Prodigy® Control System
Premium Rooftop Unit Control

PRODUCT SPECIFICATIONS

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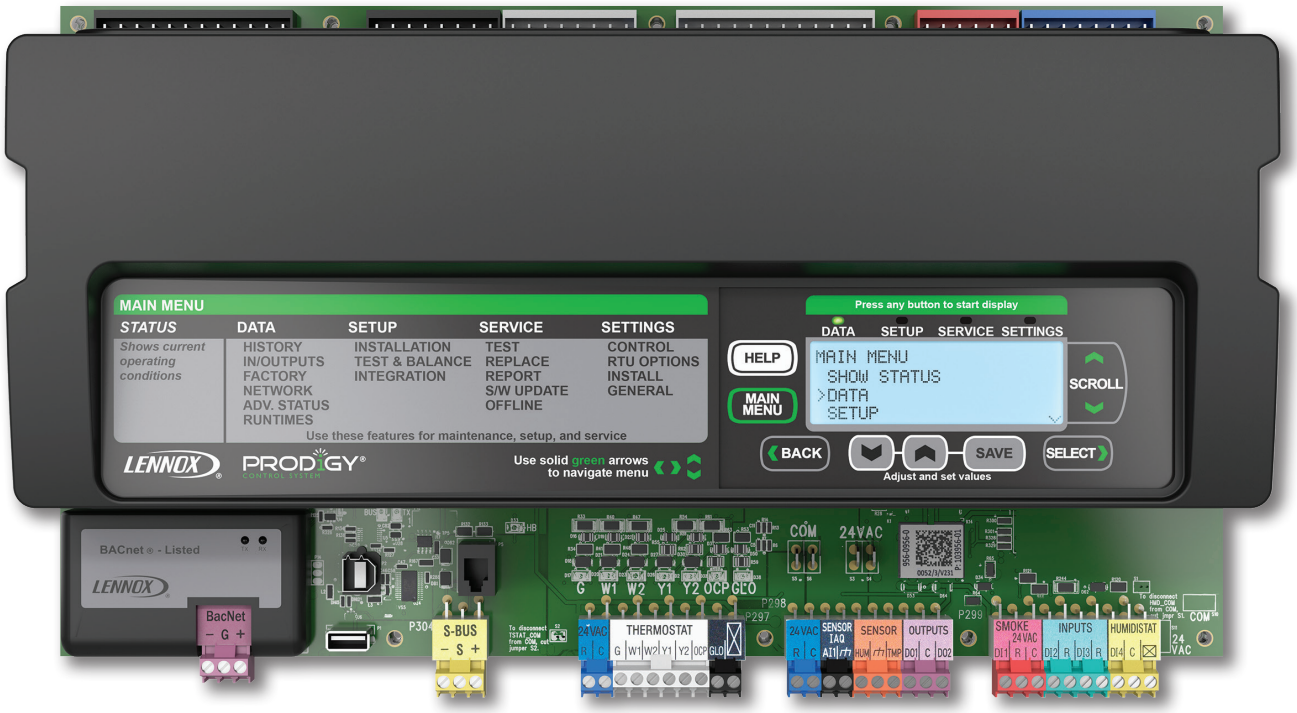


OVERVIEW

The Prodigy® Control System intelligently controls every Lennox Energence® and Strategos® rooftop unit. This control system provides all control functions for the unit, ensuring safe and reliable operation. Unit status information and unit diagnostics are displayed in plain English by the control system to facilitate troubleshooting. Although default operation does not require programming, the control system has programmable parameters that allow adjustment of time delays and setpoints that enable many advanced features.

The default operation requires a standard room thermostat or direct digital controller (DDC). By changing one parameter, the control system will also control the unit from a Comfort Sensor or Room Temperature Sensor. The Prodigy 2.0 unit controller is a network controller when daisy chained to the L Connection® Network Control System. For ease of configuration, the Prodigy 2.0 unit controller can be connected to a PC with Unit Controller PC software installed.

The Prodigy Control System is comprised of the powerful Prodigy 2.0 unit controller and the intuitive SmartWire™ System.

PRODIGY 2.0 UNIT CONTROLLER

The Prodigy 2.0 Unit Controller is a microprocessor-based control board that provides flexible control of all unit functions.

All control voltage is provided via a 24V (secondary) transformer with built-in circuit breaker protection.

The Prodigy 2.0 Unit Controller features:

LCD Display - Easy to read menu with buttons for menu navigation.during setup and diagnostics. 4 lines x 20 character display.

Menu LEDs - Four LEDs (*Data, Setup, Service, Settings*) aid in menu navigation.

Main Menu and Help Buttons - Quick navigation to home screen and built-in help functions.

Scroll, Value Adjustment Select and Save Buttons

Simplified Setup Procedure - SETUP menu insures proper installation and setup of the rooftop unit.

Profile Setup - Copy key settings between units with the same configuration greatly reducing setup time.

USB Port - Allows a technician or user to easily download and transfer unit information (with a time/date stamp and unit serial number) via a USB flash drive to help verify service was performed. USB drive will also allow updating software on the Prodigy Control System to obtain enhanced functionality without the need to change components. A second USB port also offers an easy interface with a PC and the Lennox Unit Controller Software.

Unit Profile - A Unit Profile can also be saved to a USB flash drive and then uploaded to an identical unit, instantly copying all setpoints.

Unit Self-Test - Unit Controller can perform a rooftop unit self-test to verify individual critical component and system performance. Included is an economizer test function that helps assure the economizer is operating correctly.

Time Clock with Run-Time Information - Internal time clock with runtime information on these key components:

Power Applied	Filter	Blower Belt
UV Lamp	Blower	Compressor(s)
Condenser Fan(s)	Heat Stage(s)	Free Cooling
Exhaust Fan	Dehumidification	

Built-in functions include:

Blower On/Off Delay - Adjustable time delay between blower on and off.

Built-In Control Parameter Defaults - No programming required.

Compressor Time-Off Delay - Adjustable time delay between compressor shutoff and start up.

DDC Compatible - Various third party DDC controllers can be factory or field installed.

Dirty Filter Switch Input - When a Dirty Filter Switch is installed, the control will signal when the indoor blower static pressure increases, indicating a dirty filter condition. Switch is optional and can be factory or field installed.

Discharge Air Temperature Control - The controller will cycle up to 4 stages of heating or cooling to maintain the discharge air setpoints for heating or cooling. Optional sensor for remote field installation in the supply duct.

Display/Sensor Readout - Displays control parameters, text status messages, and sensor readings. The unit controller displays temperature readings from return air, supply air, and outdoor air sensors that are furnished as standard on all Energence® units. Controller will also display readings from optional sensors such as room sensors, CO_2 sensors or relative humidity sensors.

Economizer Control Choice - The economizer is controlled by the Prodigy 2.0 unit controller. The control has several options for controlling the economizer.

Fresh Air Tempering - Provides heating and cooling as needed to maintain the supply air temperature within a comfort range, regardless of the thermostat demand. Sensor ships with unit but must be field installed in the supply air duct. Fresh Air Tempering is disabled by default and is enabled via the SETUP menu.

Extensive Unit Diagnostics - The Prodigy 2.0 unit controller monitors all sensors and functions related to unit operation to provide critical information. The controller will display detailed diagnostic information with over 100 diagnostic and status messages to pinpoint any problems and reduce troubleshooting time. All diagnostic messages and status alarms are displayed in plain English.

