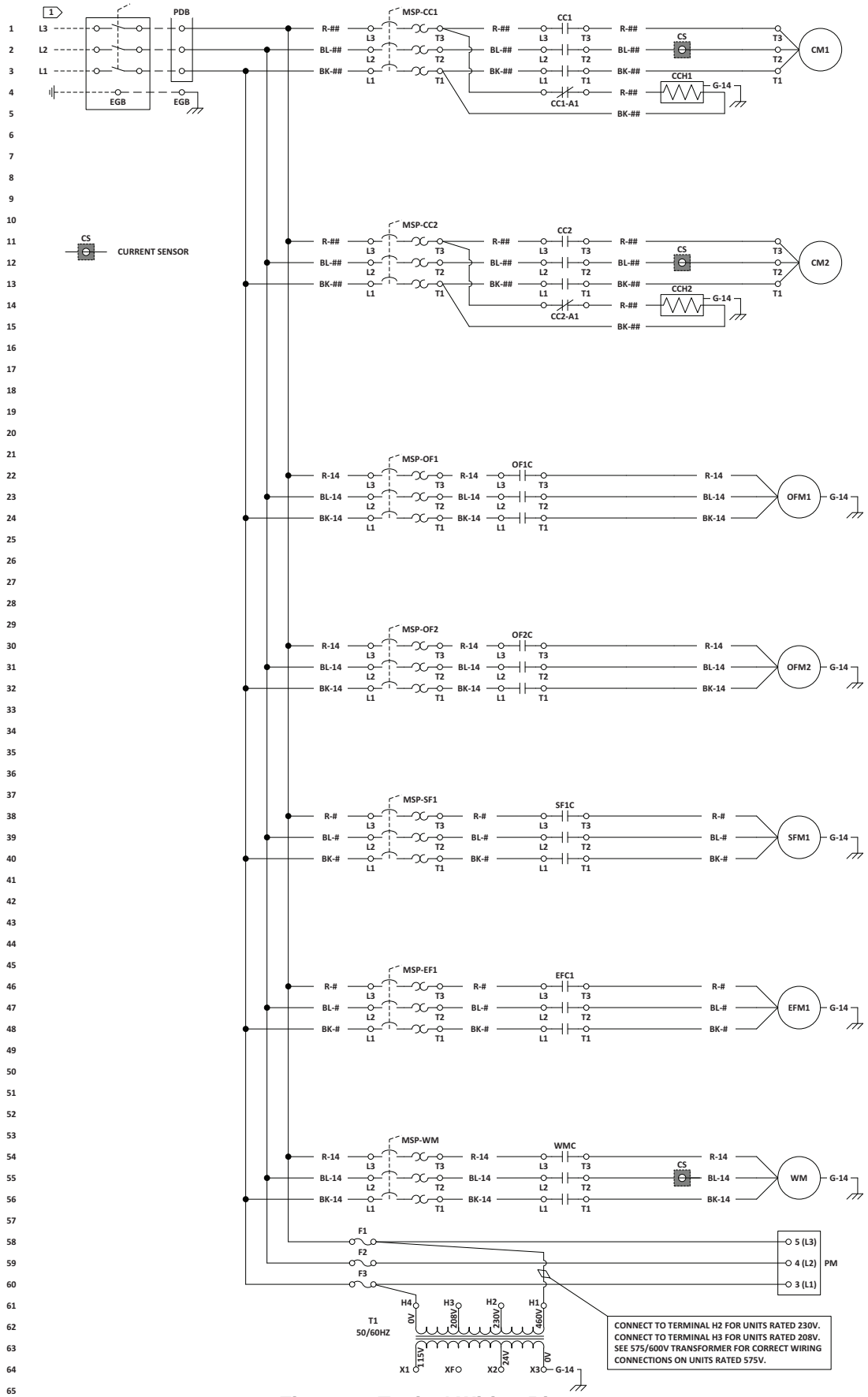


Fig. 74 — Typical Wiring Diagram

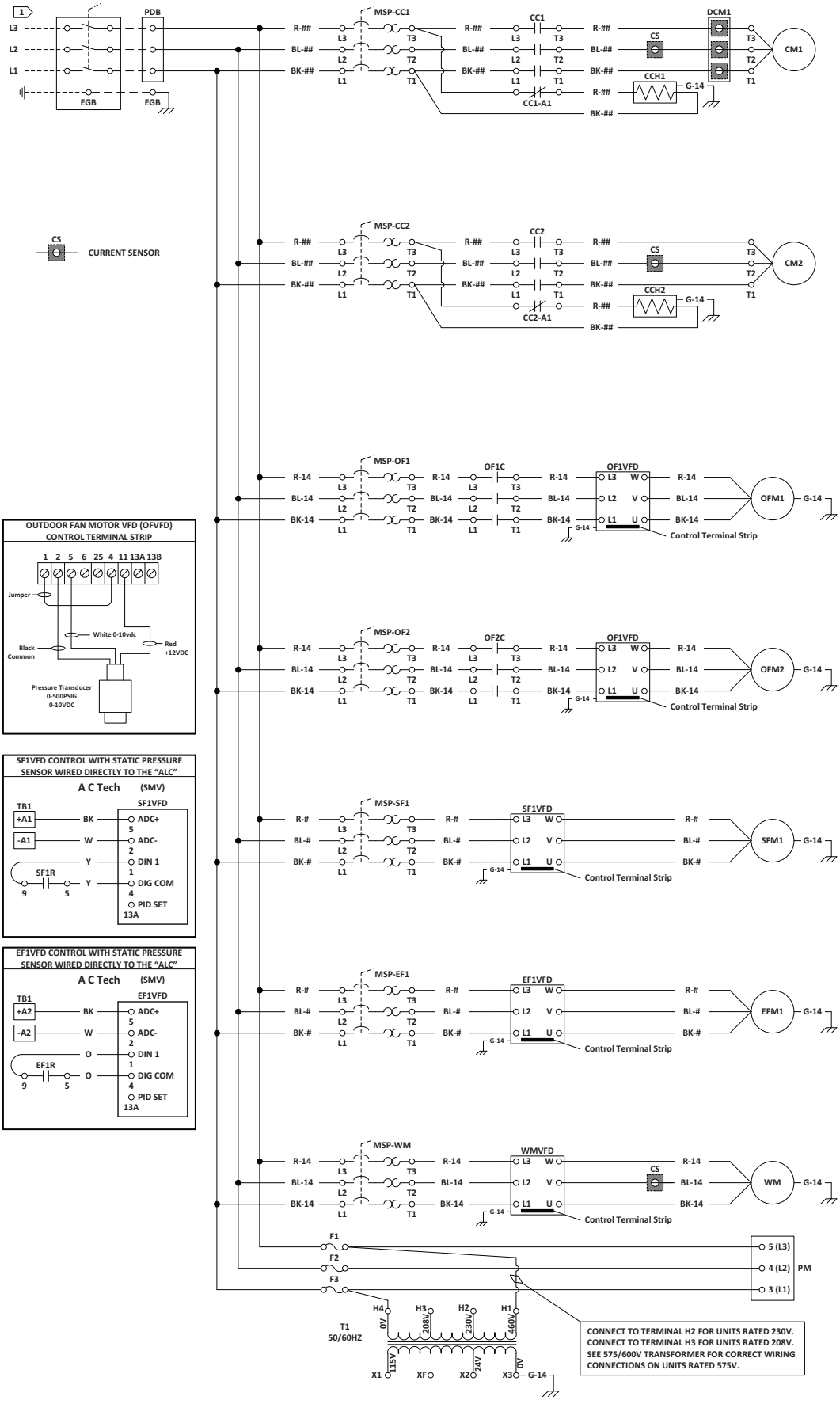


Fig. 74 — Typical Wiring Diagram (cont)

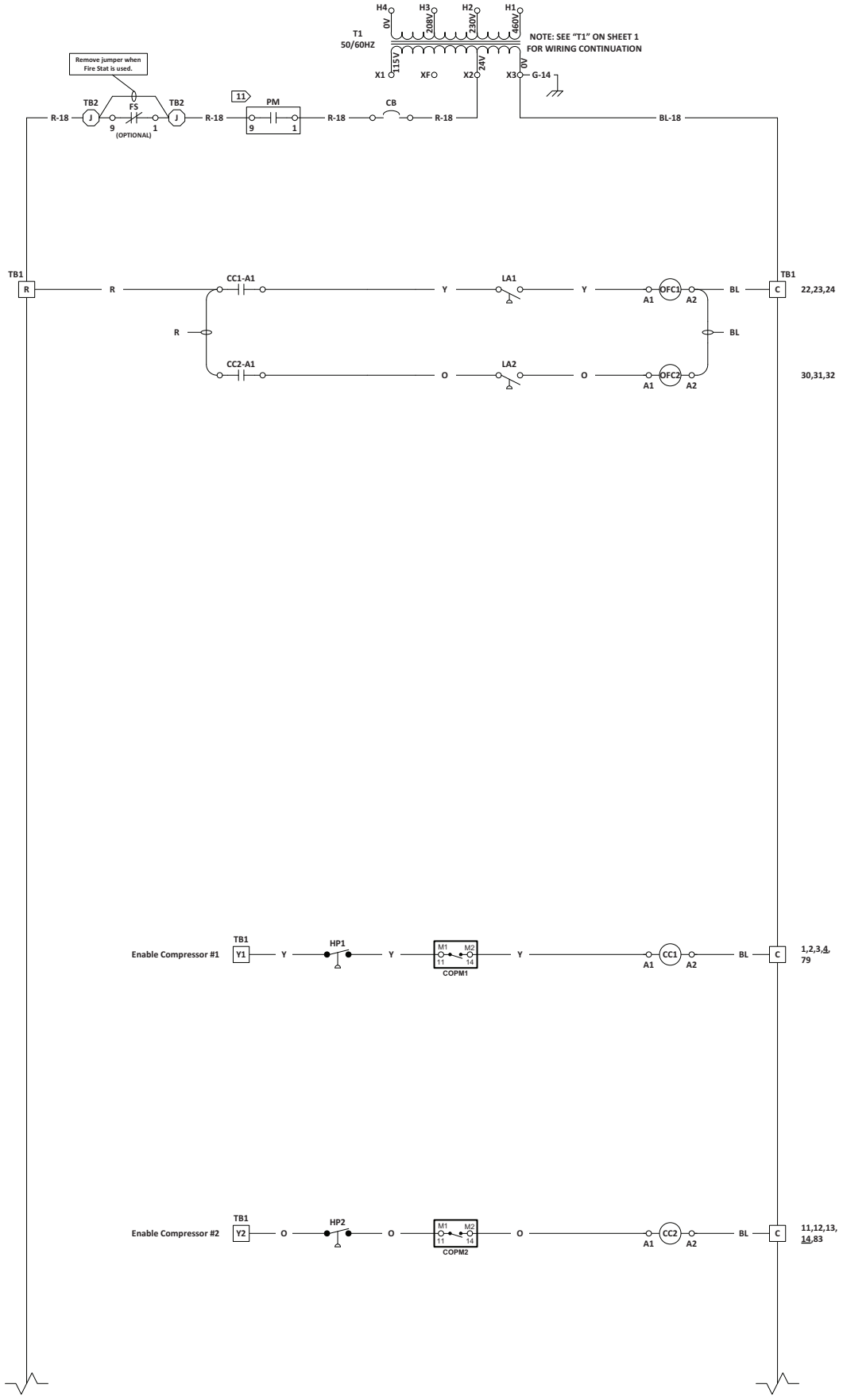


Fig. 74 — Typical Wiring Diagram (cont)

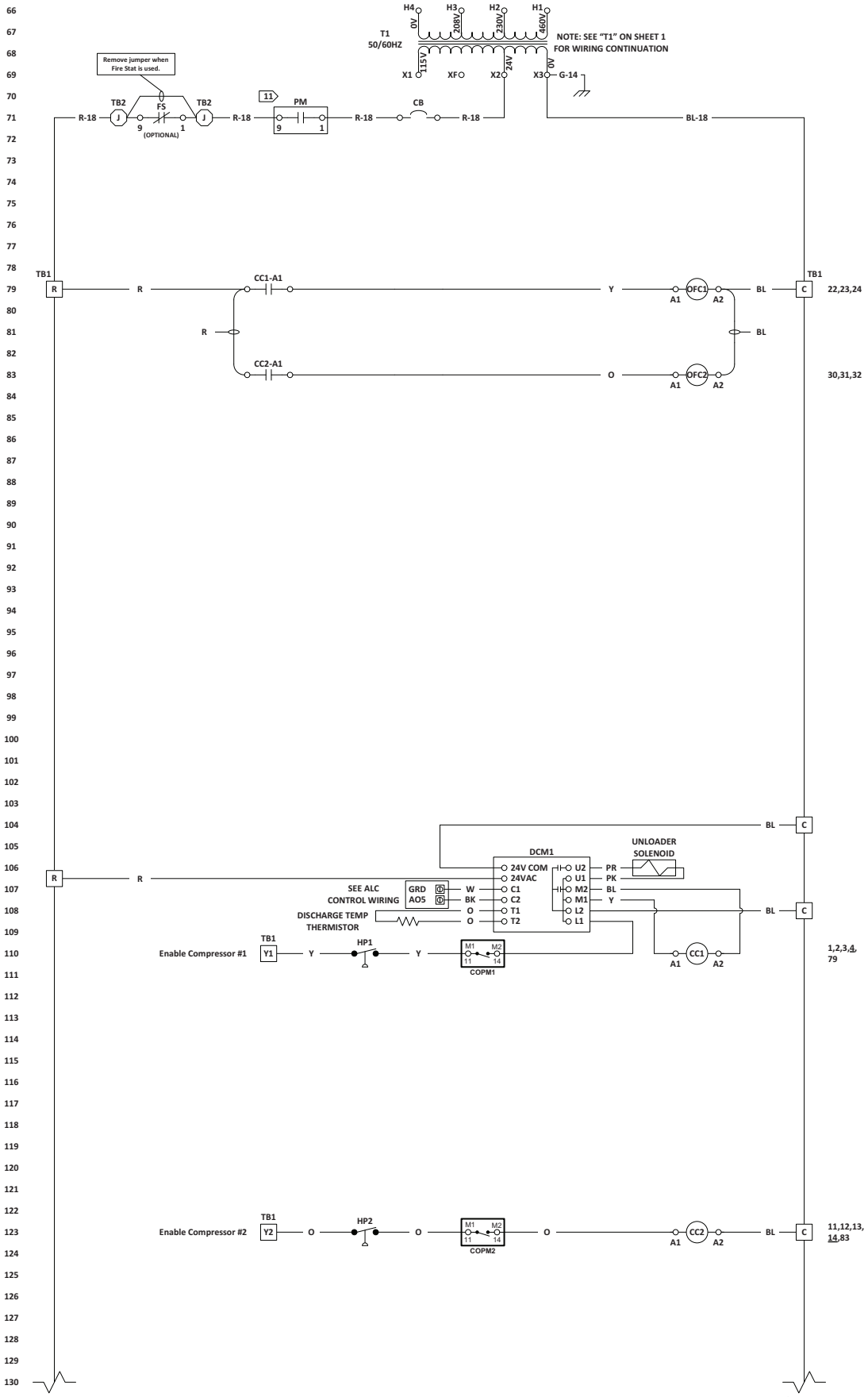


Fig. 74 — Typical Wiring Diagram (cont)

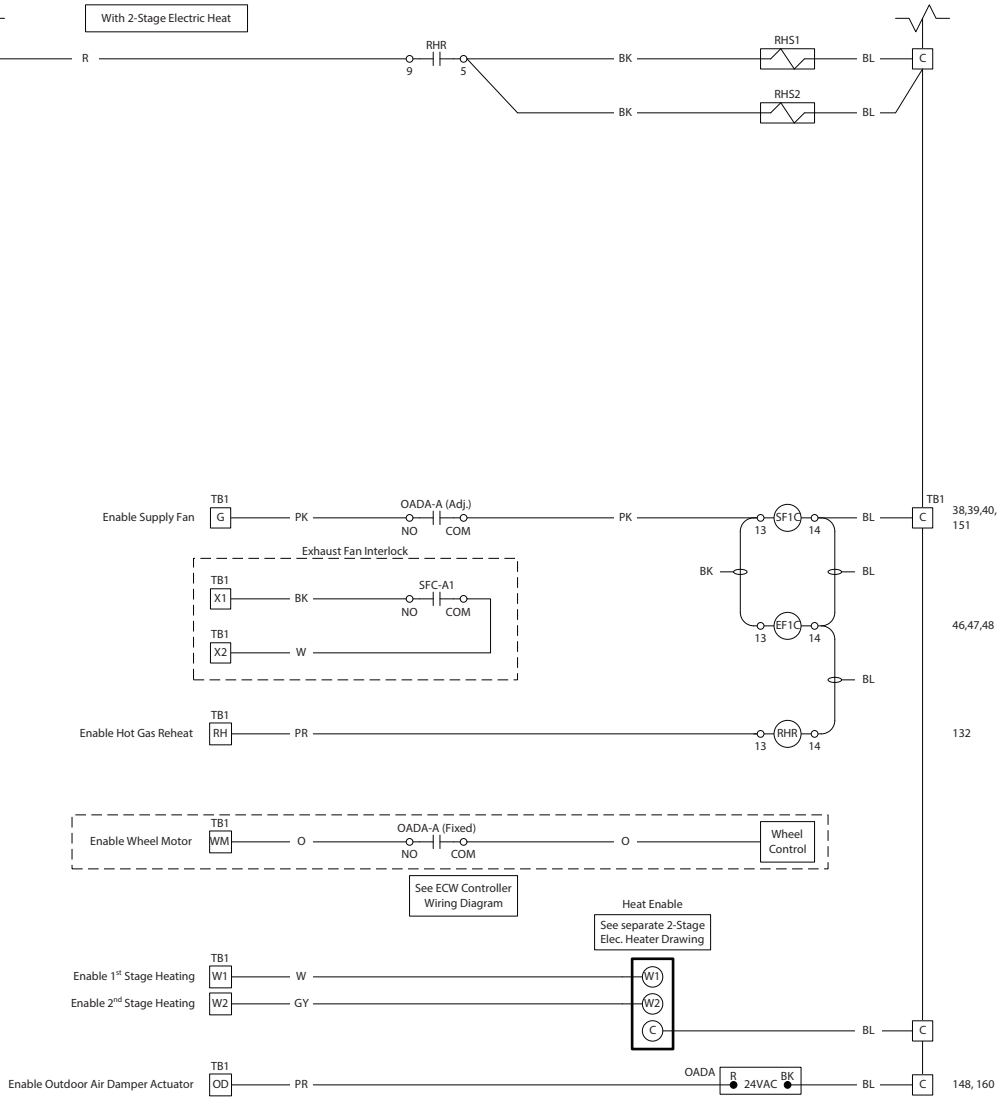


Fig. 74 — Typical Wiring Diagram (cont)

