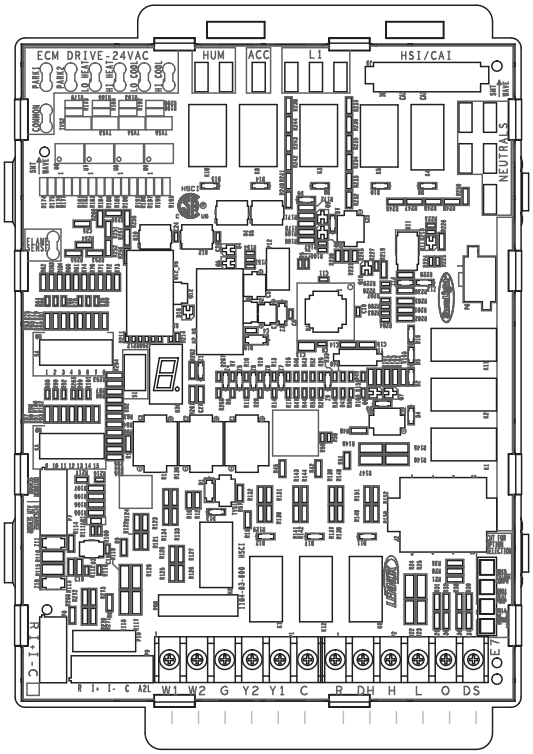
ADDENDUM

508341-01
09/2022

Addendum to Installation Instructions For Ultra Lox Nox Furnaces

Your equipment comes with an upgraded Integrated Furnace Control (IFC) for the future options of safe handling of mildly flammable refrigerants (A2L). The IFC interphase, diagnostic codes, and furnace and thermostat wiring shown below replace the similar sections of the unit installation instructions. Please review this before wiring the furnace.

Integrated Control Configuration



RS-BUS LINK (TB82, future use)

I+ = DATA HIGH CONNECTION
I - = DATA LOW CONNECTION
R = 24VAC
I + = DATA HIGH CONNECTION
I - = DATA LOW CONNECTION
C = 24VAC COMMON (ground)

RS-BUS INDOOR (TB84)

R = 24VAC
I + = DATA HIGH CONNECTION
I - = DATA LOW CONNECTION
C = 24VAC COMMON
A2L=A2L REFRIGERANT

1/4" QUICK CONNECT TERMINALS

HUM = UNPOWERED NORMALLY OPEN (DRY) CONTACTS
XMFR = 120 VAC OUTPUT TO TRANSFORMER
LI = 120 VAC INPUT TO CONTROL
ACC = 120 VAC OUTPUT TO OPTIONAL ACCESSORY
NEUTRALS = 120 VAC NEUTRAL

THERMOSTAT CONNECTIONS (TB1)

DS = DEHUMIDIFICATION SIGNAL
W2 = HEAT DEMAND FROM 2ND STAGE T/STAT
W1 = HEAT DEMAND FROM 1ST STAGE T/STAT
R = CLASS 2 VOLTAGE TO THERMOSTAT
G = MANUAL FAN FROM T'STAT
C = THERMOSTAT SIGNAL GROUND CONNECTED TO TRANSFORMER GRD (TR) & CHASIS GROUND (GRD)
Y1 = THERMOSTAT 1ST STAGE COOL SIGNAL
Y2 = THERMOSTAT 2ND STAGE COOL SIGNAL
O = THERMOSTAT SIGNAL TO HEAT PUMP REVERSING VALVE
DH = DEHUMIDIFICATION OUTPUT COMMUNICATING THERMOSTAT ONLY
L = NOT USED
H = LOW VOLTAGE (24 VAC) HUMIDIFICATION

