COMMERCIAL CONTROLS GUIDE

LENNOX®

COMMERCIAL
PRODUCT SPECIFICATIONS (EHB)

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WALL CONTROLLERS - 7-DAY PROGRAMMABLE

For Model L™ | Enlight™ | Energence®

Fully Communicating Thermostat

Up to 4 Heat and 4 Cool

Built-In Sensors For Temperature, Humidity and Optional CO_2

Compatible with packaged gas/electric, electric/electric, and heat pump systems

Automatic Changeover between Heating and Cooling Modes

Designed to maximize Lennox® CORE and Prodigy® Control System Operation

BACNet Compatible when used with Lennox® CORE or Prodigy® Control System

Remote Indoor Temperature Sensing (up to nine averaging sensors)

Intuitive Touchscreen Interface

Backlit Display

Relative Humidity Sensor - Standard

CO_2 Sensor - Optional

Remote Occupancy Sensing

Outside Air Temperature Display

Four-Wire Installation

Scheduled Occupancy Control

Performance Reports (standalone mode)

Full Variable-Speed Control (Model L™ units only)

Dehumidification/Humiditrol® Control

Wallplate Furnished

ASHRAE and IECC Compliant

17G76	CS8500 Conventional - Up to 4 Heat / 4 Cool	
17G75	CS8500 Conventional w/ CO_2 sensing - Up to 4 Heat / 4 Cool	
24K55	CS8500 Universal - Up to 4 Heat / 4 Cool	
24K53	CS8500 Universal w/ CO_2 sensing - Up to 4 Heat / 4 Cool	
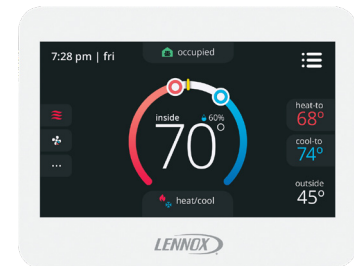
FIELD WIRING
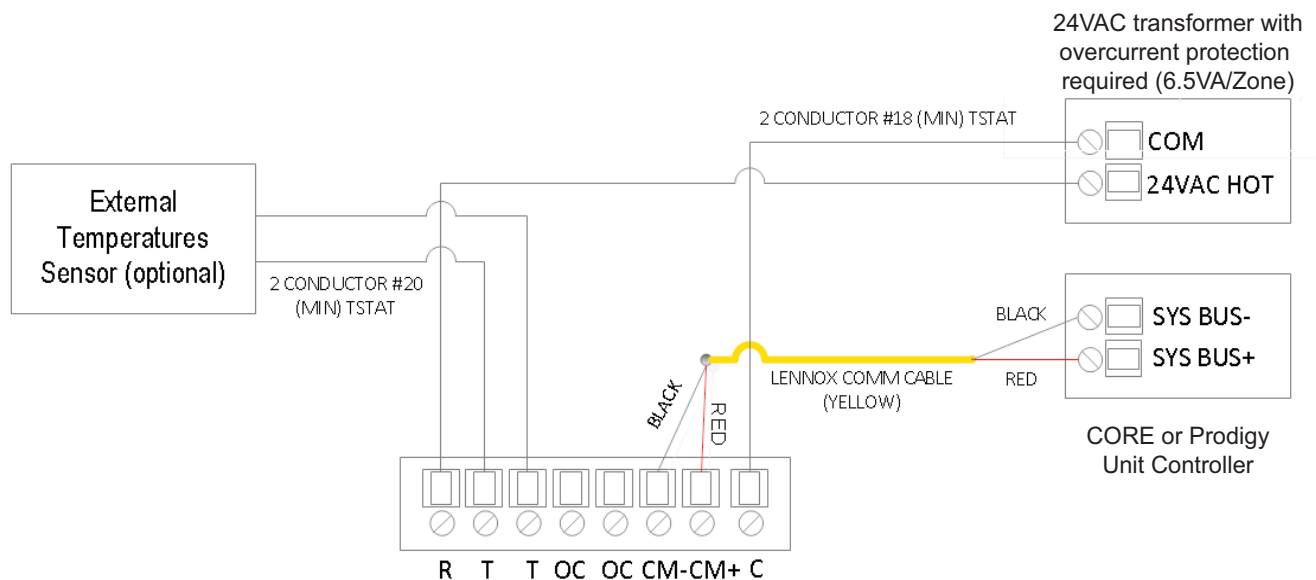
SPECIFICATIONS

Unit Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Device Commissioning	Auto-poll (real plug and play)
Operating Environment	Temperature: -0°F to 105°F Humidity: 10% - 95% RH, Non- Condensing
Memory Type	Re-programmable Flash
Electronic Configure to Order Parameters	8
Power Requirements	24VAC (+/-25%), 50/60Hz, 3VA Class 2 transformer required
Temperature Range	Temperature: 32°F to 99°F
Temperature Accuracy	+/- 1°F (May be field calibrated to +/- 0.25°F)
RH Range	5-95% RH
RH Accuracy	+/- 5% RH (May be field calibrated to +/-2%)
CO_2 Range (CO_2 Models)	400-2000 ppm
CO_2 Accuracy (CO_2 Models)	+/- 40 ppm + 3% or reading @ 77°F CO_2 sensor has built-in self calibration algorithm
Temperature Setpoint Range	Temperature: -40°F to 95°F
Display Type	Full color, capacitive touch LCD screen
Dimensions	Height: 3-5/16 in. Width: 4-5/16 in. Depth: 7/8 in.
Weight	0.42 lbs.
Enclosure	High impact ABS off-white plastic case.

INPUTS / OUTPUTS

Remote Temperature Sensor Input	Up to four remote temperature sensors connected in parallel for averaging and remote monitoring. Compatible with Miniature Wall-Mount Zone Sensor (**94L61**) and Wall-Mount Zone Sensor with Adjustable Zone Temperature (**56L80**).
Occupancy Sensor Input	24VAC input (On for occupied)
Cable Type	**S-Bus -** Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll) Belden Wiring Equivalent: Belden type 88761 or 8761
	24VAC Power - Two Conductor thermostat 22 AWG min. (wire gauge depends on distance from transformer) **Remote Temperature Sensor -** Two Conductor thermostat cable 22 AWG min. (wire gauge depends on distance) **Occupancy Sensor -** Two Conductor thermostat cable 22 AWG min. (wire gauge depends on distance.
Installation Instructions	**507611**

ACCESSORIES

Sensors/Accessories	Remote non-adjustable wall-mount 10k	**47W37**
	Remote non-adjustable wall-mount 11k	**94L61**

COMMERCIAL THERMOSTATS - 7-DAY PROGRAMMABLE

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | LRP14 | Split Systems

Energy Efficiency

Programmable - 7-Day or 5-Day/2-Day - Versatile programming options offer custom comfort and energy savings

Dual-fuel capability - Increases the efficiency of dual-fuel heating systems by automatically alternating between gas and electric operation

One-Touch Away Mode - Thermostat heating or cooling setpoints during unoccupied periods with one touch to save energy when the user is away

Performance Reports - Displays the number of hours each month the heating/cooling system has been operating

Enhanced Comfort

Automatic changeover - decides between heating and cooling operation, depending on indoor temperatures

Built-in temperature and humidity sensors

Smooth Setback Recovery - pre-cools a space to reach the desired setpoint temperature as soon as the scheduled period begins

Reliable Performance

Touchscreen display - large (4.3"), easy-to-use display with adjustable brightness

Customizable reminders - allow you to set a series of service and parts replacement reminders which display on the home screen

Filter Reminder - Reminds the user when it is time to change the filter

Outdoor temperature display - requires optional outdoor sensor

Universal thermostat - Works with conventional systems and heat pumps and supports up to 4 stages of heat and 3 stages of cooling

Compatible with Lennox-brand non-communicating equipment and most other brands of heating and cooling equipment

17G74 (2 Cool)	CS7500 - Up to 4 Heat / 2 Cool	
24K41 (3 Cool)	CS7500 - Up to 4 Heat / 3 Cool	