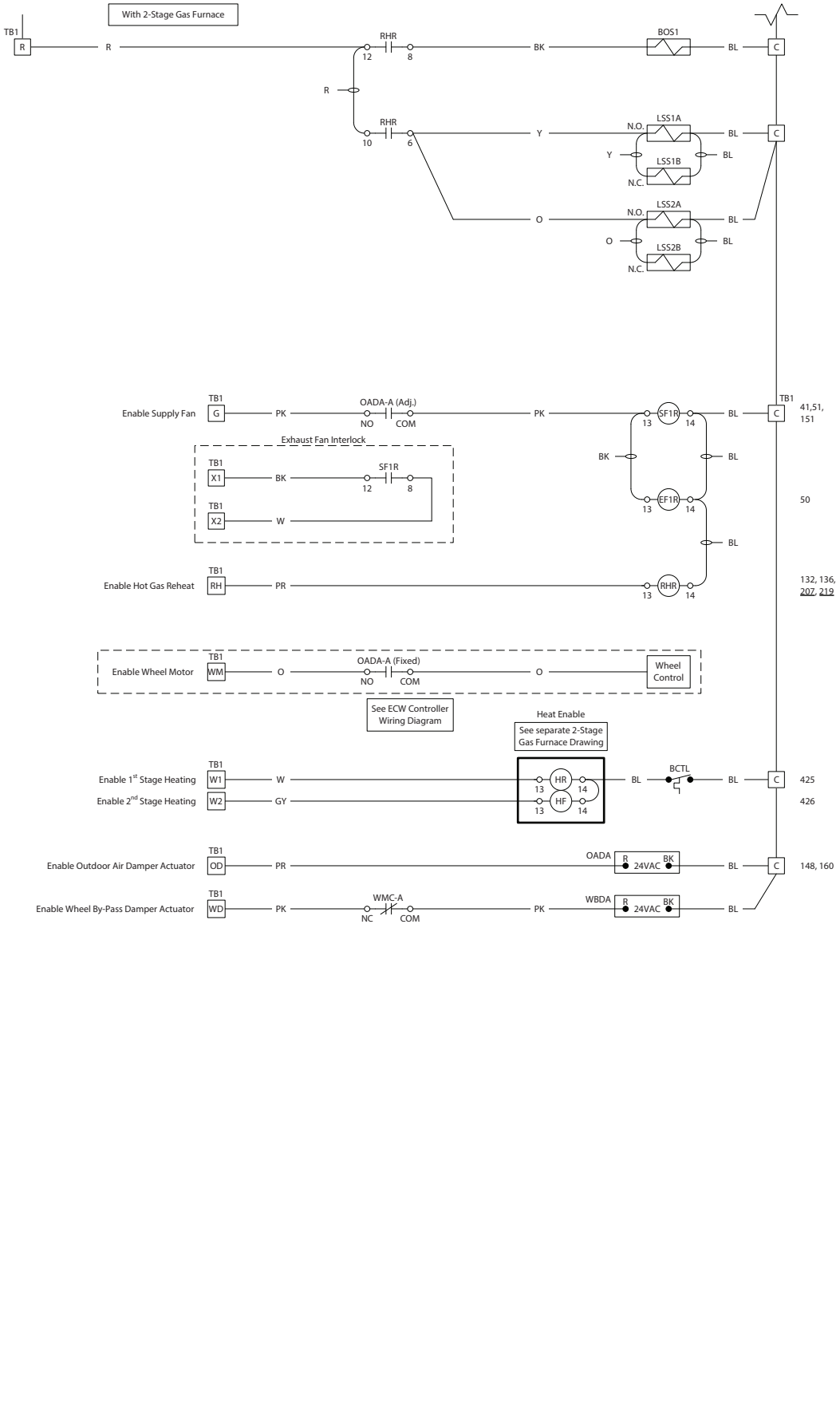


Fig. 74 — Typical Wiring Diagram (cont)

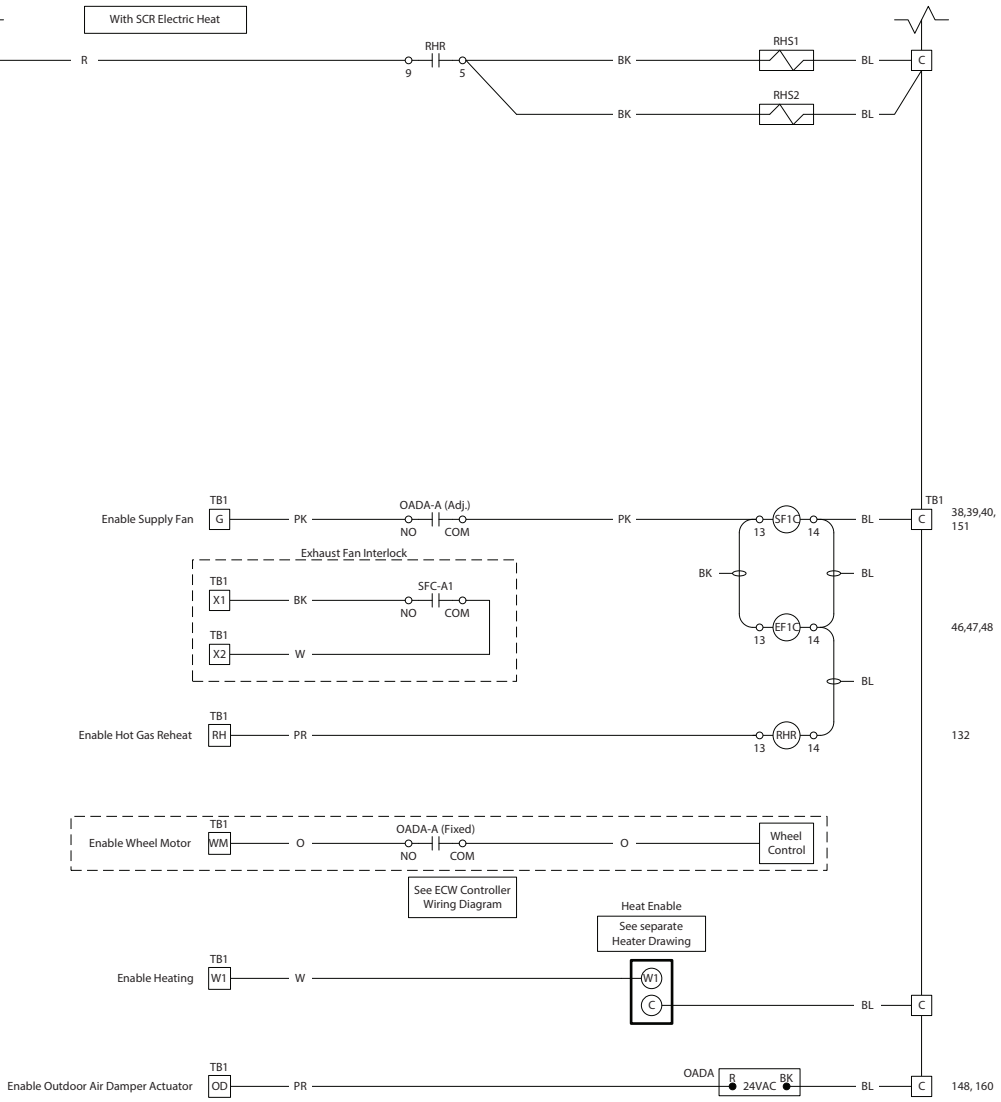


Fig. 74 — Typical Wiring Diagram (cont)

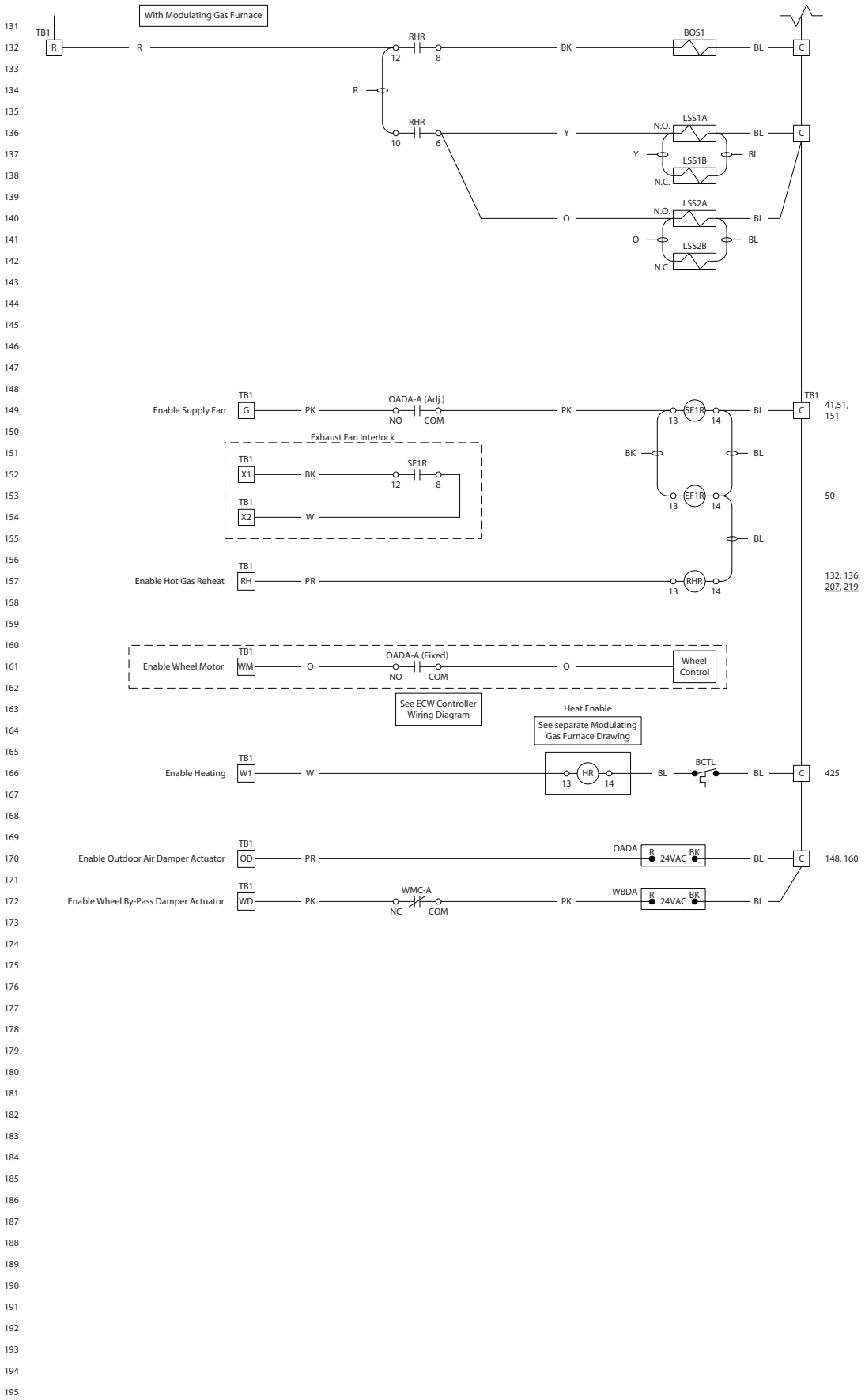
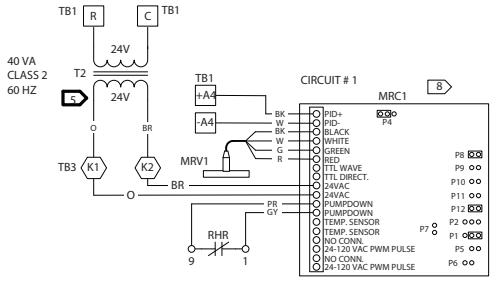
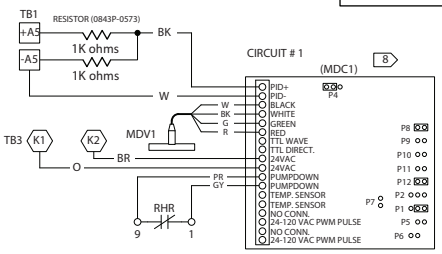


Fig. 74 — Typical Wiring Diagram (cont)

WIRING DIAGRAM FOR MODULATING REHEAT, 0-10VDC



MODULATING DISCHARGE VALVE CONTROL BOARD



NOTE: BE SURE TO WIRE THE MODULATING DISCHARGE VALVE (MDV) CORRECTLY PER WIRING DIAGRAM. SEE COLOR CODING, THE WHITE WIRE IS CONNECTED TO BLACK AND THE BLACK WIRE IS CONNECTED TO WHITE.

WIRING DIAGRAM FOR 4-STAGE ELECTRIC HEAT

Calibration and Setup
- Set the INPUT RANGE jumper to the correct position for the signal to be used (0-15 V).
- Set the deadband jumper to the desired value (3%). This can be changed at any time with the power on.
- Connect the power supply and the input signal to the correct terminals.
- Turn on the power and the POWER LED will light.
- Apply an input signal equal to the R1 setpoint (2.5V).
- Adjust the R1 pot clockwise until the RELAY1 LED goes out, then slowly adjust the R1 pot counterclockwise until the LED just lights.
- Apply an input signal equal to the R2 setpoint (5V) and adjust the R2 pot the same as for R1, watching the RELAY2 LED.
- Adjust R3 (7.5V) and R4 (9.5V) using the same method.
- Test the operation by increasing the input signal and watch as R1 to R4 turn on at the selected setpoints. Then decrease the signal and watch as the relays turn off at the selected setpoints minus the deadband.

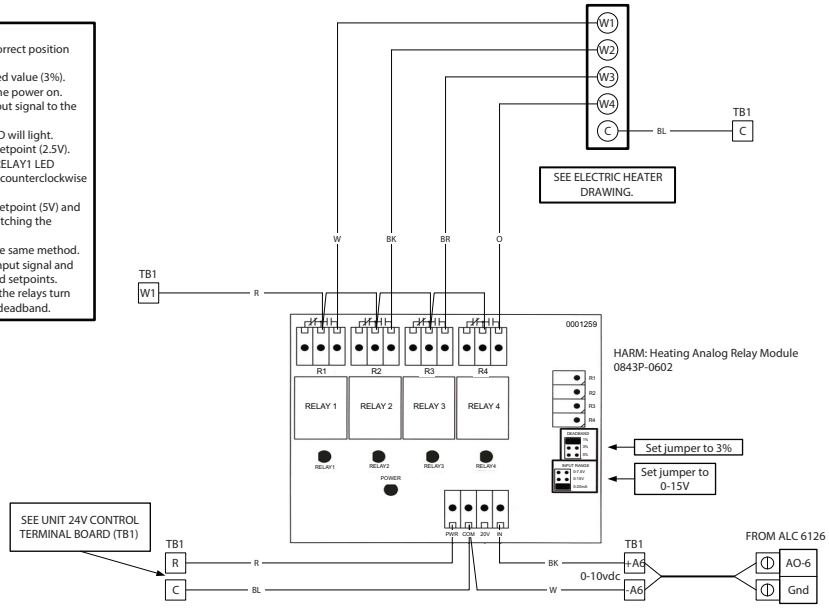


Fig. 74 — Typical Wiring Diagram (cont)

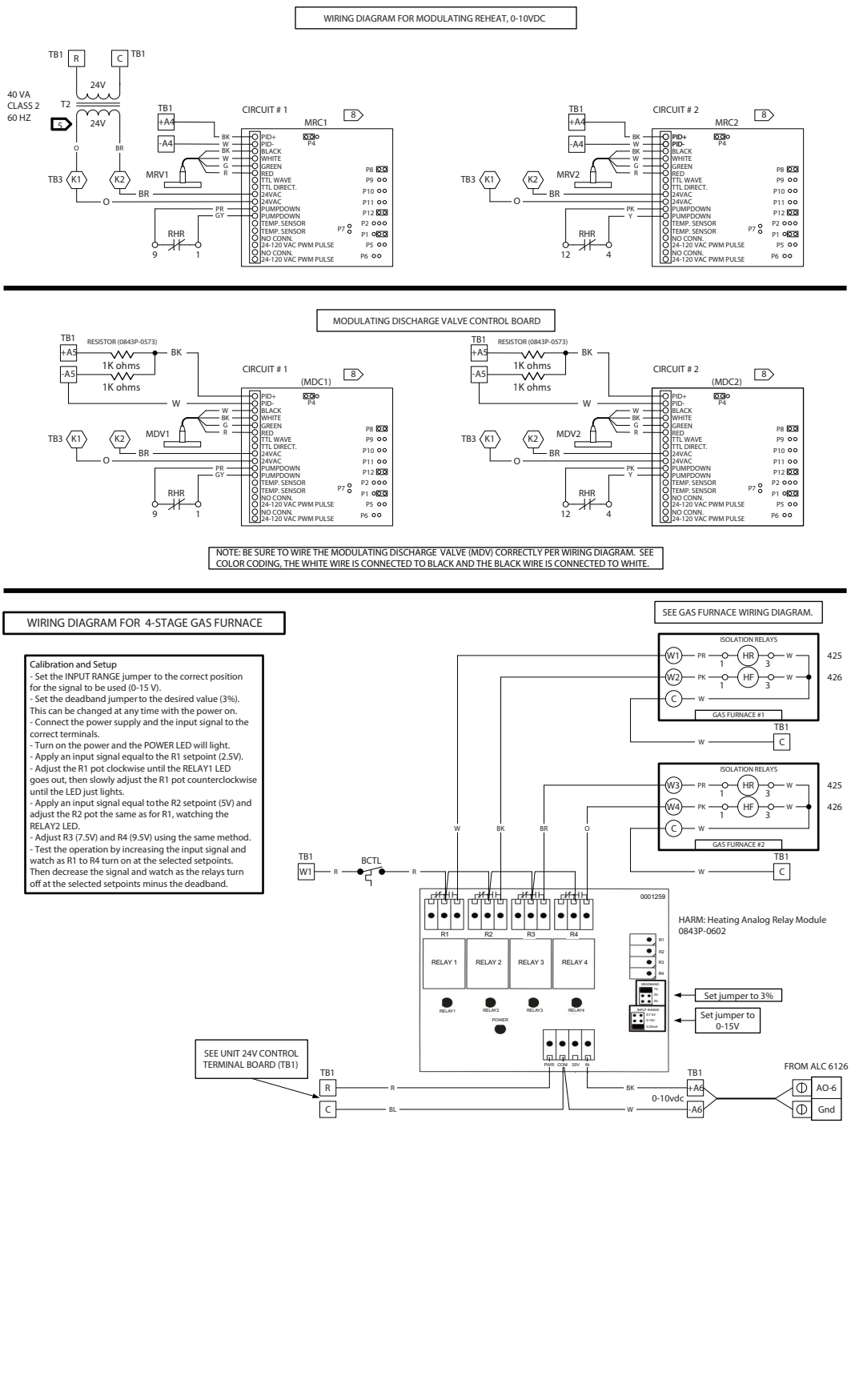


Fig. 74 — Typical Wiring Diagram (cont)