Exhaust Fan Control Modes - Fans controlled by fresh air damper position.

Permanent Diagnostic Code Storage - Stores last 128 diagnostic messages even in the event of a power failure.

Field Changeable Control Setpoints - Over 200 different control setpoints allow customizing of the unit operation by changing delays, cooling stages, deadbands, and other comfort control parameters.

FEATURES AND BENEFITS

Indoor Air Quality Input - The Prodigy 2.0 unit controller is Demand Control Ventilation ready from the factory (optional field installed CO_2 sensor required). Two modes of operation are available: setpoint and proportional.

1. **Setpoint -** Opens the economizer dampers to full position when CO_2 setpoint level is reached.
2. **Proportional -** Opens the dampers at the first set point and gradually increases it as the CO_2 level increases until the second setpoint is reached.

Low Ambient Controls - Allows unit cooling operation down to 0°F.

Gas Valve Time Delay Between First and Second Stage - Allows gradual increase of input rate.

Minimum Compressor Run Time - Ensures proper oil return to the compressor.

Network Capable - The Prodigy 2.0 unit controller can be daisy chained to other Energence Rooftop Units or the L Connection® Network Control System using twisted pair wire.

Night Setback Mode - Adjusts setpoints, closes outdoor air dampers and operates the blower on demand, may be customized for special requirements.

Return Air Temperature Limit Control - Allows the user to override the demands based upon the return air temperature during either heating or cooling operation. Helps protect against abnormal operating conditions in the event of a room sensor or thermostat failure.

Safety Switch Input - Normally-closed digital input allows the Prodigy 2.0 unit controller to respond to a external safety switch trip (phase protector, low voltage, etc.) shutting down unit operation.

Service Relay Output - Digital output can indicate a critical error has occurred to an external control device. Can also be configured to energize based on relative humidity, indoor air quality, outdoor air temperature or unit operation.

Smoke Alarm Mode - Control board has four choices for responding to a smoke alarm.

1. **Unit Off -** unit will turn off.
2. **Positive Pressure -** blower is energized, exhaust fan is de-energized, and the outdoor air dampers are opened.
3. **Negative Pressure -** blower is energized, exhaust fan is energized, and the outdoor air dampers are closed.
4. **Purge -** blower is energized, exhaust fan is energized, and the outdoor air dampers are opened.

Staging - 2 heat/2 cool. Capable of up to 4 heat/4 cool with room sensor or third party DDC control system.

"Strike Three" Protection - Ends cooling or heating operation when any of the following occurs three times (adjustable) within a thermostat cycle: low pressure trip, high pressure trip, heat limit trip, blower proving, or freezestat trip.

Gas Reheat - Control parameter option that allows simultaneous heating and cooling operation for controlling humidity for process air applications such as supermarkets. Field installed relative humidity sensor or dehumidistat can be used.

On-Demand Dehumidification - Monitors and controls condenser hot gas bypass operation with Humiditrol® option. Prioritizes heat and cool demand with dehumidification demand. Reheat demand can be enabled by digital input or a field installed relative humidity sensor can be used.

Thermostat Bounce Delay - Protects compressor from short cycling when mechanical thermostat is used.

Warm Up Mode Delay - Adjustable time that the economizer dampers are kept in the closed position during morning warm-up.

LED Indicators - For L Connection Network (transmit and receive) and for each thermostat input.

PC Interface - PC with optional Unit Controller software may be used to field or remotely adjust parameters, read alarms, or display unit status.

Room Sensor Operation - Controls room temperature with up to 4 stages of heating or cooling with optional room sensor.

APPROVALS

Title 24 Compliant

The Prodigy 2.0 unit controller meets California Code of Regulations, Title 24 requirements for staged airflow operation, economizer fault detection and diagnostics.

FEATURES AND BENEFITS

Options / Accessories

Factory or Field Installed

Blower Proving Switch

Monitors blower operation, shuts down unit if blower fails.

Dirty Filter Switch

Senses static pressure increase indicating dirty filter condition.

Controls Options / Accessories

Factory or Field Installed

Fresh Air Tempering

Used in applications with high outside air requirements. The Prodigy® Unit Controller energizes the first stage heat as needed to maintain a minimum supply air temperature for comfort, regardless of the thermostat demand. When ordered as a factory option, the sensor ships with the unit but must be field installed.

Smoke Detector

Photoelectric type, installed in supply air section, return air section or both sections. Available with power board and single sensor (supply or return) or power board and two sensors (supply and return). Power board is located in rooftop unit control box.

Interoperability via BACnet® or LonTalk® Protocols

The Prodigy® control is communication compatible with third-party automation systems that support the BACnet Application Specific Controller device profile, LonMark® Space Comfort Controller functional profile, or LonMark Discharge Air Controller functional profile.

LONMARK® 3.4

LonMark and the LonMark Logo are managed, granted, and used by LonMark International under a license granted by Echelon Corporation.

The LonMark® 3.4 certified LonTalk module is compatible with applicable open-standard communication systems and communicates with building automation systems that support the LonMark Space Comfort Controller or Discharge Air Controller functional profiles.

The Lennox BACnet® module has been tested and is listed with BACnet Testing Laboratories (BTL).

BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test prox for compliance with ASHRAE standards. Compliance of listed products to requirements of AS Standard 135 is the responsibility of the BACnet Manufacturers Association (BMA). BTL is a regi trademark of the BMA

Commercial Control Systems

L Connection® Network Control System

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions. See L Connection Network Control System Product Specifications Bulletin for details.

Aftermarket DDC

Novar® Unit Controller and options. Addiitonal aftermarket DDCs and unit controllers supported.

Thermostats

Control system and thermostat options. Aftermarket unit controller options.

Support for 2 Heat / 2 Cool thermostat with a generic occupancy input to control an energy saving economizer.

Field Installed

Humidity Sensor Kit

Humidity sensor required with factory installed *Humiditrol*® dehumidification option or Supermarket reheat field selectable option.

SMARTWIRE™ SYSTEM

Part of the Prodigy Control System, the SmartWire System features color coded, keyed, and labeled connectors which improve and simplify unit setup.

Easy connection of field sensors and accessories reduces installation and setup time.

Uniform Wiring Color Scheme

All Energence rooftop units have a common wiring scheme which eliminates any wiring differences between models. If a certain color belongs to a wiring group of one Energence unit it will be the same on all other models or sizes.