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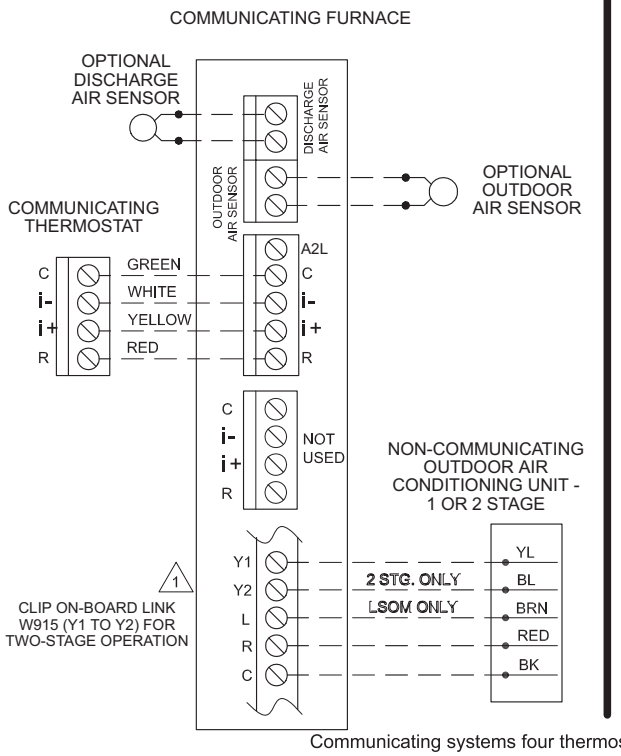
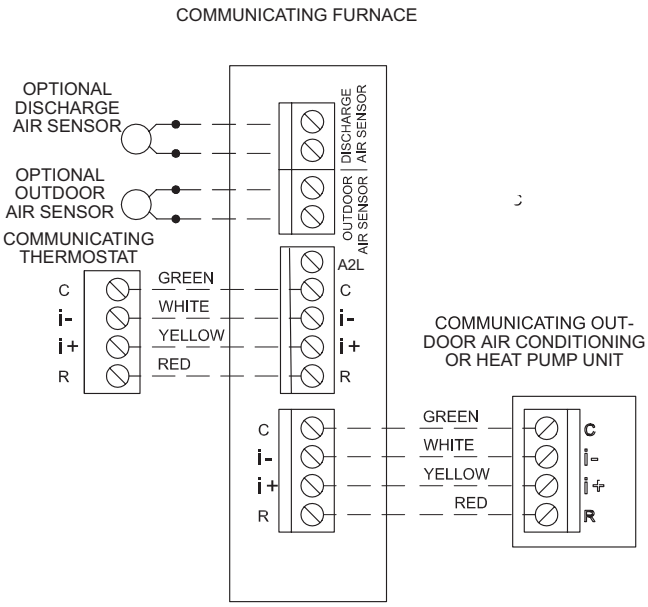
Communicating Thermostat Wiring in Communicating Applications

Communicating Enabled Furnace and Non-Communicating Outdoor Unit



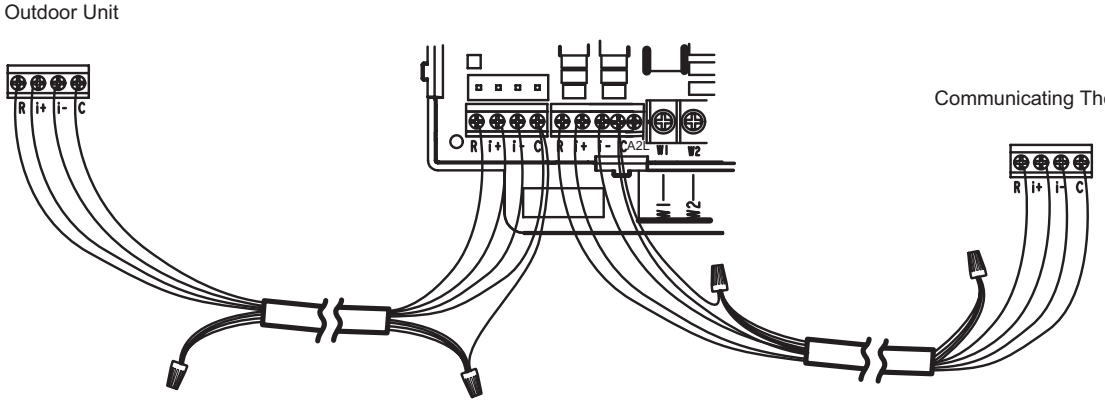
Communicating Enabled Furnace and Communicating Enabled Outdoor Unit



Communicating systems four thermostat wires between the thermostat and the furnace/air handler control and four wires between the outdoor unit and the furnace/air handler control. When a thermostat cable with more than four wires is used, the extra wires must be properly connected to avoid electrical noise. The wires must not be left disconnected.

Use wire nuts to bundle the four unused wires at each end of the cable. A single wire should then be connected to the indoor unit end of the wire bundle and attached to the "C" terminals as shown below.