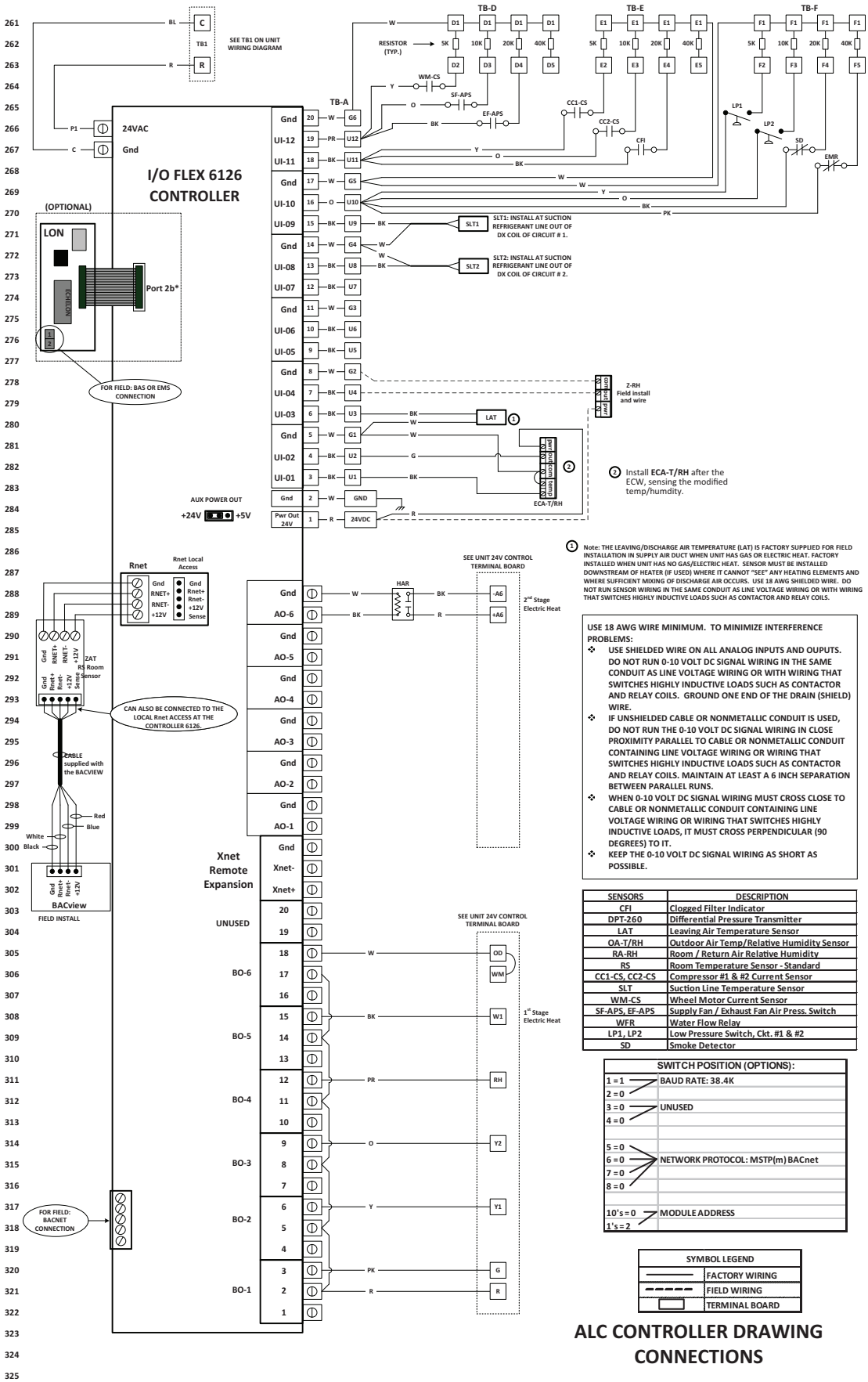


Fig. 74 — Typical Wiring Diagram (cont)

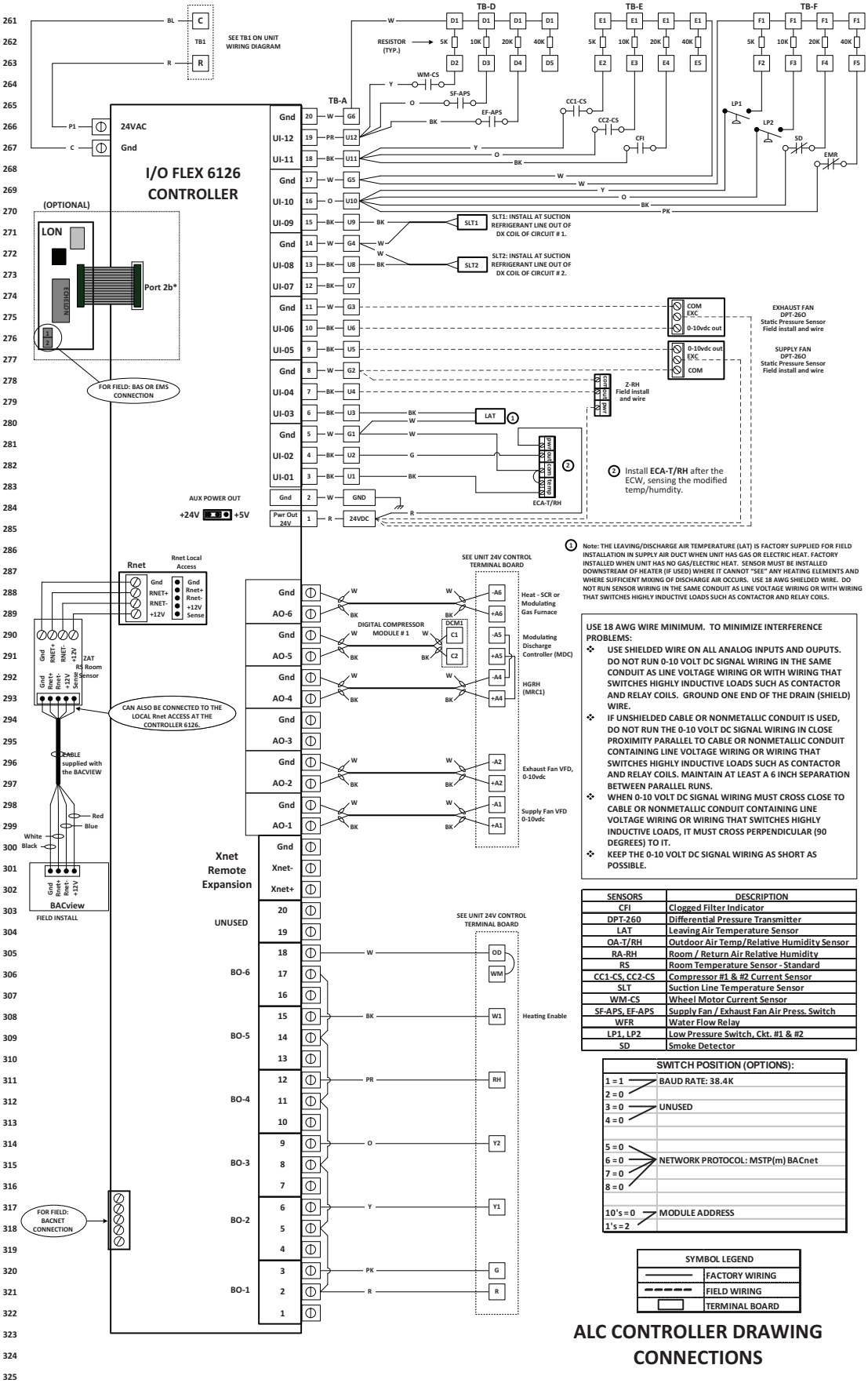
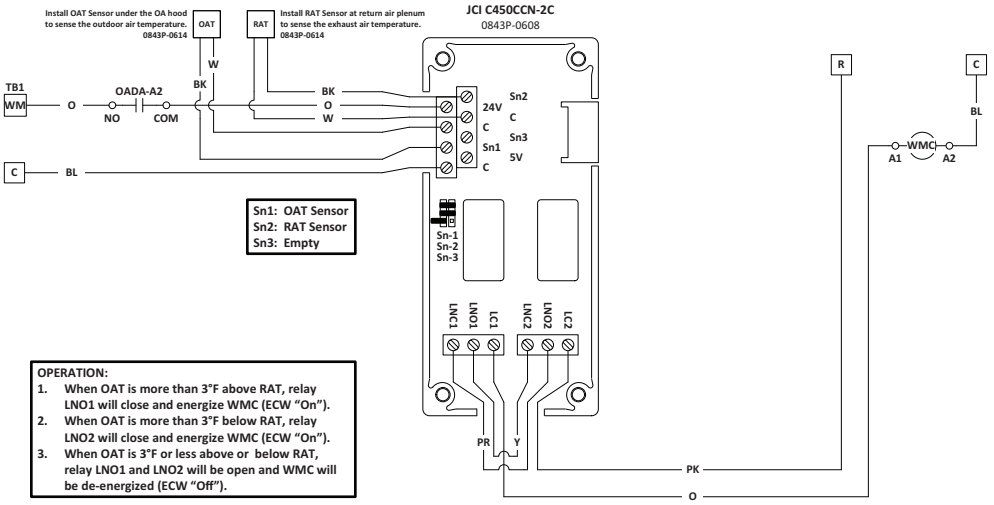


Fig. 74 — Typical Wiring Diagram (cont)

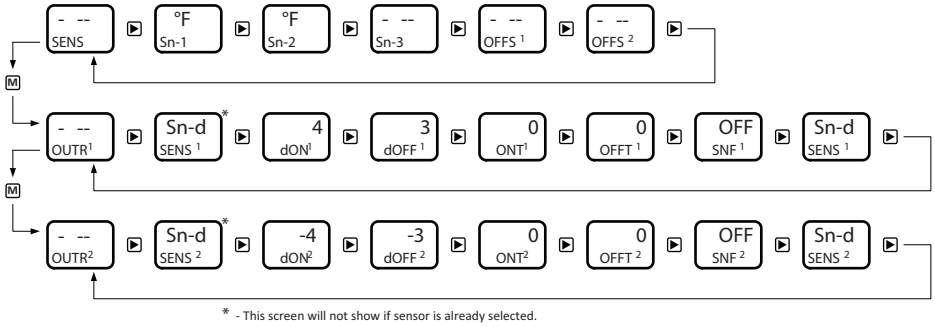
Wiring Diagram for ECW with Standard Control



OPERATION:

1. **When OAT is more than 3°F above RAT, relay LNO1 will close and energize WMC (ECW "On").**
2. **When OAT is more than 3°F below RAT, relay LNO2 will close and energize WMC (ECW "On").**
3. **When OAT is 3°F or less above or below RAT, relay LNO1 and LNO2 will be open and WMC will be de-energized (ECW "Off").**

System 450 Set-Up for ECW with Standard Control



* - This screen will not show if sensor is already selected.

System 450 Controller Programming Instructions:

1. Jumper on both pins for **Sn-1** and **Sn-2**. Apply **24VAC** power.
2. Press and hold ▲ and ▼ simultaneously for **5** seconds to access "**SENS**" set-up screens.
3. Press ▶ for "**Sn-1**". Use ▲ or ▼ to select "**°F**" sensor. Press ▶ for "**Sn-2**". Use ▲ or ▼ to select "**°F**" sensor. Press ▶ then press M.
4. Press M to access "**OUTR^1**" set-up.
5. Press ▶ for "**SENS^1**". Press ▲ or ▼ to set value to "**Sn-d**".*
6. Press ▶ for "**dON^1**". Press ▲ or ▼ to set value to "**4**".
7. Press ▶ for "**dOFF^1**". Press ▲ or ▼ to set value to "**3**".
8. Press ▶ for "**ONT^1**". Press ▲ or ▼ to set value to "**0**".
9. Press ▶ for "**OFFT^1**". Press ▲ or ▼ to set value to "**0**".
10. Press ▶ for "**SNF^1**". Press ▲ or ▼ to set value to "**OFF**".
11. Press ▶ for "**SENS^1**". Press ▲ or ▼ to set value to "**Sn-d**".
12. Press M to return to "**OUTR^1**" screen.
13. Press M to access "**OUTR^2**" set-up.
14. Repeat steps **5** thru **11** for "**OUTR^2**" settings except use "**-4**" for "**dON^2**" and "**-3**" for "**dOFF^2**".
15. Press M to return to "**OUTA^2**" screen.
16. Press ▲ and ▼ simultaneously to return to the main screen.

The controller is now programmed and ready to use.

* - This screen will not show if sensor is already selected.

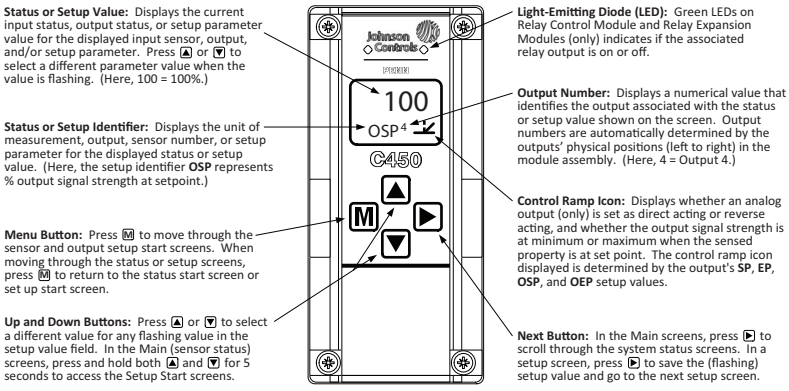
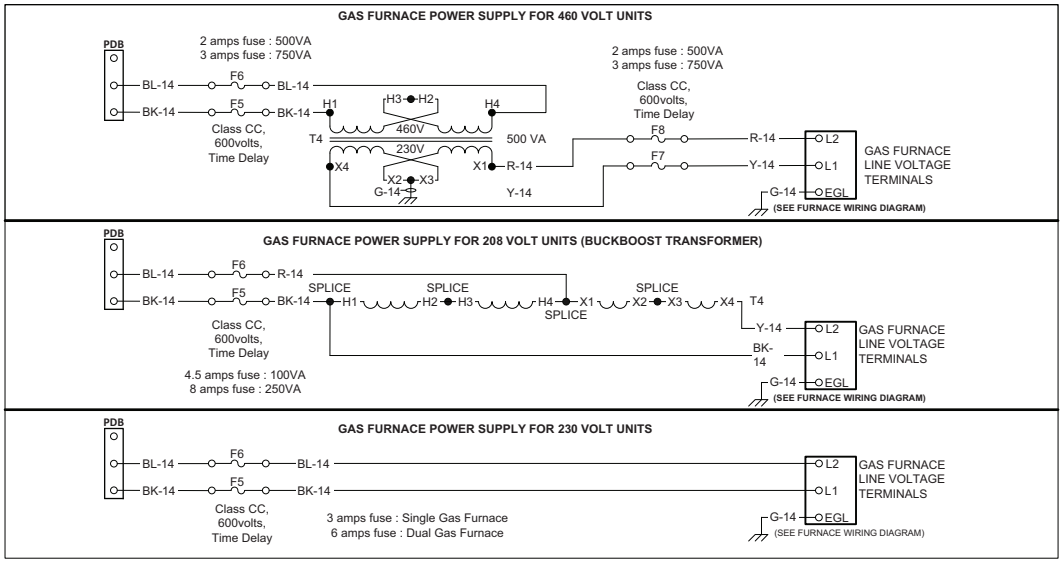


Fig. 74 — Typical Wiring Diagram (cont)



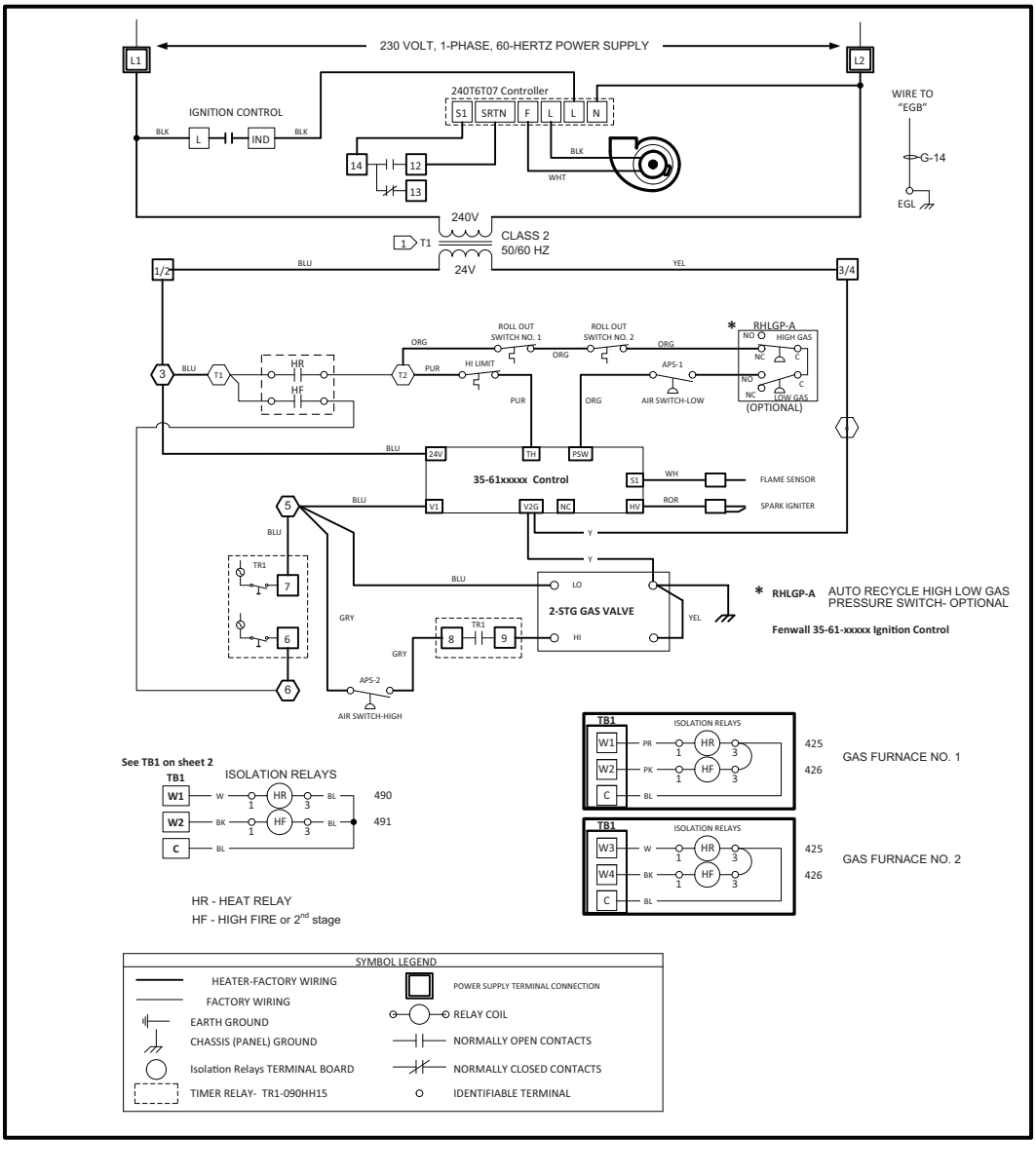
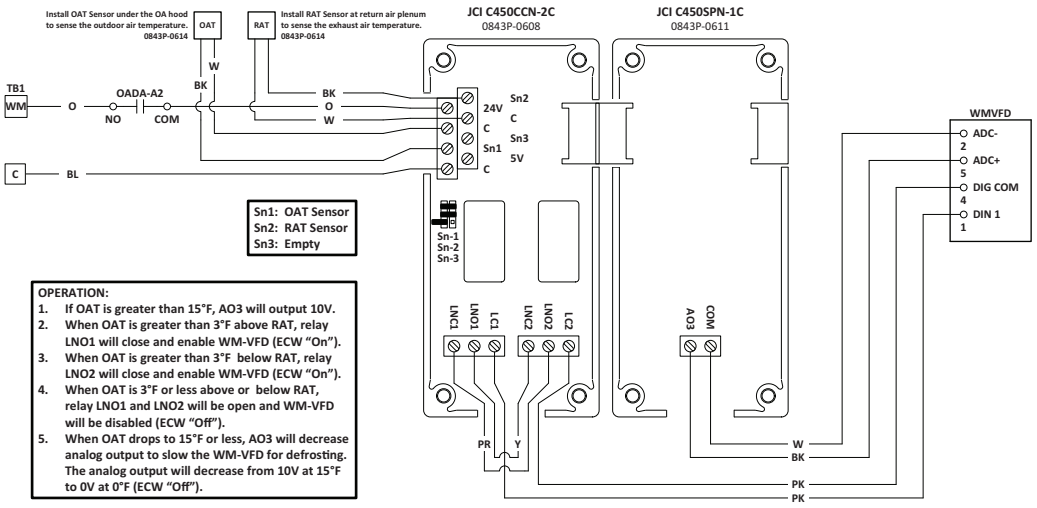


Fig. 74 — Typical Wiring Diagram (cont)

Wiring Diagram for ECW with VFD Defrost Control

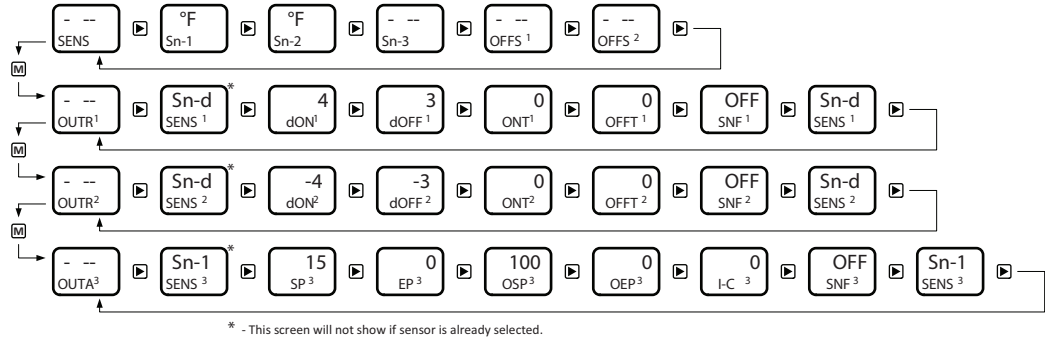


Sn1: OAT Sensor
Sn2: RAT Sensor
Sn3: Empty

OPERATION:

1. **If OAT is greater than 15°F, AO3 will output 10V.**
2. **When OAT is greater than 3°F above RAT, relay LNO1 will close and enable WM-VFD (ECW "On").**
3. **When OAT is greater than 3°F below RAT, relay LNO2 will close and enable WM-VFD (ECW "On").**
4. **When OAT is 3°F or less above or below RAT, relay LNO1 and LNO2 will be open and WM-VFD will be disabled (ECW "Off").**
5. **When OAT drops to 15°F or less, AO3 will decrease analog output to slow the WM-VFD for defrosting. The analog output will decrease from 10V at 15°F to 0V at 0°F (ECW "Off").**

System 450 Set-Up for ECW with VFD Defrost Control



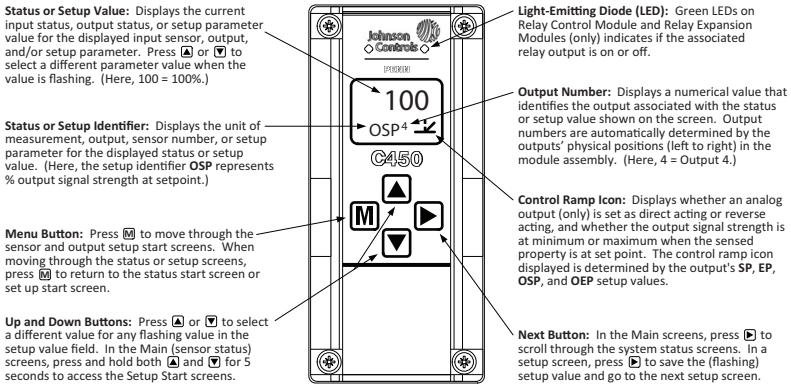
* - This screen will not show if sensor is already selected.