SPECIFICATIONS

Product Depth	7/8 in.
Product Height	3-5/16 in.
Product Width	4-5/16 in.
Gross Weight	0.6 lbs.
Hertz	50/60 Hz
Programs per Week	7 Day
Changeover	Auto changeover
Stages	17G74 - Universal 4 Heat/2 Cool 24K41 - Universal 4 Heat/3 Cool
Temperature Setting Range	Heating - 45 to 90°F Cooling - 45 to 99°F
Humidity Settings	Operating range - 10 to 90% relative humidity Humidity setpoint (Dehumidification) - 45 to 60% relative humidity, default 50%
Clock Accuracy	± 10 minutes per year
Installation Instructions	**507506**

ACCESSORIES

Sensors	Remote non-adjustable wall-mount 20k	**47W36**
	Remote non-adjustable wall-mount 10k	**47W37**
	Remote non-adjustable discharge air (duct mount)	**19L22**
	Outdoor temperature sensor	**X2658**

BACNET THERMOSTAT

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | Split Systems

7-Day Programmable
For units with or without Humiditrol®
BTL listed MS/TP ensures compatibility with any BACnet system
Built-in control programs for conventional and heat pump applications
Conventional systems up to 3-stage heat and 3-stage cool
Heat pumps with 1 or 2 compressors and up to 2-stage auxiliary heat
On-board temperature and humidity sensor
Multiple configurable inputs and outputs enable advanced control strategies
Set-up Wizard enables rapid system configuration
No special tools required for installation or commissioning
Seven-day (2, 4 or 6 event) occupancy scheduling per day
Backlit 5-inch LCD touchscreen

24C57	BACnet Compatible Thermostat With Reheat	

SPECIFICATIONS

Operating voltage	24 Vac ± 20%, Class 2, 4A maximum
Frequency	50/60 Hz.
Power consumption including connected field devices	Max. 96 VA
Output relay ratings	Pilot duty, 1A maximum per output, 4A maximum total
Enclosure	NEMA 1
Transport	Temperature -13°F through 158°F Air humidity up to 95% (non-condensing)
Operation	Temperature 23°F through 122°F Air humidity Up to 95% (non-condensing)
Setpoint range	45°F through 95°F
Approvals	UL 916
	CSA C22.2 No. 205
	EMC Directive
	Canada
	Mexico
	Australia
FCC	Complies with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.
Shipping weight	14 ounces
Installation Instructions	**508055**

PROGRAMMABLE THERMOSTAT

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | LRP14 | Split Systems

Large, back-lit, easy-to-read LCD screen with digital display

Large, easy to push buttons

Sleek, modern appearance works well with any decor

System status icons show when the HVAC system is running

Maintenance reminder lets user know when routine service is required

Filter monitor shows when to replace filter

Service monitor indicates when the cooling system is not operating properly

Gradually changes room temperature to next program period for increased comfort

Hard-wired to the indoor unit power supply

No batteries required

Thermostat can be used in conventional heating/cooling (non-heat pump) applications

Smooth Setback Recovery starts system early to achieve setpoint at start of program period

Economizer relay control

Five-minute compressor short-cycle protection

Minimum cycle time of 6 minutes

11Y05	CS3000 Programmable Thermostat, Conventional 2 Heat/2 Cool
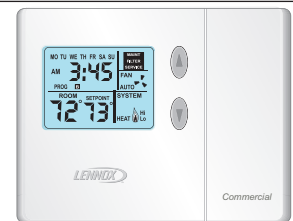
SPECIFICATIONS

Temperature set range	50°F to 90°F in one-degree increments
Room Temperature Display range	35°F to 99°F
Room Temperature Display	User selectable Fahrenheit or Celsius (press Settings button three time, press up/ down arrow button to toggle between Fahrenheit or Celsius)
Fan control	On/Auto
Stage up timer	15 minutes
User selectable filter reminder	Off, 1, 3, 6. or 12 months
User selectable maintenance reminder	Off, 6 or 12 months
DIP switch settings	Temperature offset, internal/external (room) temperature sensing, fan option (gas or electric heat), Smooth Setback Recovery (SSR)
Temperature Offset (DIP switch setting)	-3°F to 0°F
User selectable maintenance reminder	Off, 6 or 12 months
Power Supply	18-30 VAC - 50/60Hz
Dimensions (H x W x D)	3-1/2 x 4-9/16 x 1-5/16 in.
Installation Instructions	507517

ACCESSORIES

Sensors/Accessories	Remote non-adjustable wall mount 10k averaging	47W37
	Outdoor Sensor	X2658
	Thermostat wall mounting plate	X2659
	Universal Thermostat Guard with Lock (clear)	39P21

FIELD WIRING

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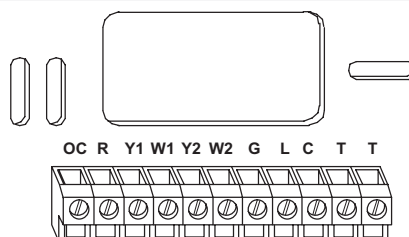
TEMPERATURE SENSORS AND ACCESSORIES

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | LRP14 | Split Systems

X2658	Remote Outdoor Temperature Sensor for CS7500 and CS3000 Thermostats	
X2659	Wallplate for CS3000 Thermostats	
39P21	Universal Locking Thermostat Guard (H x W x D) 5-7/8 x 8-3/8 x 3 in.	

THERMOSTAT COMPATIBILITY MATRIX

No.	Description	Model L LCM/LGM	Enlight LCT/LGT	Enlight LDT/LHT	Landmark/Xion KC/KG	Landmark/Xion KH	Raider ZC/ZG	Raider ZH	LRP14	ELXC	ELXP
17G75	CS8500 4C/4H no CO_2	•	•								
17G76	CS8500 4C/4H w/CO_2	•	•								
24K55	CS8500 4C/4H (HP) no CO_2			•							
24K53	CS8500 4C/4H (HP) w/CO_2			•							
24K41	CS7500 3C/4H			•	•	•	•	•		•	•
17G74	CS7500 2C/4H	•	•		• (Not for B-Box)					• (Not for 3-Stage)	
11Y05	CS3000 2C/2H Prog.	•	•	•	•	•	•	•		•	•
51M32	CS3000 2C/2H Non-Prog.	•	•								
51M33	CS3000 2C/2H Non-Prog.			•		•					
15Z69	M30 2C/4H								•	•	•
24C57	BACnet Thermostat (New)				•	•	•	•		•	•

BACNET MODULE

For Energence® Only

BACnet® Module for Prodigy® Control System.

NOTE - Not compatible with CORE™ Unit Controller.

59W51	BACnet Module	

SPECIFICATIONS

Installation Instructions	506216

LONTALK® MODULE

For Model L™ | Enlight™ | Energence®

LonTalk® module allows communication between the Lennox M2, M3 and M4 unit controllers and a LonWorks® network. The module is LonMark® certified to design guidelines version 3.4.

54W27	LonTalk® Module	

SPECIFICATIONS

Installation Instructions	508137

CO₂ SENSORS

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | Split Systems

Wall-mounted or return air duct non-communicating CO₂ sensors.
Sensors may be used for demand control ventilation.