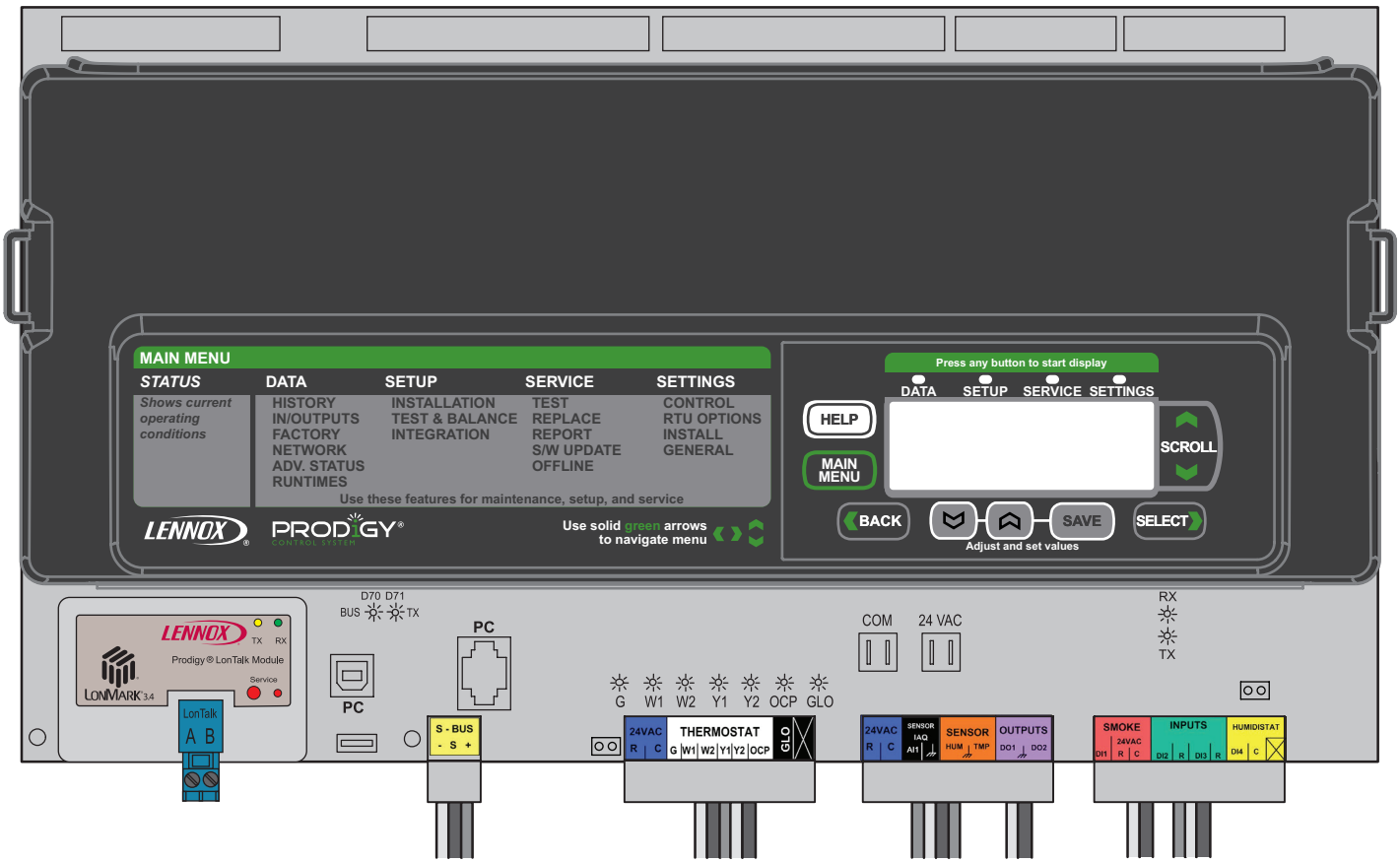
Labels On Wiring Connections

The SmartWire System features easy to read and understand labels on all important wiring connections. This reduces installation and service time and helps assure they are wired correctly.

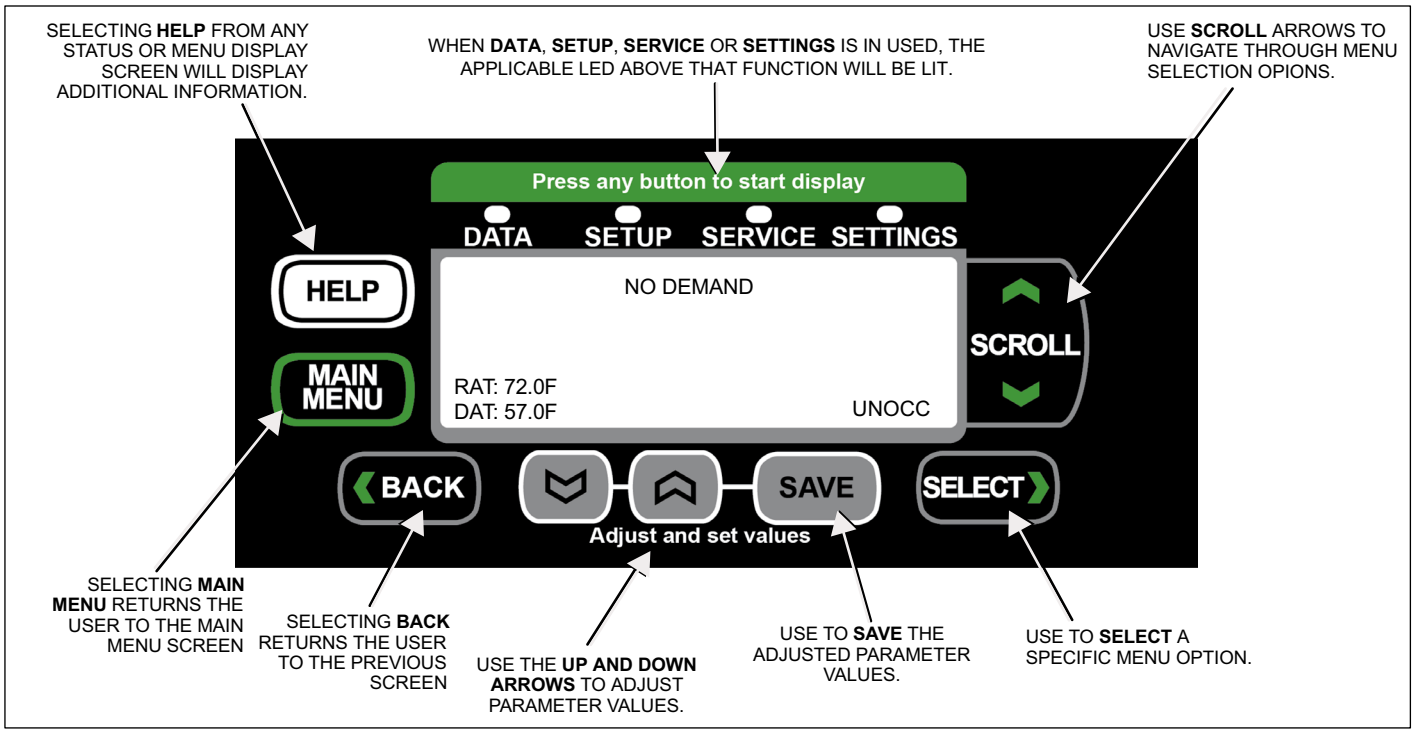
Improved Wire Routing

The SmartWire System wire routing simplifies servicing and troubleshooting by keeping it easy to trace each wire's path.