System 450 Controller Programming Instructions:

1. Jumper on both pins for **Sn-1** and **Sn-2**. Apply **24VAC** power.
2. Press and hold ▲ and ▼ simultaneously for **5** seconds to access "**SENS**" set-up screens.
3. Press ▶ for "**Sn-1**". Use ▲ or ▼ to select "**°F**" sensor. Press ▶ for "**Sn-2**". Use ▲ or ▼ to select "**°F**" sensor. Press ▶ then press M. Press M to access "**OUTR1**" set-up.
4. Press ▶ for "**SENS1**". Press ▲ or ▼ to set value to "**Sn-d**".*
5. Press ▶ for "**dON1**". Press ▲ or ▼ to set value to "**4**".
6. Press ▶ for "**dOFF1**". Press ▲ or ▼ to set value to "**3**".
7. Press ▶ for "**ONT1**". Press ▲ or ▼ to set value to "**0**".
8. Press ▶ for "**OFFT1**". Press ▲ or ▼ to set value to "**0**".
9. Press ▶ for "**SNF1**". Press ▲ or ▼ to set value to "**OFF**".
10. Press ▶ for "**SENS1**". Press ▲ or ▼ to set value to "**Sn-d**".
11. Press M to return to "**OUTR1**" screen.
12. Press M to access "**OUTR2**" set-up.
13. Repeat steps **5** thru **11** for "**OUTR2**" settings except use "**-4**" for "**dON2**" and "**-3**" for "**dOFF2**".
14. Press M to return to "**OUTR2**" screen.
15. Press M to access "**OUTA3**" set-up.
16. Press ▶ for "**SENS3**". Press ▲ or ▼ to set value to "**Sn-1**".*
17. Press ▶ for "**SP3**". Press ▲ or ▼ to set value to "**15**".
18. Press ▶ for "**EP3**". Press ▲ or ▼ to set value to "**0**".
19. Press ▶ for "**OSP3**". Press ▲ or ▼ to set value to "**100**".
20. Press ▶ for "**OEP3**". Press ▲ or ▼ to set value to "**0**".
21. Press ▶ for "**I-C3**". Press ▲ or ▼ to set value to "**0**".
22. Press ▶ for "**SNF3**". Press ▲ or ▼ to set value to "**OFF**".
23. Press ▶ for "**SENS3**". Press ▲ or ▼ to set value to "**Sn-1**".
24. Press M to return to "**OUTA3**" screen.
25. Press ▲ and ▼ simultaneously to return to the main screen.

The controller is now programmed and ready to use.

* - This screen will not show if sensor is already selected.



Status or Setup Value: Displays the current input status, output status, or setup parameter value for the displayed input sensor, output, and/or setup parameter. Press ▲ or ▼ to select a different parameter value when the value is flashing. (Here, 100 = 100%.)

Status or Setup Identifier: Displays the unit of measurement, output, sensor number, or setup parameter for the displayed status or setup value. (Here, the setup identifier **OSP** represents % output signal strength at setpoint.)

Menu Button: Press M to move through the sensor and output setup start screens. When moving through the status or setup screens, press M to return to the status start screen or set up start screen.

Up and Down Buttons: Press ▲ or ▼ to select a different value for any flashing value in the setup value field. In the Main (sensor status) screens, press and hold both ▲ and ▼ for 5 seconds to access the Setup Start screens.

Light-Emitting Diode (LED): Green LEDs on Relay Control Module and Relay Expansion Modules (only) indicates if the associated relay output is on or off.

Output Number: Displays a numerical value that identifies the output associated with the status or setup value shown on the screen. Output numbers are automatically determined by the outputs' physical positions (left to right) in the module assembly. (Here, 4 = Output 4.)

Control Ramp Icon: Displays whether an analog output (only) is set as direct acting or reverse acting, and whether the output signal strength is at minimum or maximum when the sensed property is at set point. The control ramp icon displayed is determined by the output's **SP**, **EP**, **OSP**, and **OEP** setup values.

Next Button: In the Main screens, press ▶ to scroll through the system status screens. In a setup screen, press ▶ to save the (flashing) setup value and go to the next setup screen.

Fig. 74 — Typical Wiring Diagram (cont)

LEGEND FOR FIG. 74

APS — Supply Air Differential Pressure Switch
BCTL — Blower Compartment High Temperature Limit
BOS1 — Bleed off Solenoid #1 for HGRH
C450 — Johnson Control C450
CB — Circuit Breaker
CC1 — Compressor Contactor No. 1
CC1-A — Compressor Contactor No. 1 Auxiliary Contact
CC2 — Compressor Contactor No. 2
CC2-A — Compressor Contactor No. 2 Auxiliary Contact
CCH — Compressor Crankcase Heater
CM1 — Compressor No. 1
CM2 — Compressor No. 2
COPM — Compressor Overcurrent Protection Module
CS — Compressor Current Sensor Board
DCM — Digital Compressor Module
DPT-260 — Differential Pressure Transmitter 260
ECW — Energy Conservation Wheel
EFC — Exhaust Fan Contactor
EFM — Exhaust Fan Motor
EFR — Exhaust Fan Motor Relay
EGB — Equipment Grounding Bar
EGL — Earth Ground Loop
F — Fusing
FS — Flow Switch
HAR — Heating Analog Relay
HARM — Heating Analog Relay Mode
HF — High Fire
HR — Heat Relay
HP — High Pressure Cutout
LA — Low Ambient Fan Cycling Control
LP — Low Pressure Cutout
LSS — Liquid Sub-Cooling Solenoid
MDC — Modulating Discharge - Line Controller
MDV — Modulating Discharge Valve
MRC — Modulating Reheat Temperature Control Board
MRV — Modulating Hot Gas Reheat Valve
MSP-CC — Motor Starter Protection - Compressor Contactor
MSP-EF — Exhaust Blower Motor Starter Protector
MSP-OF — Motor Starter Protection - Outdoor Fan
MSP-SF — Motor Starter Protection - Supply Fan
MSP-WM — Motor Starter Protection - Wheel Motor
OADA — Two Position Outdoor Air Damper Actuator
OAT — Outdoor Air Temperature Sensor
OFC — Outdoor Fan Contactor
OFM — Outdoor Fan Motor
PDB — Power Distribution Block
PM — Power Monitor
RAT — Return Air Temperature Sensor
RHLGP — High/Low Gas Pressure Switch
RHR — Reheat Relay
RHS — Hot Gas Reheat Solenoid Valve
SCR — Silicon Controlled Rectifier
SFC — Supply Fan Motor Contactor
SFM — Supply Fan Motor
SFR — Supply Fan Motor Relay
T — Control Transformer
TB — Terminal Board
VFD — Variable Frequency Drive
WBDA — Wheel Bypass Damper Actuator
WMC — Wheel Motor Contactor
WM — EC Wheel Motor
WMC — Wheel Motor Contactor

Table 37 — 62D Compressor Electrical Data

VOLTAGE		UNIT SIZE 62D												
		07	08	09	12	14	15	16	20	22	24	30	34	38
Number of Compressors		1	1	1	2	2	2	2	2	2	2	2	2	4
208-230/3/60	RLA (each)	16.0	19.0	23.2	13.7	16.0	22.4	25.0	29.5	29.5	30.1	48.1	55.8	29.5
	LRA	110.0	123.0	164.0	83.1	110.0	149.0	164.0	195.0	195.0	225.0	245.0	340.0	195.0
460/3/60	RLA (each)	7.8	9.7	11.2	6.2	7.8	10.6	12.2	14.8	14.8	16.7	18.6	26.9	14.8
	LRA	52.0	62.0	75.0	41.0	52.0	75.0	100.0	95.0	95.0	114.0	125.0	173.0	95.0
575/3/60	RLA (each)	5.7	7.4	7.9	4.8	5.7	7.7	90.0	12.2	12.2	12.2	14.7	23.7	12.2
	LRA	38.9	50.0	54.0	33.0	38.9	54.0	78.0	80.0	80.0	80.0	100.0	132.0	80.0

Table 38 — 62D Condenser Fan Motor Electrical Data

VOLTAGE		UNIT SIZE 62D												
		07	08	09	12	14	15	16	20	22	24	30	34	38
Number of Fans		1	1	1	2	2	2	2	2	2	2	2	2	2
208/230-3-60	FLA	3.0	4.0	4.0	2.3	2.3	4.0	4.0	4.0	4.0	4.0	5.6	5.6	5.6
460-3-60	FLA	1.5	2.0	2.0	1.2	1.2	2.0	2.0	2.0	2.0	2.0	2.8	2.8	2.8
575-3-60	FLA	0.8	1.8	1.8	0.8	0.8	0.8	1.8	1.8	1.8	1.8	2.3	2.3	2.3

Table 39 — 62D Supply and Exhaust Fan Motor Electrical Data

VOLTAGE		MOTOR HP										
		1/2	3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
208/230-3-60	FLA	2.8	3.4	3.2	4.8	6.3	9.8	15.7	22.3	29.0	43.4	57.0
460-3-60	FLA	1.4	1.7	1.5	2.0	2.9	4.1	6.8	10.0	12.9	18.9	24.5
575-3-60	FLA	0.8	1.3	1.1	1.6	2.3	3.3	5.2	7.6	10.1	15.1	19.6

Table 40 — 62D Energy Conservation Wheel Electrical Data

VOLTAGE		WHEEL SIZE (in.)			
		36	42	48	54
208/230-3-60	FLA	2.5	2.5	2.5	3.0
460-3-60	FLA	1.3	1.3	1.3	1.5
575-3-60	FLA	1.0	1.3	1.0	1.5

Table 41 — 62R Compressor Electrical Data

VOLTAGE		UNIT SIZE 62R												
		07	08	09	12	14	15	16	20	22	24	30	34	38
Number of Compressors		1	1	1	2	2	2	2	2	2	2	2	2	4
208-230/3/60	RLA (each)	16.0	19.0	23.2	13.7	16.0	22.4	25.0	29.5	29.5	30.1	48.1	55.8	29.5
	LRA	110.0	123.0	164.0	83.1	110.0	149.0	164.0	195.0	195.0	225.0	245.0	340.0	195.0
460/3/60	RLA (each)	7.8	9.7	11.2	6.2	7.8	10.6	12.2	14.8	14.8	16.7	18.6	26.9	14.8
	LRA	52.0	62.0	75.0	41.0	52.0	75.0	100.0	95.0	95.0	114.0	125.0	173.0	95.0

Table 42 — 62R Supply and Exhaust Fan Motor Electrical Data

VOLTAGE		MOTOR HP									
		3/4	1	1 1/2	2	3	5	7 1/2	10	15	20
208/230-3-60	FLA	3.4	3.2	4.8	6.3	9.8	15.7	22.3	29.0	43.4	57.0
460-3-60	FLA	1.7	1.5	2.0	2.9	4.1	6.8	10.0	12.9	18.9	24.5

Table 43 — 62R Energy Conservation Wheel Electrical Data

VOLTAGE		WHEEL SIZE (in.)			
		36	42	48	54
208/230-3-60	FLA	2.5	2.5	2.5	2.5
460-3-60	FLA	1.3	1.3	1.3	1.3

LEGEND FOR TABLES 37-43

FLA — Full Load Amp
LRA — Locked Rotor Amps
RLA — Rated Load Amps

APPENDIX A — BAS COMMISSIONING

The ALC controller in the 62D,R unit can communicate with most building automation systems (BAS) using BACnet, N2, ModBus, or LonWorks. Follow the guide below for integration instructions.

NOTE: The 62D,R unit utilizes an ALC controller and is considered a third party device when integrating with Carrier's i-Vu® Open system. In order for the 62D,R unit to communicate with the i-Vu Open system, the 62D,R unit must be connected to an i-Vu Link and the i-Vu server must be an i-Vu Open Plus.

BACnet — BACnet, which stands for Building Automation and Controls network, is a protocol developed by ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers). BACnet was developed as a response to industry concerns about increased networking of BMS (building management system) components using proprietary communications methods. In the past, these proprietary communications severely limited the building owners' choices for system expansion, upgrade, and replacement. Every major controls vendor in North America, as well as academics, end users, consulting engineers, and government groups participated in its development.

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, lighting, security, fire, heating, ventilation, and air conditioning. Its purpose is to promote interoperability - sharing data between systems made by different vendors.

It provides the necessary tools to develop a specification for systems that are interoperable. BACnet provides methods and standards for representing information, for requesting and interpreting information, and for transporting information.

BACnet over ARC156 — ARCnet is an embedded networking technology well suited for real-time control applications in both the industrial and commercial marketplaces. Its robust performance and the availability of low-cost silicon make it the network of choice in BMSs.

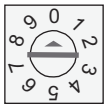
ARC156 is a unique implementation of ARCnet. ARC156 is similar to master slave/token passing (MS/TP). The main difference between the two is speed. ARC156 baud rate is 156k baud whereas MS/TP tops out at 76.8k baud.

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. ARC156 is the standard communications method used by our controllers.

CONFIGURING THE I/O FLEX 6126 FOR ARC156

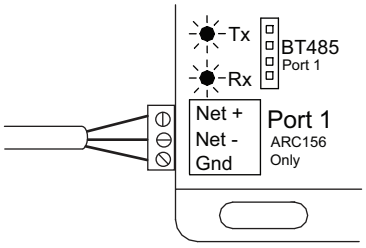
1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set the controller's address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.



3. Connect the communications wiring to Port 1 in the screw terminals labeled Net +, Net -, and Gnd.

   NOTE: Use the same polarity throughout the network segment.



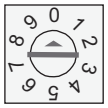
4. If the I/O Flex 6126 is at either end of a network segment, connect a BT485 to the I/O Flex 6126.
5. Turn on the I/O Flex 6126's power.
6. Set the correct network number to the unique BACnet ARC156 at the site.

BACnet MS/TP — BACnet Master Slave/Token Passing or MS/TP is used for communicating BACnet over a sub-network of BACnet-only controllers. Each controller on the network has the ability to hear the broadcast of any other device on the network. The speed of an MS/TP network ranges from 9600 baud to 76.8k baud.

CONFIGURING THE I/O FLEX 6126 FOR BACNET MS/TP

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.



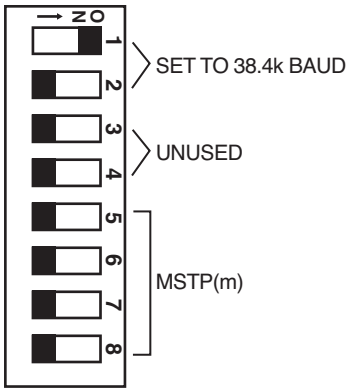
   Set the Comm Selector DIP Switches 1 and 2 for the appropriate communications speed (9600, 19.2k, 38.4k, or 76.8k bps).

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

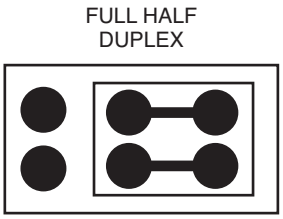
BAUD RATE	DIP SWITCH 1	DIP SWITCH 2
9600	OFF	OFF
19.2	OFF	ON
38.4	ON	OFF
76.8	ON	ON

3. Set the Comm Selector DIP Switches 5 through 8 for BACnet MS/TP (m) master or (s) slave. The following example shows the DIP Switches set for 38.4k baud and BACnet MS/TP(m).

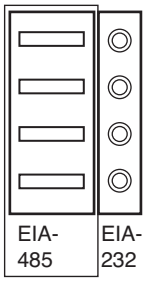
   NOTE: MS/TP (m) is recommended.



4. Set the duplex for half (two-wire).



5. Set the Communications Selection jumper to EIA-485.

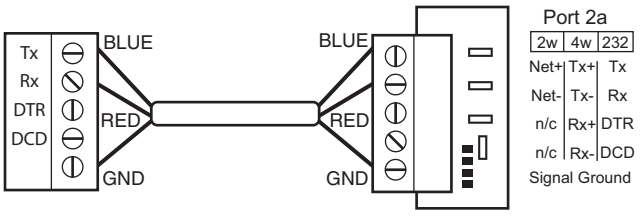


6. Configure Port 2a for BACnet MS/TP. Connect to Net+, Net-, and Gnd.

   Wire Specifications:

   - A dedicated 24 AWG (American Wire Gage) 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.
   - If the I/O Flex 6126 is at either end of a network segment, connect a BT485 to the I/O Flex 6126.

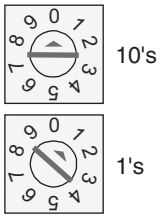
   NOTE: Use the same polarity throughout the network segment.



7. Turn on the I/O Flex 6126's power.
8. Set the correct network number to the unique BACnet MS/TP network at the site.

CONFIGURING THE I/O FLEX 6126 FOR BACNET PTP

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the tens (10's) switch to the tens digit of the address, and set the ones (1's) switch to 1.