Communicating Integrated Control



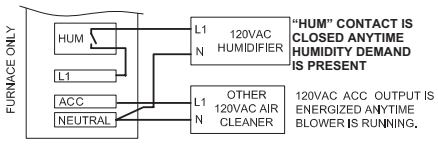
Communicating Thermostat Wiring With Optional Accessories

Optional Accessories for use with Communicating System

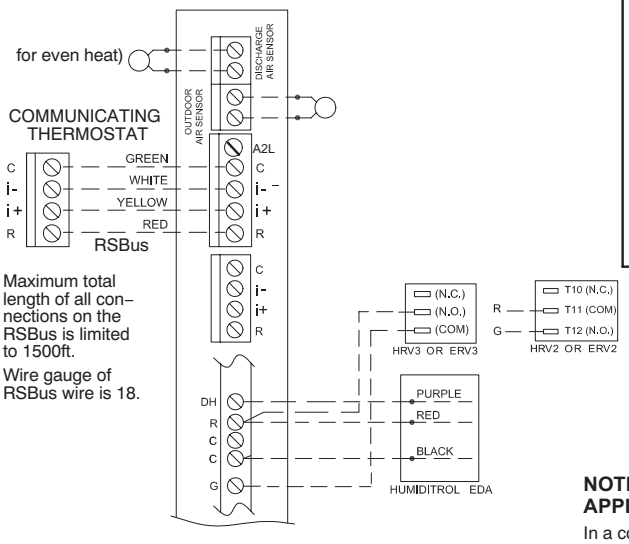
NOTE: COMMUNICATING THERMOSTAT SENSES HUMIDITY & CONTROLS HUM CONTACTS TO CYCLE HUMIDIFIER BASED ON DEMAND. NO OTHER CONTROL OR HUMIDISTAT REQUIRED.

OPTIONAL OUTDOOR AIR SENSOR FOR USE WITH HUMIDIFIER (IF NOT ALREADY IN THE SYSTEM FOR OTHER FUNCTIONS. BUILT INTO ALL COMMUNICATING ENABLED OUTDOOR UNITS).

120V CONNECTIONS



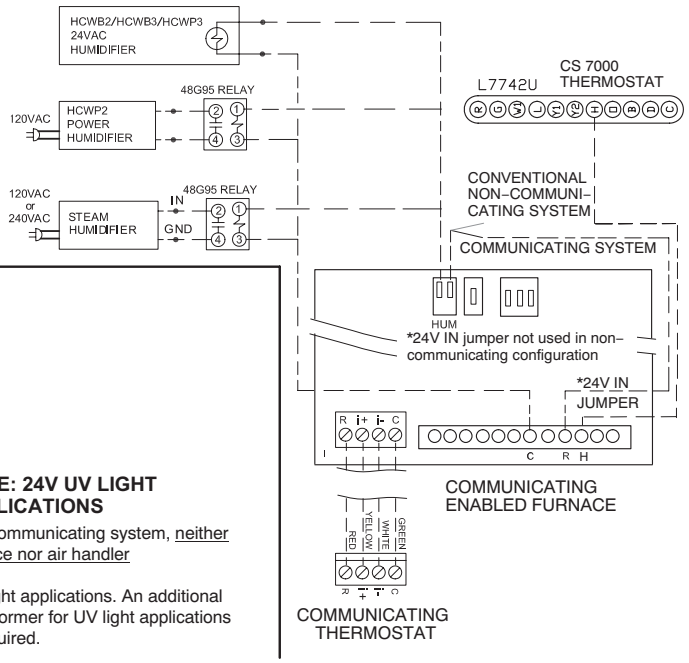
COMMUNICATING ENABLED FURNACE



Maximum total length of all connections on the RSBus is limited to 1500ft.

Wire gauge of RSBus wire is 18.

24V HUMIDIFIER CONNECTIONS

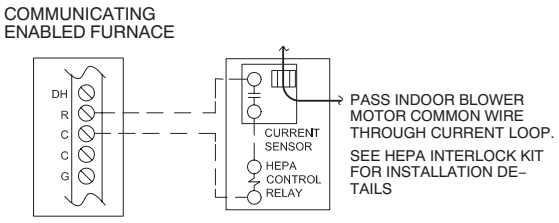


NOTE: 24V UV LIGHT APPLICATIONS

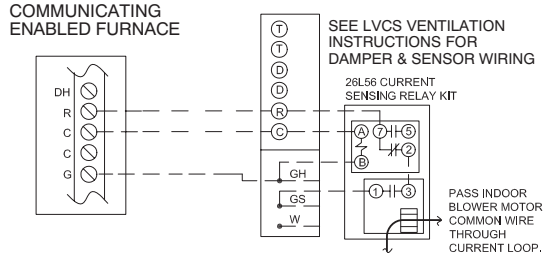
In a communicating system, neither furnace nor air handler

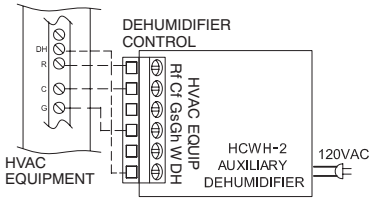
UV light applications. An additional transformer for UV light applications is required.