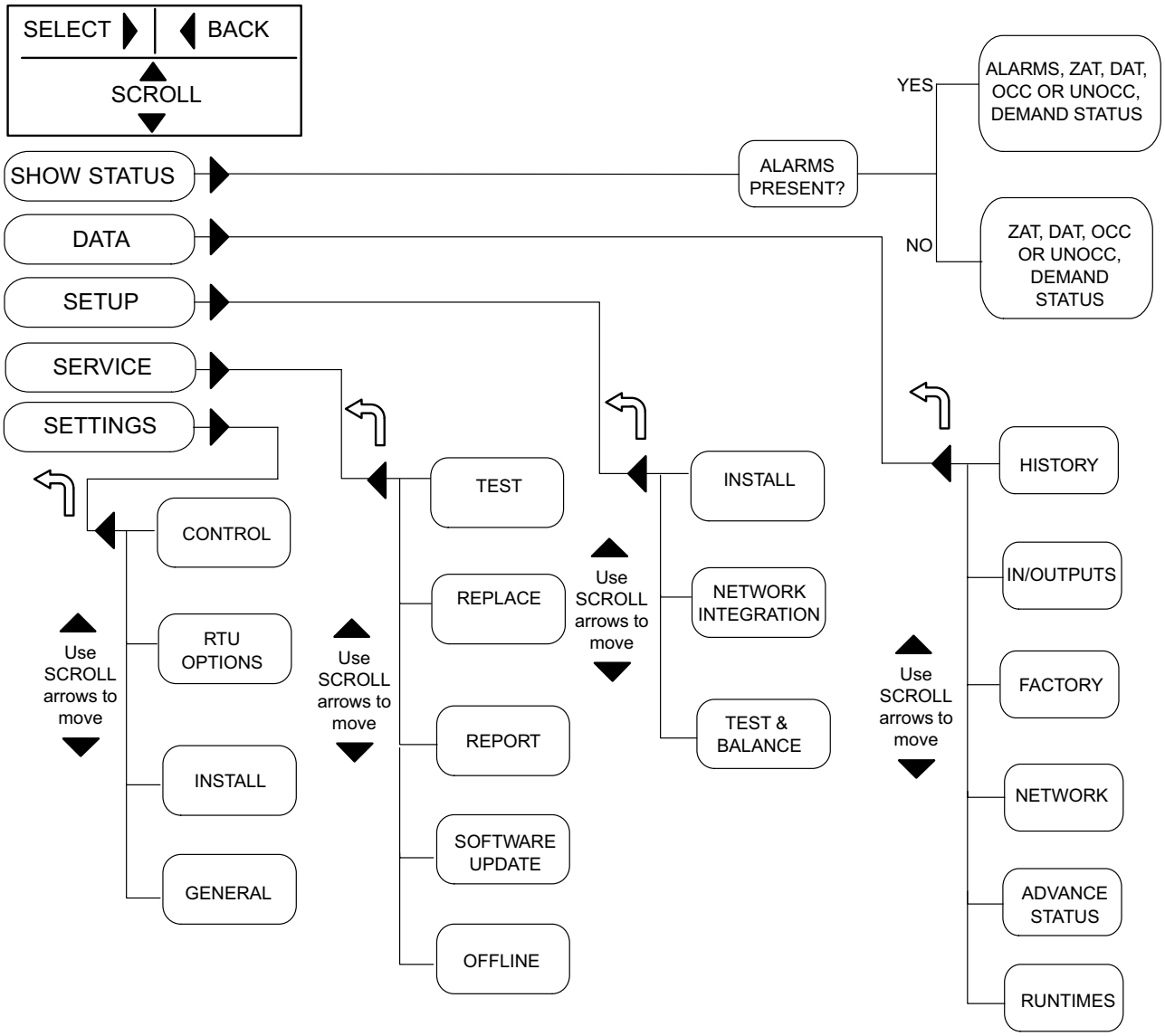
MAIN CONTROL BOARD DETAIL



SCREEN CONTROLS DETAIL



USER INTERFACE MENU DETAILS - TOP LEVEL



USER INTERFACE MENU DETAILS - SUB-MENU LEVELS

The following tables shows the major levels of the menu interface. Many of these options have more levels and are described in the following sections that detail **DATA**, **SETUP**, **SERVICE**, and **SETTINGS**.

Use **SELECT** button to progress to next menu level (i.e. level 1 to level 2).

Use the **SCROLL** arrows ▲▼ to move (scroll) within a menu level.

Use the **BACK** button to return to the previous menu level.

Use the **Adjust and set value** arrows ▲▼ to change values of selected item.

Menu Interface (Level 1 - DATA)			
Level 2	Level 3	Level 4	Level 5
HISTORY	ALARMS		
	CLEAR ALARM HISTORY = NO OR YES		
	LAST SERVICE (TIME STAMP OF LAST SERVICE)		
IN/OUTPUTS	SENSORS	THERMOSTAT	G: ON/OFF W1: ON/OFF W2: ON/OFF Y1: ON/OFF Y2: ON/OFF
		BLOWER SPEED: X OAT: XX F RAT: XX F DAT: XX F ZAT (A2): XX F C02: XX PPM RH: XX % IE OE GLO: ON/OFF OCP: ON/OFF SMOKE: ON/OFF D12: ON/OFF D13: ON/OFF REHEAT D14: ON/OFF	
	OUTPUTS (NOTE: COMPONENTS ARE ONLY DISPLAYED IF INSTALLED.)	COMPRESSOR 1: ON/OFF COMPRESSOR 2: ON/OFF BLOWER: ON/OFF EXHAUST: ON/OFF FAN 1: ON/OFF FAN 2: ON/OFF HEAT 1: ON/OFF HEAT 2: ON/OFF REHEAT COIL 1: ON/OFF REHEAT COIL 2: ON/OFF SERVICE RELAY: ON/OFF LCD HEATER: ON/OFF	
FACTORY	SOFTWARE VERSION RTU DESCRIPTION CATALOG NUMBER MODEL NUMBER SERIAL NUMBER CONFIGURATION ID 1 CONFIGURATION ID 2		
NETWORK	BACNET	MAC ADDRESS: XXX BAUD RATE: XXXXX DEVICE INSTANCE: X	
	LONTALK	PROGRAM ID NEURON ID	
	L-CONNECTION	LCONN ADDRESS: X	

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - DATA)			
Level 2	Level 3	Level 4	Level 5
ADVANCE STATUS	CURRENT ALARMS	ACTIVE ALARMS XXX	
	APP MODE		
	BLOWER	BLOWER STATUS	BLOWER SPEED X % AND RPM IF A BOX.
	DAMPER	DAMPER STATUS	TARGET: X % ACTUAL X %
RUNTIMES	BELT X HRS BLOWER X HRS BLOWER X CYC COOL 1 X HRS COOL 1 X CYC COOL 2 X HRS COOL 2 X CYC EXHAUST X HRS EXHAUST X CYC FAN 1 X HRS FAN 1 X CYC FAN 2 X HRS FAN 2 X CYC FILTER X HRS FREE COOL X HRS FREE COOL X CYC HEAT 1 X HRS HEAT 1 X CYC HEAT 2 XX HRS HEAT 2 X CYC DEHUMID X HRS DEHUMID X CRC POWER ON X CYC POWER ON X HRS PREINSTALL X HRS UV LAMP XXX HRS		