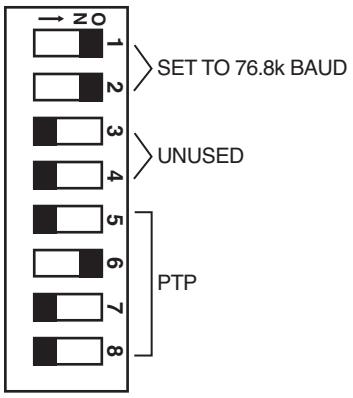


   Set the Comm Selector DIP Switches 1 and 2 for the appropriate communications speed (9600, 19.2k, 38.4k, or 76.8k bps).

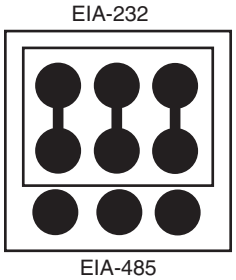
   NOTE: Use the same baud rate for all devices on the network segment.

BAUD RATE	DIP SWITCH 1	DIP SWITCH 2
9600	OFF	OFF
19.2	OFF	ON
38.4	ON	OFF
76.8	ON	ON

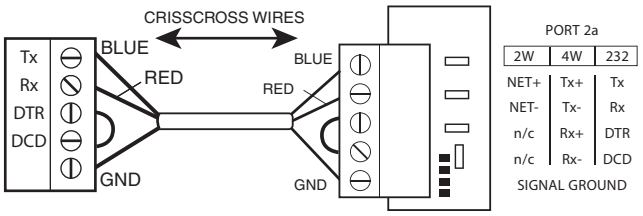
3. Set the Comm Selector DIP switches 5 through 8 for BACnet PTP. The following example shows the DIP switches set for 76.8k baud and BACnet PTP.



4. Set the Communications Selection jumper to EIA-232. EIA-232 indicates the controller will be connected to one other device speaking this protocol.



5. To wire I/O Flex 6126 to another device:
   - Configure Port 2a for BACnet PTP
   - Connect to Net+, Net-, and Gnd
   - Connect to Tx, Rx, DTR, DCD, and Gnd using three wire termination with pins 3 and 4 jumpered. Wiring must go plus-to-minus and minus-to-plus, Gnd-to-Gnd.



6. See table below to wire I/O Flex 6126 to a modem.

MODEM (25 PIN) (NULL MODEM CABLE)	NULL MODEM CABLE (9-PIN)	S2-DB9 (9-PIN)	CONTROLLER (5 PIN)
TX - pin2	TX- pin3	TX - pin3	TX - pin1
RX - pin3	RX - pin2	RX - pin2	RX - pin2
DTR - pin20	DTR - pin4	DTR - pin4	DTR - pin3
DCD - pin8	DCD - pin1	DCD - pin1	DCD - pin4
GND - pin7	GND - pin5	GND - pin5	GND - pin5

7. Turn on the I/O Flex 6126's power.

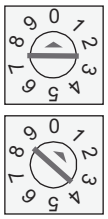
Modbus — The Modbus protocol is used mostly in the industrial process market to communicate between PLCs (Programmable Logic Controllers). Although there is no official standard, there is extensive documentation on Modbus and most companies who choose to interface using this protocol follow the same format.

Modbus is not a protocol that is particularly well suited for building management because of its limited master/slave structure, but as it is fairly simple to construct an interface, many companies do offer Modbus as an open protocol solution.

CONFIGURING THE I/O FLEX 6126 FOR MODBUS RTU OR ASCII - 6126

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.

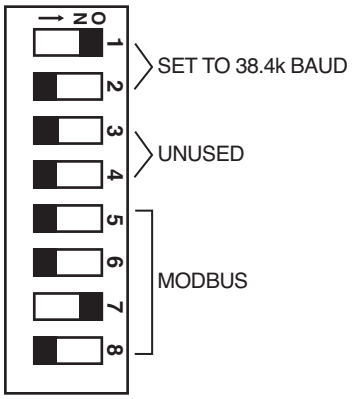


   Set the Comm Selector DIP Switches 1 and 2 for the appropriate communications speed (9600, 19.2k, 38.4k, or 76.8k bps).

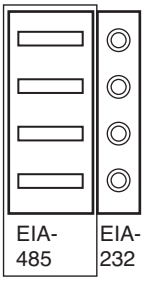
   NOTE: Use the same baud rate for all devices on the network segment.

BAUD RATE	DIP SWITCH 1	DIP SWITCH 2
9600	OFF	OFF
19.2	OFF	ON
38.4	ON	OFF
76.8	ON	ON

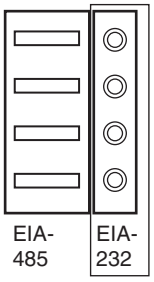
3. Set the Comm Selector DIP Switches 5 through 8 for Modbus. The following example shows the DIP Switches set for 38.4k baud and Modbus.



4. Set the Communications Selection jumper to EIA-232 or EIA 485.
   a. If EIA-485, the controller will be daisy-chained to the network of devices.



   b. If EIA-232, the controller will be connected to one device.

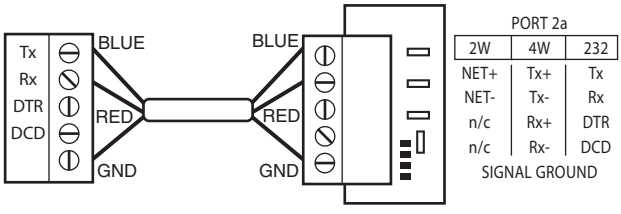


5. Configure Port 2a for Modbus using EIA 485. Connect to Net+, Net-, and Gnd.

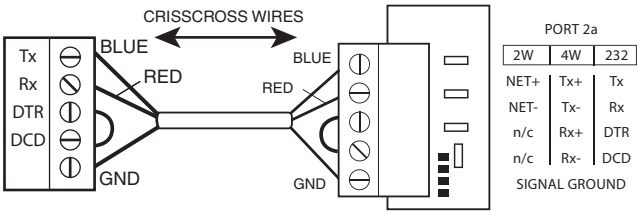
   Wire Specifications:

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

   NOTE: Use the same polarity throughout the network segment.



6. Configure Port 2a for Modbus using EIA 232. Connect to Tx, Rx, DTR, DCD, and Gnd using three wire termination with pins 3 and 4 jumpered. Wiring must go plus-to-minus-to-plus, Gnd to Gnd.and Gnd. Connect to Tx, Rx, DTR, DCD, and Gnd using three wire termination with pins 3 and 4 jumpered. Wiring must go plus-to-minus and minus-to-plus, Gnd-to-Gnd.



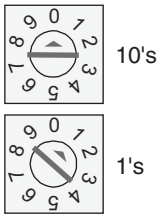
7. Do not power the device from the same transformer that powers the I/O Flex 6126.
8. Turn on the I/O Flex 6126's power.

Johnson Controls (N2) — N2 is not a standard protocol, but one that was created by Johnson Controls, Inc. that has been made open and available to the public. Johnson Controls is the only company to use N2 Bus as their standard network protocol. Because it is open and still prevalent within the industry, N2 is a standard offering for our controllers.

CONFIGURING THE I/O FLEX 6126 FOR N2

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

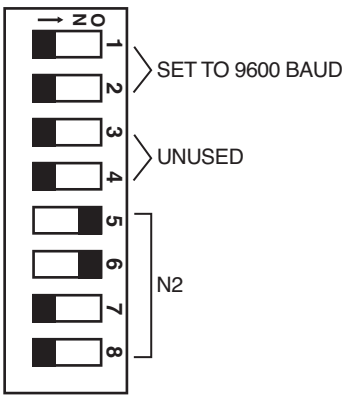
   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.



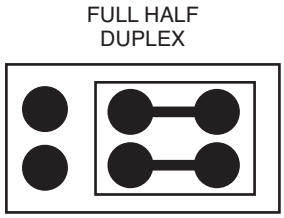
   Set the Comm Selector DIP Switches SW1 and SW2 for 9600 bps.

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

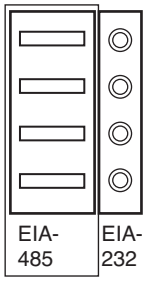
3. Set the Comm Selector DIP switches 5 through 8 for Johnson Controls N2. The following example shows the DIP switches set for 9600 baud and N2.



4. Set the duplex for half (two-wire).



5. Set the communications selection jumper to EIA-485.

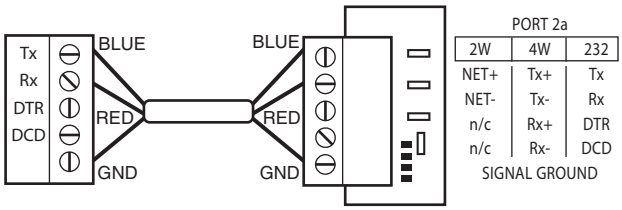


6. Configure Port 2a for N2. Connect to Net+, Net-, and Gnd.

   Wire Specifications

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

   NOTE: Use the same polarity throughout the network segment.



7. Turn on the I/O Flex 6126's power.

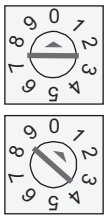
LonWorks — LonWorks is an open protocol that was originally developed by Echelon Corporation. It is now maintained by Echelon in collaboration with members of the LonMark Interoperability Association. It requires the use of Echelon's Neuron microprocessor to encode and decode the LonWorks packets.

The LonWorks protocol is based on the concept of using standardized functional profiles to control similar pieces of equipment. OEM controllers are LonWorks compatible 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. In order to reduce the cost of adding that hardware on every module, OEM formats the data packets in a manner specified by the LonWorks documentation and hands them off to the LonWorks Option Card.

CONFIGURING THE I/O FLEX 6126 FOR THE LONWORKS OPTION CARD

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.

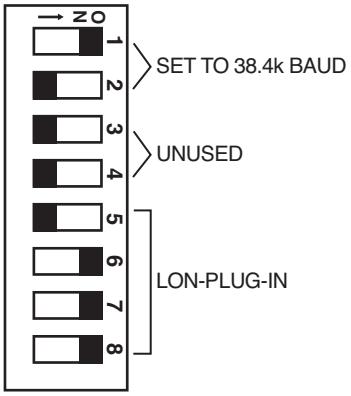


   Set the Comm Selector DIP Switches 1 and 2 for the appropriate communications speed (9600, 19.2k, 38.4k, or 76.8k bps).

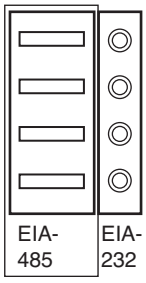
   NOTE: Use the same baud rate for all control modules on the network segment.

BAUD RATE	DIP SWITCH 1	DIP SWITCH 2
9600	OFF	OFF
19.2	OFF	ON
38.4	ON	OFF
76.8	ON	ON

3. Set the Comm Selector DIP switches 5 through 8 for LonWorks Option Card. The following example shows the DIP switches set for 38.4k baud and LonWorks Option Card.



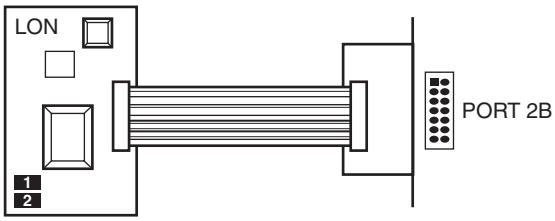
4. Set the Communications Selection jumper to EIA-485.



⚠ CAUTION

The control module must be OFF before being connected. Failure to follow this instruction could result in unit controller damage or electrical shock.

5. Connect Port 2b to the LonWorks Option Card with the supplied ribbon cable.
6. Connect LonWorks Option Card to the Option card port of the controller with the supplied ribbon cable.

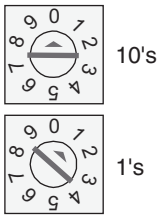


7. Turn on the I/O Flex 6126's power.

CONFIGURING THE I/O FLEX 6126 FOR LONTALK VIA SLTA — The I/O Flex 6126 can be configured as an application node in a LonWorks system. An Echelon Serial-To-LonTalk Adapter (SLTA-10) provides the network interface between each I/O Flex 6126 and the LonWorks network. An additional SLTA-10 is required if connecting a host computer running LonWorks network management software to the LonWorks network.

1. Turn off the I/O Flex 6126's power.
2. Using the rotary switches, set a unique address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

   EXAMPLE: If the controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.

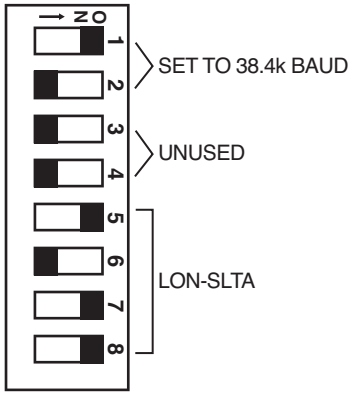


   Set the Comm Selector DIP Switches 1 and 2 for the appropriate communications speed (9600, 19.2k, 38.4k, or 76.8k bps).

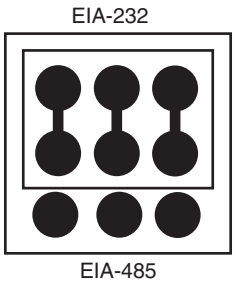
   NOTE: Use the same baud rate for all devices on the network segment.

BAUD RATE	DIP SWITCH 1	DIP SWITCH 2
9600	OFF	OFF
19.2	OFF	ON
38.4	ON	OFF
76.8	ON	ON

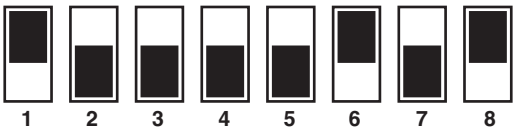
3. Set the Comm Selector DIP switches SW5 through SW8 for LON. The following example shows the DIP switches set for 38.4k baud and LON-SLTA.



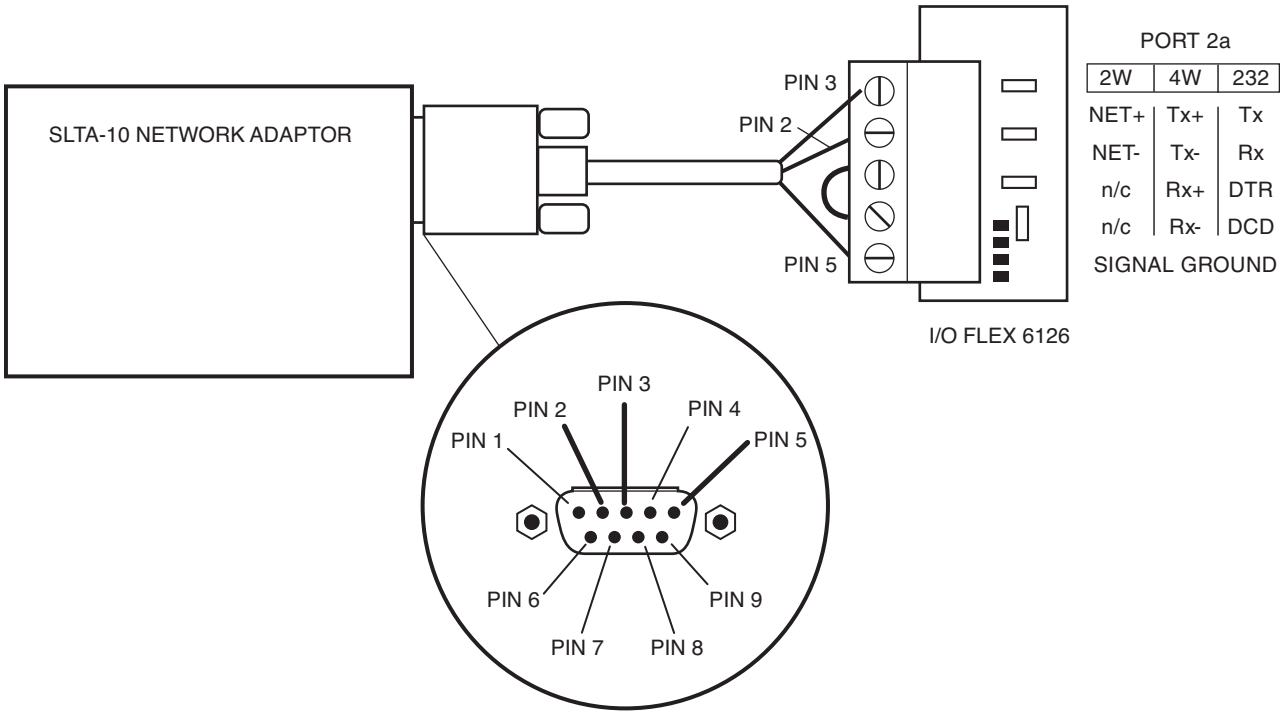
4. Set the Communications Selection jumper to EIA-232. EIA-232 indicates the controller will be connected to one other device speaking this protocol.



5. Configure Port 2a for LON using EIA-232. Connect to Tx, Rx, DTR, DCD, and Gnd using three wire termination with pins 3 and 4 jumpered. Wiring must go plus-to-minus and minus-to-plus , Gnd-to-Gnd.
6. Do not power the SLTA-10 from the same transformer that powers the I/O Flex 6126.
7. Set the following SLTA-10 dipswitch settings.