All Models

- Plug and play compatible with the Lennox® CORE and Prodigy® Unit Controller on Lennox' premium units
- Patented absorption infrared gas sensing engine
- Self-calibration system eliminates the need for manual   calibration in most applications
- Gas permeable, water resistant CO₂ diffusion filter prevents particulate and water contamination of the sensor
- Screw type terminal blocks
- +/- 40 ppm + 3% of reading up to 1000 ppm
  +/- 40 ppm + 5% of reading up to 1000-1200 ppm
  +/- 40 ppm + 7% of reading up to 1200-2000 ppm
- Dual outputs (0-10VDC and 4-20mA)

With Display

77N39/ 24C58	Off-white plastic cover, display
87N52	Black plastic case, display

No Display

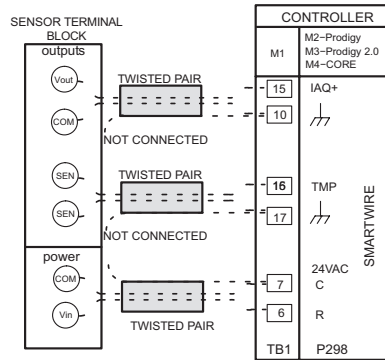| 87N53/ 23V86	Off-white plastic cover, no display, UL94-5V rated, may be used in return air duct
87N54/ 23V87	Black plastic case, no display, 87N54 is UL94-5V rated (may be used in return air duct), 23V87 is UL94-HB rated

77N39
(with Display)

24C58
(with Display)

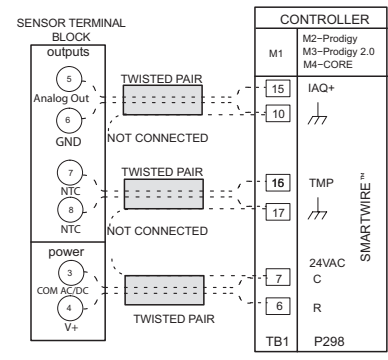## FIELD WIRING

77N39, 87N52, 87N53, 87N54
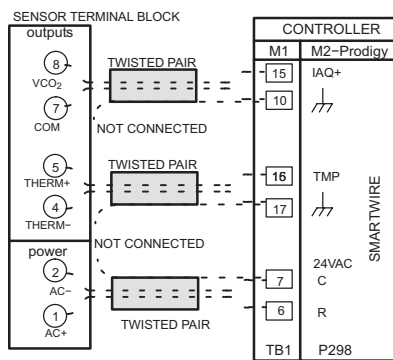
23V86, 23V87

24C58

150 feet or shorter
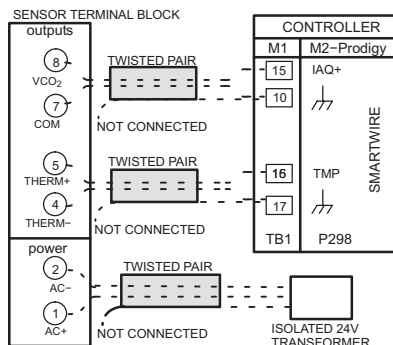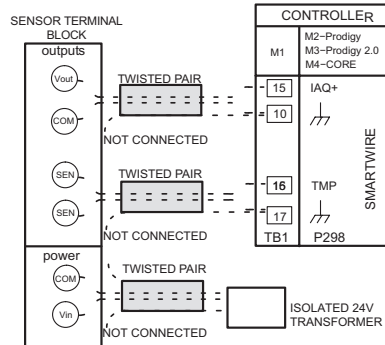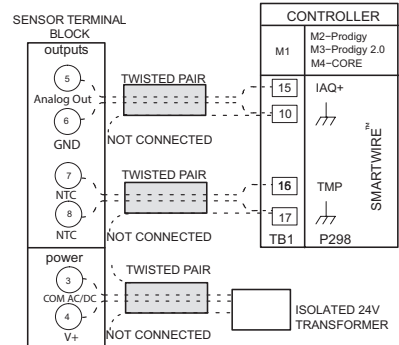
150 feet or longer

SPECIFICATIONS

Controller Compatibility	Lennox® CORE and Prodigy® Unit Controller Economizer Controller: Standard & High Performance
Power Requirements	77N39, 87N52, 87N54: 18-30 VAC RMS 50/60 HZ 23V86, 23V87: 24 VAC +/-20%, 50/60 Hz (half-wave rectifier) | 16.5-40 VDC maximum 24C58: 24 VAC/DC ±20%, 50/60 Hz (Class 2)
Operating Conditions	32-122°F 0-95% RH, non-condensing
Measurement Range	400-2000 ppm (0 ppm=0 V, 4mA)
Output Range (Dual)	0-10VDC and 4-20mA
Accuracy	77N39, 87N52, 87N53, 87N54: +/- 40 ppm + 3% of reading up to 1000 ppm +/- 40 ppm + 5% of reading up to 1000-1200 ppm +/- 40 ppm + 7% of reading up to 1200-2000 ppm 23V86, 23V87: ± 40 ppm and ± 3% of reading 24C58: ±(30 ppm +3% of reading) within the range 400-2000 ppm ±75 ppm at 600 - 1000 ppm ABC (Automatic Background Calibration) Logic self-calibration system.
Measuring Method	Non-dispersive infrared (NDIR) absorption
Temperature Sensor Type	NTC 10 KΩ thermistor, with 1 KΩ offset in series
Thermistor Accuracy	77N39, 87N52, 87N53, 87N54: ± 1.8° (59 to 95°F range) 23V86, 23V87: +/- 1°F 24C58: ± 1.53°F (55 °F- 85°F range)
Display	23V86, 23V87, 87N53, 87N54 - none 24C58, 77N39, 87N52 - display
Enclosure	23V86, 24C58, 77N39, 87N53: High impact ABS off-white plastic case, UL94-5V rated (May be used in return duct) 23V86, High impact ABS white plastic case, UL94-HB rated 24C58, High impact ABS white plastic case, UL94-V0 rated 87N52, 87N54 : High impact ABS black plastic case, UL94-5V rated (May be used in return duct) 23V87: High impact ABS black plastic case, UL94-HB rated
Dimensions (H x W x D)	77N39, 87N52, 87N53, 87N54: 4-1/2 x 3-3/16 x 1-1/16 in. 23V86, 23V87: 4-1/2 x 2-3/4 x 1-1/16 in. 24C58: 4-3/4 x 3-5/16 x 7/8 in.
Weight	0.5 lbs.

SPECIFICATIONS (continued)

INPUTS / OUTPUTS

Analog Outputs	77N39, 87N52, 87N53, 87N54: 1- 0-10VDC (100 Ω output impedance) 1- 4-20mA (RL maximum 500 Ω) (Output not used for Lennox controllers) 23V86, 23V87: 1- 0-5 VDC or 0-10 VDC (resistive load greater than 5000 ohms) 1- 4-20 mA (500Ohm load maximum) (Output not used for Lennox controllers) 24C58: 1- 0/2-10 VDC (resistive load greater than 5000 ohms) 1- 4-20 mA (resistive load less than 500 ohms) (Output not used for Lennox controllers)
Temperature Sensor	Two-wire (not polarity sensitive)
Cable Type	**Wire runs under 50 ft.** 2 twisted pair shielded cable (2 Lennox yellow COMM cables): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Wire runs over 50 ft. but under 150 ft. 2 twisted pair shielded cable (18 AWG)
	Wire runs over 150 ft. Requires local isolated power transformer: 24VAC, 20VA maximum 1 twisted pair shielded cable (1 Lennox yellow COMM cable): **27M19** (500 ft. box), **94L63** (1000 ft. box), **68M25** (2500 ft. roll)
	Belden Wiring Equivalent: Belden type 88761 or 8761
Installation Instructions	**506236** - 77N39, 87N52, 87N53 and 87N54 **508291** - 23V86 and 23V87

ACCESSORY

Downflow Duct Mounting Kit (for CO$_2$ sensor return air duct mounting)	**23Y47** - Used with 87N54, 23V87
Installation Instructions	**508307** - 23Y47

CO₂ SENSOR DUCT MOUNT ASPIRATION BOX

For Model L™ | Enlight™ | Energence® | Xion™ | Raider® | Split Systems

Converts standard wall-mount CO_2 sensors to duct mount applications. The custom internal mounting bracket secures the base of the sensor inside the aspiration box. Power is applied by running conduit through a knockout and wiring to the terminal blocks located on the sensor mounting bracket. The enclosure is lightweight, durable, and can be installed in minutes.

- See-through cover.
- Custom mounting bracket.
- Duct sample tube.
- Choice of knockouts.

90N43	CO2 Sensor Duct Mount Aspiration Box

SPECIFICATIONS

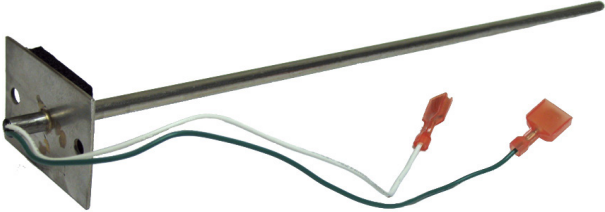| Sensor Compatibility	Wall-mount models - **87N53**, **77N39**
Electrical Knockouts	7/8 in., 1-1/8 in. and 1-1/16 in.
Enclosure Material	ABS plastic
Minimum Air Flow	400 fpm
Dimensions	Height: 7 in.
	Width: 4-1/4 in.
	Depth: 3-1/2 in.
Sample Probe Size	Length: 7 in.
	Diameter: 1-1/8 in.
Weight	2 lbs.

TEMPERATURE SENSORS

For Model L™ | Enlight™ | Energence®

Temperature Sensor monitors return air temperature.

Sensor will act as a backup in case the zone sensor has a wiring issue or malfunctions.

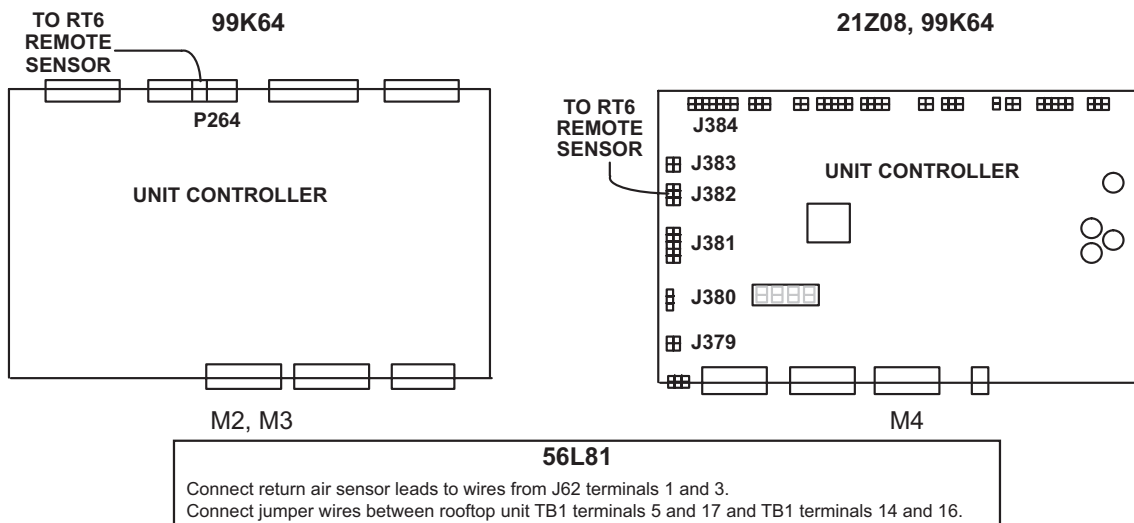Also allow the use of the return air limit option (21Z08, 99K64).

- 12 in. probe with mounting plate
- Stainless steel construction

99K64	Duct-Mount Temperature Sensor (M2, M3, M4)	
21Z08	Remote Discharge Temperature Sensor Kit for M4 with Fresh Air Tempering, Kit also includes Duct Temperature Sensor (99K64) and 22 ft. Wiring Harness	
56L81	Return Air Duct-Mount Zone Temperature Sensor, 1kΩ (Non-Communicating)	

SPECIFICATIONS

Unit Controller Compatibility	Lennox® CORE and Prodigy® Unit Controller
Temperature Range	40°F to 95°F
Accuracy	+/-0.36°F
Stability	+/-0.23°F
Interchangeability	+/-0.36°F
Sensor Type	NTC thermistor , 10K @76°F
Mounting	Mounting plate for 2 screws
Dimensions	Length: 12 in.
	Diameter: 1/4 in.
Weight	0.0625 lbs.
Cable Included (21Z08)	2 - 18AWG 105C wire (22 ft.)
Cable Type Required (99K64, 56L81)	**S-Bus** - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Belden Wiring Equivalent: Belden type 88761 or 8761
Installation Instructions	**504762**

FIELD WIRING

56L81

Connect return air sensor leads to wires from J62 terminals 1 and 3.
Connect jumper wires between rooftop unit TB1 terminals 5 and 17 and TB1 terminals 14 and 16.

WALL-MOUNT ZONE SENSORS (Non-Communicating)

For Model L™ | Enlight™ | Energence®

Two-wire non-communicating wall-mounted zone sensors.

Sensor is designed to fit a single gang electrical handy box.

Terminal blocks for wiring connections

Off-white plastic enclosure.

56L80 and **94L60** has SysBus/ZoneBus phone jack that may be connected to the network.

NOTE - Bus connection is not required for sensor operation.

Models With Setpoint Adjustment

56L80	Temperature, Offset Adjustment, Override Button, SysBus/ZoneBus Phone Jack	
94L60	Temperature, Override Button, SysBus/ZoneBus Phone Jack	
Installation Instructions	504762M	

Models Without Setpoint Adjustment

21W06	Combination Temperature and Relative Humidity	
21W07	Temperature Only	
17M50	Relative Humidity Only	
Installation Instructions	**505196** - 21W06 **505197** - 21W07 **504934** - 17M50	

SPECIFICATIONS

|		
Controller Compatibility		Lennox® CORE and Prodigy® Unit Controller
Temperature Range	21W07, 56L80, 94L60	40°F to 95°F
	17M50, 21W06	−10°F to 160°F
Humidity Range	17M50, 21W06	0-100% RH, non-condensing
Power Requirements		24VAC, +/- 25%, 50/60Hz, 1.5 VA
Temperature Accuracy (not for 17M50)		+/-0.36°F
Temperature Stability (not for 17M50)		+/-0.23°F
RH Accuracy	17M50, 21W06	+/-3% RH from 20 to 95% RH @77°F
RH Stability	17M50, 21W06	+/- 2% RH from 20 to 95% RH @77°F
Temperature Interchangeability (not for 17M50)		+/-0.36°F
RH Interchangeability	17M50, 21W06	+/- 3% RH from 20 to 95% RH @77°F
Offset Adjustment Range **(56L80 only)**		DIP switch options (located under cover) 1. No adjustment 2. +/- 1°F 3. +/- 4°F
Temperature Sensor Type (not for 17M50)		NTC thermistor , 11K @76°F w/offset Potentiometer
Enclosure		High impact ABS off-white plastic case
Dimensions		Height: 4-1/2 in.
		Width: 2-3/4 in.
		Depth: 1-1/8 in.
Weight		0.3 lbs.
INPUTS / OUTPUTS		
Temperature Sensor		Two-wire (See Cable-Type below) to RTU
Humidity Sensor		Three-wire (See Cable-Type below) to RTU
Analog Output		0-10VDC, 0-5VDC or 4-20mA (0-10VDC is used for Lennox® CORE and Prodigy® Unit Controller)
Cable Type		**Temperature Sensor (not for 17M50):** Optional SysBus - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll) **Humidity Sensor (17M50, 21W06):** **Wire runs under 50 ft.** 2 twisted pair shielded cable (2 Lennox yellow COMM cables): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll) **Wire runs over 50 ft. but under 150 ft.** 2 twisted pair shielded cable (18 AWG) **Wire runs over 150 ft.** Requires local isolated power transformer: 1 twisted pair shielded cable (1 Lennox yellow COMM cable): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll) Belden Wiring Equivalent: Belden type 88761 or 8761

FIELD WIRING

21W06, 17M50
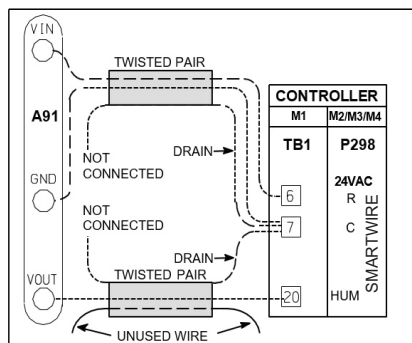
150 feet or shorter

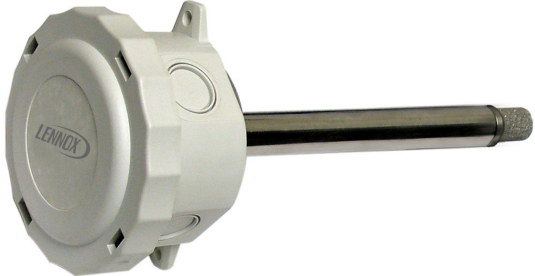150 feet or longer

21W07, 56L80, 94L60
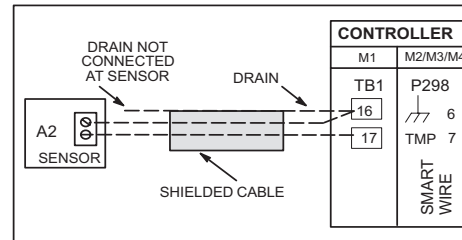
RELATIVE HUMIDITY SENSOR

For Model L™ | Enlight™ | Energence®

Terminal blocks for wiring connections.
Relative humidity range: 0 -100%.

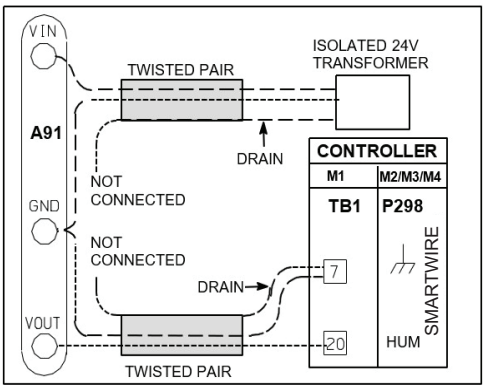| 76M31	Return Air Duct Relative Humidity Sensor (Non-Communicating)	

SPECIFICATIONS

Controller Compatibility	Lennox® CORE and Prodigy® Unit Controller
Operating Environment	Temperature: –10°F to 160°F
	Humidity: 0-95% RH, non-condensing
Power Requirements	24VAC (+/–25%), 50/60Hz, 1.5 VA
RH Range	5-95%
Accuracy	+/-3% RH from 20 to 95% RH @77°F
Enclosure	High impact ABS off-white plastic case
Dimensions:	Electronics Enclosure: 4 in. dia x 2-1/4 in.
	Duct Probe: 7-7/8 in. length x 3/4 in. diameter
Weight	1 lbs.
INPUTS / OUTPUTS	
Analog Output	0-10VDC, 0-5VDC or 4-20mA
	(0-10VDC is used for Lennox® CORE and Prodigy® Unit Controller)
Cable Type	**Wire runs under 50 ft.** 2 twisted pair shielded cable (2 Lennox yellow COMM cables): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Wire runs over 50 ft. but under 150 ft. 2 twisted pair shielded cable (18 AWG)
	Wire runs over 150 ft. Requires local isolated power transformer: 1 twisted pair shielded cable (1 Lennox yellow COMM cable): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Belden Wiring Equivalent: Belden type 88761 or 8761
Installation Instructions	**504934**

NOTE - Additional ranges and outputs are available by changing mini-jumpers.
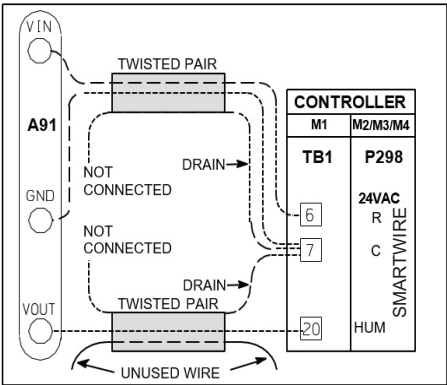
150 feet or shorter

150 feet or longer

RETURN STATIC DIFFERENTIAL PRESSURE SENSOR

For Model L™ | Enlight™ | Energence®

Pre-set to -0.5 to 0.5 in. w.c. range and 0 to 10VDC output for Lennox® CORE or Prodigy Unit Controller.

Additional ranges and outputs are available by changing mini-jumpers.
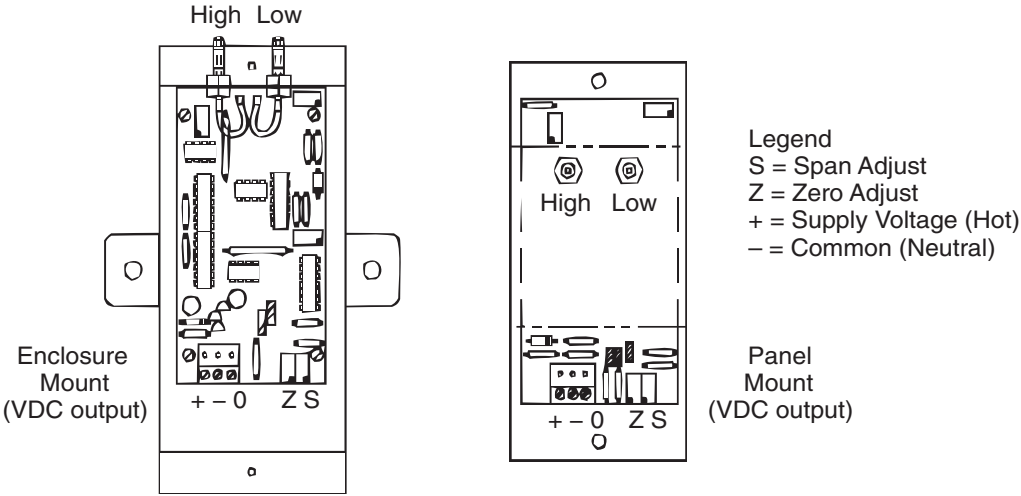
Outdoor Air Weather Head (79M21) required for reducing outdoor static pressure fluctuations.

78M20	Return (Building) Static Differential Pressure Sensor	

SPECIFICATIONS

Controller Compatibility	Lennox® CORE and Prodigy® Unit Controller
Operating Temperature	0 to 175°F 10 to 90% RH
Compensated Temperature Range	25 to 150°F
Power Requirements	24VAC (+/-25%), 50/60Hz, 0.5VA maximum
Operating Range	0 - 1.0 in. w.c., 0 - 0.5 in. w.c., 0 - 0.25 in. w.c. -0.5 - 0.5 in. w.c., -0.25 - 0.25 in. w.c., -0.125 - 0.125 in. w.c. Factory Setting is -0.5-+0.5 in. w.c.
Accuracy	+/- 1% F.S.
Overpressure	10 PSID
Output	0-10VDC, 0-5VDC, 4-20mA Factory Settings is 0-10VDC
Enclosure	Steel NEMA 4, aluminum probe
Media Compatibility	Clean dry air or any inert gas
Termination	Un-pluggable screw terminal block
Dimensions	Height: 6 in. Width: 4 in. (with mounting tabs) Depth: 2-1/4 in.
Weight	1 lbs.
Cable Type	**Wire runs under 50 ft.** 2 twisted pair shielded cable (2 Lennox yellow COMM cables): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Wire runs over 50 ft. but under 150 ft. 2 twisted pair shielded cable (18 AWG)
	Wire runs over 150 ft. Requires local isolated power transformer: 1 twisted pair shielded cable (1 Lennox yellow COMM cable): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Belden Wiring Equivalent: Belden type 88761 or 8761

High Low

Enclosure
Mount
(VDC output)

+ – 0   Z S

Legend
S = Span Adjust
Z = Zero Adjust
+ = Supply Voltage (Hot)
– = Common (Neutral)

High   Low

Panel
Mount
(VDC output)

+ – 0   Z S

SUPPLY STATIC DIFFERENTIAL PRESSURE SENSOR

For Model L™ | Enlight™ | Energence®

General purpose sensor to monitor refrigerated coolers, ice makers, etc.

Also allows the low ambient compressor control option and allows use of the heat pump supplemental heat lockout option that keeps the supplemental heat off if outside air temperature is above the selected set-point.

Pre-set to 0 - 5.0 in. w.c. range and 0-10VDC output.

Additional ranges and outputs are available by hanging mini-jumpers.

NIST traceable calibration.

Compatible with Lennox® CORE and Prodigy® Unit Controllers.

78M19	Supply Static Differential Pressure Sensor	

SPECIFICATIONS

Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Operating Environment	0 to 175°F
	10 to 90% RH
Compensated Temperature Range	25 to 150°F
Power Requirements	24VAC (+/-25%), 50/60Hz, 0.5VA maximum
Operating pressure range	0 - 5 in. w.c., 0 - 2.5 in. w.c., 0 -1.25 in. w.c. (adjustable)
Accuracy	Factory Setting: 0 - 5 in. w.c.
Overpressure	+/- 1% F.S.
Output	10 PSID
Media Compatibility	0-10VDC, 0-5VDC, 4-20mA
Termination	Factory setting - 0-10VDC
Enclosure	Clean dry air or any inert gas
Dimensions	Un-pluggable screw terminal block
	Steel NEMA 4, aluminum probe
	Height: 6 in.
	Width: 4 in. (with mounting tabs)
Weight	Depth: -2-1/4 in.
	Probe length: 8 in.
	1 lbs.
Cable Type	**Wire runs under 50 ft.**
	2 twisted pair shielded cable (2 Lennox yellow COMM cables): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Wire runs over 50 ft. but under 150 ft. 2 twisted pair shielded cable (18 AWG)
	Wire runs over 150 ft. Requires local isolated power transformer:
	1 twisted pair shielded cable (1 Lennox yellow COMM cable): **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
	Belden Wiring Equivalent: Belden type 88761 or 8761

Legend
S = Span Adjust
Z = Zero Adjust
+ = Supply Voltage
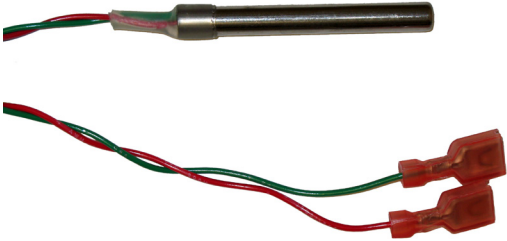- = Common
(Neutral)
0 = Output
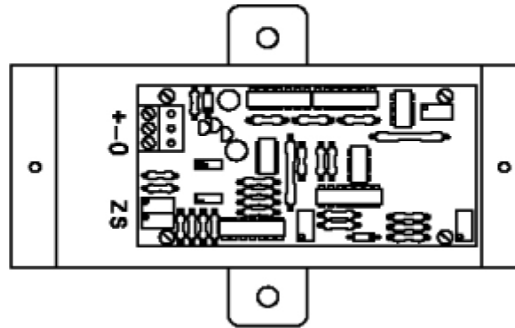
OUTDOOR AIR TEMPERATURE SENSOR PROBE

For Model L™ | Enlight™ | Energence®

General purpose sensor to monitor refrigerated coolers, ice makers, etc.

Also allows the low ambient compressor control option and allows use of the heat pump supplemental heat lockout option that keeps the supplemental heat off if outside air temperature is above the selected set-point.

14K92	Outdoor Air Temperature Sensor Probe

SPECIFICATIONS

Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Accuracy	+/-0.36°F
Stability	+/-0.23°F
Interchangeability	+/-0.36°F
Sensor Type	NTC thermistor , 10K @76°F
Mounting	Mounting plate for 2 screws
Dimensions	Length: 3 in.
	Diameter: 1/4 in.
Weight	0.06 lbs.
Cable Type	**Sensor** - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)

MINIATURE WALL-MOUNT TEMPERATURE SENSOR

For Model L™ | Enlight™ | Energence®

Small size.

Terminal block for wiring connections.

Off-white plastic enclosure.

94L61	Non-communicating 11K (non-adjustable)
59M04	Non-communicating 10K (non-adjustable)

SPECIFICATIONS

Unit Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Temperature Range	40°F to 95°F
Accuracy	+/-0.36°F
Stability	+/-0.23°F
Interchangeability	+/-0.36°F
Sensor Type	NTC thermistor, 11K @76°F (94L61)
	NTC thermistor, 10K @76°F (59M04)
Enclosure	High impact ABS off-white plastic case with aluminum base
Dimensions	Height: 1-1/2 in.
	Width: 2 in.
	Depth: 1 in.
Weight	0. 06 lbs.
Cable Type	**Sensor** - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
Installation Instructions	**504762** - 94L61 **504764** - 59M04

FIELD WIRING

76M32, 94L61
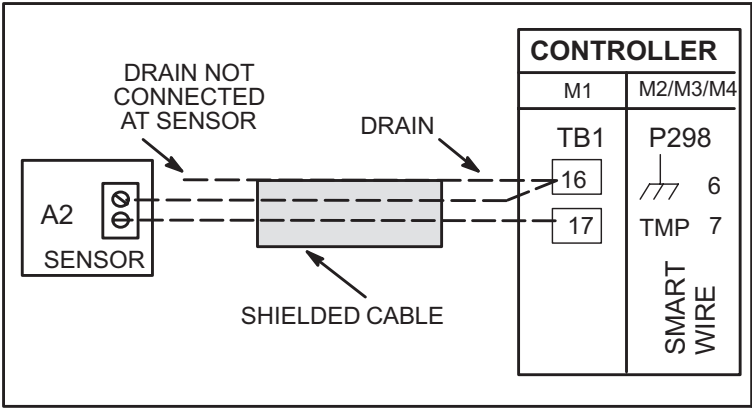
AVERAGING ZONE SENSOR KIT

For Model L™ | Enlight™ | Energence®

Two small wall-mounted non-communicating zone sensors that are used for averaging zone temperatures in two locations.

NOTE - These sensors MUST be used together!

Kit includes two wall-mounted sensors.

Terminal block for wiring connections.

Wired in parallel for simple installation.

Off-white plastic enclosure.

23M20	Averaging Zone Sensor Kit - Wall-Mount (Non-Communicating)	

SPECIFICATIONS

Unit Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Temperature Range	40°F to 95°F
Accuracy	+/-0.36°F (+/-0.2C)
Stability	+/-0.23°F (+/-0.13C)
Interchangeability	+/-0.36°F (+/-0.2C)
Sensor Type	NTC thermistor , 22K @76°F (Each Sensor) Must be connected in parallel
Enclosure	High impact ABS off-white plastic case.
Dimensions (Each Sensor)	Height: 1-1/2 in.
	Width: 2 in.
	Depth: 1 in.
Weight	0.12 lbs.
Cable Type	**Sensor** - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
Installation Instructions	**504483**

FLUSH WALL-MOUNT ZONE SENSOR (Non-Communicating)

For Model L™ | Enlight™ | Energence®

For applications that require flush mounted wall sensors.

Single gang electrical handy box size.

Stainless steel wall-mounting plate.

Simple two-wire sensor connection.

76M32	Flush Wall-Mount (Non-Communicating)	

SPECIFICATIONS

Unit Controller Compatibility	Lennox® CORE and Prodigy® Unit Controllers
Temperature Range	40°F to 95°F
Accuracy	+/-0.36°F
Stability	+/-0.23°F
Interchangeability	+/-0.36°F
Sensor Type	NTC thermistor , 11K @76°F
Cover Material	Stainless steel
Dimensions (Each Sensor)	Height: 4-1/2 in.
	Width: 2-3/4 in.
	Depth: 1/8 in.
Weight	0.4 lbs.
Cable Type	**Sensor** - Lennox yellow COMM cable: **27M19** (500 ft. box) **94L63** (1000 ft. box) **68M25** (2500 ft. roll)
Installation Instructions	**504762**

FIELD WIRING

76M32, 94L61
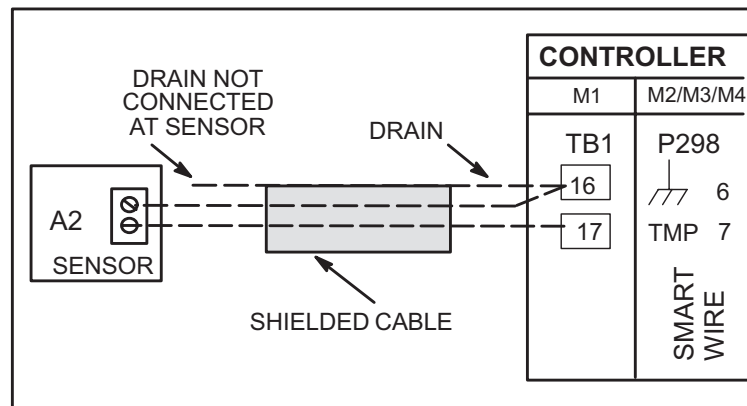
SMOKE DETECTORS

For Model L™ | Enlight™ | Energence® | Xion™

Innovative 4-wire photoelectric duct smoke detector features a pivoting housing that fits both square and rectangular footprints and mounts to round or rectangular ductwork. Operates in airflow speeds of 100 to 4000 feet per minute, temperatures of -4ºF to 158ºF, and a humidity range of 0 to 95 percent (non-condensing). A plug-in sensor head offers improved false alarm immunity and simple installation, testing, and maintenance. Cover design isolates the sensor head from the low-flow feature for simple maintenance.

The housing provides ample wiring space, a 3/4-inch conduit knockout, and built-in short circuit protection to prevent damage to sensitive components during installation. High contrast terminal designations make wiring easy. With its 2:1 sensor-to-power capability, the power board may be used to monitor a second sensor, simultaneously (i.e., supply and return side). As many as 50 detectors can be interconnected. When one unit senses smoke, all interconnected detectors will switch their relays; only the detector sensing smoke will go into alarm, thus pinpointing the fire source.

An easy-access Test/Reset button makes it possible to test the unit with the cover on. Three DIP switches can be used to configure field selectable settings: cover tamper delay, number of sensors to be controlled, and shut down on trouble option. Each power board has two LED s that can be used to indicate the status of connected sensors, and a quick reference imprinted on the cover explains the LED status indications (Standby, Maintenance, Trouble, and Alarm). Can be customized to meet local codes and specifications without additional wiring.

Usage:

Units with a Unit Controller - Smoke detector sends a 24 VAC signal to the unit controller when smoke is sensed. Unit controller default mode will de-energize unit.

Units without a Unit Controller - Smoke detector interrupts the 24 VAC signal to the unit control circuit when smoke is sensed. Unit will be de-energized.

For A-Box	
21Z11	Supply or Return (Power Board and One Sensor)
21Z12	Supply and Return (Power Board and Two Sensors)
For B-Box	
11K76	Supply or Return (Power Board and One Sensor)
11K80	Supply and Return (Power Board and Two Sensors)
For C-Box	
22H56	Supply or Return (Power Board and Two Sensor)
22H57	Supply and Return (Power Board and Two Sensors)
Additional Components	
68W52	Photoelectric Sensor Component Only
Replacement Parts	
68W54	1.5' Steel Sampling Tube
68W55	2' Steel Sampling Tube
68W59	2.5' Steel Sampling Tube
68W56	3' Steel Sampling Tube
68W57	5' Steel Sampling Tube
68W58	1' Steel Sampling Tube
82W57	Bracket-Smoke Detector for A-Box
78W49	Bracket-Smoke Detector for C-Box
Accessories	
Y3028	Multi-Signaling Accessory without Strobe
Y3027	Multi-Signaling Accessory wit Strobe
Y3010	Key Remote Test and Reset Station for Duct Smoke Detector

SPECIFICATIONS

Temperature	-4°F - 158°F
Humidity	0% - 95% non-Condensing
Air Duct Velocity	100 - 4000 ft./min.
Nominal Voltage	24 VAC OR 24 VDC
Frequency	50-60 Hz
Reset Voltage	2.0 VAC. min. with 24 VAC supply voltage
Reset Time (By Power Down)	0.03 to 0.30 seconds
Power Up	35 seconds maximum
Alarm Response Time	15 seconds

Power Requirements		24 VDC	24 VDC
	Max. Standby Current	21 mA	65 mA
	Max. Standby Power	<1 WATT AVG.	N/A
	Max. Alarm Current	65 mA	135 mA
	Max. Alarm Power	1.6 WATTS AVG.	N/A

Contact Ratings	Alarm initiation contact (SPST): 2.0A @ 30 VDC (resistive)
	Alarm auxiliary contact (DPDT): 10A @ 30 VDC (resistive)
	• 10A @ 250 VAC (resistive) • 1/2 HP @ 240 VAC • 1/4 HP @ 120 VAC
	Supervisory contact (SPST): 2.0A @ 30 VDC (resistive)
	• 2.0A @ 125 VAC (resistive)
Weight	1.5 lbs.
Installation Instructions	**506218** - A-Box **506437** - B-Box **506791** - C-Box

NOTE - See installation instructions for applicable wiring diagrams.
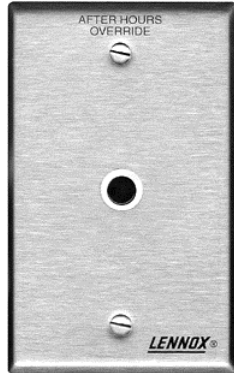
AFTER-HOURS OVERRIDE BUTTON

For Model L™ | Enlight™ | Energence®

Momentary pushbutton for after-hours override.

Single gang electrical handy box size.

Stainless steel wall-mounting plate.

56L16	After-Hours Override Button	

SPECIFICATIONS

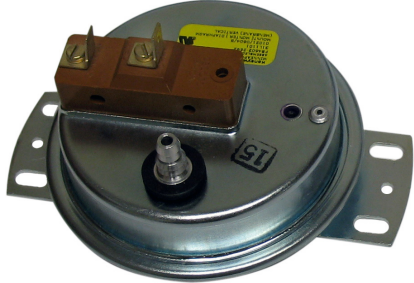|	
Button Type	Momentary - Normally open
Cover Material	Stainless steel
Dimensions	Height: 4-1/2 in.
	Width: 2-3/4 in.
	Depth: 1/8 in.
Weight	0.2 lbs.
Cable Type	Two-conductor thermostat wire, 20 AWG min.
Installation Instructions	**504762**

DIRTY FILTER SWITCHES

For Model L™ | Enlight™ | Energence®

When used on Lennox' premium rooftop unit applications, switch enables the use of the dirty filter input that will issue a dirty filter alarm.

Permits the alarm code to be displayed on the Lennox® CORE or Prodigy® Unit Controller.

Simple plug-in connection.

53W66	036-074 models
53W67	092-150 models
53W68	156-600 models

SPECIFICATIONS

Operating Temperature	-40°F To 185°F
Electrical Switch Type	Single pole, normally open, snap action
Electrical Ratings	10mA @5VDC
Electrical Connections	1/4 in. quick connect terminals
Contact Material	Gold-Platinum-Silver alloy
Operating Pressure	Normally open contacts close on pressure rise at 1.04 in. w.c. (± 0.10) (non-adjustable)
Usage	Air only
Maximum Pressure	3" w.c.
Expected Life	100,000 cycles
Mounting Position	Recommended diaphragm vertical
Mounting	Mounting bracket furnished for installation in rooftop unit
Sample Line Connector	Negative: Combination barbed type for use with 1/4 in. or 5/16 in. I.D. flexible plastic or rubber tubing
Dimensions	Height: 4-5/8 in.
	Width: 3-9/16 in.
	Depth: 3-1/8 in.
Weight	0.5 lbs.
Cable Type	Two-conductor thermostat wire, 20 AWG min.
Installation Instructions	**506204**

DUCT PRESSURE LIMIT SWITCH

For Model L™ | Enlight™ | Energence®

Switch is used to shut down the variable frequency drive (VFD) on a variable air volume (VAV) application if the switch pressure setpoint is reached.

Compatible with Lennox premium rooftop VAV units.

Adjustable setpoint.

79M80	Duct Pressure Limit Switch	

SPECIFICATIONS

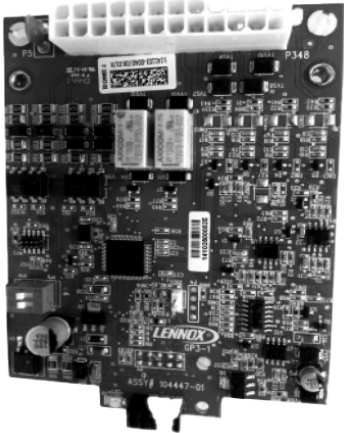|	
Operating Temperature	-30°F To 180°F
Electrical Switch Type	Single-pole double-throw
Electrical Ratings	15 Amps @120-480VAC , derate to 10 Amps for high cycle rates
Electrical Connections	Screw-type terminals
Pressure Limits	45 in. w.c. continuous, 10 psig surge
Setpoint Adjustment	Screw-type inside conduit enclosure
Deadband	Approximately 0.30 in. w.c.
Operating Pressure Range	1.4 to 5.5 in. w.c..
Usage	Air only
Mounting Position	Diaphragm in vertical position
Mounting	Two mounting holes
Sample Line Connectors	Low pressure and high pressure - 1/8 in. female NPT
Dimensions	Height: 3-1/2 in.
	Width: 3-1/2 in.
	Depth: 2-3/8 in.
Weight	1 lbs.
Cable Type	Two-conductor thermostat wire, 20 AWG min.
Agency	CE

ACCESSORIES

Mounting Kit for Duct Pressure Limit Kit	**79M81** - Includes 18 in. of vinyl tubing, tubing adapters and mounting flange with screws

CONTROL FIELD INSTALLATION KIT

Energence®

Plug-in control provides additional analog and digital inputs/outputs for field installed options

Compatible with Prodigy® 2.0 M3 unit controller.

NOTE - Not compatible with Lennox® CORE Unit Controller.

13J78	GP3 General Purpose Control Kit	

SPECIFICATIONS

Installation Instructions	507521

OUTDOOR WEATHER HEAD

For Model L™ | Enlight™ | Energence®

Outdoor Air Weather-Head effectively reduces the fluctuation of outdoor static pressures caused by wind gusts.

Eliminating this fluctuation is necessary in the control of building pressures which use outdoor static pressure as a reference.

Includes 50 ft. of vinyl tubing, weather-head, mounting bracket and hardware.

Adjustable bracket for horizontal or vertical mounting.

Used with Return (Building) Static Differential Pressure Sensor (**78M20**).

79M21	Outdoor Air Weather Head	

SPECIFICATIONS

Tubing Length	50 ft.
Tubing Size	1/8 in. ID
Tubing Material	Vinyl

PRESSURE SWITCH

For Model L™ | Enlight™ | Energence®

Static pressure switch used to control unit power exhaust fans on Lennox' premium rooftop unit applications using one of the Lennox® CORE or Prodigy® Unit Controller's staged exhaust fan options.

79M79	Pressure Switch	

SPECIFICATIONS

Operating Temperature	40°F To 190°F
Electrical Switch Type	Single-pole single-throw, automatic reset
Electrical Ratings	10mA @5VDC
Contact Material	Gold-flash
Electrical Connections	Screw-type terminals
Pressure Limits	13.85 in. w.c.
Setpoint Range	0.05 to 12 in. w.c.
Setpoint Adjustment	Screw-type inside conduit enclosure
Operating Pressure Range	1.4 to 5.5 in. w.c.
Usage	Air only
Mounting Position	Diaphragm in vertical position
Mounting	Two mounting holes
Sample Line Connectors	Compression fittings for 1/4 in. O.D. rigid or semi-rigid tubing, barb fittings for 1/4 in. O.D. polyethylene tubing
Dimensions	Height: 5-9/16 in.
	Width: 6 in.
	Depth: 3-1/8 in.
Weight	1.3 lbs.
Cable Type	Two-conductor thermostat wire, 20 AWG min.
Agency	UL and CSA

CONTROL TRANSFORMERS

For Model L™ | Enlight™ | Energence®

75VA, 24VAC control transformer has primary taps for 120, 208, 240 and 480VAC.
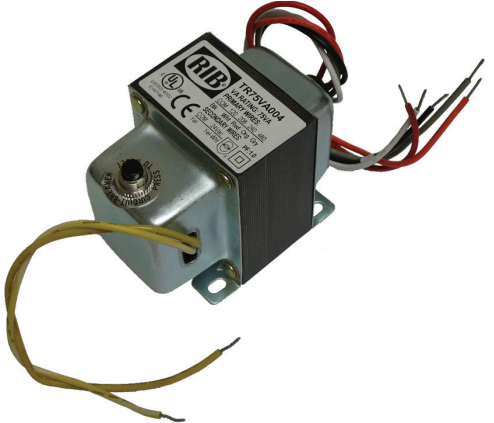
100VA, 24VAC control transformer has primary taps for 120, 240, 277 and 480VAC.

Plate or panel mounted.

9 in. leads.

1/2 in. 14 NPSM conduit connector.

Circuit breaker overload protection.

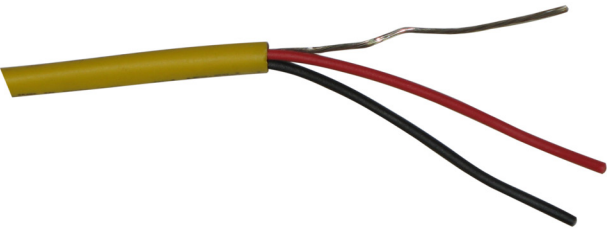| 27W14	75VA, 24VAC Control Transformer
27W15	100VA, 24VAC Control Transformer

SPECIFICATIONS

Model No.	27W14 (75VA)	27W15 (100VA)
Operating Temperature	−30°F to 140°F	−30°F to 140°F
Primary Voltage	120, 208, 240 or 480 VAC, 60HZ	120, 240, 277 or 480 VAC, 60HZ
Secondary Voltage	24VAC, 75VA, Class 2	24VAC, 100VA, Class 2
Lead Wire Length	9.5 in.	8.0 in.
Lead Wire Size	18AWG	18AWG
Overload Protection	3.5 Amp circuit breaker , manual reset	3.5 Amp circuit breaker , manual reset
Dimensions	Height: 3 in. Width: 2-1/2 in. Length: 3-15/16 in. (w/ 1/2 in. NPT hub)	Height: 3 in. Width: 2-1/2 in. Length: 4-1/4 in. (w/ 1/2 in. NPT hub)
Weight	3.8 lbs.	4.6 lbs.
Agency	Class 2 UL5085-3 Listed, C-UL, CE, RoHS	Class 2 UL5085-3 Listed, C-UL, CE, RoHS

FIELD WIRING

75VA

PRIMARY WIRES	SECONDARY WIRES
Gry - 480 VAC	Yel/Wht - 24 VAC
Org - 240 VAC	
Red - 208 VAC	
Wht - 120 VAC	
Blk - Comm	Yel - Comm

100VA

PRIMARY WIRES	SECONDARY WIRES
Gry - 480 VAC	Yel/Wht - 24 VAC
Brn - 277 VAC	
Org - 240 VAC	
Wht - 120 VAC	
Blk - Comm	Yel - Comm

S-BUS NETWORK CABLES

For Model L™ | Enlight™ | Energence®

Miscellanious Controls Accessories	
27M19	S-Bus Network Cable (Yellow) - 500 ft. box
94L63	S-Bus Network Cable (Yellow) - 1000 ft. box
68M25	S-Bus Network Cable (Yellow) - 2500 ft. box

SPECIFICATIONS

Type	Twisted pair 100% shielded communication cable 22 AWG Yellow jacket, rated at 75°C 300V Plenum rated Insulation - Low smoke PVC NEC, CMP
Color	Outside jacket- Yellow, with order number imprinted Twisted pair - Red and Black
Length - Weight	500 ft. box - 8lbs.
	1000 ft. box - 14 lbs.
	2500 ft. box - 30 lbs.
Belden Wiring Equivalent	Belden type 88761 or 8761

REVISIONS

Sections	Description of Change
Controls Features Overview	Removed LCS Room Sensor and Repeater