Menu Interface (Level 1 - SETUP)				
Level 2	Level 3	Level 4	Level 5	LEVEL 6
INSTALL	LANGUAGE =	= ENGLISH, ESPANOL, OR FRANCAIS		
	DATE/TIME =	= DAY, MONTH, YEAR, HOURS, MINUTES, SECONDS		
	DISPLAY UNITS F/C	= FAHRENHEIT OR CELSIUS		
	MODEL NUMBER =	LOCATED ON UNIT NAMEPLATE.		
	CONFIGURATION ID 1	SEE WHITE STICKER TITLED “ORIGINAL FACTORY UNIT CONFIGURATION” LOCATED ON THE RIGHT SIDE OF THE CONTROL BOX NEAR THE M3 CONTROLLER.		
	CONFIGURATION ID 2	SEE WHITE STICKER TITLED “ORIGINAL FACTORY UNIT CONFIGURATION” LOCATED ON THE RIGHT SIDE OF THE CONTROL BOX NEAR THE M3 CONTROLLER.		
	CATALOG NUMBER	LOCATED ON UNIT NAMEPLATE		
	SERIAL NUMBER	LOCATED ON UNIT NAMEPLATE		
	RTU DESCRIPTION	= UP TO 18 ALPHA/NUMERIC CHARACTERS		
	DEHUMIDIFIER SENSOR TYPE	= NONE OR REHEAT DI4		
		= LOCAL SENSOR OR NETWORK SENSOR	DEHUMIDIFIER DEHUMID SETPOINT = X.XX %	
			DEHUMIDIFIER DEHUMID DEADBAND = X.X %	
NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS				

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - SETUP)				
Level 2	Level 3	Level 4	Level 5	LEVEL 6
NETWORK INTERGRATION	NETWORK = L-CONNECTION	LCONN ADDRESS = X		
		CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	• NETWORK SENSOR CO2 = YES OR NO • NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO • NETWORK SENSOR TEMPEATURE = YES OR NO • ROOM SENSOR OCC BLOWER MODE= AUTO CYCLES OR ON-CONTINUOUS 1, 2 OR 3 * • BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT • BACKUP SETPOINTS OCCUPIED HEAT = XX.X F • BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F • BACKUP SETPOINTS OCCUPIED COOL = XX.X F • BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	
		OCC (OCCUPIED) BLOWER MODE DESCRIPTION: • AUTO CYCLE: BLOWER CYCLES WITH DEMAND • ON-CONTINUOUS 1: BLOWER IS ON WITH EITHER THE OCCUPANCY SENSOR OR OCCUPANCY SCHEDULER INDICATES OCCUPIED. • ON-CONTINUOUS 2: BLOWER IS ON ONLY WITH BOTH THE OCCUPANCY SENSOR AND OCCUPANCY SCHEDULER, BOTH INDICATES OCCUPIED. • ON-CONTINUOUS 3: BLOWER IS ON ONLY WHEN BOTH THE OCCUPANCY SENSOR AND OCCUPANCY SCHEDULER INDICATES OCCUPIED. IN ADDITION, BLOWER WILL BE ON A MINIMUM OF 25% OF THE TIME WHEN OCCUPANCY SCHEDULER INDICATES OCCUPIED BY THE OCCUPANCY SENSOR INDICATES NOT OCCUPIED. THE 25% MINIMUM IS ACHIEVED BY TURNING BLOWER ON FOR 30 MINUTES AND OFF FOR 90 MINUTES.		
	NETWORK = BACNET	BACNET MAC ADDRESS = X		
		BACNET BAUD RATE = 9.6, 19.2, 38.4 OR 76.8 K		
		CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	• NETWORK SENSOR CO2 = YES OR NO • NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO • NETWORK SENSOR TEMPERATURE = YES OR NO • ROOM SENSOR OCC BLOWER MODE= AUTO CYCLES OR ON-CONTINUOUS 1, 2 OR 3 (SEE DESCRIPTION ABOVE) • BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT • BACKUP SETPOINTS OCCUPIED HEAT = XX.X F • BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F • BACKUP SETPOINTS OCCUPIED COOL = XX.X F • BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	
	NETWORK = LONTALK	CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	• NETWORK SENSOR CO2 = YES OR NO • NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO • NETWORK SENSOR TEMPERATURE = YES OR NO • ROOM SENSOR OCC BLOWER MODE= AUTO CYCLES OR ON-CONTINUOUS 1, 2 OR 3 (SEE DESCRIPTION ABOVE) • BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT • BACKUP SETPOINTS OCCUPIED HEAT = XX.X F • BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F • BACKUP SETPOINTS OCCUPIED COOL = XX.X F • BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	
NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS.				

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - SETUP)				
Level 2	Level 3	Level 4	Level 5	LEVEL 6
TEST & BALANCE	BLOWER	BLOWER CALIBRATION HIGH SPEED = CALIBRATION DONE OR TURN BLOWER ON		
		BLOWER HEAT = XXXX CFM		
		BLOWER COOLING HIGH = XXXX CFM		
		BLOWER COOLING LOW = XXXX CFM		
		BLOWER VENTILATION = XXXX CFM		
		ON (TARGET XXXXCFM) ADJUST BLOWER RPM = XXXX RPM		
	DAMPER	ECONOMIZER TEMP ECON TYPE = TEMPERATURE OFFSET OR TEMPERATURE SETPT		*NOTE: THIS OPTION IS DEPENDANT ON CONFIGURATION ID 1 SETUP.*
		ECONOMIZER OAT SETPOINT = XX.X F.		
		ECONOMIZER ENTHALPY SETPOINT = XX MA		*NOTE: THESE OPTIONS ARE DEPENDANT ON CONFIGURATION ID 1 SETUP.*
		ECONOMIZER ENTHALPY OFFSET = XX MA		
		FREE COOLING SUPPLY AIR SETPOINT = XX.X F		
		MIN DAMPER POSITION BLOWER ON HIGH = X.X %		
		MIN DAMPER POSITION BLOWER ON LOW = X.X %		
		DEMAND CONTROL VENT **>** DAMPER START OPEN = XXX PPM		
		DEMAND CONTROL VENT **>** DAMPER FULL OPEN = XXXX.X PPM		
		DEMAND CONTROL VENT **>** DAMPER MAX OPENING = XXX.X %.		
		POWER EXHAUST ON BY ECON TRAVEL = XX.X %		
		FRESH AIR HEATING ENABLE FAH = NO OR YES	FRESH AIR HEATING FAH SETPOINT = XX F	
		FRESH AIR COOLING ENABLE FAC = YES OR NO	FRESH AIR COOLING AFC SETPOINT = XX F	
NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS.				

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - SERVICE)

Note: Available menu options are dependent on hardware configuration.

Level 1	Level 2	Level 3	Use the **Adjust and set values** arrows to scroll up or down for selection options.	WHEN SELECTED (PRESS BACK TO RETURN TO THE PREVIOUS MENU)
SERVICE	TEST	COOL	OPTIONS ARE COOL 1, COOL 2, COOL 3 AND COOL 4.	COOL X ON RAT: XX.X F DAT: XX.X F OR NOT APPLICABLE EQUIPMENT NOT PRESENT
		HEAT	OPTIONS ARE HEAT 1, HEAT 2, HEAT 3 AND HEAT 4.	HEAT X ON RAT: XX.X F DAT: XX.X F OR NOT APPLICABLE EQUIPMENT NOT PRESENT
		BLOWER	BLOWER ON	
			BLOWER TEST AIRFLOW: NO = XX %	
		DAMPER	POSITION	ACTUAL: 0.1%. *NOTE: THIS FUNCTION IS ONLY AVAILABLE IF CONFIGURATION ID 1, POSITION 2 HAS BEEN CONFIGURED.*
			POWER EXHAUST	POWER EXHAUST ON OR NOT PRESENT
		FANS	OPTIONS ARE FAN 1, 2, 3, 4, 5 OR 6	FAN X ON OR NOT APPLICABLE EQUIPMENT NOT PRESENT
		DEHUMIDIFIER	OPTIONS ARE DEHUMIDIFIER 1 AND DEHUMIDIFIER 2	WHEN SELECTING OPTION, RESPONSE WILL BE EITHER DEHUMIDIFIER X ON OR NOT APPLICABLE EQUIPMENT NOT PRESENT.
		OUTPUTS	SERVICE RELAY	SERVICE RELAY ON
	REPLACE	FILTER	RESET RUNTIME? = NO OR YES	
		BELT (only available based on model number)	RESET RUNTIME? = NO OR YES	
		UV LAMP	RESET RUNTIME? = NO OR YES OR NOT APPLICABLE EQUIPMENT NOT PRESENT	
		FANS (1 through 6)	RESET RUNTIME? = NO OR YES OR NOT APPLICABLE EQUIPMENT NOT PRESENT	
		BLOWER	RESET RUNTIME? = NO OR YES	
		COMPRESSOR (1 through 4)	RESET RUNTIME? = NO OR YES OR NOT APPLICABLE EQUIPMENT NOT PRESENT	
	REPORT	USB SERVICE REPORT	USB SERVICE REPORT = DEFAULT VALVE IS THE SERIAL NUMBER IF SET. OTHERWISE IT WILL BE 123456789. CAN BE RENAMED BY USER. MAXIMUM 18 CHARACTERS.	
		USB ADV AIRFLOW RPT	USB ADVANCED AIRFLOW REPORT = START USB REPORT OR USB REPORT DONE.	START USB REPORT = SAF_RPT (DEFAULT) AND CAN BE RENAMED BY USER. MAXIMUM 18 CHARACTERS.
		SAVE USER PROFILE	SAVE USER PROFILE = YES OR NO	
		LOAD USER PROFILE	LOAD USER PROFILE = YES OR NO	
		USB PROFILE SAVE	USB PROFILE SAVE = 1234 UNLESS CATALOG NUMBER IS SET. DEFAULT IS CATALOG NUMBER. CAN BE RENAMED BY USER. MAXIMUM 18 CHARACTERS.	
		USB PROFILE LOAD	USB PROFILE LOAD = 1234XXXXXXXXXX (USER ASSIGNED NAME AS SPECIFICED. TYPICALLY CATALOG NUMBER.	WILL LOAD PREVIOUSLY SAVED USB PROFILE.
		LOAD FACTORY PROF	LOAD FACTORY PROF = YES OR NO	
		LOG SERVICE EVENT	LOG SERVICE EVENT = YES OR NO	
	SOFTWARE UPDATE	SOFTWARE UPDATE	SOFTWARE UPDATE (EITHER THE UPDATE WILL BE SUCCESSFUL OR THE FOLLOWING MESSAGES WILL APPEAR. SW UPDATE FAILED OR SW UPDATE FILE NOT FOUND.	NOTE: IF USB FLASH DRIVE IS NOT INSTALLED OR THE M3 UNIT CONTROLLER CANNOT READ THE FLASH MEDIA, A MESSAGE WILL APPEAR “NOT APPLICABLE EQUIPMENT NOT PRESENT.”
	OFFLINE	CLEAR DELAYS	CLEAR DELAYS = YES OR NO.	
		RESET CONTROLLER	RESET CONTROLLER = YES OR NO.	NOTE: THIS REBOOTS THE M3 CONTROLLER. NO CONFIGURATION SETTINGS ARE CHANGED.
		CONTROLLER LOCKOUT	CONTROLLER LOCKOUT = YES OR NO.	

NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS.

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - SETTINGS)

Note: Available menu options are dependent on hardware configuration.

Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
CONTROL	CONTROL TYPE = NETWORK OR WIRED THERMOSTAT	WIRED THERMOSTAT			
		NETWORK > BACNET	CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	BACNET MAC ADDRESS = X	
				BACNET BAUD RATE = 9.6, 19.2, 38.4 OR 76.8 K	
				NETWORK SENSOR C02 = YES OR NO	
				NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO	
				NETWORK SENSOR TEMPERATURE = YES OR NO	
				ROOM SENSOR OCC BLOWER MODE = AUTO - CYCLES OR ON - CONTINUOUS 1, 2, 3 (SEE DESCRIPTION ON PAGE 76)	
				BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT	
				BACKUP SETPOINTS OCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS OCCUPIED COOL = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	
		NETWORK > L-CONNECTION	CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	LCONN ADDRESS = X	
				NETWORK SENSOR C02 = YES OR NO	
				NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO	
				NETWORK SENSOR TEMPERATURE = YES OR NO	
				ROOM SENSOR OCC BLOWER MODE=ON-CONTINUOUS 1, 2, 3 OR AUTO CYCLES (SEE DESCRIPTION ON PAGE 76)	
				BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT	
				BACKUP SETPOINTS OCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS OCCUPIED COOL = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	
		NETWORK > LONTALK	CONTROL MODE = ROOM SENSOR, MONITOR ONLY OR NETWORK THERMOSTAT	NETWORK SENSOR C02 = YES OR NO	
				NETWORK SENSOR RELATIVE HUMIDITY = YES OR NO	
				NETWORK SENSOR TEMPERATURE = YES OR NO	
				ROOM SENSOR OCC BLOWER MODE=ON-CONTINUOUS 1, 2, 3 OR AUTO CYCLES (SEE DESCRIPTION ON PAGE 76)	
				BACKUP MODE = NONE, ROOM SENSOR, RETURN AIR BACKUP OR THERMOSTAT	
				BACKUP SETPOINTS OCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED HEAT = XX.X F	
				BACKUP SETPOINTS OCCUPIED COOL = XX.X F	
				BACKUP SETPOINTS UNOCCUPIED COOL = XX.X F	

NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS.

USER INTERFACE - SUB-MENU LEVELS (Continued)

Menu Interface (Level 1 - SETTINGS)

Note: Available menu options are dependent on hardware configuration.

Level 2	Level 3	Level 4	Level 5	USE THE **ADJUST AND SET VALUES** ARROWS TO SCROLL UP OR DOWN FOR SELECTION OPTIONS.
RTU OPTION	BLOWER	SPEEDS	BLOWER HEAT = XXXX CFM	
			BLOWER COOLING HIGH = XXXX CFM	
			BLOWER COOLING LOW = XXXX CFM	
			BLOWER VENTILATION = XXXX CFM	
			ON (TARGET XXXX CFM) ADJUST BLOWER RPM - XXXX RPM	
			A BOX (NON-EP) - HEATING, HIGH SPEED AND LOW SPEED	HIGH SPEED = % LOW SPEED = % ADJUST BLOWER % = XX%
			EP A BOX AND B BOX OR BIGGER HEATING, COOLING HIGH, COOLING MED, COOLING MED HIGH, COOLING MED LOW, COOLOW LOW AND VENTILATION	BLOWER CALIBRATION (HEATING, HIGH SPEED, LOW SPEED OR VENTILATION = CALIBRATION DONE OR TURN BLOWER ON. IF TURN BLOWER ON IS SELECTED, BLOWER ON XXXXX > TURN BLOWER OFF= NO OR YES.
		VFD BYPASS	VFD BYPASS DISENGAGED ENGAGE? = NO OR YES	
	DAMPER	ECONOMIZER ENTHALPY OFFSET = X MA		
		ECONOMIZER TEMP ECON TYPE = TEMPERATURE OFFSET OR TEMPERATURE SETPT		
		ECONOMIZER OAT SETPOINT = XX.X F		
		FREE COOLING SUPPLY AIR SETPOINT = XX F		
		MIN DAMPER POSITION BLOWER ON HIGH = X.X %		
		MIN DAMPER POSITION BLOWER ON LOW = X.X %		
		DEMAND CONTROL VENT DAMPER START OPEN = XXXX.X PPM		
		DEMAND CONTROL VENT DAMPER FULL OPEN = XXXX.X PPM		
		DEMAND CONTROL VENT DAMPER MAX OPENING = XXX.X%		
		POWER EXHAUST ON BY ECON TRAVEL = XX.X %		
		FRESH AIR HEATING ENABLE FAH = YES OR NO	FRESH AIR HEATING FAH SETPOINT = XX F	
		FRESH AIR COOLING ENABLE AFC = YES OR NO	FRESH AIR COOLING AFC SETPOINT = XX F	
	DEHUMIDIFIER	SENSOR TYPE= LOCAL SENSOR. NETWORK SENSOR, REHEAT DI4 OR NONE	= NONE OR REHEAT DI4	
			= LOCAL SENSOR OR NETWORK SENSOR	DEHUMIDIFIER DEHUMID SETPOINT = XX.X %
				DEHUMIDIFIER DEHUMID DEADBAND = X.X %
	EDIT PARAMETER	ENTER DATA ID=XXX		
INSTALL	NEW UNIT SETUP	LANGUAGE = ENGLISH, ESPANOL, OR FRANCAIS.		
		DATE/TIME = DAY, MONTH, YEAR, HOURS, MINUTES, SECONDS		
		DISPLAY UNITS F/C (FAHRENHEIT / CELSIUS)		
		MODEL NUMBER = (SEE FIGURE NO TAG ON PAGE NO TAG)		
		CONFIGURATION ID 1 = (SEE FIGURE NO TAG ON PAGE NO TAG)		
		CONFIGURATION ID 2 = (SEE FIGURE NO TAG ON PAGE NO TAG)		
		CATALOG NUMBER = (18 CHARACTER POSITION)		
		SERIAL NUMBER = (18 CHARACTER POSITION)		
		RTU DESCRIPTION = (18 CHARACTER POSITION)		
		DEHUMIDIFIER SENSOR TYPE	= NONE OR REHEAT DI4	
			= LOCAL SENSOR OR NETWORK SENSOR	DEHUMIDIFIER DEHUMID SETPOINT = XX.X %
				DEHUMIDIFIER DEHUMID DEADBAND = X.X %
	INSTALL NEW M3	CLEAR ALL CONFIG=YES OR NO. IF YES IS SELECTED. ARE YOU SURE?=YES OR NO.		
GENERAL	LANGUAGE	= ENGLISH, FRANCAIS OR ESPANOL		
	DATE/TIME	DAY, MONTH, YEAR HOURS, MINUTES AND SECONDS NOTE: HOURS IN 24 HOUR CLOCK FORMAT (MILITARY)		
	DISPLAY UNITS F/C	= FAHRENHEIT OR CELSIUS		
	RTU DESCRIPTION	ENTER A 18 POSITION ALPHA / NUMERIC NAME		
	CATALOG NUMBER	= LOCATED ON UNIT NAMEPLATE		
	MODEL NUMBER	= LOCATED ON UNIT NAMEPLATE		
	SERIAL NUMBER	= LOCATED ON UNIT NAMEPLATE		
	CONFIGURATION ID 1	= WHITE STICKER TITLED “ORIGINAL FACTORY UNI CONFIGURATION” LOCATED ON THE RIGHT SIDE OF THE CONTROL BOX NEAR THE M3 CONTROLLER		
	CONFIGURATION ID 2			

NOTE: PARAMETERS AVAILABLE ARE DEPENDENT ON MODEL NUMBER AND CONFIGURATION ID 1 AND 2 SETTINGS. IN ORDER FOR ANY CHANGE TO THE SYSTEM TO TAKE AFFECT, BACK COMPLETE OUT OF THE CURRENT LOCATION TO THE MAIN MENU OR STATUS SCREEN.

USB SERVICE REPORT EXAMPLE (If Smart Airflow® is Installed)

```
=====================================================
USB SERVICE REPORT
=====================================================
Service Date         04:03:2014
Service Time         19:26:35
Serial No.
Software Version     08.00.0009
Hardware Version
Unit Number          UNIT 1
SBUS Address         2
BACnet Address       2
Catalogue Number
Model Number         LGH060H4EH1Y
CONFIGURATION ID 1   NTNNNNLN
CONFIGURATION ID 2   NNNNNNNNN
Status               IDLE
=====================================================
Runtime Data
   Total Power On       23 HRS          8 CYCLES
   Before Install        0 HRS      -------
   Filter               12 HRS      -------
   Belt                 11 HRS      -------
   Blower               12 HRS         50 CYCLES
   Compressor 1          3 HRS         40 CYCLES
   Compressor 2          4 HRS         27 CYCLES
   Compressor 3          0 HRS          2 CYCLES
   Compressor 4          0 HRS          3 CYCLES
   Outdoor Fan 1         7 HRS         28 CYCLES
   Outdoor Fan 2         2 HRS         22 CYCLES
   Outdoor Fan 3         0 HRS          2 CYCLES
   Outdoor Fan 4         0 HRS          3 CYCLES
   Outdoor Fan 5         0 HRS          3 CYCLES
   Outdoor Fan 6         0 HRS          3 CYCLES
   POWER EXHAUST         0 HRS          0 CYCLES
   Heat Stage 1          0 HRS          1 CYCLES
   Heat Stage 2          0 HRS          1 CYCLES
   Humiditrol            0 HRS          0 CYCLES
   Free Cooling          0 HRS          4 CYCLES
   UV Lamp               0 HRS      -------
=====================================================
Sensor Data
   OAT      66  degF
   RAT      72  degF
   DAT      73  degF
   ZAT      78  degF
   RH       50  %
   CO2     460  ppm
=====================================================
SmartAirFlow System Data

    Calibrated On 04/03/2014 19:12:56



    Supply Airflow Calibration Table
   ---------------------------------------
   PWM(%)     Speed(rpm)     Airflow(cfm)
   ---------------------------------------
      20          480            1031
      30          570            1274
      40          660            1493
      50          750            1687
      60          840            1857
      70          930            2004
      80         1020            2126
      90         1110            2223
     100         1200            2297

    Supply Airflow Targets
   ---------------------------------------------
   Mode              Desired Airflow(cfm)    PWM(%)
   ---------------------------------------------
   Cool High                 1800             57
   Cool Low                  1300             31
   Heat                      2000             70
   Ventilation               1200             27
   Smoke                     2000             70
Economizer Differential Presssure(@ 2000 Supply
Airflow(cfm))
   ---------------------------------------------
   Damper Position (%)        Diff.Pressure(in.H20)
   ---------------------------------------------
              0                      0.39
             50                      0.23
            100                      0.06
  Outside Airflow Targets
   ----------------------------------------
   Minimum Outside Air/Minimum DCV:     200 cfm
   Maximum DCV:                           0 cfm
   Minimum CO2:                         700 ppm
   Maximum CO2:                        1200 ppm
=====================================================
Alarm/Status Log
  (143)  04:03:2014 19:26:13  RESET  DAMPER PRESSURE
  (141)  04:03:2014 19:26:13  RESET  CFM TARGET TOO
HIGH
  (143)  04:03:2014 19:06:19    SET  DAMPER PRESSURE
  (141)  04:03:2014 19:06:19    SET  CFM TARGET TOO
HIGH
  ( 82)  04:03:2014 19:06:18  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 19:06:18    SET  CONTROLLER RESET
  (143)  04:03:2014 18:59:41    SET  DAMPER PRESSURE
  (141)  04:03:2014 18:59:41    SET  CFM TARGET TOO
HIGH
  ( 82)  04:03:2014 18:59:40  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 18:59:40    SET  CONTROLLER RESET
  (143)  04:03:2014 18:35:19    SET  DAMPER PRESSURE
  (141)  04:03:2014 18:35:19    SET  CFM TARGET TOO
HIGH
  (148)  04:03:2014 18:21:36  RESET  SMART AIRFLOW
CONFIG ERROR
  (170)  04:03:2014 18:21:36  RESET  POWER EXHAUST
UNCONFIGURED
  (165)  04:03:2014 18:21:36  RESET  ECONOMIZER
UNCONFIGURED
  ( 85)  04:03:2014 18:21:36  RESET  INCORRECT
HUMIDITROL SETTINGS
  (132)  04:03:2014 18:21:24  RESET  VFD BYPASS
UNCONFIGURED
  (148)  04:03:2014 18:21:23    SET  SMART AIRFLOW
CONFIG ERROR
  (132)  04:03:2014 18:21:23    SET  VFD BYPASS
UNCONFIGURED
  (170)  04:03:2014 18:21:23    SET  POWER EXHAUST
UNCONFIGURED
  (165)  04:03:2014 18:21:23    SET  ECONOMIZER
UNCONFIGURED
  ( 85)  04:03:2014 18:21:23    SET  INCORRECT
HUMIDITROL SETTINGS
  ( 82)  04:03:2014 18:20:31  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 18:20:31    SET  CONTROLLER RESET
  ( 82)  04:03:2014 18:16:32  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 18:16:32    SET  CONTROLLER RESET
  ( 82)  04:03:2014 18:14:10  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 18:14:10    SET  CONTROLLER RESET
  ( 82)  04:03:2014 18:14:09  RESET  CONTROLLER RESET
  ( 82)  04:03:2014 18:14:09    SET  CONTROLLER RESET

=====================================================
END OF REPORT
```

USB SERVICE REPORT EXAMPLE (If Smart Airflow® is Installed) (Continued)

```
=====================================================
USB SMARTAIRFLOW REPORT
=====================================================
Service Date         04:03:2014
Service Time         19:32:49
Serial No.
Software Version     08.00.0009
Hardware Version
Unit Number          UNIT 1
SBUS Address         2
BACnet Address       2
Catalogue Number
Model Number         LGH060H4EH1Y
CONFIGURATION ID 1   NTNNNNLN
CONFIGURATION ID 2   NNNNNNNNN
Status               IDLE
=====================================================

    Calibrated On 04/03/2014 19:12:56


    Supply Airflow Calibration Table
   ---------------------------------------
   PWM(%)      Speed(rpm)      Airflow(cfm)
   ---------------------------------------
      20           480            1031
      30           570            1274
      40           660            1493
      50           750            1687
      60           840            1857
      70           930            2004
      80          1020            2126
      90          1110            2223
     100          1200            2297

    Supply Airflow Set Points

-------------------------------------------------------
                     Desired               Actual
Airflow(cfm)
   Mode            Airflow(cfm)   PWM(%)    (With Damper
Closed)     Econ dP

-------------------------------------------------------
   Cool Low            1300         31              1687
              0.21
   Cool High           1800         57              1297
              0.13
   Heat                2000         70              1809
              0.25
   Ventilation         1200         27              2004
              0.30
   Smoke               2000         70              1204
              0.11

    Outside Airflow Targets
   ------------------------------------------
   Minimum Outside Air/Minimum DCV:     200 cfm
   Maximum DCV:                           0 cfm
   Minimum CO2:                         700 ppm
   Maximum CO2:                        1200 ppm

    Ventilation Calibration(@ 2000 Supply
Airflow(cfm))

-------------------------------------------------------
   Damper                      Outdoor     Supply
    Supply
   Position(%)     Econ dP   Airflow(cfm)   PWM(%)
Airflow(cfm)

-------------------------------------------------------
      0%             0.30           0         70
                      2004
      5%             0.29         104         70
                      2004
     10%             0.28         184         70
                      2004
     15%             0.27         261         70
                      2004
     20%             0.26         325         70
                      2004
     25%             0.24         437         70
                      2004
     30%             0.23         561         70
                      2004
=====================================================
END OF REPORT
```

SPECIFICATIONS

Operating Environment	Temperature: -40°F to 155°F
	Humidity: 10% - 95% RH, Non- Condensing
Power Requirements	24VAC (+/-25%), 50/60Hz
	5 VA for M3 maximum
Memory Type	Re-programmable Flash
Device Commissioning	Auto-poll (real plug and play)
Unit type	Electric/Electric, Gas/Electric (Rooftops)
Cooling stages	4
Heating stages	4
Electronic Parameters	>250
Alarm Codes	>100
Alarm Codes Stored	128
Display Type	LCD, 4 lines x 20 character display Four LEDs (Data, Setup, Service, Settings)
Indicator LEDs	1- Heartbeat
	1- Bus transmit
	1 - Bus receive
	1- each for Y1,Y2,W1,W2,G,OCP, GLO
Dimensions - Main Board	Main Board: Height: 8 in., Width: 14-1/2 in., Depth: 6 in.
Weight	2 lbs. for M3
Cable Type	SysBus - Lennox yellow COMM cable: C0MISC00AE1- (27M19) (500 ft. box), C0MISC04AE1- (94L63) (1000 ft. box), C0MISC01AE1- (68M25) (2500 ft. roll) ZoneBus - Lennox purple COMM cable: C0MISC05AE1- (23W99) (500 ft. box) C0MISC06AE1- (24W00) (1000 ft

INPUTS / OUTPUTS

INPUTS / OUTPUTS (M2 MAIN BOARD)

Bus Port	Lennox SysBus, EIA-485, 9600 baud (SmartWire™ wiring terminal block and phone jack)
	USB Communication Port (1 for Host, 1 for Device)
Expansion Ports	3 expansion ports for adding up to 5 expansion boards
Digital Outputs	13 digital outputs (2 Amps Max)
Digital Inputs	20 (24VAC), 5 (5VDC)
Analog Inputs	8 analog inputs (0-5VDC, 0-10VDC or 4-20 mA)
Temperature Inputs	6 temperature inputs (thermistor type). Outdoor Air, Return Air, Discharge Air and Room, [1] Compressor 1 Sump Temperature, Compressor 2 Sump Temperature
Analog Outputs	2 (0-10VDC)
PWM Outputs	2 (0-18VDC), 1 (0-12VDC)

[1] Energence Ultra rooftiop units only.

BACNET® MODULE

Refer to “M2/M3 BACnet Module Service Literature”, Corp. 0926-L11.

LONTALK® MODULE

Refer to “Prodigy LonTalk Module Kit” Instructions. 506693.

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