8. Turn on the I/O Flex 6126's power.



APPENDIX A — BAS COMMISSIONING (cont)

Mapping Points - Carrier 62D Rev. E - 100% Outdoor Air Air-to-Air

				BACNET			MODBUS		N2		LONWORKS	
POINT NAME	OBJECT NAME	DESCRIPTION	READ ONLY	TYPE	OBJECT ID	DEVICE ID	OBJECT TYPE	REGISTER	TYPE	ID	SNVT #	SNVT
Clg #1 LAT LDB Occ	clg1_lat_ldb_o_1	Cooling Circuit #1 Leaving Air Temperature Lower Deadband Occupied		BAV	AV:309	DEV:1602	float value	40001	data float	1		
Clg #1 LAT UDB Occ	clg1_lat_udb_o_1	Cooling Circuit #1 Leaving Air Temperature Upper Deadband Occupied		BAV	AV:308	DEV:1602	float value	40003	data float	2		
Clg #1 OADP/ECDP LDB Occ	clg1_oadp_ecdp_ldb_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Dew Point Lower Deadband Occupied		BAV	AV:3152	DEV:1602	float value	40005	data float	3		
Clg #1 OADP/ECDP SP Occ	clg1_oadp_ecdp_sp_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Dew Point Set Point Occupied		BAV	AV:3132	DEV:1602	float value	40007	data float	4		
Clg #1 OADP/ECDP UDB Occ	clg1_oadp_ecdp_udb_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Dew Point Upper Deadband Occupied		BAV	AV:3142	DEV:1602	float value	40009	data float	5		
Clg #1 OAE/ECE LDB Occ	clg1_oae_ece_ldb_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Enthalpy Lower Deadband Occupied		BAV	AV:3151	DEV:1602	float value	40011	data float	6		
Clg #1 OAE/ECE SP Occ	clg1_oae_ece_sp_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Enthalpy Set Point Deadband Occupied		BAV	AV:3131	DEV:1602	float value	40013	data float	7		
Clg #1 OAE/ECE UDB Occ	clg1_oae_ece_udb_o_1	Cooling Circuit #1 Outdoor Air/ Enetering Coil Enthalpy Upper Deadband Occupied		BAV	AV:3141	DEV:1602	float value	40015	data float	8		
Clg #1 OAT LDB Occ	clg1_oat_ecat_ldb_o_1	Cooling Circuit #1 Outside Air Temperature Lower Deadband Occupied		BAV	AV:327	DEV:1602	float value	40017	data float	9		
Clg #1 OAT SP Occ	clg1_oat_ecat_sp_o_1	Cooling Circuit #1 Outside Air Temperature Set Point Occupied		BAV	AV:325	DEV:1602	float value	40019	data float	10		
Clg #1 OAT UDB Occ	clg1_oat_ecat_udb_o_1	Cooling Circuit #1 Outside Air Temperature Upper Deadband Occupied		BAV	AV:326	DEV:1602	float value	40021	data float	11		
Clg #2 LAT LDB Occ	clg2_lat_ldb_o_1	Cooling Circuit #2 Leaving Air Temperature Lower Deadband Occupied		BAV	AV:311	DEV:1602	float value	40023	data float	12		
Clg #2 LAT UDB Occ	clg2_lat_udb_o_1	Cooling Circuit #2 Leaving Air Temperature Upper Deadband Occupied		BAV	AV:310	DEV:1602	float value	40025	data float	13		
Clg #2 OADP/ECDP LDB Occ	clg2_oadp_ecdp_ldb_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Dew Point Lower Deadband Occupied		BAV	AV:3182	DEV:1602	float value	40027	data float	14		
Clg #2 OADP/ECDP SP Occ	clg2_oadp_ecdp_sp_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Dew Point Set Point Occupied		BAV	AV:3162	DEV:1602	float value	40029	data float	15		
Clg #2 OADP/ECDP UDB Occ	clg2_oadp_ecdp_udb_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Dew Point Upper Deadband Occupied		BAV	AV:3172	DEV:1602	float value	40031	data float	16		
Clg #2 OAE/ECE LDB Occ	clg2_oae_ece_ldb_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Enthalpy Lower Deadband Occupied		BAV	AV:3181	DEV:1602	float value	40033	data float	17		
Clg #2 OAE/ECE SP Occ	clg2_oae_ece_sp_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Enthalpy Set Point Deadband Occupied		BAV	AV:3161	DEV:1602	float value	40035	data float	18		
Clg #2 OAE/ECE UDB Occ	clg2_oae_ece_udb_o_1	Cooling Circuit #2 Outdoor Air/ Enetering Coil Enthalpy Upper Deadband Occupied		BAV	AV:3171	DEV:1602	float value	40037	data float	19		
Clg #2 OAT LDB Occ	clg2_oat_ecat_ldb_o_1	Cooling Circuit #2 Outside Air Temperature Lower Deadband Occupied		BAV	AV:330	DEV:1602	float value	40039	data float	20		
Clg #2 OAT SP Occ	clg2_oat_ecat_sp_o_1	Cooling Circuit #2 Outside Air Temperature Set Point Occupied		BAV	AV:328	DEV:1602	float value	40041	data float	21		
Clg #2 OAT UDB Occ	clg2_oat_ecat_udb_o_1	Cooling Circuit #2 Outside Air Temperature Upper Deadband Occupied		BAV	AV:329	DEV:1602	float value	40043	data float	22		
Clg LAT SP Occ	clg_lat_sp_o_1	Cooling Leaving Air Temperature Set Pioint Occupied		BAV	AV:307	DEV:1602	float value	40045	data float	23	2	SNVT_temp_p (105)
Clg SLT Occ	clg_slt_o_1	Cooling Suction Line Temperature Occupied		BAV	AV:301	DEV:1602	float value	40047	data float	24	3	SNVT_temp_p (105)
Clg ZAT LDB Occ	clg_zat_ldb_o_1	Cooling Zone Air Temperature Lower Deadband Occupied		BAV	AV:321	DEV:1602	float value	40049	data float	25		
Clg ZAT SP Occ	clg_zat_sp_o_1	Cooling Zone Air Temperature Set Point Occupied		BAV	AV:319	DEV:1602	float value	40051	data float	26	4	SNVT_temp_p (105)
Clg ZAT UDB Occ	clg_zat_udb_o_1	Cooling Zone Air Temperature UDB Occupied		BAV	AV:320	DEV:1602	float value	40053	data float	27		
Cooling OAT/ECAT Lower Limit	clg_oat_ecat_low_limit_1	Cooling Outside Air/Entering Coil Air Temperature Lower Limit		BAV	AV:541	DEV:1602	float value	40055	data float	28		
Dehumidification Mode OAT/ECAT SP Occ	dehum_oat_ecat_sp_o_1	Dehumidification Mode Outside Air Temperature/Entering Coil Air Temperature Set Point Occupied		BAV	AV:312	DEV:1602	float value	40057	data float	29	5	SNVT_temp_p (105)
Digital Compressor #1 DCM	dig_c1_dcm_1	Digital Compressor #1 Digital Compressor Module	Y	BAV	AV:230	DEV:1602	float value	40059	data float	30	6	SNVT_lev_percent (81)

APPENDIX A — BAS COMMISSIONING (cont)

Mapping Points - Carrier 62D Rev. E - 100% Outdoor Air Air-to-Air (cont)

				BACNET			MODBUS		N2		LONWORKS	
POINT NAME	OBJECT NAME	DESCRIPTION	READ ONLY	TYPE	OBJECT ID	DEVICE ID	OBJECT TYPE	REGISTER	TYPE	ID	SNVT #	SNVT
EF-APS Override Time	efaps_ovrd_time_1	Exhaust Fan - Air Proving Switch Override Time		BAV	AV:355	DEV:1602	float value	40061	data float	31		
EF DPT SP Occ	ef_dpt_o_1	Exhaust Fan Differential Pressure Trasducer Set Point Occupied		BAV	AV:354	DEV:1602	float value	40063	data float	32	7	SNVT_press_p (113)
EF DPT Status	ef_dpt_stat_1	Exhaust Fan Differential Pressure Transducer Status	Y	BAV	AV:214	DEV:1602	float value	40065	data float	33	8	SNVT_press_p (113)
EF Min. Time On	ef_min_time_on_1	Exhaust Fan Minimum Time On		BAV	AV:359	DEV:1602	float value	40067	data float	34		
EF VFD Frequency	efvfd_freq_1	Exhaust Fan Variable Frequency Drive Frequency	Y	BAV	AV:227	DEV:1602	float value	40069	data float	35	9	SNVT_freq_hz (76)
Gas Heat Purge	sf_vfd_gas_purge_1	Suuply Fan Variable Frequency Drive Gas Heat Purge		BAV	AV:609	DEV:1602	float value	40071	data float	36		
Heat Fail Delay	heat_fail_delay_1	Heat Fail Delay		BAV	AV:802	DEV:1602	float value	40073	data float	37		
Heat Modulation	heat_mod_1	Heat Modulation	Y	BAV	AV:231	DEV:1602	float value	40075	data float	38	10	SNVT_lev_percent (81)
HGRH LAT LDB Occ	hgrh_lat_ldb_o_1	Hot Gas Reheat Leaving Air Temperature Lower Dry Bulb Occupied		BAV	AV:323	DEV:1602	float value	40077	data float	39		
HGRH LAT UDB Occ	hgrh_lat_udb_o_1	Hot Gas Reheat Leaving Air Temperature Upper Dry Bulb Occupied		BAV	AV:322	DEV:1602	float value	40079	data float	40		
HGRH Modulation	hgrh_mod_1	Hot Gas Reheat Modulation	Y	BAV	AV:229	DEV:1602	float value	40081	data float	41	11	SNVT_lev_percent (81)
HGRH Purge Cycle	hgrh_purge_cycle_1	Hot Gas Reheat Purge Cycle		BAV	AV:357	DEV:1602	float value	40083	data float	42		
HGRH Purge Time On	hgrh_purge_time_on_1	Hot Gas Reheat Purge Time On		BAV	AV:356	DEV:1602	float value	40085	data float	43		
Htg LAT LDB Occ	htg_lat_ldb_o_1	Heating Leaving Air Temperature Lower Dry Bulb Occupied		BAV	AV:336	DEV:1602	float value	40087	data float	44		
Htg LAT SP Occ	htg_lat_sp_o_1	Heating Leaving Air Temperature Set Point Occupied		BAV	AV:334	DEV:1602	float value	40089	data float	45	12	SNVT_temp_p (105)
Htg LAT UDB Occ	htg_lat_udb_o_1	Heating Leaving Air Temperature UDB Occupied		BAV	AV:335	DEV:1602	float value	40091	data float	46		
Htg OAT/ECAT LDB Occ	htg_oat_ecat_ldb_o_1	Heating Outside Air/Entering Coil Air Temperature LDB Occupied		BAV	AV:333	DEV:1602	float value	40093	data float	47		
Htg OAT/ECAT SP Occ	htg_oat_ecat_sp_o_1	Heating Outside Air Temperature/ Entering Coil Air Temperature Set Point Occupied		BAV	AV:331	DEV:1602	float value	40095	data float	48	13	SNVT_temp_p (105)
Htg OAT/ECAT UDB Occ	htg_oat_ecat_udb_o_1	Heating Outside Air Temperature/ Entering Coil Air Temperature Occupied		BAV	AV:332	DEV:1602	float value	40097	data float	49		
Htg ZAT LDB Occ	htg_zat_ldb_o_1	Heating Zone Air Temperature LDB Occupied		BAV	AV:339	DEV:1602	float value	40099	data float	50		
Htg ZAT SP Occ	htg_zat_sp_o_1	Heating Zone Air Temperature Set Point Occupied		BAV	AV:337	DEV:1602	float value	40101	data float	51	14	SNVT_temp_p (105)
Htg ZAT UDB Occ	htg_zat_udb_o_1	Heating Zone Air Temperature UDB Occupied		BAV	AV:338	DEV:1602	float value	40103	data float	52		
LAT Heat Fail	lat_heat_fail_1	Leaving Air Temperature Heat Fail		BAV	AV:340	DEV:1602	float value	40105	data float	53	15	SNVT_temp_p (105)
LAT High Limit - Elec.	lat_high_limit_e_1	Leaving Air Temperature High Limit - Electric		BAV	AV:342	DEV:1602	float value	40107	data float	54		
LAT High Limit - Gas	lat_high_limit_g_1	Leaving Air Temperature High Limit - Gas		BAV	AV:343	DEV:1602	float value	40109	data float	55		
LAT Low Limit	lat_low_limit_1	Leaving Air Temperature Low Limit		BAV	AV:341	DEV:1602	float value	40111	data float	56	16	SNVT_temp_p (105)
LAT RTHO Maximum	lat_rtho_max_1	Leaving Air Temperature Room Temperature Heating Override Maximum		BAV	AV:587	DEV:1602	float value	40113	data float	57	17	SNVT_temp_p (105)
LAT RTHO Ratio	lat_rtho_ratio_1	Leaving Air Temperature Room Temperature Heating Override Ratio		BAV	AV:586	DEV:1602	float value	40115	data float	58	18	SNVT_temp_p (105)
LAT RTRHO Maximum	lat_rtrho_max_1	Leaving Air Temperature Room Temperature Reheat Override Maximum		BAV	AV:583	DEV:1602	float value	40117	data float	59	19	SNVT_temp_p (105)
LAT RTRHO Ratio	lat_rtrho_ratio_1	Leaving Air Temperature Room Temperature Reheat Override Ratio		BAV	AV:582	DEV:1602	float value	40119	data float	60	20	SNVT_temp_p (105)
LAT Status	lat_stat_1	Laeving Air Temperature Status	Y	BAV	AV:208	DEV:1602	float value	40121	data float	61	21	SNVT_temp_p (105)
Low LAT Delay	low_lat_delay_1	Low Leaving Air Temperature Delay		BAV	AV:801	DEV:1602	float value	40123	data float	62		
OA/EC-RH Status	oa_ec_rh_stat_1	Outside Air Temeprature/Entering Coil Air Temperature Status	Y	BAV	AV:206	DEV:1602	float value	40125	data float	63	22	SNVT_lev_percent (81)
OAT/ECAT Status	oat_ecat_stat_1	Outside Air Temeprature/Entering Coil Air Temperature Status	Y	BAV	AV:204	DEV:1602	float value	40127	data float	64	23	SNVT_temp_p (105)
Operating Condition	op_cond_1	Operating Condition	Y	BAV	AV:111	DEV:1602	float value	40129	data float	65	24	SNVT_count (8)
Operating Mode	op_mode_1	Operating Mode	Y	BAV	AV:112	DEV:1602	float value	40131	data float	66	25	SNVT_count (8)
RTHO Modified LAT Set Point Occ	rtho_lat_sp_o_1	Room Temperature Heating Override Modified Leaving Air Temperature Set Point Occupied	Y	BAV	AV:588	DEV:1602	float value	40133	data float	67	26	SNVT_temp_p (105)
RTRHO Modified LAT Set Point Occ	rtrho_lat_sp_o_1	Room Temperature Reheat Override Modified Leaving Air Temperature Set Point Occupied	Y	BAV	AV:584	DEV:1602	float value	40135	data float	68	27	SNVT_temp_p (105)

APPENDIX A — BAS COMMISSIONING (cont)

Mapping Points - Carrier 62D Rev. E - 100% Outdoor Air Air-to-Air (cont)

				BACNET			MODBUS		N2		LONWORKS	
POINT NAME	OBJECT NAME	DESCRIPTION	READ ONLY	TYPE	OBJECT ID	DEVICE ID	OBJECT TYPE	REGISTER	TYPE	ID	SNVT #	SNVT
SF-APS Override Time	sfaps_ovrd_time_1	Supply Fan Air Proving Switch Override Time		BAV	AV:353	DEV:1602	float value	40137	data float	69		
SF DPT SP Occ	sf_dpt_o_1	Supply Fan Differential Pressure Transducer Set Point Occupied		BAV	AV:352	DEV:1602	float value	40139	data float	70	28	SNVT_press_p (113)
SF DPT Status	sf_dpt_stat_1	Supply Fan Differential Pressure Transducer Status	Y	BAV	AV:212	DEV:1602	float value	40141	data float	71	29	SNVT_press_p (113)
SF Min. Time On	sf_min_time_on_1	Supply Fan Minutes Time On		BAV	AV:358	DEV:1602	float value	40143	data float	72		
SF VFD Frequency	sfvfd_freq_1	Supply Fan Variable Frequency Drive Frequency	Y	BAV	AV:226	DEV:1602	float value	40145	data float	73	30	SNVT_freq_hz (76)
SLT #1 Status	slt1_stat_1	Suction Line Temperature Cooling Circuit #1 Status	Y	BAV	AV:220	DEV:1602	float value	40147	data float	74	31	SNVT_temp_p (105)
SLT #2 Status	slt2_stat_1	Suction Line Temperature Cooling Circuit #2 Status	Y	BAV	AV:218	DEV:1602	float value	40149	data float	75	32	SNVT_temp_p (105)
SLT Freeze Delay	slt_frz_delay_1	Suction Line Temperature Freeze Delay		BAV	AV:306	DEV:1602	float value	40151	data float	76		
SLT Freeze LSP Occ	slt_lsp_o_1	Suction Line Temperature Lower Set Point Occupied		BAV	AV:305	DEV:1602	float value	40153	data float	77		
SLT Freeze MSP Occ	slt_msp_o_1	Suction Line Temperature Middle Set Point Occupied		BAV	AV:304	DEV:1602	float value	40155	data float	78		
SLT Freeze USP Occ	slt_usp_o_1	Suction Line Temperature Upper Set Point Occupied		BAV	AV:303	DEV:1602	float value	40157	data float	79		
ZAT RTHO Ratio	zat_rtho_ratio_1	Zone Air Temperature Room Temperature Heating Override Ratio		BAV	AV:585	DEV:1602	float value	40159	data float	80	33	SNVT_temp_p (105)
ZAT RTRHO Ratio	zat_rtrho_ratio_1	Zone Air Temperature Room Temperature Reheat Override Ratio		BAV	AV:581	DEV:1602	float value	40161	data float	81	34	SNVT_temp_p (105)
ZAT Status	zat_stat_1	Zone Air Temperature Status	Y	BAV	AV:202	DEV:1602	float value	40163	data float	82	35	SNVT_temp_p (105)
ZRH LDB Dehum. Occ	zrh_ldb_dehum_o_1	Zone Reheat Lower Deadband Dehumidification Occupied		BAV	AV:351	DEV:1602	float value	40165	data float	83		
ZRH SP Occ	zrh_sp_o_1	Zone Reheat Set Point Occupied		BAV	AV:360	DEV:1602	float value	40167	data float	84	36	SNVT_lev_percent (81)
Z-RH Status	z_rh_stat_1	Zone Reheat Status	Y	BAV	AV:210	DEV:1602	float value	40169	data float	85	37	SNVT_lev_percent (81)
ZRH UDB C2 Dehum. Occ	zrh_udb_c2_dehum_o_1	Zone Relative Humidity Upper Deadband Compressor #2 Dehumidification Occupied		BAV	AV:350	DEV:1602	float value	40171	data float	86		
ZRH UDB C1 Dehum. Occ	zrh_udb_c1_dehum_o_1	Zone Relative Humidity Upper Deadband Compressor #1 Dehumidification Occupied		BAV	AV:349	DEV:1602	float value	40173	data float	87		
Alarm Reset	alarm_reset_1	Alarm Reset		BBV	BV:899	DEV:1602	discrete out	1	binary out	1	38	SNVT_count_inc (9)
Alarm Status	alarm_status_1	Alarm Status	Y	BBV	BV:812	DEV:1602	discrete in	10001	binary in	1	39	SNVT_count_inc (9)
C1 Command	c1_cmd_1	Compressor #1 Command	Y	BBV	BV:242	DEV:1602	discrete in	10002	binary in	2	40	SNVT_count_inc (9)
C1 FAULT	c1_fault_alarm_1	Compressor #1 Fault	Y	BALM	BV:816	DEV:1602	discrete in	10025	binary in	25		
C2 Command	c2_cmd_1	Compressor #2 Command	Y	BBV	BV:243	DEV:1602	discrete in	10003	binary in	3	41	SNVT_count_inc (9)
C2 FAULT	c2_fault_alarm_1	Compressor #2 Fault	Y	BALM	BV:821	DEV:1602	discrete in	10026	binary in	26		
CFI ALARM	cfi_alarm_1	Clogged Filter Indicator Alarm	Y	BALM	BV:830	DEV:1602	discrete in	10027	binary in	27		
CFI Status	cfi_stat_1	Clogged Filter Indicator Status	Y	BBV	BV:207	DEV:1602	discrete in	10004	binary in	4		
CFI Status	cfi_status_1	Clogged Filter Indicator Status	Y	BBV	BV:807	DEV:1602	discrete in	10005	binary in	5	42	SNVT_count_inc (9)
Comp #1 CS Status	cc1_cs_stat_1	Compressor #1 Current Sensor Status	Y	BBV	BV:205	DEV:1602	discrete in	10006	binary in	6	43	SNVT_count_inc (9)
Comp #2 CS Status	cc2_cs_stat_1	Compressor #2 Current Sensor Status	Y	BBV	BV:206	DEV:1602	discrete in	10007	binary in	7	44	SNVT_count_inc (9)
ECAT FAIL	ecat_failure_1	Enetring Coil Air Temperature Fail	Y	BALM	BV:838	DEV:1602	discrete in	10028	binary in	28		
ECRH FAIL	ecrh_failure_1	Entering Coil Rehat Fail	Y	BALM	BV:839	DEV:1602	discrete in	10029	binary in	29		
ECW CS Status	ecw_cs_stat_1	Energy Conservation Wheel Current Sensor Status	Y	BBV	BV:209	DEV:1602	discrete in	10008	binary in	8		
ECW Status	ecw_stat_1	Energy Conservation Wheel Status	Y	BBV	BV:815	DEV:1602	discrete in	10009	binary in	9	45	SNVT_count_inc (9)
EF ALARM	ef_alarm_1	Exhaust Fan Alarm	Y	BALM	BV:814	DEV:1602	discrete in	10030	binary in	30		
EF-APS Status	ef_aps_stat_1	Exhaust Fan Air Proving Switch Status	Y	BBV	BV:211	DEV:1602	discrete in	10010	binary in	10	46	SNVT_count_inc (9)
EF Command	ef_cmd_1	Exhaust Fan Command	Y	BBV	BV:523	DEV:1602	discrete in	10011	binary in	11	47	SNVT_count_inc (9)
Emerg. Shutdown Enable	emer_shtdwn_1	Emergency Shutdown Enable		BBV	BV:810	DEV:1602	discrete out	2	binary out	2	48	SNVT_count_inc (9)