HEPA BYPASS FILTER X2680 HEPA INTERLOCK KIT

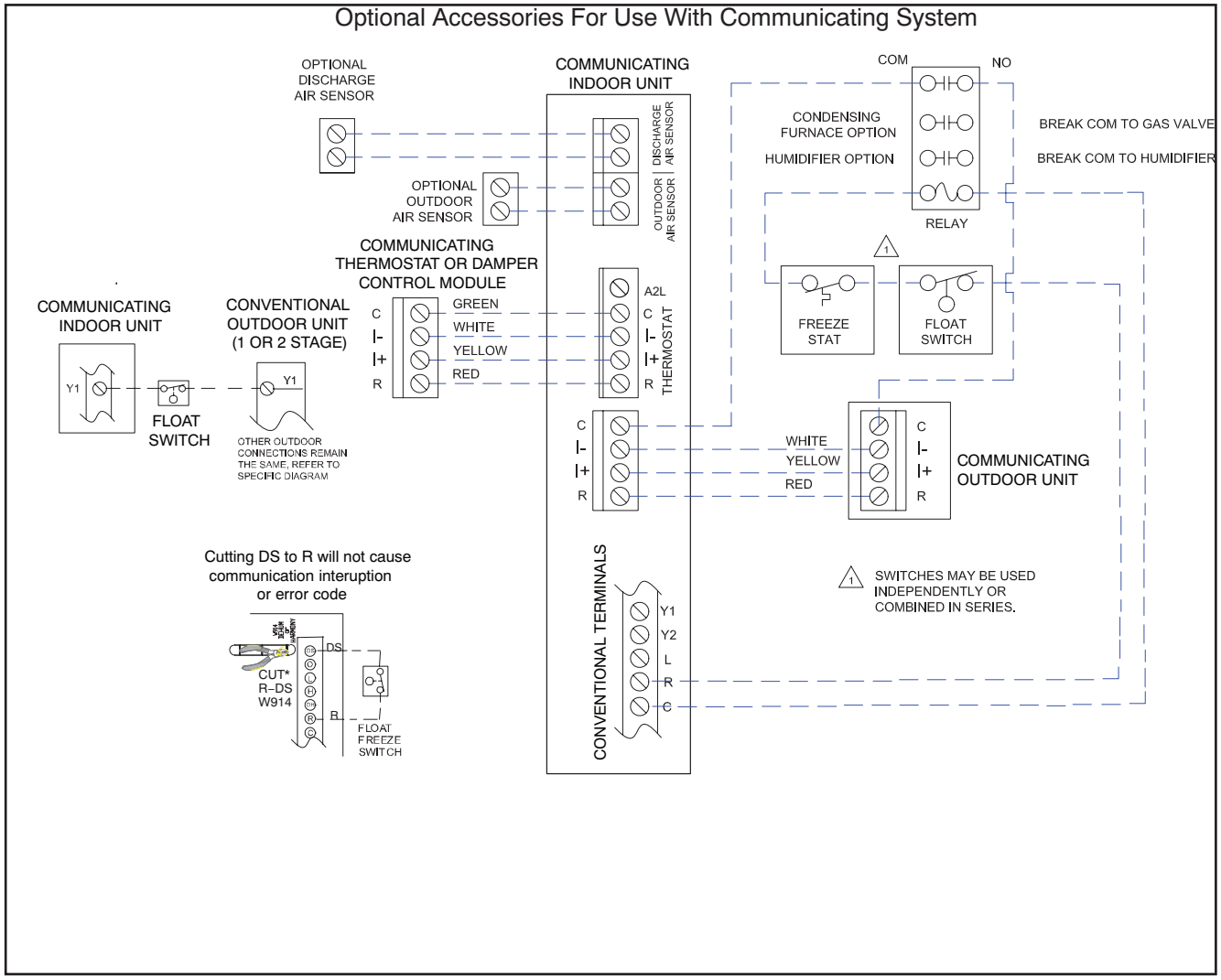


LVCS VENTILATION CONTROL SYSTEM

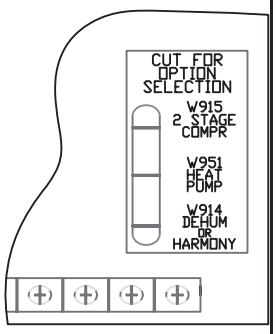
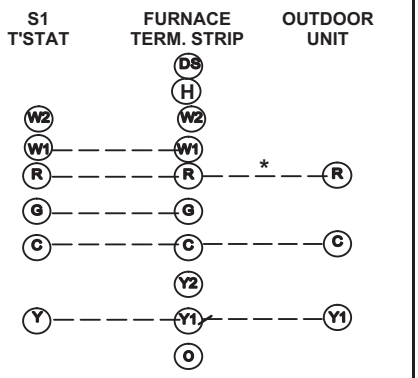
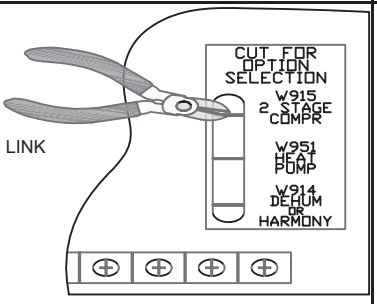
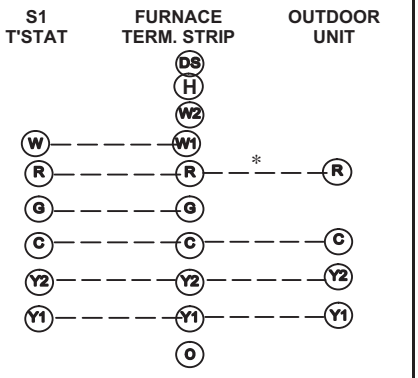
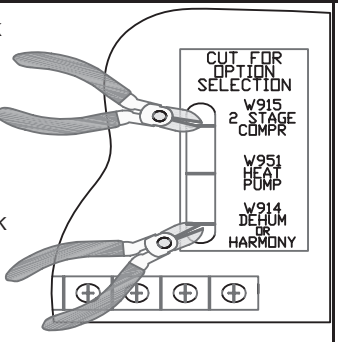
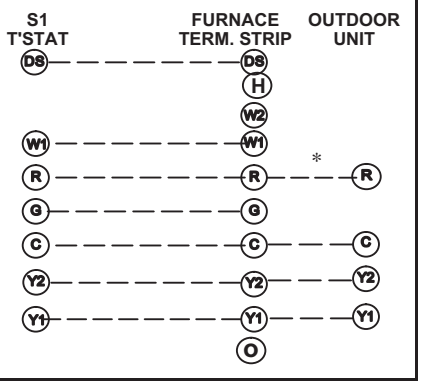




Communicating Thermostat Wiring With Optional Accessories (Continued)

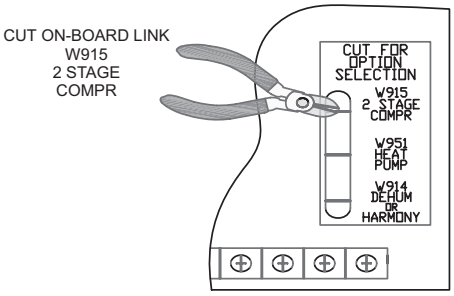
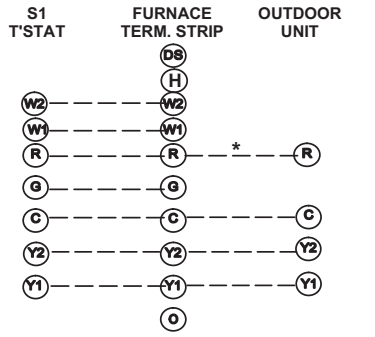
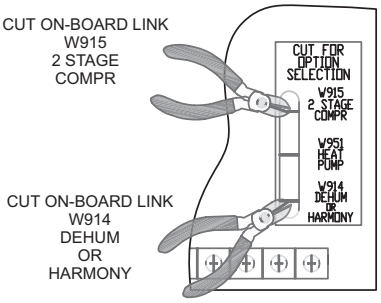
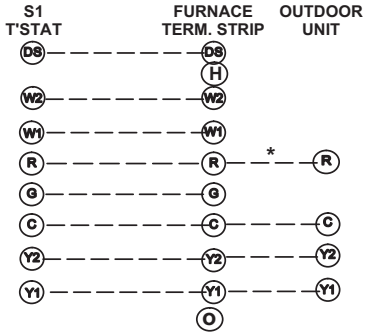
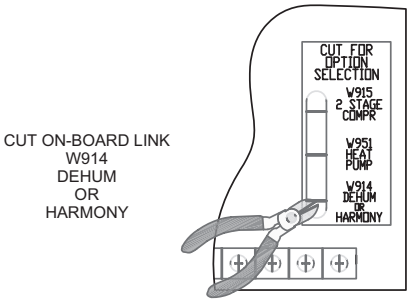
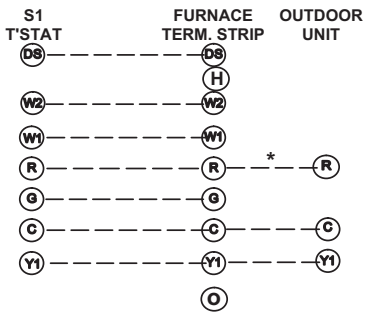
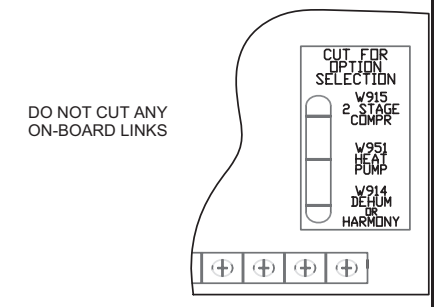
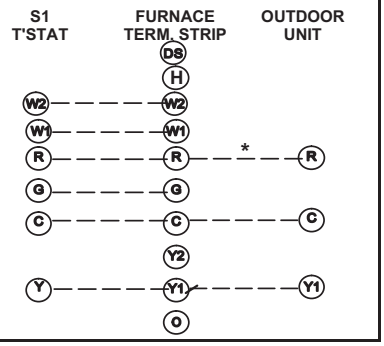


Field Wiring Applications With Conventional Thermostat

Thermostat	DIP Switch Settings and On-Board Links		Wiring Connections
	DIP Switch 1 Thermostat Heating Stages	On Board Links Must Be Cut To Select System Options	
1 Heat / 1 Cool *NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.*	ON	DO NOT CUT ANY ON-BOARD LINKS 	
1 Heat / 2 Cool *NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.*	ON	CUT ON-BOARD LINK W915 2 STAGE COMPR 	
1 Heat / 2 Cool with t'stat with humidity control *NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.*	ON	CUT ON-BOARD LINK W915 2 STAGE COMPR CUT ON-BOARD LINK W914 DEHUM OR HARMONY 	

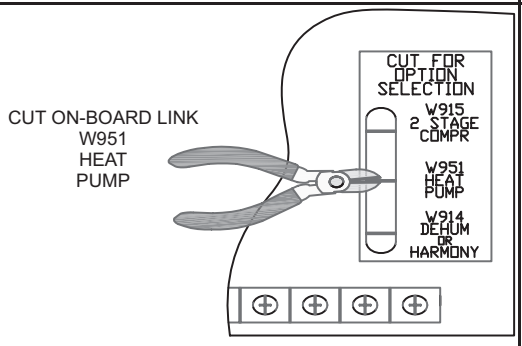
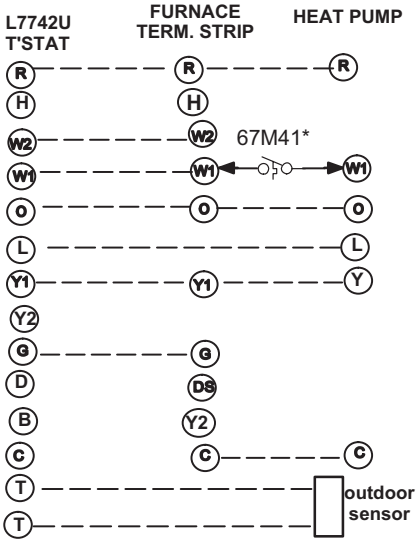
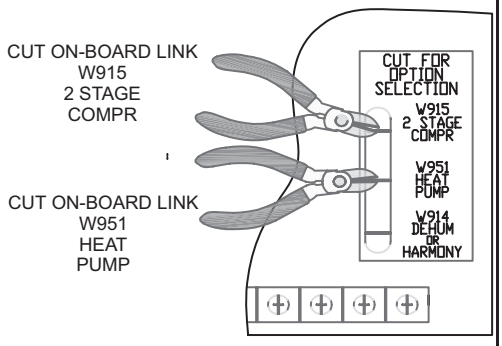
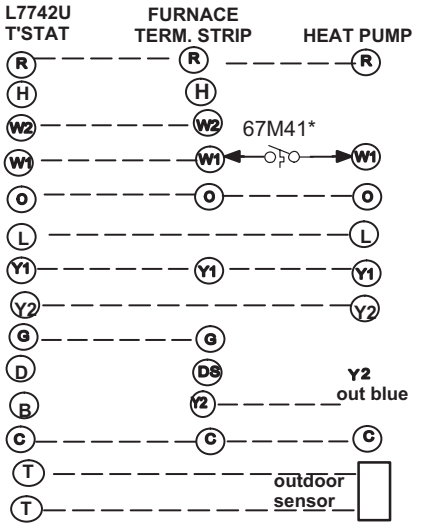
** Not required on all units.*

Field Wiring Applications With Conventional Thermostat (Continued)

Thermostat	DIP Switch Settings and On-Board Links		Wiring Connections
	DIP Switch 1 Thermostat Heating Stages	On Board Links Must Be Cut To Select System Options	
2 Heat / 2 Cool	OFF		
2 Heat / 2 Cool with t'stat with humidity control	OFF		
2 Heat / 1 Cool with t'stat with humidity control	OFF		
2 Heat / 1 Cool	OFF		

** Not required on all units.*

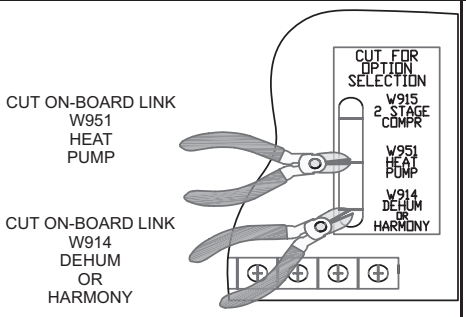
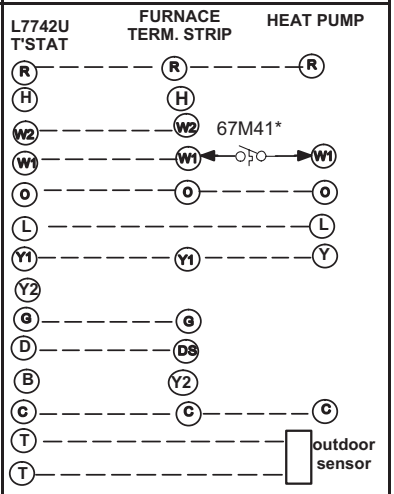
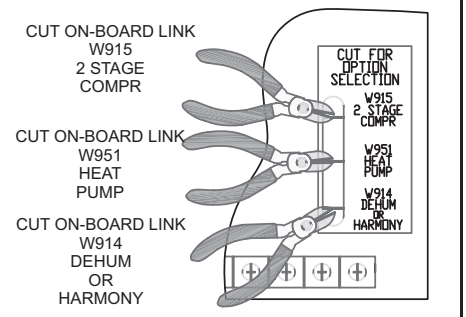
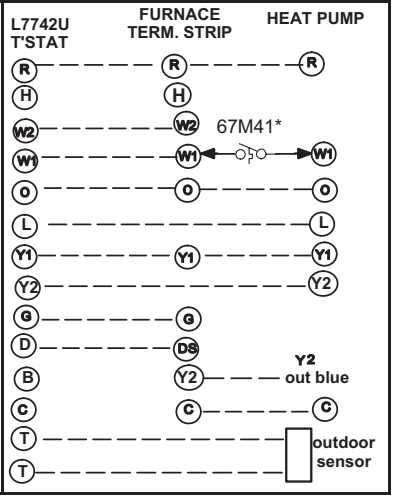
Field Wiring Applications With Conventional Thermostat (Continued)

Thermostat	DIP Switch Settings and On-Board Links		Wiring Connections
	DIP Switch 1 Thermostat Heating Stages	On Board Links Must Be Cut To Select System Options	
Dual Fuel Single Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control	OFF		
Dual Fuel Two Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control	OFF		

** Connect W1 to W1 ONLY if using defrost tempering kit 67M41*

*NOTE - **Do NOT** make a wire connection between the room thermostat L terminal and the L terminal of the furnace integrated control.*

Field Wiring Applications With Conventional Thermostat (Continued)

Thermostat	DIP Switch Settings and On-Board Links		Wiring Connections
	DIP Switch 1 Thermostat Heating Stages	On Board Links Must Be Cut To Select System Options	
Dual Fuel Single Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control w/dehumidification control	OFF		
Dual Fuel Two Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control w/dehumidification	OFF		

** Connect W1 to W1 ONLY if using defrost tempering kit 67M41*

*NOTE - **Do NOT** make a wire connection between the room thermostat L terminal and the L terminal of the integrated control.*

Integrated Control Diagnostic Modes

Display	Action (when button is released)
No change (idle)*	Remain in idle mode
Solid “E”	Enter diagnostic recall mode
Solid “U”	Discharge Air Installed
Solid “F”	Enter flame signal mode
Solid “F” (variable speed only)	Program unit capacity size (Unit Code)
Two horizontal lines	soft disable

Integrated Control Diagnostic Codes

Code	Diagnostic Codes/Status of Equipment	Action Required to Clear and Recover
.	Idle mode (Decimal blinks at 1 Hertz -- 0.5 second ON, 0.5 second OFF).	
A	Cubic feet per minute (cfm) setting for indoor blower (1 second ON, 0.5 second OFF) / cfm setting for current mode displayed.	
C	Cooling stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes).	
d	Dehumidification mode (1 second ON) / 1 second OFF) / cfm setting displayed / Pause / Repeat Codes).	
h	Heat pump stage (1 second ON, 0.5 second OFF) / % of input rate displayed / Pause / cfm setting / Pause / Repeat codes.	
H	Gas Heat Stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes. Blinking during ignition.	
dF	Defrost mode.	
U	Discharge Air Temperature	
E000	No error in memory	
E105	Device communication problem - No other devices on RS BUS (Communication system).	Equipment is unable to communicate. Indicates numerous message errors. In most cases errors are related to electrical noise. Make sure high voltage power is separated from RSBus. Check for miswired and/or loose connections between the stat, indoor unit and outdoor unit. Check for a high voltage source of noise close to the system. Fault clears after communication is restored.
E110	Low line voltage.	Line Voltage Low (Voltage lower than nameplate rating). Check power line voltage and correct. Alarm clears 5 seconds after fault recovered.
E111	Low line voltage.	Reverse line power voltage wiring. System resumes normal operation 5 seconds after fault recovered.
E112	Ground not detected	System shuts down. Provide proper earth ground. System resumes normal operation 5 seconds after fault recovered.
E113	High line voltage.	Line Voltage High (Voltage higher than nameplate rating). Provide power voltage within proper range. System resumes normal operation 5 seconds after fault recovered.
E114	Line voltage frequency out-of-range.	No 60 Hertz Power. Check voltage and line power frequency. Correct voltage and frequency problems. System resumes normal operation 5 seconds after fault recovered.
E115	Low 24V - Control will restart if the error recovers.	24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. May require installation of larger VA transformer to be installed in furnace / air handler. Clears after fault recovered.
E117	Poor ground detected (Warning only)	Provide proper grounding for unit. Check for proper earth ground to the system. Warning only will clear 30 seconds after fault recovered.
E120	Unresponsive device. Communication only.	Usually caused by delay in outdoor unit responding to indoor unit poling. Recycle power. Check all wiring connections. Cleared after unresponsive device responds to any inquiry.

Integrated Control Diagnostic Codes		
Code	Diagnostic Codes/Status of Equipment	Action Required to Clear and Recover
E312	Restricted air flow in cooling or continuous fan mode is lower than cfm setting.	Warning Only. Restricted airflow - Indoor blower is running at a reduced CFM (Cutback Mode - The variable speed motor has pre-set speed and torque limiters to protect the motor from damage caused by operating outside of design parameters (0 to 0.8” W.C.. total external static pressure). Check filter and duct system. To clear, replace filter if needed or repair/add duct. Cleared after the current service demand is satisfied.
E313	Indoor or outdoor unit capacity mismatch. Communication only.	Incorrect indoor/outdoor capacity code selected. Check for proper configuring in installation instructions. Alarm is just a warning. The system will operate, but might not meet efficiency and capacity parameters. Alarm will clear when commissioning is exited. Cleared after commissioning is complete.
E344	Relay “Y1” stuck on interated control.	Replace integrated control.
E345	Relay O Failure	
E347	No 24 Volt output on Y1 of ”integrated control” with non communicating outdoor unit.	Operation stopped. Y1 relay / Stage 1 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed.
E348	No 24 Volt output on Y2 of ”integrated control” with non?communicating outdoor unit.	Y2 relay / Stage 2 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed.
E370	Interlock switch sensed open for 2 minutes.	Control sees the loss of 24VAC for 2 minutes.Terminate all services and wait for interlock switch to close. The alarm will clear when 24VAC is continuously sensed on DS terminal for a minimum of 10 seconds or on a power reset.

Typical Wiring Schematic