APPENDIX A — BAS COMMISSIONING (cont)

Mapping Points - Carrier 62D Rev. E - 100% Outdoor Air Air-to-Air (cont)

				BACNET			MODBUS		N2		LONWORKS	
POINT NAME	OBJECT NAME	DESCRIPTION	READ ONLY	TYPE	OBJECT ID	DEVICE ID	OBJECT TYPE	REGISTER	TYPE	ID	SNVT #	SNVT
EMR On	emr_on_1	Energy Management Relay On	Y	BBV	BV:853	DEV:1602	discrete in	10012	binary in	12	49	SNVT_count_inc (9)
EMR Status	emr_stat_1	Energy Management Relay Status	Y	BBV	BV:204	DEV:1602	discrete in	10013	binary in	13		
Heat Command	heat_cmd_1	Heat Command	Y	BBV	BV:245	DEV:1602	discrete in	10014	binary in	14	50	SNVT_count_inc (9)
HGRH Command	hgrh_cmd_1	Hot Gas Rehaet Command	Y	BBV	BV:244	DEV:1602	discrete in	10015	binary in	15	51	SNVT_count_inc (9)
HLAT ALARM	hlat_alarm_1	High Leaving Air Temperature Alarm	Y	BALM	BV:829	DEV:1602	discrete in	10031	binary in	31		
HT FAIL	heat_failure_1	Heat Failure	Y	BALM	BV:826	DEV:1602	discrete in	10032	binary in	32		
Initiate Archive	archive_now_1	Initiate Archive		BBV	BV:133	DEV:1602	discrete out	3	binary out	3	1	SNVT_count_inc (9)
LAT FAIL	lat_failure_1	Leaving Air Temperature Failure	Y	BALM	BV:827	DEV:1602	discrete in	10033	binary in	33		
LLAT ALARM	low_lat_alarm_1	Low Leaving Air Temperature Failure	Y	BALM	BV:828	DEV:1602	discrete in	10034	binary in	34		
LP #1 Status	lp1_stat_1	Low Pressure Switch #1	Y	BBV	BV:201	DEV:1602	discrete in	10016	binary in	16	52	SNVT_count_inc (9)
LP #2 Status	lp2_stat_1	Low Pressure Switch #2	Y	BBV	BV:202	DEV:1602	discrete in	10017	binary in	17	53	SNVT_count_inc (9)
LP1 ALARM	lp1_alarm_1	Low Pressure Switch #1 Alarm	Y	BALM	BV:817	DEV:1602	discrete in	10035	binary in	35		
LP1 STOP	lp1_stop_alarm_1	Low Pressure Switch #1 Stop	Y	BALM	BV:818	DEV:1602	discrete in	10036	binary in	36		
LP2 ALARM	lp2_alarm_1	Low Pressure Switch #2 Alarm	Y	BALM	BV:822	DEV:1602	discrete in	10037	binary in	37		
LP2 STOP	lp2_stop_alarm_1	Low Pressure Switch #2 Stop	Y	BALM	BV:823	DEV:1602	discrete in	10038	binary in	38		
OA Damper Command	oada_cmd_1	Outside Air Damper Command	Y	BBV	BV:246	DEV:1602	discrete in	10018	binary in	18	54	SNVT_count_inc (9)
OARH FAIL	oarh_failure_1	Outside Air Relative Humidity Failure	Y	BALM	BV:835	DEV:1602	discrete in	10039	binary in	39		
OAT FAIL	oat_failure_1	Outside Air Temperature Failure	Y	BALM	BV:834	DEV:1602	discrete in	10040	binary in	40		
Occupancy Status	occ_status_1	Occupancy Status	Y	BBV	BV:106	DEV:1602	discrete in	10019	binary in	19	55	SNVT_count_inc (9)
Push Button Enable	enable_push_button_1	Push Button Enable		BBV	BV:104	DEV:1602	discrete out	4	binary out	4	56	SNVT_count_inc (9)
SD ALARM	sd_alarm_1	Smoke Detector Alarm	Y	BALM	BV:831	DEV:1602	discrete in	10041	binary in	41		
SD Status	sd_stat_1	Smoke Detector Status	Y	BBV	BV:203	DEV:1602	discrete in	10020	binary in	20		
SD Stop	sd_stop_1	Smoke Detector Alarm	Y	BBV	BV:808	DEV:1602	discrete in	10021	binary in	21	57	SNVT_count_inc (9)
SF ALARM	sf_alarm_1	Supply Fan Alarm	Y	BALM	BV:813	DEV:1602	discrete in	10042	binary in	42		
SF-APS Status	sf_aps_stat_1	Supply Fan Air Proving Switch Status	Y	BBV	BV:210	DEV:1602	discrete in	10022	binary in	22	58	SNVT_count_inc (9)
SF Command	sf_cmd_1	Supply Fan Command	Y	BBV	BV:241	DEV:1602	discrete in	10023	binary in	23	59	SNVT_count_inc (9)
SLT1 ALARM	slt1_alarm_1	Suction Line Temperature Cooling Circuit #1 Alarm	Y	BALM	BV:819	DEV:1602	discrete in	10043	binary in	43		
SLT1 FAIL	slt1_failure_1	Suction Line Temperature Cooling Circuit #1 Failure	Y	BALM	BV:833	DEV:1602	discrete in	10044	binary in	44		
SLT1 STOP	slt1_stop_alarm_1	Suction Line Temperature Cooling Circuit #1 Stop	Y	BALM	BV:820	DEV:1602	discrete in	10045	binary in	45		
SLT2 ALARM	slt2_alarm_1	Suction Line Temperature Cooling Circuit #2 Alarm	Y	BALM	BV:824	DEV:1602	discrete in	10046	binary in	46		
SLT2 FAIL	slt2_failure_1	Suction Line Temperature Cooling Circuit #2 Failure	Y	BALM	BV:837	DEV:1602	discrete in	10047	binary in	47		
SLT2 STOP	slt2_stop_alarm_1	Suction Line Temperature Cooling Circuit #2 Stop	Y	BALM	BV:825	DEV:1602	discrete in	10048	binary in	48		
SP ALARM	sp_alarm_1	Set Point Alarm	Y	BALM	BV:855	DEV:1602	discrete in	10049	binary in	49		
Unit Enable (BAS)	enable_bas_1	Unit Enable Building Automation System		BBV	BV:102	DEV:1602	discrete out	5	binary out	5	60	SNVT_count_inc (9)
Unit Stop	unit_stop_1	Unit Stop	Y	BBV	BV:811	DEV:1602	discrete in	10024	binary in	24	61	SNVT_count_inc (9)
ZAT FAIL	zat_failure_1	Zone Air Temperature Failure	Y	BALM	BV:832	DEV:1602	discrete in	10050	binary in	50		
ZRH FAIL	zrh_failure_1	Zone Relative Humidity Failure	Y	BALM	BV:836	DEV:1602	discrete in	10051	binary in	51		
Control Source	ctrl_source_1	Control Source		BMSV	MSV:101	DEV:1602	unsigned in	40175	data int	1	62	SNVT_count_inc (9)
Low Pr. Sw. BPT	lps_bpt_1	Low Pressure Switch Bypass Timer		BMSV	MSV:302	DEV:1602	unsigned in	40176	data int	2		

APPENDIX A — BAS COMMISSIONING (cont)

LEGEND

ALC — Automated Logic Incorporated, a division of UTC Climate, Controls, and Security
APS — Air Pressure Switch
BAS — Building Automation System
CCS — Compressor Current Switch
CFI — Clogged Filter Indicator
CM1A — Compressor #1
CC1A — Compressor #1 Contactor Coil
CC1A-A1 — Compressor #1 Auxiliary Contact
CFM — Cubic Feet per Minute (volumetric flow rate)
CPM — Compressor Protection Module
CM2A — Compressor #2
CC2A — Compressor #2 Contactor Coil
CC2A-A1 — Compressor #2 Auxiliary Contact
DCM — Digital Compressor Module
DPT — Differential Pressure Transmitter
DOAU — Dedicated Outdoor Air Unit
DOM — Delay-On-Make
EC-RH — Entering Coil Relative Humidity, measured before entering the DX coil and after the ECW
ECAT — Entering Coil Air Temperature, measured before entering the DX coil and after the ECW
ECW — Energy Conservation Wheel
EMR — Energy Management Relay; normally closed contact
EF — Exhaust Fan
EF-APS — Exhaust Fan Air Pressure Switch
EF-DPT — Differential Pressure Transmitter
EF-VFD — Exhaust Fan Variable Frequency Drive
FPM — Feet per Minutes (velocity)
FSC — Fan Speed Control
HAR — Heating Analog Relay
HARM — Heating Analog Relay Module
HGRH — Hot Gas Reheat
HPS — High Pressure Switch
HP1 — High Pressure Switch #1
HP2 — High Pressure Switch #2
LA — Low Ambient Pressure Sensor
LAT — Leaving Air Temperature
LP1 — Low Pressure Switch #1
LP2 — Low Pressure Switch #2
MDC — Modulating Discharge Controller
MDV — Modulating Discharge Valve
MRC — Modulating Reheat Controller
MRV — Modulating Reheat Valve
NC — Normally Closed contact
NO — Normally Opened contact
OA — Outside Air; prior to any conditioning
OD — Outside Air Damper
OA-RH — Outside Air Relative Humidity (real), measured before air enters the ECW, if existing
OAT — Outside Air Temperature (real), measured before air enters the ECW, if existing
OFM1 — Outdoor Fan #1 Motor
OF1C — Outdoor Fan #1 Contactor Coil
OF1-VFD — Outdoor Fan #1 Variable Frequency Drive
OFM2 — Outdoor Fan #2 Motor
OF2C — Outdoor Fan #2 Contactor Coil
OF2-VFD — Outdoor Fan #2 Variable Frequency Drive
RHR — Reheat Relay
RHS — Reheat Valve Solenoid
RTHO — Room Temperature Heating Override
RTRHO — Room Temperature Reheat Override
SD — Smoke Detector; normally closed contact
SF — Supply Fan
SF-APS — Supply Fan Air Pressure Switch
SF-DPT — Differential Pressure Transmitter
SF-VFD — Supply Fan Variable Frequency Drive
SLT — Suction Line Temperature, attached to the suction line near the suction header of the DX coil
VFD — Variable Frequency Drive
WM — Wheel Motor
WMC — Wheel Motor Contactor
WM-VFD — Wheel Motor Variable Frequency Drive
ZAT — Zone Air Temperature
Z-RH — Zone Relative Humidity

APPENDIX B — SET POINT MATRIX

CONTROL VARIABLE	ABBREVIATION	DEFAULT SET POINT	ADJUSTMENT RANGE	
			MINIMUM	MAXIMUM
Time Clock				
Set Points				
Occupied Mode Period		ON: 7:00 am OFF: 6:00 pm	1 hour	24 hour
Time Clock Override Time		30 minutes	1 minute	120 minutes
Archive Time Delay		10 minutes	5 minutes	30 minutes
Fans				
Set Points				
Supply Fan Static Pressure	SF-DPT	0.75 "H2O	0.5 "H2O	4.9 "H2O
Exhaust Fan Static Pressure	EF-DPT	0.02 "H2O	0.0 "H2O	1.0 "H2O
Time Delays				
Supply Fan APS By-Pass Time	SF-APS	60 seconds	60 seconds	120 seconds
Supply Fan Minimum Run Time		2 minutes	1 minute	5 minutes
Exhaust Fan APS By-Pass Time	EF-APS	60 seconds	60 seconds	120 seconds
Exhaust Fan Minimum Run Time		2 minutes	1 minute	5 minutes
ECW (controlled by JCI C450 Module)				
Standard Control				
Set Points				
ON When Outside Air Temp. <> Return Air Temp	OAT/RAT	±3 F		
On-Off Defrost Control				
Set Points				
ON When Outside Air Temp. <> Return Air Temp	OAT/RAT	±3 F		
OFF When Outside Air Temp. < Set Point	OAT	15 F		
VFD Defrost Control				
Set Points				
ON (100%) when Outside Air Temp. <> Return Air Temp.	OAT/RAT	±3 F		
Ramps Speed Down when Outside Air Temp. < Set Point	OAT	15 F		
OFF (0%) when Outside Air Temp. = Set Point				
Cooling				
Set Points				
Leaving Air Temperature - Cooling Mode	LAT Cooling SP	72 F	55 F	90 F
Suction Line Temperature - Cooling Mode	SLT Cooling SP	45 F	32 F	60 F
Zone Air Temperature - Cooling Mode	ZAT Cooling SP	72 F	55 F	90 F
Deadbands				
LAT - Compressor #1 - Lower/Upper Deadband		1 F / 1 F		
LAT - Compressor #2 - Lower/Upper Deadband		2 F/ 2 F		
LAT - HGRH Lower/Upper Deadband		1 F / 2 F		
ZAT - Lower/Upper Deadband		1 F / 1F		
Time Delays				
Low Pressure By-Pass Time	LP BPT	90 seconds	90, 120, 180, or 300 seconds	
SLT Freeze Delay	SLT FRZ DELAY	15 minutes	5 minutes	30 minutes
Compressor #1/#2 Minimum Run Time		4 minutes	Not Adjustable	
Compressor #1/#2 Minimum Time Time		5 minutes	Not Adjustable	
HGRH Purge Cycle	PURGE CYCLE	120 minutes		
HGRH Purge Time ON	PURGE ON	2 minutes		
Coil Freeze Protection				
SLT Upper Freeze Temperature	SLT USP	38 F	35 F	40 F
SLT Middle Freeze Temperature	SLT MSP	32 F	30 F	40 F
SLT Lower Freeze Temperature	SLT LSP	28 F	28 F	35 F

APPENDIX B — SET POINT MATRIX (cont)

CONTROL VARIABLE	ABBREVIATION	DEFAULT SET POINT	ADJUSTMENT RANGE	
			MINIMUM	MAXIMUM
Dehumidification				
Set Points				
Outside Air Temperature - DH Mode	DEHUM OAT	60 F	55 F	90 F
Zone Relative Humidity - DH Mode	ZRH SP	55%	30%	65%q
Deadbands				
Zone Relative Humidity - Compressor #1 - Upper Deadband	DH1 ZRH UDB	1%		
Zone Relative Humidity - Compressor #2 - Upper Deadband	DH2 ZRH UDB	2%		
Zone Relative Humidity - Lower Deadband	DH ZRH LDB	2%		
Heating				
Set Points				
Outside Air Temperture - Heating Mode	HTG OAT	58 F	40 F	110 F
Leaving Air Temperature - Heating Mode	HTG LAT	72 F	40 F	110 F
Zone Air Temperature - Heating Mode	HTG ZAT	72 F	40 F	110 F
Deadbands				
Outside Air Temp. - Heating Mode - Lower/Upper Deadband	HTG OAT L/UDB	1 F / 1 F		
Leaving Air Temp. - Heating Mode - Lower/Upper Deadband	HTG LAT L/UDB	2 F / 2 F		
Zone Air Temp. - Heating Mode - Lower/Upper Deadband	HTG ZAT L/UDB	2 F / 2 F		
Alarms				
LAT Heat Failure	LAT HEAT FAIL	50 F	38 F	70 F
LAT Low Limit	LAT LLIM	40 F	38 F	70 F
LAT High Limit - Electric Heat	LAT HELIM	120 F	65 F	120 F
LAT High Limit - Gas Furnace (also Hot Water and Steam)	LAT HGLIM	130 F	65 F	130 F
Time Delays				
LAT Heat Fail Delay	HEAT FAIL DELAY	15 minutes	5 minutes	30 minutes
Low LAT Delay	LOW LAT DELAY	15 minutes	5 minutes	30 minutes
Gas Furnace Purge Time	GAS PURGE	2 minutes	1 minute	5 minutes

APPENDIX C — CONTROLS QUICK START

General — Carrier 62D and 62R units controls are wired, programmed, and configured from the factory to reflect each unit configuration. Below are the steps for initial unit set up before operation:

Check Battery Status (Recommended) — Control settings and configuration are stored in the controller memory, which has a battery backup in case controller power is lost. Check the battery voltage while the controller power is on and the battery is still in the holder. If the battery voltage is below 3.0V, replace immediately and do not remove controller power.

NOTE: If controller power is lost and battery backup is removed or fails, controller programming and set points will be lost.

Set Time and Date (Required) — In order for the unit schedules to function properly, the current unit time and date must be set. The time clock is set to Eastern Standard Time (EST) from the factory.

To adjust Current Time and Date:

1. From the "Home" screen, use the ARROW KEYS to navigate down to "Controls" and press ENTER to go to the "Controls" screen. The User or Admin password is required to access this screen.
2. From the "Controls" use the ARROW KEYS to navigate down to "Set Time and Date: →ClockSet" and press ENTER to go to the "Set Current Time/Date" screen.
3. In the "Set Current Time/Date" screen, scroll down to "Time (hh:mm:ss): HH:MM:SS."
4. Press ENTER. The hour section will blink to indicate that it is currently selected for editing.
5. Use the NUMBER KEYS or the [INCR] and [DECR] soft keys to enter the current hour (use 24-hour clock).
6. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
7. Use the ARROW KEYS to navigate to the minutes "MM" and seconds "SS" entry. Repeat Steps 4-6.
8. Use the ARROW KEYS to scroll down to "Date (dd:mm:yy): DD:MM:YY."
9. Press ENTER. The day section will blink to indicate that it is currently selected for editing.
10. Use the NUMBER KEYS or the [INCR] and [DEC] soft keys to enter the current day of the month.
11. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
12. Use the ARROW KEYS to scroll to the month and year entries. Repeat Steps 9-11.
13. Press the [→DST] soft key to go to the "Daylight Savings Time" screen or go to the "Home" by pressing the [HOME] or the [PREV] soft key.

Set Daylight Savings Time (Recommended) — This screen is used to adjust the effective dates for Daylight Savings Time (DST) for the next ten (10) years. Typical DST start time is 02:00 or 2:00 A.M.

To set Daylight Savings Time:

1. From the "Set Current Time and Date" screen, press the [→DST] soft key.
2. In the "Daylight Savings Time" screen, navigate to "Entry 0 - Start Time: HH:MM."
3. Press ENTER to adjust the DST starting time hour "HH."
4. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.
5. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
6. Use the ARROW KEYS to navigate to the minutes "MM" entry. Repeat Steps 3-5.
7. Use the ARROW KEYS to scroll down to "Entry 0" under the DST beginning date "Beg Date: MM-DD-YYYY."
8. Press ENTER. The month section will blink to indicate that it is currently selected for editing.
9. Use the [INCR] and [DEC] soft keys to enter the current month.
10. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
11. Use the ARROW KEYS to scroll to the day and year entries. Repeat steps 8-10.
12. Use the ARROW KEYS to scroll to the DST ending date "End Date: MM-DD-YYYY." Repeat Steps 8-11.
13. Repeat Steps 2-12 on "Entries 1-9" as necessary.
14. Press the [PREV] soft key to go back to the "Set Time and Date" screen.

Set Schedules (Optional) — From the "Controls" or "Home" screen, scroll down to the →*SCHEDULES* link and press ENTER to access the "Schedules" screen. Access to the Schedules screen will require the User or Admin password.

NOTE: The Daily Schedule 1 is enabled by default, and is schedule for occupied mode from 7 AM to 6 PM, Monday through Friday.

Daily Schedules (Optional) — From the "Schedules" screen, use the ARROW KEYS to navigate to the →*DAILY* menu option and press ENTER to go to the "Daily Schedule 1" edit screen.

Daily schedules are use to determine the unit occupancy period for normal operating times. When a daily schedule is in effect, the unit will be occupied from the start time to the end time for the days selected in that schedule. The unit can also be selected for 24/7 operation. Daily Schedule can only enable occupied mode. If two or more Daily Schedules conflict, the unit will be occupied whenever either schedule is occupied.

To set Daily Schedule:

1. From the “Schedules” screen, use the ARROW KEYS to navigate to the →*DAILY* menu option and press ENTER to go to the "Daily Schedule 1" edit screen.
2. Use the ARROW KEYS to navigate to the "Use ?" option and press ENTER
3. Use the [INCR] or [DECR] soft keys to change the option to "YES" to enable this schedule.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
5. Use the ARROW KEYS to navigate to the "Start Time: HH:MM" parameter to edit the starting time of occupancy.
6. Press ENTER to adjust the schedule starting time hour "HH." The hour section will blink to indicate that it is currently being edited.
7. Use the NUMBER KEYS or [INCR] and [DEC] soft keys to change the value.

8. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
9. Use the ARROW KEYS to navigate to the minutes "MM" entry. Repeat Steps 6-8.
10. Use the ARROW KEYS to navigate to the "Stop Time: HH:MM" entry. Repeat Steps 4-9.
11. Use the ARROW KEYS to navigate to "DAYS: - - - - - - -" and press ENTER.
12. Use the [INCR] or [DECR] soft key to change the "-" to "MON" to make this schedule active every Monday.
13. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.
14. Use the ARROW KEYS navigate to the next "-" to add additional days of the week to the schedule. Repeat Steps 12 and 13 for TUE-SUN.
15. Optional: to enable an additional Daily Schedule (2-4), press the [→NEXT] soft key to go to the next available daily schedule. Repeat Steps 2-14.

Enable 24/7 Operation:

1. From the "Daily Schedule 1" edit screen, press the [→NEXT] soft key three (3) times, to get the "Daily Schedule 4" edit screen.
2. Use the ARROW KEYS to navigate to the "Cont? [N]" option and press ENTER.
3. Use the [INCR] or [DECR] soft keys to change the option to "YES" to enable 24/7 operation. Change the value to [N] to disable 24/7 operation.
4. Press ENTER or the [OK] soft key to confirm entry or press the [CANCEL] soft key to restore the original value.

Adjust Factory Set Points (Optional) — On the "Home" screen, scroll down to the "→SETPOINTS" menu option and press ENTER (or use the FN + 6 shortcut) to go to the "Set Points" edit screen. Access to the "Set Points" screen will require the User or Admin password.

All units are programmed from the factory with pre-set set points. These set points can be modified to change unit operation to the user's requirements.

To view the available set point ranges:

On the "Set Points" screen, press the [?RANGES] soft key to go to the "Set Point Ranges" information screen to view the possible ranges of set points. The set point ranges cannot be modified.

To change a set point:

1. Use the arrow keys to navigate to the set point to be changed.
2. Press ENTER to edit the value, a line will appear under the figure being edited.
3. Use the number keys to enter a new value or use the [DECR] or [INCR] to scroll through available values.
4. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.
5. Repeat Steps 1-4 for additional set point changes.
6. Press the [→PREV] soft key or the [→HOME] soft key to go to the HOME screen.

Select Control Source (Optional) — From the "Home" screen, use the ARROW KEYS to navigate to the "→CONTROLS" link and press ENTER to access the "Controls" screen.

The control source parameter dictates where control of occupancy and schedules originate. The following control sources are available:

- DIGITAL INPUT - select if control source is from a separate ALC input
- BACVIEW - select if the BACview is the control source (default)
- BAS - select if a building automation system (BAS) is the control source
- CLOCK - select to override scheduled unoccupied conditions and place the unit in occupied mode for an adjustable amount of time (default is 30 minutes)
- MANUAL OVRD - select to manually override scheduled unoccupied period (system schedules are ignored until this setting is changed to another value)

To modify the control source:

1. Use the ARROW KEYS to navigate to "Control Source: [BACVIEW]" and press ENTER.
2. Press ENTER to edit the value.
3. Use the [DECR] or [INCR] to scroll through available values.
4. Press ENTER or the [OK] soft key to accept the change or press the [CANCEL] soft key to restore the original value.

APPENDIX D — EQUIPMENT START-UP

Unit Preparation — Check that unit has been installed in accordance with the installation instructions and applicable codes.

Verify Unit Installation — Verify the unit is installed using the correct power and heat source as per the model tag (Fig. A).

- Verify installation voltage
- Verify installation MCA and MOCP
- Verify installation heat source (gas, electric, hot water, steam)
- Verify installation heat fuel (natural gas or propane)

Unit Setup — Make sure that all hoods have been installed, shipping brackets removed, and that the final filters, ECW filter (if equipped), and air intake screen filters are properly installed.

Condensate — Make sure condensate piping is installed as per the installation instructions and that the condensate drain is clear from obstruction. Check the unit level as per installation instructions.

Internal Wiring — Ensure that all electrical connections in the control box are tightened as required. If the unit has heat, verify leaving air temperature (LAT) sensors have been routed to the supply ducts as required.

Accessory Installation — Check to make sure that all accessories including space sensors and pressure sensors have been installed and wired as required by the instructions and unit wiring diagrams.

Crankcase Heaters — All units are equipped with crankcase heaters. Verify that they are operational. The heaters must operate 24 hours before starting up the unit for cooling operation. The crankcase heaters will be on whenever the unit has power and the compressors are off.

Supply Fan — Verify fan belt and fixed pulleys are factory installed. See Figure # for fan performance. Make sure that fans rotate in the proper direction. See Tables # for motor limitations and air quantity limits. Verify pressure transducer has been installed for VFD control.

Exhaust Fan (If Equipped) — Fan belt and fixed pulleys are factory installed. See Fig. 64-73 for fan performance. Make sure that fans rotate in the proper direction. See Tables 39 and 42 for motor limitations.

Energy Recovery Wheel (If Equipped) — Verify the ECW wheel rotates freely and in the correct direction. Verify ECW belt tension. Check to make sure the ECW filters are installed and clean.

Condenser Fans — Make sure that fans rotate in the proper direction. Check fans for obstructions.

Unit Clearance — Verify unit clearance from other objects as per installation instructions.

Gas Heating (If Equipped) — Check gas piping for leaks, verify installation as per local code. Verify gas pressure as supply tap. Verify gas shut off valve. Verify manifold pressure. Verify gas condensate trap has been installed.

Steam/Hot Water Heating (If Equipped) — Check steam pressure or hot water temperature. Check for leaks. Verify field supply control valve is installed and operating.

Application Limitations — Verify the following application limitations are not being exceeded. If an application requires exceeding a limitation, please contact service or application engineering.

ELECTRIC HEAT — Maximum 75 F temperature rise across the electric heating coil. Minimum 50 CFM airflow per every kW of heat across the electric heating coil.

GAS HEAT — Maximum 90 F temperature rise across the gas furnace for vertical discharge units. Maximum 50 F temperature rise across the gas furnace for horizontal discharge units.

EVAPORATOR — Maximum face velocity of 500 FPM and minimum face velocity of 150 PFM. See Fig. 64-73 for airflow limitations for each unit size.

ENTERING AIR TEMPERATURE — Maximum Cooling EAT: 115 F; Minimum Cooling EAT: 35 F; Minimum Auxiliary Heating EAT: -20 F; Minimum Heat Pump Heating EAT: 30 F (62R).

ECW — Maximum pressure drop of 1.75 in. wg.

Carrier
A United Technologies Company

Model #	62DAJ030BS8D3D-FDR
Serial #	3713V01762
Tag #	MAU-1 130701901

Carrier

Refrigerant Charge	R410A	Lbs.	Kg.
Circuit #1		21	9.55
Circuit #2		16	7.27

Test Pressure Max.	Low	High
psig	250	490
kPa	1724	3379

	Volts	Phase	RLA	LRA	Qty.
Compressor(s) - Circuit #1	460	3	18.5	125	1
Compressor(s) - Circuit #2	460	3	18.5	125	1

Allowable Voltage	
Max	506
Min	414
Hz	60

	Volts	Phase	FLA	HP	Qty
Outdoor Fan (ea.)	460	3	2.9	1.5	1
Outdoor Fan (ea.)	460	3	2.9	1.5	1
Indoor Fan (ea.)	460	3	6.8	5	1
Exhaust Fan (ea.)					
Indoor Fan (ea.)					

Minimum Circuit Ampacity
54.2

Max. Circuit Protection	
(HACR Type)	70

Electric Heat	kW	V	Phase	Amp	Stages
Gas heat	600,000 Btu/h Input		NATURAL GAS		

Minimum Clearance to Combustible Materials Inches

Short-circuit current: 5 kA ms symmetrical, 600 V maximum

SUITABLE FOR OUTDOOR USE

Date of Manufacture: Aug-13
Manufacture Location:
7050 Overland Rd.
Orlando, FL 32810

ETL Listed
Conforms to ANSI/UL Std 1995 Certified
to CAN/CSA STD C22.2 No. 236

C ETL US

ETL# 43136

Fig. A — Model Tag

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Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Catalog No. 04-53620020-01 Printed in U.S.A. Form 62D,R-1T Pg 120 2-15 Replaces: 62D-1T

PRE-START-UP CHECKLIST

NOTE: Prior to performing start-up, the crankcase heaters must operate for 24 hours. Cooling startup is only recommended when ambient air temperatures are above 55 F.

PROJECT INFORMATION

Job Name _____ Installing Contractor _____

Address _____ Carrier Office _____

City _____ State _____ Zip _____

Model Number _____ Serial Number _____

PRESTART-UP CHECKLIST

- ☐ The unit is free of damage. If damage exists, contact your local Carrier representative.
- ☐ The unit power feed is installed. Voltage and phasing have been verified to be correct.
- ☐ The power feed meets the MCA requirements as indicated on the unit label.
- ☐ The power feed safeties meet the MOCP requirements as indicated on the unit label.
- ☐ All electrical connections and terminals are tight, all terminals are free from corrosion.
- ☐ All packing materials have been removed from the unit.
- ☐ All required unit accessories have been installed.
- ☐ The outdoor intake hood and screen have been installed.
- ☐ The unit leaving air temperature sensor (LAT) has been installed.
- ☐ The unit has been leak checked and has been found to be free of leaks.
- ☐ The compressor oil level is acceptable.
- ☐ The condenser fan(s) rotation is not inhibited.
- ☐ The air-cooled condenser coil is free from debris and defects (62D only).
- ☐ The water-cooled condenser piping has been installed and is free from leaks (62R only).
- ☐ The water-cooled condenser has adequate water flow and freeze protection (62R only).
- ☐ Condenser water shutoff valves and strainer have been installed in the condenser water piping (62R only).
- ☐ The gas piping has been checked for leaks and has been found to be leak free (if equipped).
- ☐ Gas shutoff valves and gas regulator have been installed and have been verified to operate properly.
- ☐ The inlet gas pressure and gas quality is sufficient for proper unit operation.
- ☐ The gas furnace condensate drain has been installed as per the unit instructions.
- ☐ The hot water or steam piping has been installed and is free from leaks (if equipped).
- ☐ The hot water/steam control valve has been installed and is operational (if equipped with hydronic heat).
- ☐ The unit steam trap has been installed (if equipped with steam heat).
- ☐ The unit filters and ECW filters (if equipped) have been installed and are clean.
- ☐ The unit is within level tolerances to promote proper condensate drainage.
- ☐ The condensate drain has been installed as the installation instructions.
- ☐ All fire dampers, VAV dampers, or auxiliary units required for proper 62 Series unit operation are functional.
- ☐ The supply and exhaust (if equipped) fan rotation is not inhibited.
- ☐ The crank case heaters have been verified to be operational and will operate 24 hours prior to start-up.

Please note if the following sensors have been installed:

- ☐ ZAT (space temperature)
- ☐ Z-RH (zone relative humidity)
- ☐ SF-DPT (supply fan static pressure)
- ☐ EF-DPT (exhaust fan static pressure)

Unit Supply Voltage L1-L2 _____ L2-L3 _____ L3-L1 _____

START-UP CHECKLIST

NOTE: Prior to performing start-up, the crank case heaters must operate for 24 hours. A BACview device is required to perform unit start-up.

PROJECT INFORMATION

Job Name _____
Address _____
City _____ State _____ Zip _____

Model Number _____

Installing Contractor _____
Carrier Office_____
Serial Number _____
Software _____
Software Date _____

CHECKLIST

- ☐ Verify the unit is free of damage. If damage exists, contact your local Carrier representative.
- ☐ Check the unit power feed for voltage and phasing.
- ☐ Check unit power wiring, verify correct fuses/breakers are installed.
- ☐ Verify all electrical connections and terminals are tight.
- ☐ Verify the crankcase heater(s) have been operating for 24 hours.
- ☐ Verify all packing materials have been removed from the unit.
- ☐ Verify all unit accessories have been installed.
- ☐ Verify outdoor intake hood and screen has been installed.
- ☐ Verify the space temperature sensor has been installed.
- ☐ Verify leaving air temperature sensor has been installed.
- ☐ Check for refrigerant leaks.
- ☐ Check compressor oil level.
- ☐ Check condenser fan rotation (62D).
- ☐ Check condenser coil for debris (62D).
- ☐ Check condenser and condenser piping for leaks (62R).
- ☐ Check condenser flow, verify water regulating valve operation (62R).
- ☐ Check gas piping for leaks (for gas heat units, if equipped).
- ☐ Verify gas furnace condensate drain has been installed as per the unit instructions.
- ☐ Check hot water/steam piping (if equipped) for leaks.
- ☐ Verify hot water/steam control valve has been installed and is operational (if equipped with hydronic heat).
- ☐ Verify steam trap has been installed (if equipped with steam heat).
- ☐ Verify the unit filters and ERW filters (if equipped) have been installed and are clean.
- ☐ Verify ECW belt is installed at the proper tension.
- ☐ Verify the unit is level within tolerances for proper condensate drainage.
- ☐ Verify condensate drain is installed as per unit instructions.
- ☐ Verify all duct fire dampers or VAV dampers are open.
- ☐ Check supply and return (if equipped) fan sheave alignment.
- ☐ Check supply and return (if equipped) fan belt tension.
- ☐ Check fan blower clearance.
- ☐ Verify the controller power switch is on and the battery is installed.
- ☐ Verify control time and data has been set, and schedules are active.
- ☐ Verify control set points are accurate.

NOTE: Cooling start-up is only recommended when ambient air temperatures are above 55 F.

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

UNIT START-UP:

ELECTRICAL

UNIT SUPPLY VOLTAGE	L1-L2 _____	L2-L3 _____	L3-L1 _____
COMPRESSOR 1 AMPS	C1-L2 _____	C1-L2 _____	C1-L3 _____
COMPRESSOR 2 AMPS	C2-L1 _____	C2-L2 _____	C2-L3 _____
SUPPLY FAN AMPS	CV_____	VAV*_____	
EXHAUST FAN AMPS	CV_____	VAV*_____	
ECW MOTOR AMPS	_____	_____	

*VAV fan readings must be taken with a true RMS meter for accurate readings.

TEMPERATURES

COOLING OAT	_____ °F DB	_____ °F WB
COOLING LAT	_____ °F DB	_____ °F WB
HEATING OAT	_____ °F DB	
HEATING LAT	_____ °F DB	

REFRIGERATION SYSTEM

SUCTION LINE PRESSURE	CIRCUIT NO. 1 _____ ° F	CIRCUIT NO. 2 _____ ° F
SUCTION PRESSURE	CIRCUIT NO. 1 _____ IN. WG	CIRCUIT NO. 2 _____ IN. WG
DISCHARGE TEMPERATURE	CIRCUIT NO. 1 _____ ° F	CIRCUIT NO. 2 _____ ° F
DISCHARGE PRESSURE	CIRCUIT NO. 1 _____ IN. WG	CIRCUIT NO. 2 _____ IN. WG

WATER COOLED CONDENSER (62R)

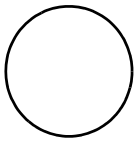
ENTERING WATER TEMPERATURE	_____ ° F
LEAVING WATER TEMEPRATURE	_____ ° F
GLYCOL TYPE	_____
GLYCOL CONCENTRATION	_____ %

HEATING

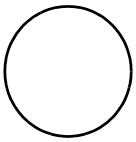
HEATING SOURCE		_____			
INLET PRESSURE		_____	IN. WG		
MANIFOLD PRESSURE	LOW	_____	IN. WG	HIGH _____	IN. WG
CO_2 IN FLUE GAS	LOW	_____	%	HIGH _____	%
CO IN FLUE GAS	LOW	_____	PPM	HIGH _____	PPM
DRAFT FAN PRESSURE	LOW	_____	IN. WG	HIGH _____	IN. WG
ELECTRIC HEATER AMPS		_____	AMPS		
STEAM HEAT PRESSURE		_____	IN. WG		
HOT WATER TEMPERATURE		_____	F		

COMPRESSOR OIL LEVEL

FILL IN THE CIRCLE TO INDICATE SIGHT GLASS OIL LEVEL.



CIRCUIT 1



CIRCUIT 2

SET POINTS:

CONTROL VARIABLE	ABBREVIATION	DEFAULT SET POINT	UNITS	CURRENT SP	UNITS
Supply Fan Static Pressure	SFDPT STATIC	0.75	in. H2O		in. H2O
Exhaust Fan Static Pressure	EFDPT STATIC	0.020	in. H2O		in. H2O
Cooling Leaving Air Temp	COOLING LAT	70	°F		°F
Cooling Suction Line Temp	COOLING SLT	45	°F		°F
Cooling OAT/ECAT Low Limit	CLG OAT/ECAT	55	°F		°F
Cooling Zone Air Temp	COOLING ZAT	72	°F		°F
Leaving Air Temp Low Limit	LAT LOW LIMIT	40	°F		°F
Leaving Air Temp High Limit	LAT HIGH LIMIT	130	°F		°F
Heating OAT/ECAT	HTG OAT/ECAT	58	°F		°F
Dehumidify OAT/ECAT	DEHUMID OAT/ECAT	60	°F		°F
Heating Leaving Air Temp	HEATING LAT	72	°F		°F
Heating Zone Air Temp	HEATING ZAT	72	°F		°F
Leaving Air Temp Heat Fail	LAT HEAT FAIL	50	°F		°F
RTRHO Enabled	RTRHO ENABLE	NO	YES/NO		YES/NO
Cooling ZAT Set Point	COOLING ZAT	72	°F		°F
RTHO Enabled	RTHO ENABLE	NO	YES/NO		YES/NO
Heating ZAT Set Point	HEATING ZAT	72	°F		°F
Dehumidification Mode Enable	DEHUMID	NO	YES/NO		YES/NO

SCHEDULES:

SCHEDULE NAME	M	T	W	T	F	S	S	START TIME	END TIME
Daily Schedule 1									
Daily Schedule 2									
Daily Schedule 3									
Daily Schedule 4									
Holiday Schedule 1									
Holiday Schedule 2									
Holiday Schedule 3									
Holiday Schedule 4									
Holiday Schedule 5									
Holiday Schedule 6									
Holiday Schedule 7									
Holiday Schedule 8									
Holiday Schedule 9									
Holiday Schedule 10									
Holiday Schedule 11									
Holiday Schedule 12									
Override Schedule 1									
Override Schedule 2									

SERVICE INFORMATION

Final Filter Size _____ Quantity _____

Pre-Filter Size _____ Quantity _____

Supply Fan Belt Part Number _____ Quantity _____

Exhaust Fan Belt Part Number _____ Size _____

ECW Belt Part Number _____ Size _____

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE