Submittal Review No. 20

Project Spurwink Services - Kaufman House

Description: 152500-001.01 HVAC

Submittal: Initial

Division Ref: 152500 HVAC

This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means, methods, sequences or procedures of construction; coordination of his or her Work with that of all other trades; and for performing all work in a safe and satisfactory manner.

☐ Furnish as Corrected ☐ Rejected ☒ Reviewed ☐ Revise & Resubmit ☐ Submit Specific Item

Remarks:

Reviewed By Matthew Winch

Date Reviewed 5/31/15

Matthew WInch, Architect
Garrison Consulting
41 Edgewood Ave
Portland, ME 04103

v (207) 450-0750
e matthewwinch@earthlink.net

Rebecca S. Fay, Field Offc Mgr
131 Presumpscot Street
Portland , ME 04103
T: 207-874-2323 xt. 112
F: 207-874-2727
E: rfay@pcconstruction.com

Project No. 15030
Kaufman House Renovation
899 Riverside Street
Portland, ME 04103

CONSTRUCTION

Submittal 152500-001
Review Cycle 1

Title	**HVAC**		
Type	**Product Data**		
Sent Date	**22-May-2015**	Spec Section	**152500**
Due Date	**29-May-2015**	Spec Sub-Section	

Sent To For Review
Matthew Winch

Responsible Subcontractor / Vendor
Aaron Black
PC Construction Company

Item Being Submitted
HVAC

Please see the attached submittal 152500-001.01 HVAC for review and approval.

*Please note that this is a high priority submittal.

Contractor's Review Stamp	Architect's Review Stamp
I hereby certify that I have examined the enclosed submittal(s) and have determined and verified all field measurements, construction criteria, materials, catalog numbers, and similar data, coordinated the submittal(s) with other submissions and the work of other trades and contractors and, to the best of my knowledge and belief, the enclosed submittal(s) is/are in full compliance with the Contract requirements, except as noted above.	
Signature: *Aaron Black* Date: *5/22/15*	
Name: Aaron Black, PC Construction Company	

This approval does not release subcontractor / vendor from the contractual responsibilities.

BOILER LOOP AIR HANDLERS

HBXB-HW Series

Vertical / Horizontal / Counterflow (Except 60HBXB-HW) Air Handler

Cooling or Heat Pump / Boiler heating

1-1/2 through 5 tons, up to 131,700 BTUH Heating

Description :

The new **HBXB-HW** series air handler has been fitted with a **Multi-Function MicroProcessor** that reduces the number of electrical parts in the unit while adding **many new integrated features**.

HEATING: Air handlers can now be directly wired from the boiler to the air handler without adding any additional relays or related controls. Multiple air handlers may be connected to a single, high efficiency natural gas or oil fired hot water boiler to provide complete, whole house hydronic space heating. Each air handler includes a high efficiency cooling coil, a separate hot water coil, horizontal drain pan, flue gas door switch (except 60HBXB-HW), 120V three or four speed blower motor, throwaway filter, microprocessor, and a 24V transformer. (Note: If connecting to a circulator, it must have a circulator relay).

COOLING: These air handlers are completely compatible with all split system type condensing units and heat pumps. Cooling coils in the **HBXB-HW** air handlers are extra-large and engineered to offer cooling efficiencies up to **15 SEER**, depending on the outside condensing unit used.

(1) First Co's customer is ultimately responsible for confirming which fan coil models are compatible with selected outdoor units(s) and which expansion valves (if any) are required. To determine certified indoor/outdoor matches, go to www.firstco.com or contact the factory.

ACCESSORIES: (see P. 2) Optional field installed accessories include TXV Kits, Flow Control Modules, Counterflow Conversion Kits, and Freeze Protector.

NOW WITH "DIRECT CONNECT" FROM THE BOILER TO THE AIR HANDLER

FEATURES:

Heating Cycle

1. **Boiler Start Relay:** Eliminates field installed boiler relay, allowing direct wiring from the boiler to the air handler.
2. **Heating Cycle Blower Delay:** 45 second delay of the blower start to allow the coil to be preheated before the blower energizes. It also operates the fan motor 20 seconds after shutdown, increasing heating efficiency.
3. **Blower Jumper:** Set from the factory for low speed heating and high speed cooling. This can be field changed to high speed on heating and cooling for higher capacity out-put.
4. **Microprocessor:** Allows either 24V or 120V power for field installed motorized valves.

Cooling Cycle

1. **Cooling Cycle Blower Delay:** Maximizes cooling efficiency by allowing the blower to operate 45 seconds after the thermostat is satisfied.
2. **Horizontal Drain Pan:** Factory installed. (re-positions within the cabinet for left-to-right airflow)
3. **Piston-type** metering device or factory installed R22 or R410a TXV on cooling coil.
4. **Drain Connections:** Primary and secondary on cooling coil.

Optional Features

1. **Freeze Protector:** (Optional freeze protector switch required Reduces the possibility of the water coil freezing by switching the unit to the heating mode if the water temperature is nearing a freezing condition.
2. Factory or field installed R22 or R410a TXV's (non-bleed type).

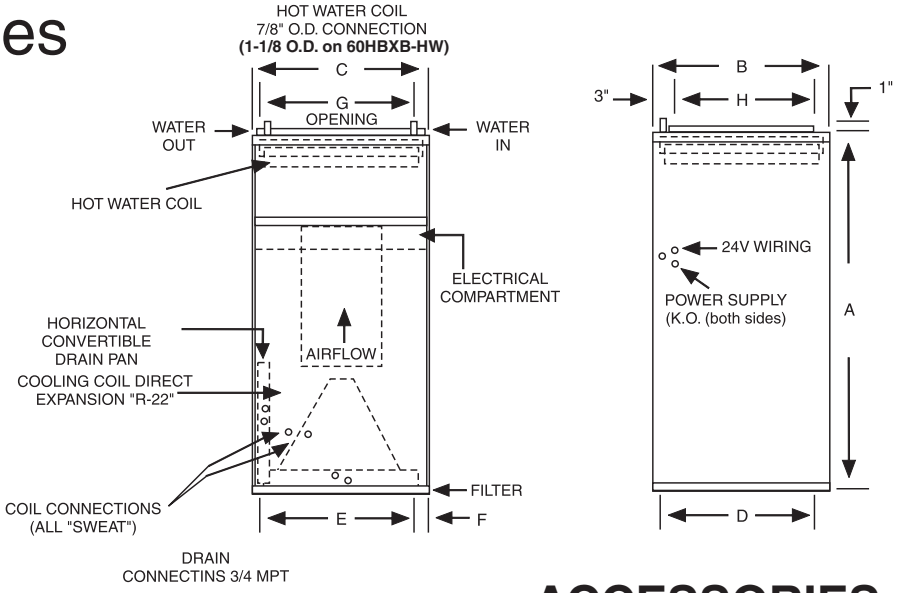
Additional Standard Features

1. Manual **air vent** on hot water coil
2. **Blower door safety switch** (except 60HBXB-HW)
3. **Slide out hot water coil assembly** for easier service
4. **Copper tube** heating and cooling coils
5. Compatible with all major brands of **split condensing units** and **heat pumps**
6. **Factory installed filter**
7. Attractive **baked-on finish**
8. Primary and secondary **drain connections** on cooling coil

FIRST CO. - P.O. Box 270969 - Dallas, Texas 75227 - Ph. (214) 388-5751 - Fax (214) 388-2255 - www.firstco.com

HBXB-HW Series

DX COOLING
BOILER HEATING



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(See P.4 for Model Numbers)

BLOWER DATA					UPFLOW / HORIZONTAL ONLY						DOWNFLOW ONLY				
UNIT MODEL	MOTOR HP-AMPS (120V)	MIN. CKT. AMPACITY	MAX. CKT. PROTECTION	MOTOR SPEED CONN.	CFM vs. EXTERNAL STATIC PRESSURE										
					0.05	0.10	0.20	0.30	0.40	0.50	0.05	0.10	0.20	0.30	0.35
18HBXB-HW	1/5 - 2.8	3.5	15	HIGH MED. MED. LOW LOW	810 680 530 350	780 655 505 325	715 600 460 270	650 545 415 220	580 490 360 160	500 420 295 ---	710 640 480 330	690 620 460 310	630 575 420 260	570 520 380 220	540 490 350 200
24HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	950 860 780	920 835 755	855 785 705	790 720 650	720 650 590	645 580 510	760 720 680	730 690 655	880 640 600	620 590 550	590 550 525
30HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	1120 850 680	1095 840 670	1045 810 655	995 780 625	940 740 585	880 690 510	1080 885 730	1060 860 720	1010 830 690	950 800 660	920 770 640
36HBXB-HW	1/2 - 8.5	10.63	15	HIGH MED. LOW	1340 1290 1200	1310 1260 1170	1250 1200 1120	1190 1140 1070	1120 1080 1010	1050 1000 940	1090 1060 1020	1070 1030 990	1010 980 940	950 920 890	925 890 860
48HBXB-HW	3/4 - 10.7	13.38	15	HIGH MED. LOW	1810 1570 1280	1780 1550 1260	1720 1510 1220	1660 1460 1180	1590 1400 1130	1530 1340 1050	1510 1270 1005	1480 1240 980	1430 1190 930	1380 1150 890	1350 1120 860
60HBXB-HW	1 - 11.5	14.38	15	HIGH MED. LOW	2160 1865 1560	2125 1840 1540	2055 1785 1490	1980 1710 1435	1895 1620 1365	1810 1525 1260	60HBXB-HW is not approved for downflow conversion				

NOTES:
1. All models are approved for installation with 0" clearance to combustible materials.
2. **For downflow applications, select air handler 1/2 ton larger than the outdoor unit in order to achieve nominal airflow.**
3. Use 48HBXB-HW for 3.5 ton applications and field-convert fan motor to medium speed.

PHYSICAL DIMENSIONS									
UNIT MODEL	A	B	C	D	E	F	G	H	FILTER SIZE
18HBXB-HW 24HBXB-HW	40	20	20	18-1/2	16	2	18	16	18 X 20 X 1
30HBXB-HW 36HBXB-HW	42	23	20	21-1/2	16	2	18	19	20 X 22 X 1
48HBXB-HW	48	28	21-1/4	26-1/4	17-1/4	2	18	24	20 X 25 X 1
60HBXB-HW	52	28	25-1/4	26-1/2	21-1/4	2	22	24	14 X 24 X 1 (2 required)

COIL CONNECTIONS		
UNIT SIZE	LIQUID	SUCTION
18/24	3/8	5/8
30/36	3/8	3/4
48/60	1/2	7/8

FREEZE PROTECTOR	
KIT NUMBER	FOR
941-1	18 - 60HBXB-HW

ACCESSORIES
(field installed)

FLOW CONTROL MODULES	
PART NUMBER	FOR
940-3CV	18 - 48HBXB-HW
940-2CV	60HBXB-HW

NOTE:
Flow Control Modules are required when connecting to individual gas water heaters.

EXPANSION VALVE KITS (Field installed) (cooling only or heat pump)	
PART NUMBER	
R22	FITS
9EVR22-4	18/24HBXB-HW
9EVR22-5	30/36HBXB-HW
9EVR22-6	48/60HBXB-HW
R410a	
9EVR410-3	18/24HBXB-HW
9EVR410-4	30/36HBXB-HW
9EVR410-5	48/60HBXB-HW

NOTES:
1. Above expansion valve kits are approved for both cooling only (non heat pump) and heat pump applications.
2. Valves are non-bleed type. Field added. Hard start kit may be required.
3. Valves have screw-on connections.

COUNTERFLOW KITS	
KIT NUMBER	FOR
919-11	18, 24HBXB-HW
919-12	30, 36HBXB-HW
919-13	48HBXB-HW

NOTES:
1. Counterflow conversion **not** recommended where the air handler is installed above a finished ceiling.
2. No kit available for 60HBXB-HW. This model is not approved for counterflow installation.

Model Numbers:

MODEL SIZE (BTU)	MODEL (PISTON)	FACTORY INSTALLED TXV'S	
		MODEL (R22 TXV)	MODEL (R410a TXV)
18,000	18HBXB-HW	18HBXB-HW w/R22 TXV	18HBXB-HW w/R410a TXV
24,000	24HBXB-HW	24HBXB-HW w/R22 TXV	24HBXB-HW w/R410a TXV
30,000	30HBXB-HW	30HBXB-HW w/R22 TXV	30HBXB-HW w/R410a TXV
36,000	36HBXB-HW	36HBXB-HW w/R22 TXV	36HBXB-HW w/R410a TXV
42,000/48,000	48HBXB-HW	48HBXB-HW w/R22 TXV	48HBXB-HW w/R410a TXV
60,000	60HBXB-HW	60HBXB-HW w/R22 TXV	60HBXB-HW w/R410a TXV

All TXV's are approved for cooling only or heat pump operation (non-bleed type).

NOTE:

Expansion valve requirement depends on the selected outdoor unit.
Go to www.firstco.com or contact the factory for assistance.

PERFORMANCE DATA

UNIT MODEL	NOM. COOLING BTUH	MOTOR SPEED CONN.	CFM @ .3 ESP	GPM (HTG.)	P.D. (FT. WTR.)	BTUH (1000) AT ENTERING WATER TEMPERATURE		
						140°F	160°F	180°F
18HBXB-HW	18,000	HIGH	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.0	31.6 29.2 21.9	38.7 35.7 26.8
		MED.	550	3 2 1	1.13 0.51 0.13	22.4 20.7 15.8	28.7 26.6 20.4	35.1 32.5 24.9
		MED. LOW	420	3 2 1	1.13 0.51 0.13	18.9 17.8 13.8	24.3 22.8 17.8	29.7 27.8 21.7
24HBXB-HW	24,000	HIGH	800	3 2 1	1.13 0.51 0.13	27.7 25.4 19.0	35.6 32.7 24.5	43.5 39.9 29.9
		MED.	725	3 2 1	1.13 0.51 0.13	26.3 24.2 18.3	33.8 31.1 23.5	41.3 38.1 28.8
		LOW	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.1	31.6 29.2 22.0	38.7 35.7 26.9
30HBXB-HW	30,000	HIGH	1000	6 4 2	7.55 3.64 1.04	37.5 35.1 30.0	48.2 45.2 38.6	58.9 55.2 47.2
		MED.	780	6 4 2	7.55 3.64 1.04	32.3 30.5 26.3	41.6 39.2 33.9	50.8 47.9 41.4
		LOW	625	6 4 2	7.55 3.64 1.04	28.2 26.7 23.5	36.3 34.3 30.2	44.3 40.9 36.9
36HBXB-HW	36,000	HIGH	1200	6 4 2	7.55 3.64 1.04	41.5 38.7 32.8	53.4 49.8 42.2	65.2 60.8 51.5
		MED.	1140	6 4 2	7.55 3.64 1.04	40.3 37.7 32.1	51.8 48.5 41.3	63.4 59.3 50.5
		LOW	1070	6 4 2	7.55 3.64 1.04	39.0 36.5 31.3	50.1 47.0 40.2	61.3 57.4 49.1
48HBXB-HW	48,000	HIGH	1660	6 4 2	2.90 1.40 0.41	66.6 61.7 48.0	85.6 79.4 61.8	104.7 97.0 75.5
		MED.	1460	6 4 2	2.90 1.40 0.41	62.3 57.4 45.0	80.1 73.8 57.8	97.9 90.2 70.7
		LOW	1180	6 4 2	2.90 1.40 0.41	54.5 50.6 40.1	70.1 65.0 51.6	85.7 79.5 63.0
60HBXB-HW	60,000	HIGH	1980	9 7 5	5.15 3.33 1.86	83.8 80.0 74.5	107.8 102.9 95.8	131.7 125.8 117.1
		MED.	1710	9 7 5	5.15 3.33 1.86	76.8 73.5 68.9	98.7 94.5 88.5	120.6 115.5 108.2
		LOW	1430	9 7 5	5.15 3.33 1.86	68.5 65.8 61.8	88.1 84.6 79.5	107.7 103.4 97.1

NOTES:

(1) Heat BTU is at 65° Entering Air Temperature**.**

(2) Units are shipped with motors connected to high speed for cooling and medium speed for heating.

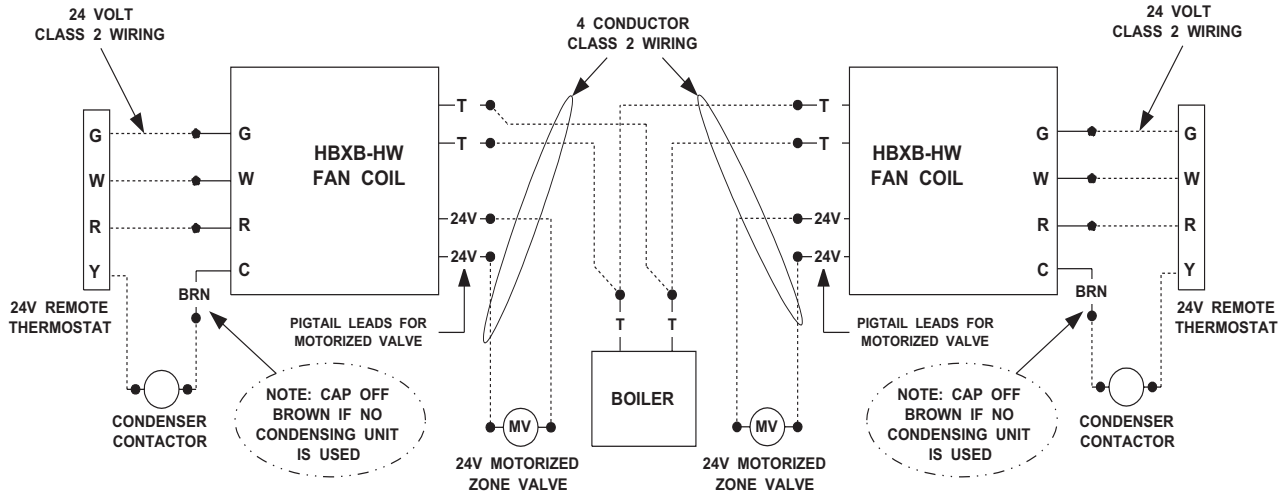
(3) 190° EWT would increase the 180° EWT heating capacities by 9.1%. 200° EWT would increase the 180° EWT heating capacities by 18.2%.

In keeping with its policy of continuous progress and product improvement, First Co. reserves the right to make changes without notice. Maintenance for all First Co. products is available under "Product Maintenance" at www.firstco.com.

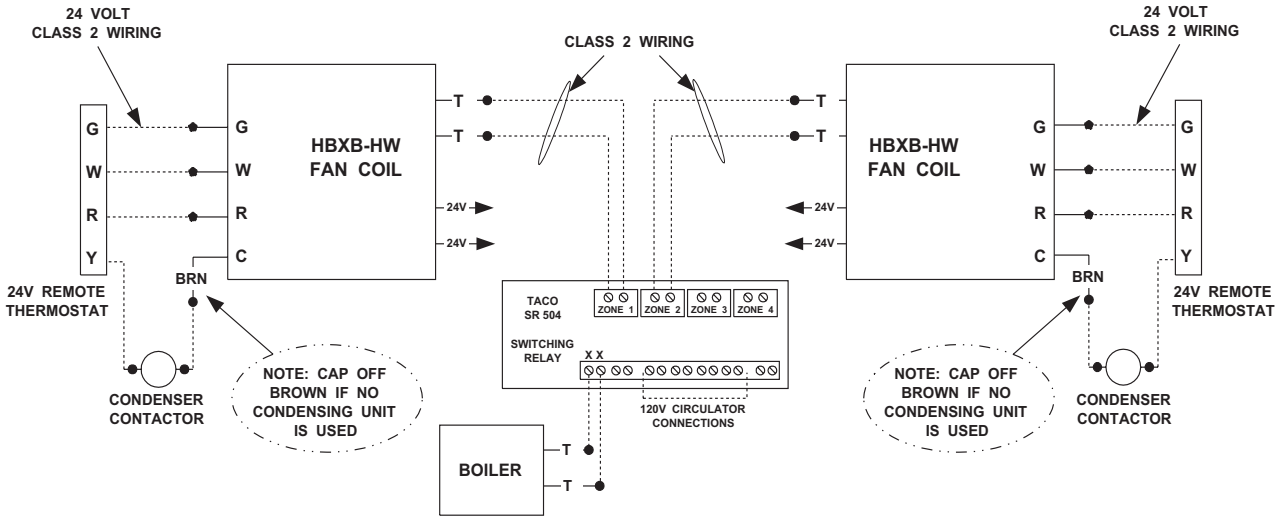
APPLICATION GUIDELINES

Zone Valves Install a motorized valve with each air handler to control flow to that zone as required**.**

TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS
WITH ZONE VALVES



TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS TO
TACO SR-504/506 SWITCHING RELAY



BOILER LOOP AIR HANDLERS

HBXB-HW Series

Vertical / Horizontal / Counterflow (Except 60HBXB-HW) Air Handler

Cooling or Heat Pump / Boiler heating

1-1/2 through 5 tons, up to 131,700 BTUH Heating

Description :

The new **HBXB-HW** series air handler has been fitted with a **Multi-Function MicroProcessor** that reduces the number of electrical parts in the unit while adding **many new integrated features**.

HEATING: Air handlers can now be directly wired from the boiler to the air handler without adding any additional relays or related controls. Multiple air handlers may be connected to a single, high efficiency natural gas or oil fired hot water boiler to provide complete, whole house hydronic space heating. Each air handler includes a high efficiency cooling coil, a separate hot water coil, horizontal drain pan, flue gas door switch (except 60HBXB-HW), 120V three or four speed blower motor, throwaway filter, microprocessor, and a 24V transformer. (Note: If connecting to a circulator, it must have a circulator relay).

COOLING: These air handlers are completely compatible with all split system type condensing units and heat pumps. Cooling coils in the **HBXB-HW** air handlers are extra-large and engineered to offer cooling efficiencies up to **15 SEER**, depending on the outside condensing unit used.

(1) First Co's customer is ultimately responsible for confirming which fan coil models are compatible with selected outdoor units(s) and which expansion valves (if any) are required. To determine certified indoor/outdoor matches, go to www.firstco.com or contact the factory.

ACCESSORIES: (see P. 2) Optional field installed accessories include TXV Kits, Flow Control Modules, Counterflow Conversion Kits, and Freeze Protector.

NOW WITH "DIRECT CONNECT" FROM THE BOILER TO THE AIR HANDLER

FEATURES:

Heating Cycle

1. **Boiler Start Relay:** Eliminates field installed boiler relay, allowing direct wiring from the boiler to the air handler.
2. **Heating Cycle Blower Delay:** 45 second delay of the blower start to allow the coil to be preheated before the blower energizes. It also operates the fan motor 20 seconds after shutdown, increasing heating efficiency.
3. **Blower Jumper:** Set from the factory for low speed heating and high speed cooling. This can be field changed to high speed on heating and cooling for higher capacity out-put.
4. **Microprocessor:** Allows either 24V or 120V power for field installed motorized valves.

Cooling Cycle

1. **Cooling Cycle Blower Delay:** Maximizes cooling efficiency by allowing the blower to operate 45 seconds after the thermostat is satisfied.
2. **Horizontal Drain Pan:** Factory installed. (re-positions within the cabinet for left-to-right airflow)
3. **Piston-type** metering device or factory installed R22 or R410a TXV on cooling coil.
4. **Drain Connections:** Primary and secondary on cooling coil.

Optional Features

1. **Freeze Protector:** (Optional freeze protector switch required Reduces the possibility of the water coil freezing by switching the unit to the heating mode if the water temperature is nearing a freezing condition.
2. Factory or field installed R22 or R410a TXV's (non-bleed type).

Additional Standard Features

1. Manual **air vent** on hot water coil
2. **Blower door safety switch** (except 60HBXB-HW)
3. **Slide out hot water coil assembly** for easier service
4. **Copper tube** heating and cooling coils
5. Compatible with all major brands of **split condensing units** and **heat pumps**
6. **Factory installed filter**
7. Attractive **baked-on finish**
8. Primary and secondary **drain connections** on cooling coil

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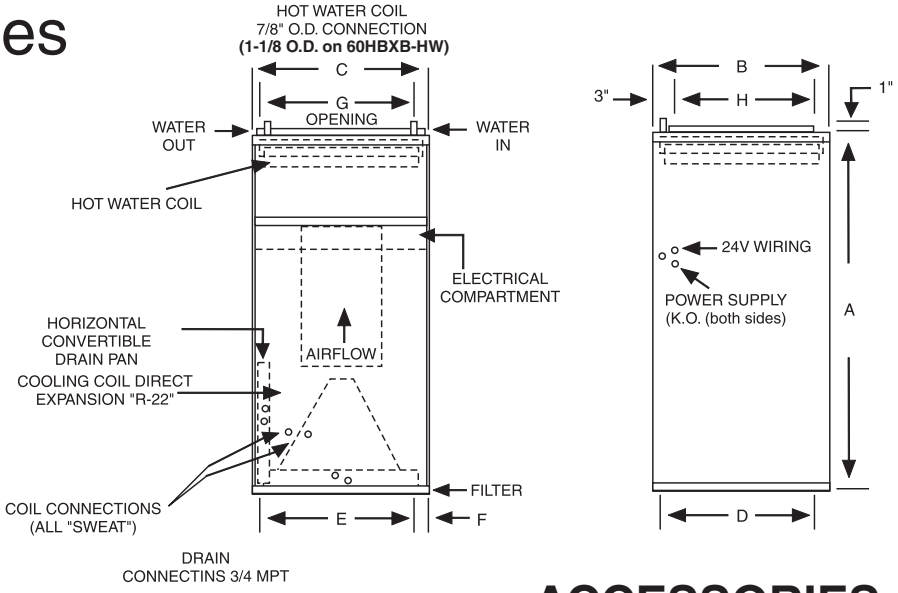
HBXB-HW Series

DX COOLING
BOILER HEATING



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(See P.4 for Model Numbers)

BLOWER DATA					UPFLOW / HORIZONTAL ONLY						DOWNFLOW ONLY				
UNIT MODEL	MOTOR HP-AMPS (120V)	MIN. CKT. AMPACITY	MAX. CKT. PROTECTION	MOTOR SPEED CONN.	CFM vs. EXTERNAL STATIC PRESSURE										
					0.05	0.10	0.20	0.30	0.40	0.50	0.05	0.10	0.20	0.30	0.35
18HBXB-HW	1/5 - 2.8	3.5	15	HIGH MED. MED. LOW LOW	810 680 530 350	780 655 505 325	715 600 460 270	650 545 415 220	580 490 360 160	500 420 295 ---	710 640 480 330	690 620 460 310	630 575 420 260	570 520 380 220	540 490 350 200
24HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	950 860 780	920 835 755	855 785 705	790 720 650	720 650 590	645 580 510	760 720 680	730 690 655	880 640 600	620 590 550	590 550 525
30HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	1120 850 680	1095 940 670	1045 810 655	995 780 625	940 740 585	880 690 510	1080 885 730	1060 860 720	1010 830 690	950 800 660	920 770 640
36HBXB-HW	1/2 - 8.5	10.63	15	HIGH MED. LOW	1340 1290 1200	1310 1260 1170	1250 1200 1120	1190 1140 1070	1120 1080 1010	1050 1000 940	1090 1060 1020	1070 1030 990	1010 980 940	950 920 890	925 890 860
48HBXB-HW	3/4 - 10.7	13.38	15	HIGH MED. LOW	1810 1570 1280	1780 1550 1260	1720 1510 1220	1660 1460 1180	1590 1400 1130	1530 1340 1050	1510 1270 1005	1480 1240 980	1430 1190 930	1380 1150 890	1350 1120 860
60HBXB-HW	1 - 11.5	14.38	15	HIGH MED. LOW	2160 1865 1560	2125 1840 1540	2055 1785 1490	1980 1710 1435	1895 1620 1365	1810 1525 1260	60HBXB-HW is not approved for downflow conversion				

NOTES:
1. All models are approved for installation with 0" clearance to combustible materials.
2. **For downflow applications, select air handler 1/2 ton larger than the outdoor unit in order to achieve nominal airflow.**
3. Use 48HBXB-HW for 3.5 ton applications and field-convert fan motor to medium speed.

PHYSICAL DIMENSIONS									
UNIT MODEL	A	B	C	D	E	F	G	H	FILTER SIZE
18HBXB-HW 24HBXB-HW	40	20	20	18-1/2	16	2	18	16	18 X 20 X 1
30HBXB-HW 36HBXB-HW	42	23	20	21-1/2	16	2	18	19	20 X 22 X 1
48HBXB-HW	48	28	21-1/4	26-1/4	17-1/4	2	18	24	20 X 25 X 1
60HBXB-HW	52	28	25-1/4	26-1/2	21-1/4	2	22	24	14 X 24 X 1 (2 required)

COIL CONNECTIONS		
UNIT SIZE	LIQUID	SUCTION
18/24	3/8	5/8
30/36	3/8	3/4
48/60	1/2	7/8

FREEZE PROTECTOR	
KIT NUMBER	FOR
941-1	18 - 60HBXB-HW

ACCESSORIES
(field installed)

FLOW CONTROL MODULES	
PART NUMBER	FOR
940-3CV	18 - 48HBXB-HW
940-2CV	60HBXB-HW

NOTE:
Flow Control Modules are required when connecting to individual gas water heaters.

EXPANSION VALVE KITS (Field installed) (cooling only or heat pump)	
PART NUMBER	
R22	FITS
9EVR22-4	18/24HBXB-HW
9EVR22-5	30/36HBXB-HW
9EVR22-6	48/60HBXB-HW
R410a	
9EVR410-3	18/24HBXB-HW
9EVR410-4	30/36HBXB-HW
9EVR410-5	48/60HBXB-HW

NOTES:
1. Above expansion valve kits are approved for both cooling only (non heat pump) and heat pump applications.
2. Valves are non-bleed type. Field added. Hard start kit may be required.
3. Valves have screw-on connections.

COUNTERFLOW KITS	
KIT NUMBER	FOR
919-11	18, 24HBXB-HW
919-12	30, 36HBXB-HW
919-13	48HBXB-HW

NOTES:
1. Counterflow conversion **not** recommended where the air handler is installed above a finished ceiling.
2. No kit available for 60HBXB-HW. This model is not approved for counterflow installation.

Model Numbers:

MODEL SIZE (BTU)	MODEL (PISTON)	FACTORY INSTALLED TXV'S	
		MODEL (R22 TXV)	MODEL (R410a TXV)
18,000	18HBXB-HW	18HBXB-HW w/R22 TXV	18HBXB-HW w/R410a TXV
24,000	24HBXB-HW	24HBXB-HW w/R22 TXV	24HBXB-HW w/R410a TXV
30,000	30HBXB-HW	30HBXB-HW w/R22 TXV	30HBXB-HW w/R410a TXV
36,000	36HBXB-HW	36HBXB-HW w/R22 TXV	36HBXB-HW w/R410a TXV
42,000/48,000	48HBXB-HW	48HBXB-HW w/R22 TXV	48HBXB-HW w/R410a TXV
60,000	60HBXB-HW	60HBXB-HW w/R22 TXV	60HBXB-HW w/R410a TXV

All TXV's are approved for cooling only or heat pump operation (non-bleed type).

NOTE:

Expansion valve requirement depends on the selected outdoor unit.
Go to www.firstco.com or contact the factory for assistance.

PERFORMANCE DATA

UNIT MODEL	NOM. COOLING BTUH	MOTOR SPEED CONN.	CFM @ .3 ESP	GPM (HTG.)	P.D. (FT. WTR.)	BTUH (1000) AT ENTERING WATER TEMPERATURE		
						140°F	160°F	180°F
18HBXB-HW	18,000	HIGH	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.0	31.6 29.2 21.9	38.7 35.7 26.8
		MED.	550	3 2 1	1.13 0.51 0.13	22.4 20.7 15.8	28.7 26.6 20.4	35.1 32.5 24.9
		MED. LOW	420	3 2 1	1.13 0.51 0.13	18.9 17.8 13.8	24.3 22.8 17.8	29.7 27.8 21.7
24HBXB-HW	24,000	HIGH	800	3 2 1	1.13 0.51 0.13	27.7 25.4 19.0	35.6 32.7 24.5	43.5 39.9 29.9
		MED.	725	3 2 1	1.13 0.51 0.13	26.3 24.2 18.3	33.8 31.1 23.5	41.3 38.1 28.8
		LOW	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.1	31.6 29.2 22.0	38.7 35.7 26.9
30HBXB-HW	30,000	HIGH	1000	6 4 2	7.55 3.64 1.04	37.5 35.1 30.0	48.2 45.2 38.6	58.9 55.2 47.2
		MED.	780	6 4 2	7.55 3.64 1.04	32.3 30.5 26.3	41.6 39.2 33.9	50.8 47.9 41.4
		LOW	625	6 4 2	7.55 3.64 1.04	28.2 26.7 23.5	36.3 34.3 30.2	44.3 40.9 36.9
36HBXB-HW	36,000	HIGH	1200	6 4 2	7.55 3.64 1.04	41.5 38.7 32.8	53.4 49.8 42.2	65.2 60.8 51.5
		MED.	1140	6 4 2	7.55 3.64 1.04	40.3 37.7 32.1	51.8 48.5 41.3	63.4 59.3 50.5
		LOW	1070	6 4 2	7.55 3.64 1.04	39.0 36.5 31.3	50.1 47.0 40.2	61.3 57.4 49.1
48HBXB-HW	48,000	HIGH	1660	6 4 2	2.90 1.40 0.41	66.6 61.7 48.0	85.6 79.4 61.8	104.7 97.0 75.5
		MED.	1460	6 4 2	2.90 1.40 0.41	62.3 57.4 45.0	80.1 73.8 57.8	97.9 90.2 70.7
		LOW	1180	6 4 2	2.90 1.40 0.41	54.5 50.6 40.1	70.1 65.0 51.6	85.7 79.5 63.0
60HBXB-HW	60,000	HIGH	1980	9 7 5	5.15 3.33 1.86	83.8 80.0 74.5	107.8 102.9 95.8	131.7 125.8 117.1
		MED.	1710	9 7 5	5.15 3.33 1.86	76.8 73.5 68.9	98.7 94.5 88.5	120.6 115.5 108.2
		LOW	1430	9 7 5	5.15 3.33 1.86	68.5 65.8 61.8	88.1 84.6 79.5	107.7 103.4 97.1

NOTES:

(1) Heat BTU is at 65° Entering Air Temperature**.**

(2) Units are shipped with motors connected to high speed for cooling and medium speed for heating.

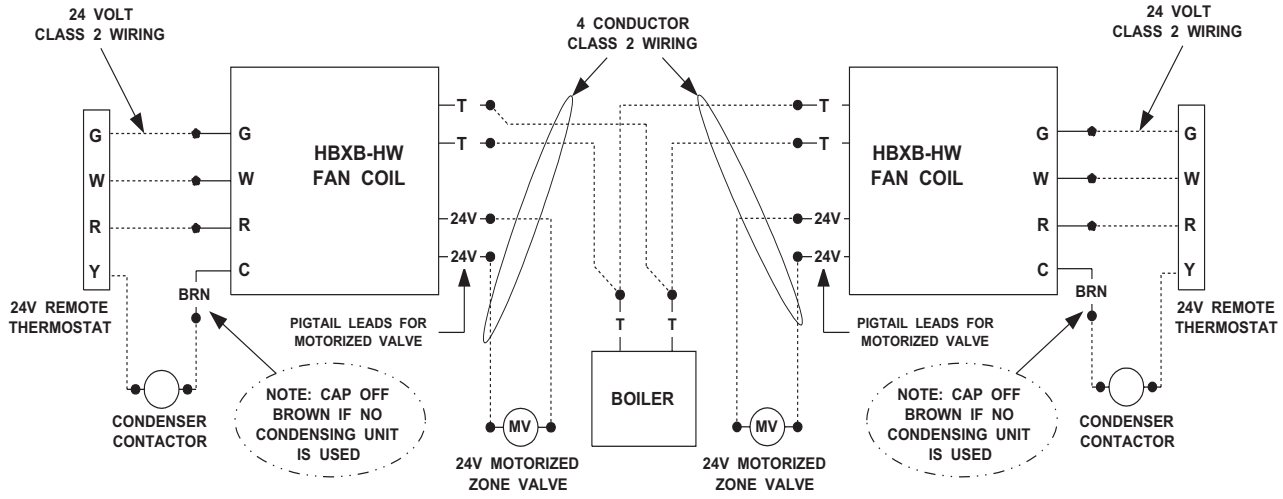
(3) 190° EWT would increase the 180° EWT heating capacities by 9.1%. 200° EWT would increase the 180° EWT heating capacities by 18.2%.

In keeping with its policy of continuous progress and product improvement, First Co. reserves the right to make changes without notice. Maintenance for all First Co. products is available under "Product Maintenance" at www.firstco.com.

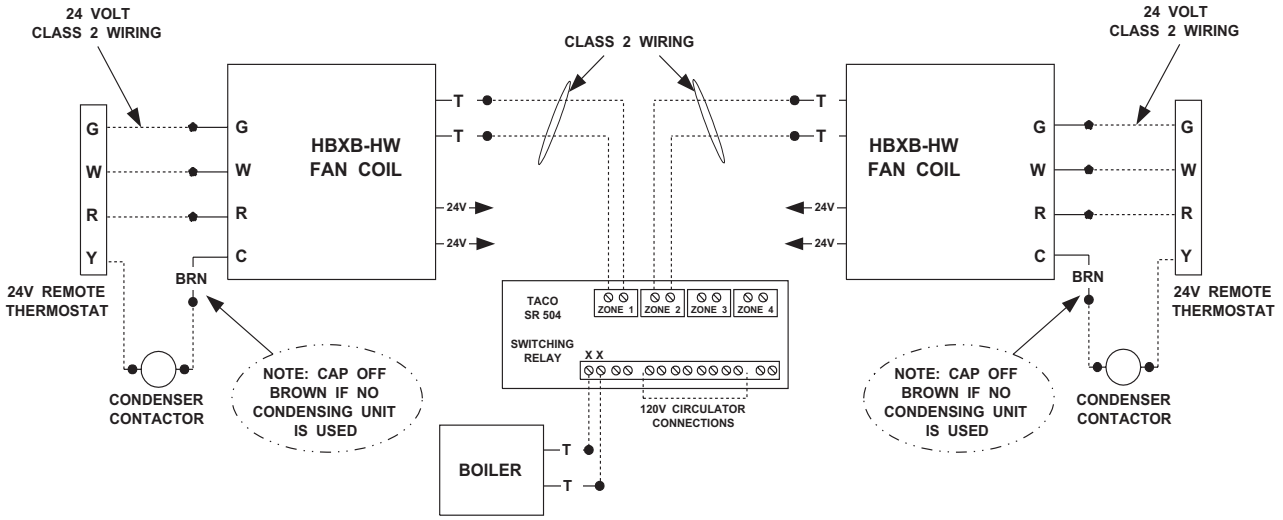
APPLICATION GUIDELINES

Zone Valves Install a motorized valve with each air handler to control flow to that zone as required**.**

TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS
WITH ZONE VALVES



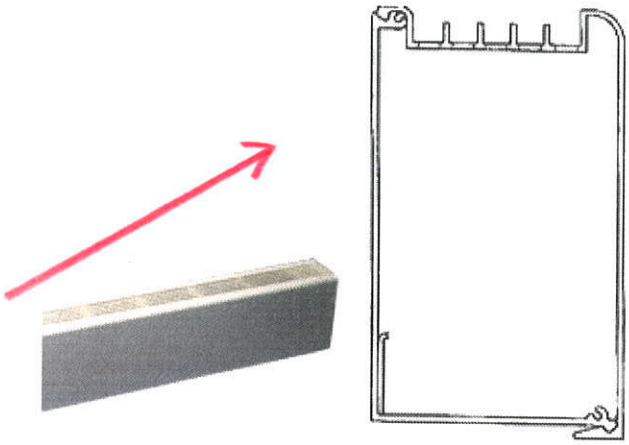
TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS TO
TACO SR-504/506 SWITCHING RELAY



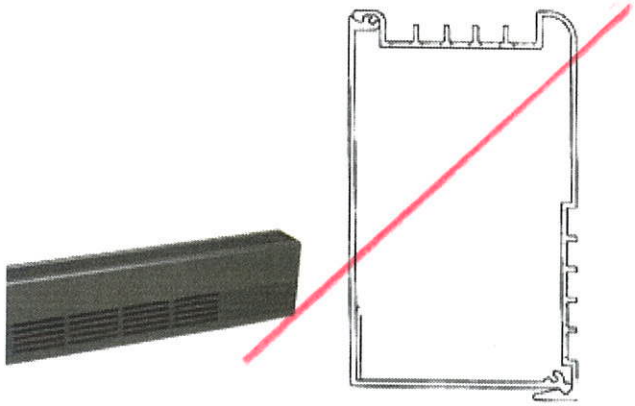
HOT WATER DRAFT BARRIERS
MODEL WSBT, WSBF, WSBST

Features

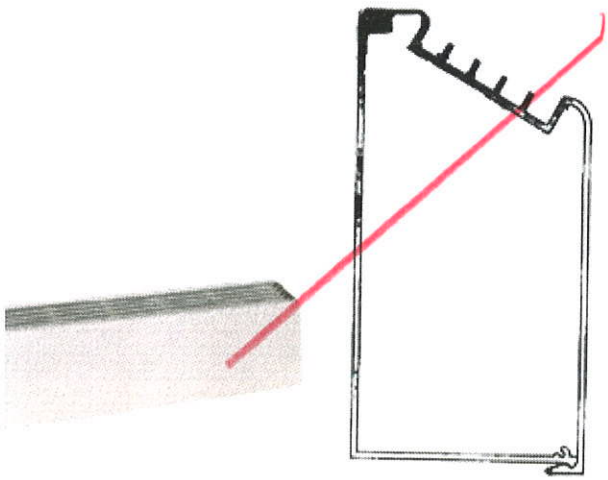
- Bottom intake, top discharge WSBT.
- Front intake, top discharge WSBF.
- Slope top, bottom intake WSBST
- 14 gauge extruded aluminum front and back (12 gauge WSBST).
- Snap fit 2 piece construction.
- SB is 3"W x 5"H
- SBST is 3"W x 6"H
- 1/4"pencil proof discharge grill.
- Aluminum fins for quick heat.
- Custom selection of cabinet lengths from 2' to 14' length in 1/16" increments.
- Multiple heater sections on one common back.
- Painted and anodized finishes.
- Pedestals available (WSBT-PD, WSBF-PD, WSPST-PD).
- Valve compartments are 6" or 12".
- 3/4" and 1" copper tubes available.
- 400 to 1000 BTUH ratings (per foot).
- Accessories include: end caps, splice plates, wall trims, corners, blanks and valve compartments.



WSBT



WSBF



WSBST

HOT WATER DRAFT BARRIERS
MODEL WSBT, WSBF, WSBST

Specifications

SUGGESTED ENGINEERING SPECIFICATIONS

Design Draft Barriers shall be 5"or 6" high and 3"wide. The front cover shall be 14 gauge (12GA, WSBST) aluminum construction suitable for architectural, commercial and industrial use with 1/4"pencil proof top and discharge. The one piece cover shall be extruded aluminum for maximum strength and shall be available in lengths to 14'.

The front cover shall snap fit to the back cover with no screw heads or assembly fasteners. The back cover shall be suitable for mullion to mullion mounting.

Standard painted finishes shall be provided.

ELEMENT

Heat sections from 2' to 10' are available.

Furnish and install model EMB or SLT type heating element. The element shall be manufactured with 3/4" and 1" nominal copper tubing with .010" thick aluminum fins, having full collars for uniform spacing and optimum thermal contact. Fins shall be mechanically bonded to the copper tube. One end of each element shall be expanded to accept the unepanded end of another tube without coupling.

ELEMENT MOUNT BRACKET

Element bracket is constructed of 16 gauge galvenized steel and are mounted to the backplate for noiseless expansion of element. Designed for easy installation into pre-punched mounting holes.

Elements are supplied with nylon brackts for noiseless expansion.

INSTALLATION FEATURES

Model WSB construction allows simple, snap-fit installation. The back plate which houses the heating element assembly is simply attached to the wall surface at the desired height and the front cover enclosure is then snapped into place.

PEDESTAL FEATURES

Model WSBT-PD, WSBF-PD, WSBST-PD shall have 2" adjustable pedestals and the heater back will be painted to match the front cover. 1"of adjustment is available on the cast iron pedestal.

PEDESTAL QUANTITIES

2 on 1', 2', 3', 4', 5' and 6'
3 on 7', 8', 9' and 10'

RATING EMB ELEMENT

Model	Flow Rate	170 ^{O}	180 ^{O}	190 ^{O}	200 ^{O}	210 ^{O}	220 ^{O}	230 ^{O}	240 ^{O}
3/4"	4 GPM	540	600	680	734	790	870	940	1010
	1 GPM	510	570	640	690	750	820	890	960

RATING SLT ELEMENT

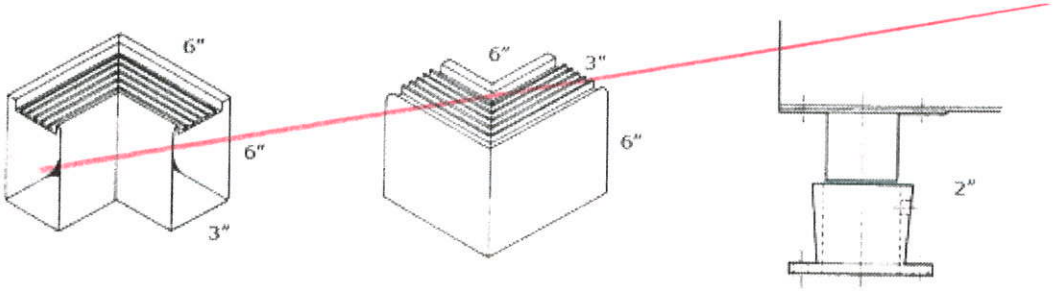
Model	Flow Rate	170 O	180 O	190 O	200 O	210 O	220 O	230 O	240 O
3/4"	4 GPM	620	710	800	890	970	1070	1150	1250
	1 GPM	580	670	760	840	920	1010	1090	1180

HOT WATER DRAFT BARRIERS
MODEL WSBT, WSBF, WSBST

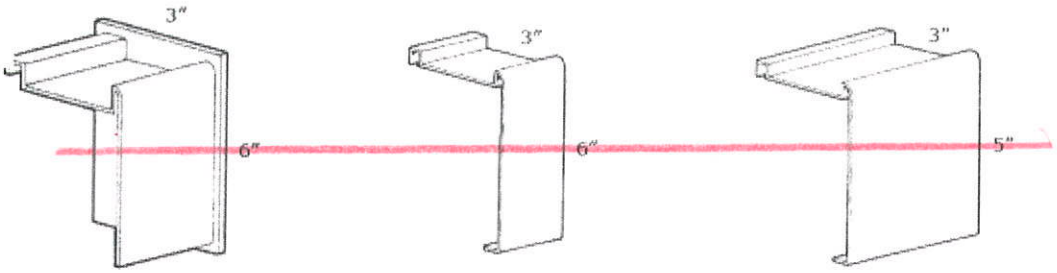
Accessories

Description	Series WSB Catalog Number	Dimensions D/H/L
BLANKS	WSB 100BS	3″ X 5″ OR 6″ X 1′
BLANKS	WSB 200BS	3″ X 5″ OR 6″ X 2′
BLANKS	WSB 300BS	3″ X 5″ OR 6″ X 3′
BLANKS	WSB 400BS	3″ X 5″ OR 6″ X 4′
BLANKS	WSB 500BS	3″ X 5″ OR 6″ X 5′
BLANKS	WSB 600BS	3″ X 5″ OR 6″ X 6′
BLANKS	WSB 700BS	3″ X 5″ OR 6″ X 7′
BLANKS	WSB 800BS	3″ X 5″ OR 6″ X 8′
BLANKS	WSB 900BS	3″ X 5″ OR 6″ X 9′
BLANKS	WSB 1000BS	3″ X 5″ OR 6″ X 10′
Wall Trim	WSB – WT	3″ X 5″ OR 6″ X 2″
Splice Plate	WSB – SP	3″ X 5″ OR 6″ X 1 1/2″
Inside Corner	WSB – IC	3″ X 5″ OR 6″ X 12″
Outside Corner	WSB – OC	3″ X 5″ OR 6″ X 12″
End Caps	WSB – EC	3″ X 5″ OR 6″ X 1/8″

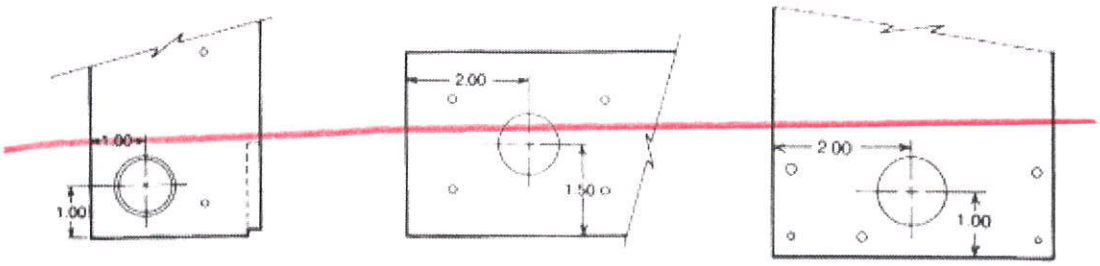
SLOPE TOP MODEL



Inside Corner Outside Corner Cast Pedestal

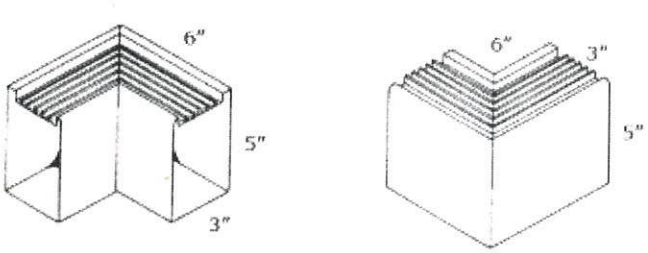


End Cap | Splice Plate | Wall Trim

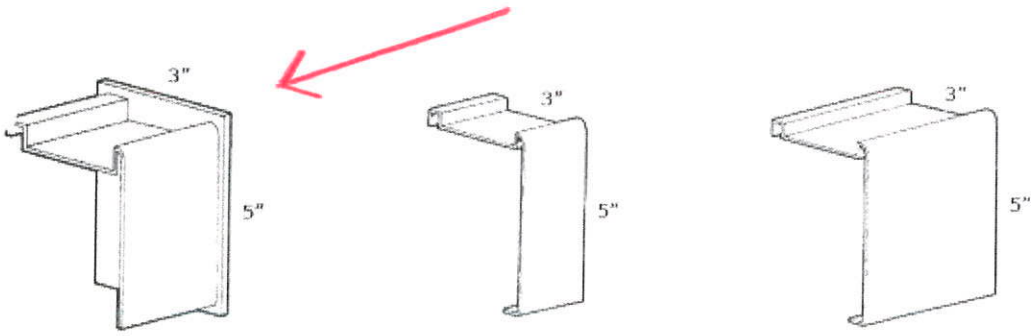


Side View | Bottom View | Back View (Pedestal Unit Only)

FLAT TOP MODEL



Inside Corner | Outside Corner | Cast Pedestal



End Cap | Splice Plate | Wall Trim

BOILER LOOP AIR HANDLERS

HBXB-HW Series

Vertical / Horizontal / Counterflow (Except 60HBXB-HW) Air Handler

Cooling or Heat Pump / Boiler heating

1-1/2 through 5 tons, up to 131,700 BTUH Heating

Description :

The new **HBXB-HW** series air handler has been fitted with a **Multi-Function MicroProcessor** that reduces the number of electrical parts in the unit while adding **many new integrated features**.

HEATING: Air handlers can now be directly wired from the boiler to the air handler without adding any additional relays or related controls. Multiple air handlers may be connected to a single, high efficiency natural gas or oil fired hot water boiler to provide complete, whole house hydronic space heating. Each air handler includes a high efficiency cooling coil, a separate hot water coil, horizontal drain pan, flue gas door switch (except 60HBXB-HW), 120V three or four speed blower motor, throwaway filter, microprocessor, and a 24V transformer. (Note: If connecting to a circulator, it must have a circulator relay).

COOLING: These air handlers are completely compatible with all split system type condensing units and heat pumps. Cooling coils in the **HBXB-HW** air handlers are extra-large and engineered to offer cooling efficiencies up to **15 SEER**, depending on the outside condensing unit used.

(1) First Co's customer is ultimately responsible for confirming which fan coil models are compatible with selected outdoor units(s) and which expansion valves (if any) are required. To determine certified indoor/outdoor matches, go to www.firstco.com or contact the factory.

ACCESSORIES: (see P. 2) Optional field installed accessories include TXV Kits, Flow Control Modules, Counterflow Conversion Kits, and Freeze Protector.

NOW WITH "DIRECT CONNECT" FROM THE BOILER TO THE AIR HANDLER

FEATURES:

Heating Cycle

1. **Boiler Start Relay:** Eliminates field installed boiler relay, allowing direct wiring from the boiler to the air handler.
2. **Heating Cycle Blower Delay:** 45 second delay of the blower start to allow the coil to be preheated before the blower energizes. It also operates the fan motor 20 seconds after shutdown, increasing heating efficiency.
3. **Blower Jumper:** Set from the factory for low speed heating and high speed cooling. This can be field changed to high speed on heating and cooling for higher capacity out-put.
4. **Microprocessor:** Allows either 24V or 120V power for field installed motorized valves.

Cooling Cycle

1. **Cooling Cycle Blower Delay:** Maximizes cooling efficiency by allowing the blower to operate 45 seconds after the thermostat is satisfied.
2. **Horizontal Drain Pan:** Factory installed. (re-positions within the cabinet for left-to-right airflow)
3. **Piston-type** metering device or factory installed R22 or R410a TXV on cooling coil.
4. **Drain Connections:** Primary and secondary on cooling coil.

Optional Features

1. **Freeze Protector:** (Optional freeze protector switch required Reduces the possibility of the water coil freezing by switching the unit to the heating mode if the water temperature is nearing a freezing condition.
2. Factory or field installed R22 or R410a TXV's (non-bleed type).

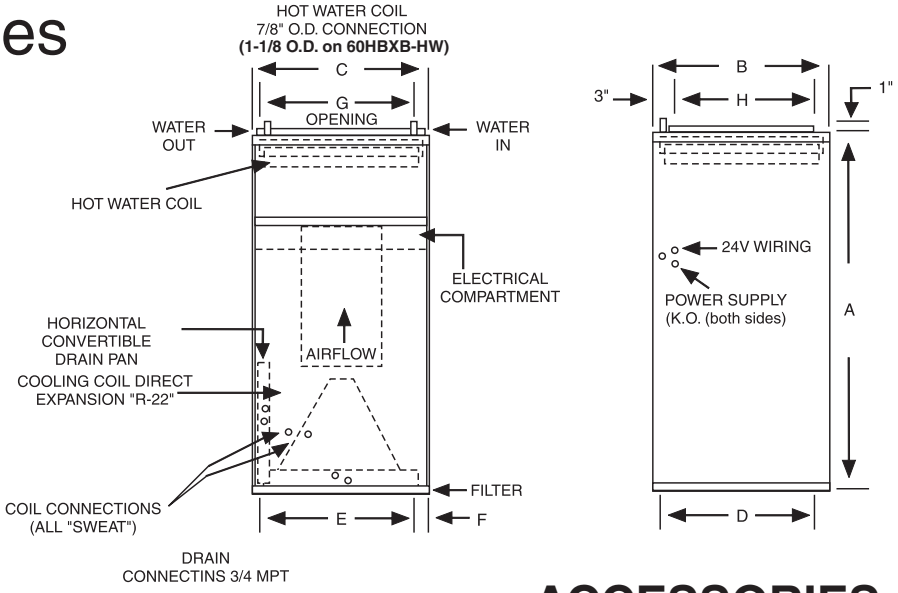
Additional Standard Features

1. Manual **air vent** on hot water coil
2. **Blower door safety switch** (except 60HBXB-HW)
3. **Slide out hot water coil assembly** for easier service
4. **Copper tube** heating and cooling coils
5. Compatible with all major brands of **split condensing units** and **heat pumps**
6. **Factory installed filter**
7. Attractive **baked-on finish**
8. Primary and secondary **drain connections** on cooling coil

FIRST CO. - P.O. Box 270969 - Dallas, Texas 75227 - Ph. (214) 388-5751 - Fax (214) 388-2255 - www.firstco.com

HBXB-HW Series

DX COOLING
BOILER HEATING



c UL us LISTED

(See P.4 for Model Numbers)

BLOWER DATA					UPFLOW / HORIZONTAL ONLY						DOWNFLOW ONLY				
UNIT MODEL	MOTOR HP-AMPS (120V)	MIN. CKT. AMPACITY	MAX. CKT. PROTECTION	MOTOR SPEED CONN.	CFM vs. EXTERNAL STATIC PRESSURE										
					0.05	0.10	0.20	0.30	0.40	0.50	0.05	0.10	0.20	0.30	0.35
18HBXB-HW	1/5 - 2.8	3.5	15	HIGH MED. MED. LOW LOW	810 680 530 350	780 655 505 325	715 600 460 270	650 545 415 220	580 490 360 160	500 420 295 ---	710 640 480 330	690 620 460 310	630 575 420 260	570 520 380 220	540 490 350 200
24HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	950 860 780	920 835 755	855 785 705	790 720 650	720 650 590	645 580 510	760 720 680	730 690 655	880 640 600	620 590 550	590 550 525
30HBXB-HW	1/5 - 5.1	6.38	15	HIGH MED. LOW	1120 850 680	1095 840 670	1045 810 655	995 780 625	940 740 585	880 690 510	1080 885 730	1060 860 720	1010 830 690	950 800 660	920 770 640
36HBXB-HW	1/2 - 8.5	10.63	15	HIGH MED. LOW	1340 1290 1200	1310 1260 1170	1250 1200 1120	1190 1140 1070	1120 1080 1010	1050 1000 940	1090 1060 1020	1070 1030 990	1010 980 940	950 920 890	925 890 860
48HBXB-HW	3/4 - 10.7	13.38	15	HIGH MED. LOW	1810 1570 1280	1780 1550 1260	1720 1510 1220	1660 1460 1180	1590 1400 1130	1530 1340 1050	1510 1270 1005	1480 1240 980	1430 1190 930	1380 1150 890	1350 1120 860
60HBXB-HW	1 - 11.5	14.38	15	HIGH MED. LOW	2160 1865 1560	2125 1840 1540	2055 1785 1490	1980 1710 1435	1895 1620 1365	1810 1525 1260	60HBXB-HW is not approved for downflow conversion				

NOTES:
1. All models are approved for installation with 0" clearance to combustible materials.
2. **For downflow applications, select air handler 1/2 ton larger than the outdoor unit in order to achieve nominal airflow.**
3. Use 48HBXB-HW for 3.5 ton applications and field-convert fan motor to medium speed.

PHYSICAL DIMENSIONS									
UNIT MODEL	A	B	C	D	E	F	G	H	FILTER SIZE
18HBXB-HW 24HBXB-HW	40	20	20	18-1/2	16	2	18	16	18 X 20 X 1
30HBXB-HW 36HBXB-HW	42	23	20	21-1/2	16	2	18	19	20 X 22 X 1
48HBXB-HW	48	28	21-1/4	26-1/4	17-1/4	2	18	24	20 X 25 X 1
60HBXB-HW	52	28	25-1/4	26-1/2	21-1/4	2	22	24	14 X 24 X 1 (2 required)

COIL CONNECTIONS		
UNIT SIZE	LIQUID	SUCTION
18/24	3/8	5/8
30/36	3/8	3/4
48/60	1/2	7/8

FREEZE PROTECTOR	
KIT NUMBER	FOR
941-1	18 - 60HBXB-HW

ACCESSORIES
(field installed)

FLOW CONTROL MODULES	
PART NUMBER	FOR
940-3CV	18 - 48HBXB-HW
940-2CV	60HBXB-HW

NOTE:
Flow Control Modules are required when connecting to individual gas water heaters.

EXPANSION VALVE KITS (Field installed) (cooling only or heat pump)	
PART NUMBER	
R22	FITS
9EVR22-4	18/24HBXB-HW
9EVR22-5	30/36HBXB-HW
9EVR22-6	48/60HBXB-HW
R410a	
9EVR410-3	18/24HBXB-HW
9EVR410-4	30/36HBXB-HW
9EVR410-5	48/60HBXB-HW

NOTES:
1. Above expansion valve kits are approved for both cooling only (non heat pump) and heat pump applications.
2. Valves are non-bleed type. Field added. Hard start kit may be required.
3. Valves have screw-on connections.

COUNTERFLOW KITS	
KIT NUMBER	FOR
919-11	18, 24HBXB-HW
919-12	30, 36HBXB-HW
919-13	48HBXB-HW

NOTES:
1. Counterflow conversion **not** recommended where the air handler is installed above a finished ceiling.
2. No kit available for 60HBXB-HW. This model is not approved for counterflow installation.

Model Numbers:

MODEL SIZE (BTU)	MODEL (PISTON)	FACTORY INSTALLED TXV'S	
		MODEL (R22 TXV)	MODEL (R410a TXV)
18,000	18HBXB-HW	18HBXB-HW w/R22 TXV	18HBXB-HW w/R410a TXV
24,000	24HBXB-HW	24HBXB-HW w/R22 TXV	24HBXB-HW w/R410a TXV
30,000	30HBXB-HW	30HBXB-HW w/R22 TXV	30HBXB-HW w/R410a TXV
36,000	36HBXB-HW	36HBXB-HW w/R22 TXV	36HBXB-HW w/R410a TXV
42,000/48,000	48HBXB-HW	48HBXB-HW w/R22 TXV	48HBXB-HW w/R410a TXV
60,000	60HBXB-HW	60HBXB-HW w/R22 TXV	60HBXB-HW w/R410a TXV

All TXV's are approved for cooling only or heat pump operation (non-bleed type).

NOTE:

Expansion valve requirement depends on the selected outdoor unit.
Go to www.firstco.com or contact the factory for assistance.

PERFORMANCE DATA

UNIT MODEL	NOM. COOLING BTUH	MOTOR SPEED CONN.	CFM @ .3 ESP	GPM (HTG.)	P.D. (FT. WTR.)	BTUH (1000) AT ENTERING WATER TEMPERATURE		
						140°F	160°F	180°F
18HBXB-HW	18,000	HIGH	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.0	31.6 29.2 21.9	38.7 35.7 26.8
		MED.	550	3 2 1	1.13 0.51 0.13	22.4 20.7 15.8	28.7 26.6 20.4	35.1 32.5 24.9
		MED. LOW	420	3 2 1	1.13 0.51 0.13	18.9 17.8 13.8	24.3 22.8 17.8	29.7 27.8 21.7
24HBXB-HW	24,000	HIGH	800	3 2 1	1.13 0.51 0.13	27.7 25.4 19.0	35.6 32.7 24.5	43.5 39.9 29.9
		MED.	725	3 2 1	1.13 0.51 0.13	26.3 24.2 18.3	33.8 31.1 23.5	41.3 38.1 28.8
		LOW	650	3 2 1	1.13 0.51 0.13	24.6 22.7 17.1	31.6 29.2 22.0	38.7 35.7 26.9
30HBXB-HW	30,000	HIGH	1000	6 4 2	7.55 3.64 1.04	37.5 35.1 30.0	48.2 45.2 38.6	58.9 55.2 47.2
		MED.	780	6 4 2	7.55 3.64 1.04	32.3 30.5 26.3	41.6 39.2 33.9	50.8 47.9 41.4
		LOW	625	6 4 2	7.55 3.64 1.04	28.2 26.7 23.5	36.3 34.3 30.2	44.3 40.9 36.9
36HBXB-HW	36,000	HIGH	1200	6 4 2	7.55 3.64 1.04	41.5 38.7 32.8	53.4 49.8 42.2	65.2 60.8 51.5
		MED.	1140	6 4 2	7.55 3.64 1.04	40.3 37.7 32.1	51.8 48.5 41.3	63.4 59.3 50.5
		LOW	1070	6 4 2	7.55 3.64 1.04	39.0 36.5 31.3	50.1 47.0 40.2	61.3 57.4 49.1
48HBXB-HW	48,000	HIGH	1660	6 4 2	2.90 1.40 0.41	66.6 61.7 48.0	85.6 79.4 61.8	104.7 97.0 75.5
		MED.	1460	6 4 2	2.90 1.40 0.41	62.3 57.4 45.0	80.1 73.8 57.8	97.9 90.2 70.7
		LOW	1180	6 4 2	2.90 1.40 0.41	54.5 50.6 40.1	70.1 65.0 51.6	85.7 79.5 63.0
60HBXB-HW	60,000	HIGH	1980	9 7 5	5.15 3.33 1.86	83.8 80.0 74.5	107.8 102.9 95.8	131.7 125.8 117.1
		MED.	1710	9 7 5	5.15 3.33 1.86	76.8 73.5 68.9	98.7 94.5 88.5	120.6 115.5 108.2
		LOW	1430	9 7 5	5.15 3.33 1.86	68.5 65.8 61.8	88.1 84.6 79.5	107.7 103.4 97.1

NOTES:

(1) Heat BTU is at 65° Entering Air Temperature**.**

(2) Units are shipped with motors connected to high speed for cooling and medium speed for heating.

(3) 190° EWT would increase the 180° EWT heating capacities by 9.1%. 200° EWT would increase the 180° EWT heating capacities by 18.2%.

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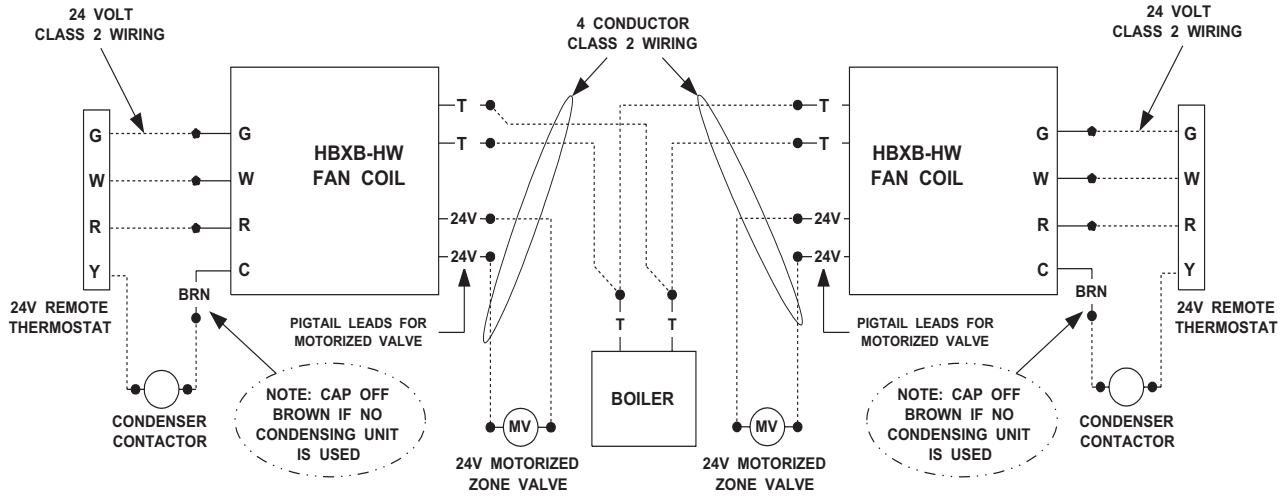
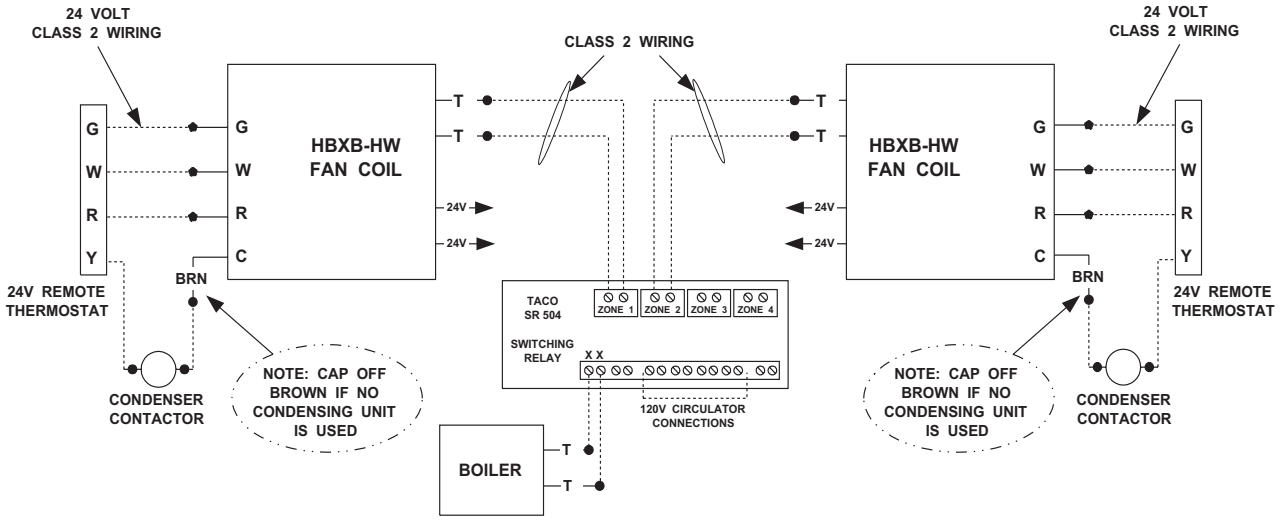
APPLICATION GUIDELINES

Zone Valves Install a motorized valve with each air handler to control flow to that zone as required**.**

TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS
WITH ZONE VALVES



TYPICAL WIRING SCHEMATIC
FOR MULTIPLE ZONE CONNECTIONS TO
TACO SR-504/506 SWITCHING RELAY



QUIET-ONE 2000™

RECESSED POCKET WALL UNIT SERIES

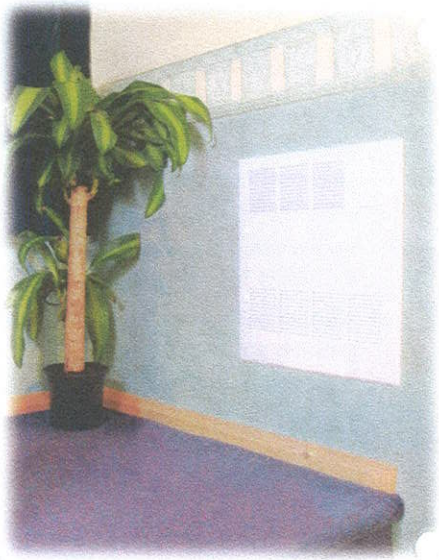
Features & Benefits

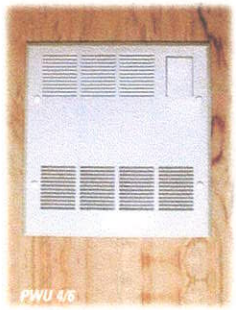
- **Completely Assembled**
  self-contained heating unit comes out of the box ready to install.
- **3 sizes to choose from**
  PWU-4/6 — 2,000-6,000 BTU/Hr.
  PWU-8/10 — 4,000-9,000 BTU/Hr.
  PWU-13/15 — 8,000-15,000 BTU/Hr.
- **Quality Sheet Metal**
  The PWU grille and chassis are quite possibly the finest examples of sheet metal crafting in the industry.
- **Quiet Performance**
  In the tradition of The Quiet-One family, the PWU is a silent, yet powerful performer thanks to our proven Teflon bearing technology.
- **Protrudes only 7/8"**
  This makes the PWU the perfect choice in applications where space is at a premium.
- **Header Type Coil**
  This mechanically bonded heat exchanger is positioned in such a way that it fully utilizes the air stream as it gently thrusts heat into the room.
- **5 Year Warranty**
  Our confidence in the quality of our products allows us to extend this generous warranty.
- **User Friendly Features**
  2 speed fan control and air vent are easily accessed through our finely crafted, unique gravity-glide access door.
- **Installer Friendly Features**
  Our integrated design assures you'll be off the job quickly.

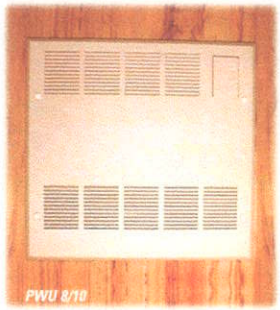
Designed to deliver maximum heat in the minimum amount of space... quietly and reliably

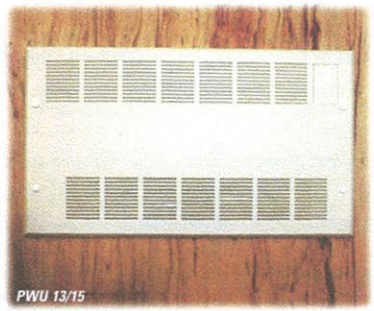
The Pocket Wall Unit

The perfect product for foyers, hallways, family rooms, finished basements and even for taking the chill off of a garage





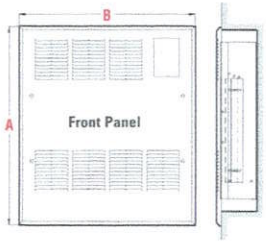




PWU BTU/HR Ratings at high speed - Water Flow Rate (Gallons Per Minute)

Entering Water Temperature (°F)	1 GPM			3 GPM			5 GPM		
	Model 4/6	Model 8/10	Model 13/15	Model 4/6	Model 8/10	Model 13/15	Model 4/6	Model 8/10	Model 13/15
140°	2529	4185	7002	3294	5211	8154	4050	6030	8640
150°	2961	4689	8352	3645	5724	9045	4410	6480	9675
160°	3285	5175	9180	4050	6291	10017	4815	7110	10575
170°	3663	5634	10215	4482	6966	11556	5220	7840	12060
180°	3906	6174	11088	4941	7614	13068	5490	8505	13500
190°	4167	6696	12105	5292	8289	14121	5895	9180	14715
200°	4572	7200	12951	5670	8991	15120	6390	9855	15795

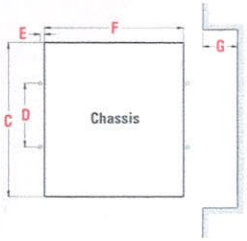
Ambient air temp: 65°F • Flow rates 1, 3 and 5 Gallons per Minute



Dimensions

Front Panel	A	B
PWU 4/6	19½"	17⅛"
PWU 8/10	19½"	21"
PWU 13/15	19½"	31½"

Chassis	C	D	E	F	G
PWU 4/6	17⅛"	7⅛"	3/8"	14⅛"	3⅛"
PWU 8/10	17⅛"	7⅛"	3/8"	18⅛"	3⅛"
PWU 13/15	17⅛"	7⅛"	3/8"	28⅛"	3⅛"



Smith's
ENVIRONMENTAL PRODUCTS®

QUIET-ONE 2000™
RECESSED POCKET WALL UNIT SERIES

HOOD INFORMATION – Job#2323566

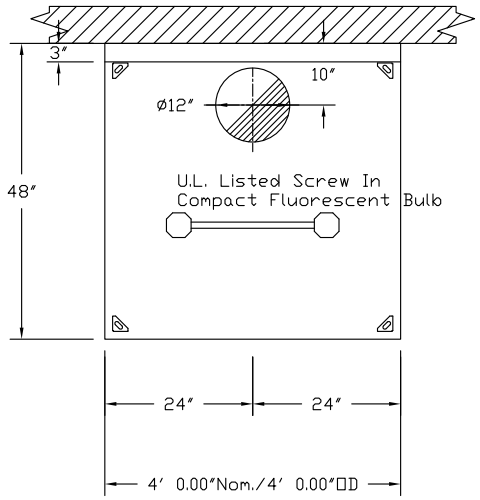
HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	EXHAUST PLENUM						HOOD CONSTRUCTION	HOOD CONFIG.	
					TOTAL EXH. CFM	RISER(S)						END TO END	ROW
						WIDTH	LENG.	DIA.	CFM	S.P.			
1		4812 SND-2	4' 0.00"	600 Deg.	1000			12"	1000	-0.332"	430 SS Where Exposed	ALONE	ALONE

HOOD INFORMATION

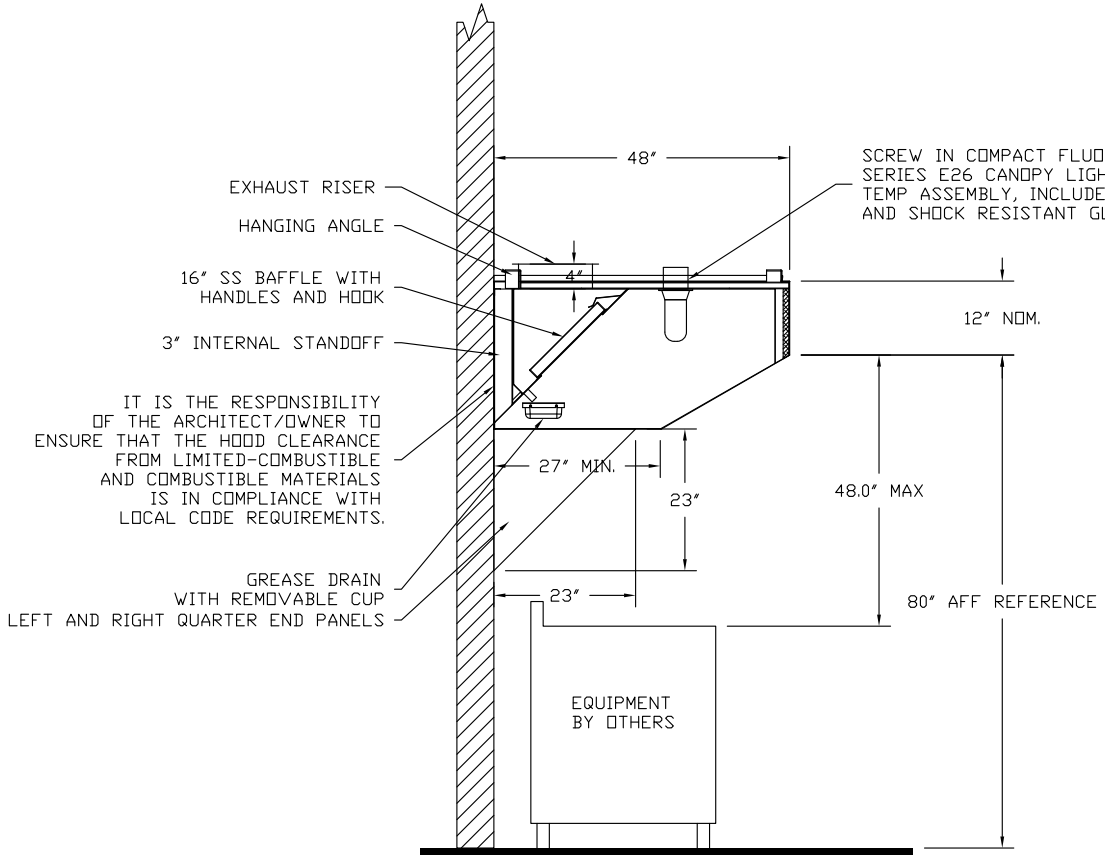
HOOD NO.	TAG	FILTER(S)				LIGHT(S)			UTILITY CABINET(S)					FIRE SYSTEM PIPING	HOOD HANGING WGHT
		TYPE	QTY.	HEIGHT	LENGTH	EFFICIENCY @ 9 MICRONS	QTY.	TYPE	WIRE GUARD	LOCATION	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY		
1		SS Baffle with Handles	2	16"	16"	30%	2	Screw In Compact	NO						NO	199 LBS

HOOD OPTIONS

HOOD NO.	TAG	OPTION
1		RIGHT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS
		LEFT QUARTER END PANEL 23" Top Width, 0" Bottom Width, 23" High 430 SS



PLAN VIEW – Hood #1
4' 0.00" LONG 4812SND-2



SECTION VIEW – MODEL 4812SND-2
HOOD – #1

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐
SIGNATURE _____
Your Title _____ Date _____

CAPTIVEAIRE

JOB Kaufman House r1	
LOCATION PORTLAND, ME, 04103	
DATE 5/8/2015	JOB # 2323566
DWG # 1	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

EXHAUST FAN INFORMATION – Job#2323566

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	ø	VOLT	FLA	WEIGHT (LBS.)	SONES
1		DU50HFA	1000	0.500	1170	0.500	0.1810	1	115	5.6	106	9.9

FAN OPTIONS

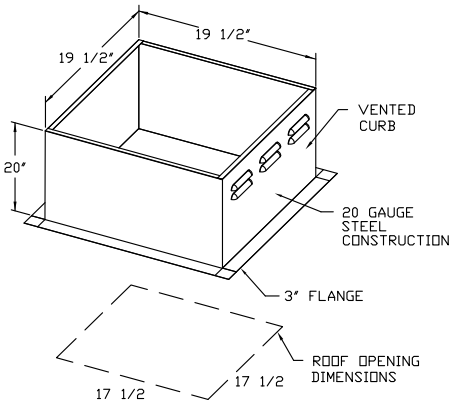
FAN UNIT NO.	TAG	OPTION (Qty. - Descr.)
1		1 - Grease Box
		1 - Full Crating For Exhaust Fans
		1 - ECM Wiring Package for Exhaust Fans or Untempered Supply Fans - Manual Speed Control.
		1 - 3 Year Extended Motor Warranty
		1 - Fan Base Ceramic Seal - For Grease Ducts

FAN ACCESSORIES

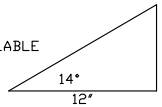
FAN UNIT NO.	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1		YES						

CURB ASSEMBLIES

NO.	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	31 LBS	Curb	19.500"W x 19.500"L x 20.000"H SPECIFY Pitch Vented Hinged

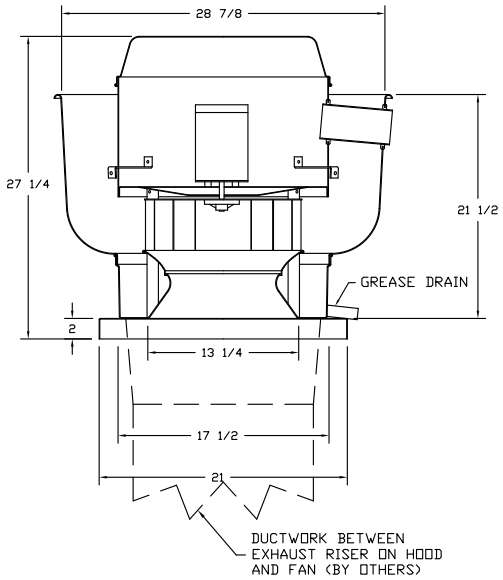


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.



SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE

FAN #1 DU50HFA - EXHAUST FAN



FEATURES:

- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX
FULL CRATING FOR EXHAUST FANS
ECM WIRING PACKAGE FOR EXHAUST FANS OR UNTEMPERED SUPPLY FANS - MANUAL SPEED CONTROL.
3 YEAR EXTENDED MOTOR WARRANTY
FAN BASE CERAMIC SEAL - FOR GREASE DUCTS

ROOF PITCH FOR CURB(S) MUST BE SPECIFIED PRIOR TO RELEASING ORDER
___:12

CUSTOMER APPROVAL TO MANUFACTURE:

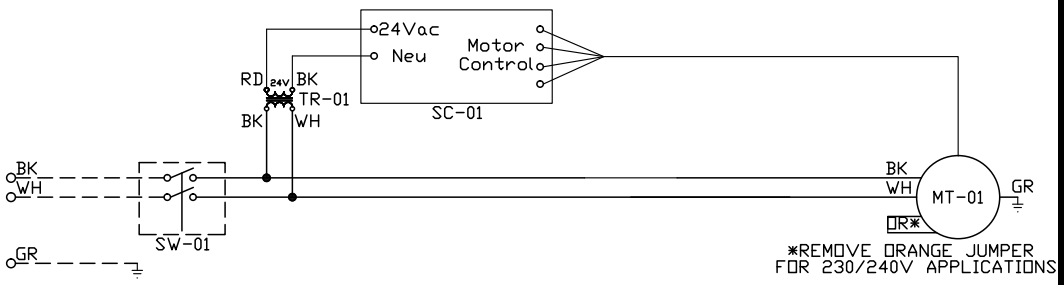
Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐
SIGNATURE _____
Your Title _____ Date _____

BUILT IN ACCORDANCE WITH NFPA No. 96

CAPTIVEAIRE

JOB Kaufman House r1	
LOCATION PORTLAND, ME, 04103	
DATE 5/8/2015	JOB # 2323566
DWG # 2	DRAWN BY BFC-21
REV.	SCALE 3/8" = 1'-0"

Exhaust Fan Wiring	JOB 2323566 - Kaufman House r1	
DRAWING NUMBER EXH2323566-1	SHIP DATE 5/8/2015	MODEL DU50HFA



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Installed Options

Component Identification

Label	Description	Location
MT-01	Fan Motor	[2]
SC-01	EVO/ECM-VCU-36-MP	[1]
SW-01	Main disconnect switch	[2]
TR-01	24VAC 20VA Transformer	[1]

MOTOR INFO

EXHAUST 0.5HP-115V-1P-5.6FLA

ELECTRICAL INFORMATION

MOTOR/CTRL MCA: 7.0A
MOTOR/CTRL MOP: 15A

NOTES

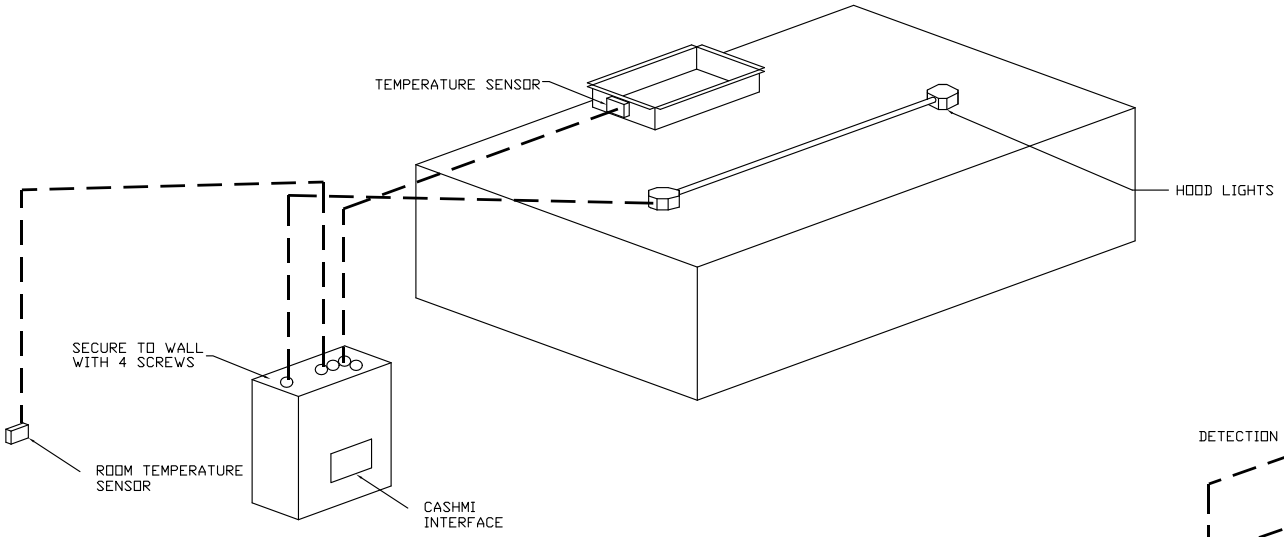
- - - - DENOTES FIELD WIRING
——— DENOTES INTERNAL WIRING

WIRE COLOR

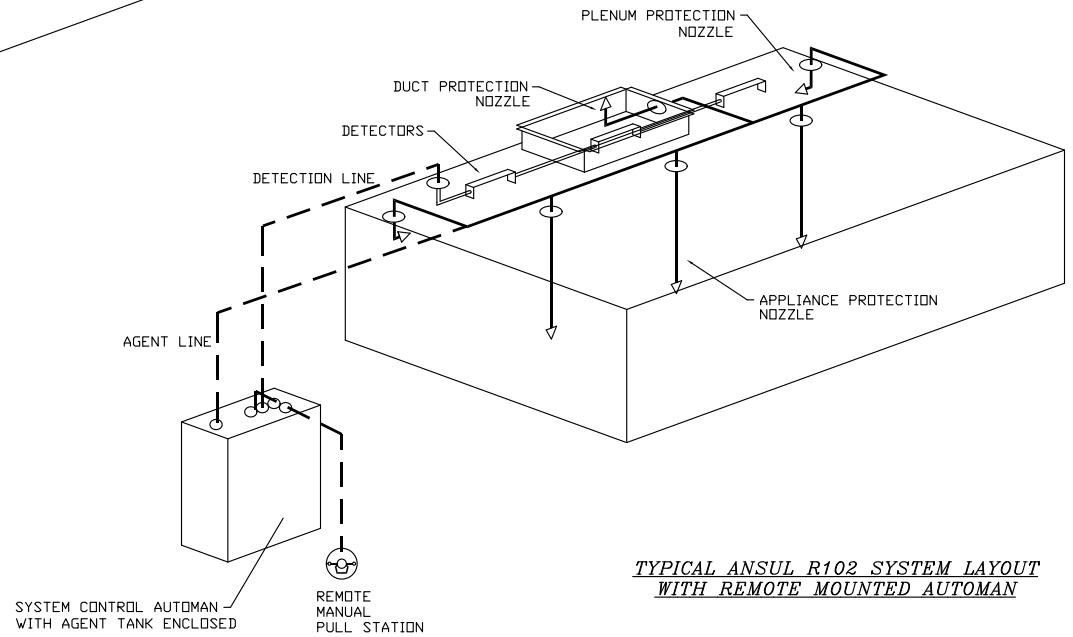
BK - BLACK	YW - YELLOW
BL - BLUE	GR - GREEN
BR - BROWN	GY - GRAY
OR - ORANGE	PR - PURPLE
RD - RED	PK - PINK
WH - WHITE	

ELECTRICAL PACKAGES – Job#2323566

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TYPE	ø	H.P.	VOLT	FLA
1		SC-110110FP	Wall Mount In SS Box	SS Wall Mount Box	1 Light 1 Fan	Smart Controls Thermostatic Control	Exhaust	1	0.500	115	5.6



WALL MOUNTED CONTROL CENTER



TYPICAL ANSUL R102 SYSTEM LAYOUT WITH REMOTE MOUNTED AUTOMAN

SPECIFICATIONS

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/ LINKAGE ASSEMBLY.

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐

Approved with NO Exception Taken ☐

Revise and Resubmit ☐

SIGNATURE _____

Your Title _____ Date _____

BUILT IN ACCORDANCE WITH NFPA No. 96

CAPTIVEAIRE

JOB Kaufman House r1	
LOCATION PORTLAND, ME, 04103	
DATE 5/8/2015	*JOB #* 2323566
DWG # 4	*DRAWN BY* BFC-21
REV.	*SCALE* 3/8" = 1'-0"

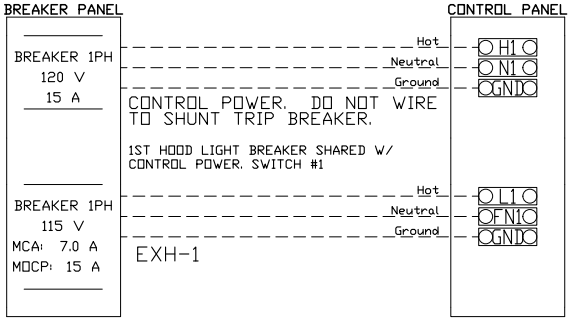
JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE
2323566	SC-110110FP		INSTALL
	JOB NAME: Kaufman House r1	DATE: 5/8/2015	DWG NO: ECP #1-1

DESCRIPTION OF OPERATION:
120V 1 Phase w/ 1 Exhaust Fan, Exhaust on in Fire, Lights out in Fire, Fan(s) On/Off Thermostatically Controlled. Room temperature sensor shipped loose for field installation.

BREAKER PANEL TO CONTROL PANEL

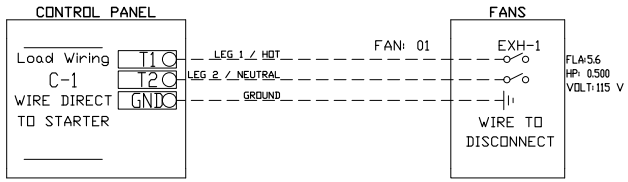
Responsibility: Electrician

BREAKER SIZE SHOWN IS THE MAXIMUM ALLOWED



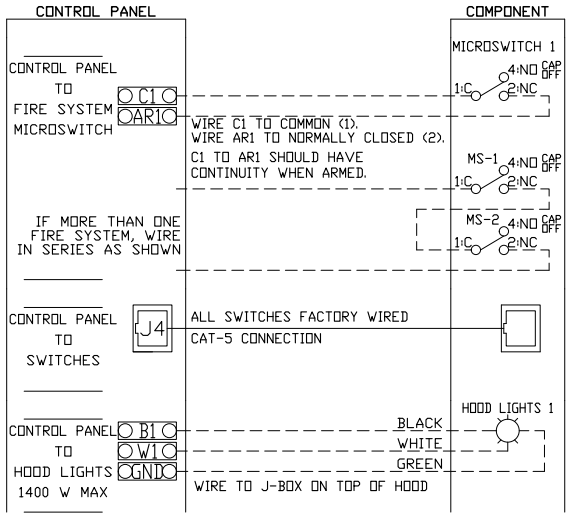
CONTROL PANEL TO FANS

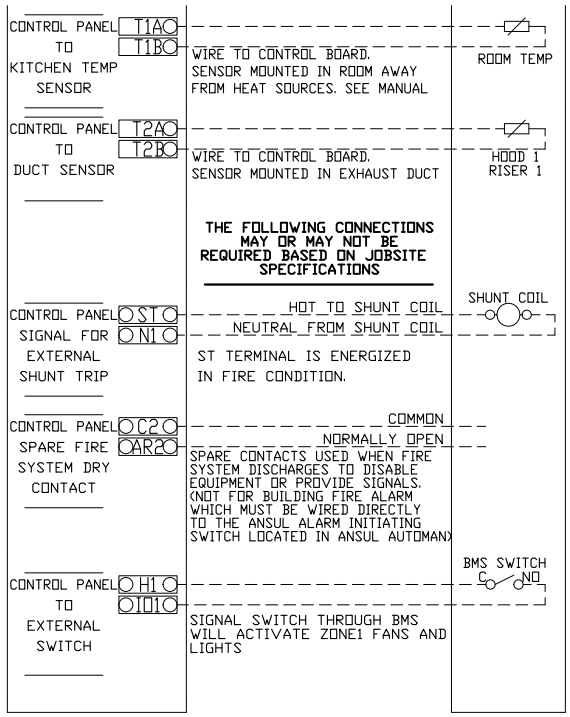
Responsibility: Electrician



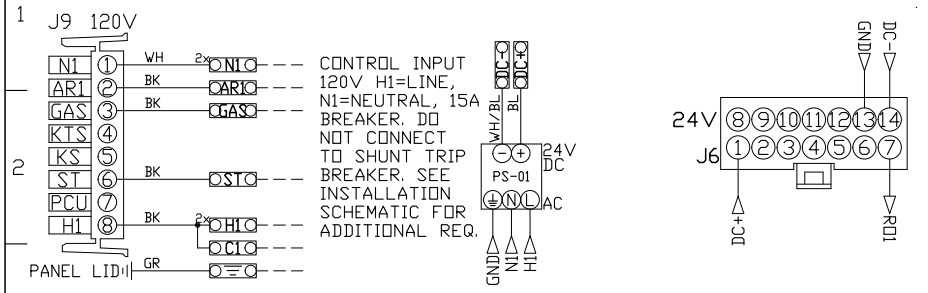
CONTROL PANEL TO ACCESSORY ITEMS

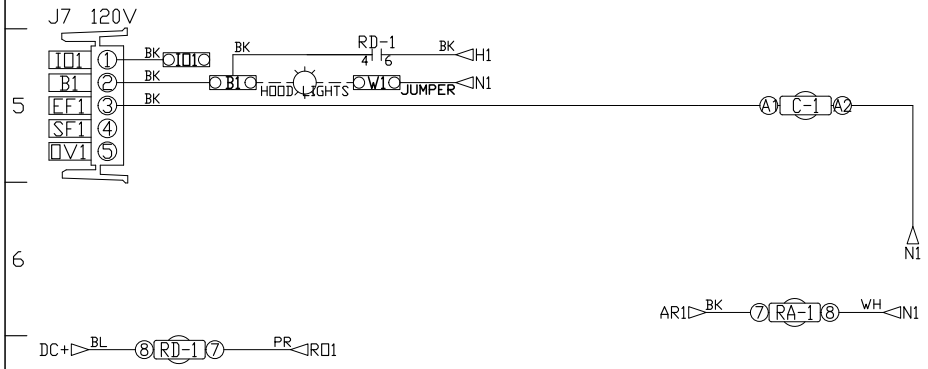
Responsibility: Electrician



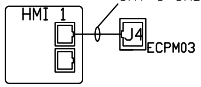


UNLESS SPECIFIED OTHERWISE, ALL FACTORY AC WIRING 16 AWG. ALL FACTORY DC WIRING 18 AWG.



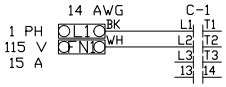


SWITCHES

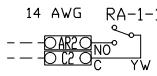


PUT END OF LINE PLUG IN EMPTY RJ45 JACKS, PN: EDL120A CAT-5 CABLE. LENGTH AS REQUIRED.

MOTOR POWER CIRCUIT



DRY CONTACTS (SHOWN DE-ENERGIZED)



14 x 18 x 6 Box

FACTORY WIRING SCHEMATIC
CIRCUIT BOARDS
ECPM03 Rev. 1.34
HMI Rev. 1.06

RA-x 120 VAC RELAY			RD-x 24 VDC RELAY	
NO	4	3	14	NO
NC	2	1	12	NC
COIL	8	7	A1 A2	COIL
COM	6	5	11	COM

COMPONENT LIST

LABEL	DESCRIPTION
ST-X	Starter PN:varies
OL-X	Overload PN:varies
C-X	Contactor PN:varies
PS-1	Power Sup. 24VDC PN:MDP18-24A-1C
RA-x	120V Relay DPDT PN:34.110.0184.0
RD-x	24VDC Light Relay PN:34.110.0188.0

LEGEND

- - - FIELD WIRING
——— FACTORY WIRING

BK- BLACK	YW- YELLOW
BL- BLUE	GY- GREY
BR- BROWN	PR- PURPLE
OR- ORANGE	RD- RED
WH- WHITE	
OR/BL- OR/BL STRIPE	
BL/RD- BL/RD STRIPE	
RD/GN- RD/GN STRIPE	
WH/BL- WH/BL STRIPE	

JOB NAME: Kaufman House r1

DRAWING TITLE: SC-110110FP

DESCRIPTION OF OPERATION

120V 1 Phase w/ 1 Exhaust Fan, Exhaust on in Fire, Lights out in Fire, Fan(s) On/Off Thermostatically Controlled. Room temperature sensor shipped loose for field installation.

JOB NO	DRAWN BY
2323566	
TYPE: FACTORY	DATE: 5/8/2015

DWG NO: ECP #1-2

Submittal Data Sheet

0.5-Ton Wall Mounted Unit - CTXS07LVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

FEATURES

- Connects with multi-split systems
- Intelligent eye occupancy sensor
- Vertical and horizontal auto swing
- Hot start technology
- 12 year limited parts and compressor warranty with online registration

BENEFITS

- Low ambient heat operation down to 0° F
- Titanium apatite photocatalytic air purifying

Submittal Data Sheet

0.5-Ton Wall Mounted Unit - CTXS07LVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

PERFORMANCE

Indoor Unit Model No.	CTXS07LVJU	Indoor Unit Name:	0.5-Ton Wall Mounted Unit
Type:	Wall Mounted	Rated Cooling Conditions:	Indoor (°F DB/WB): 80 / 67 Ambient (°F DB/WB): 95 / 75
Rated Cooling Capacity (Btu/hr):	7,000	Rated Heating Conditions:	Indoor (°F DB/WB): 70 / 70 Ambient (°F DB/WB): 47 / 43
Sensible Capacity (Btu/hr):		Rated Piping Length(ft):	
Cooling Input Power (kW):	0.040	Rated Height Separation (ft):	
Rated Heating Capacity (Btu/hr):	8,500		
Heating Input Power (kW):	0.05		

INDOOR UNIT DETAILS

Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Airflow Rate (H/M/L/SL) (CFM):	332/261/194/145
Power Supply Connections:	L1, L2, Ground	Moisture Removal (Gal/hr):	
Min. Circuit Amps MCA (A):		Gas Pipe Connection (inch):	3/8
Max Overcurrent Protection (MOP) (A):		Liquid Pipe Connection (inch):	1/4
Dimensions (HxWxD) (in):	11-5/8 x 31-1/2 x 8-9/16	Condensate Connection (inch):	5/8
Panel (HxWxD) (in):		Sound Pressure (H/M/L/SL) (dBA):	38/32/22/22
Net Weight (lb):	20	Sound Power Level (dBA):	54
Panel Weight (lb):		Ext. Static Pressure (Rated/Max) (inWg):	0.00 / 0.00

Submittal Data Sheet

0.5-Ton Wall Mounted Unit - CTXS07LVJU

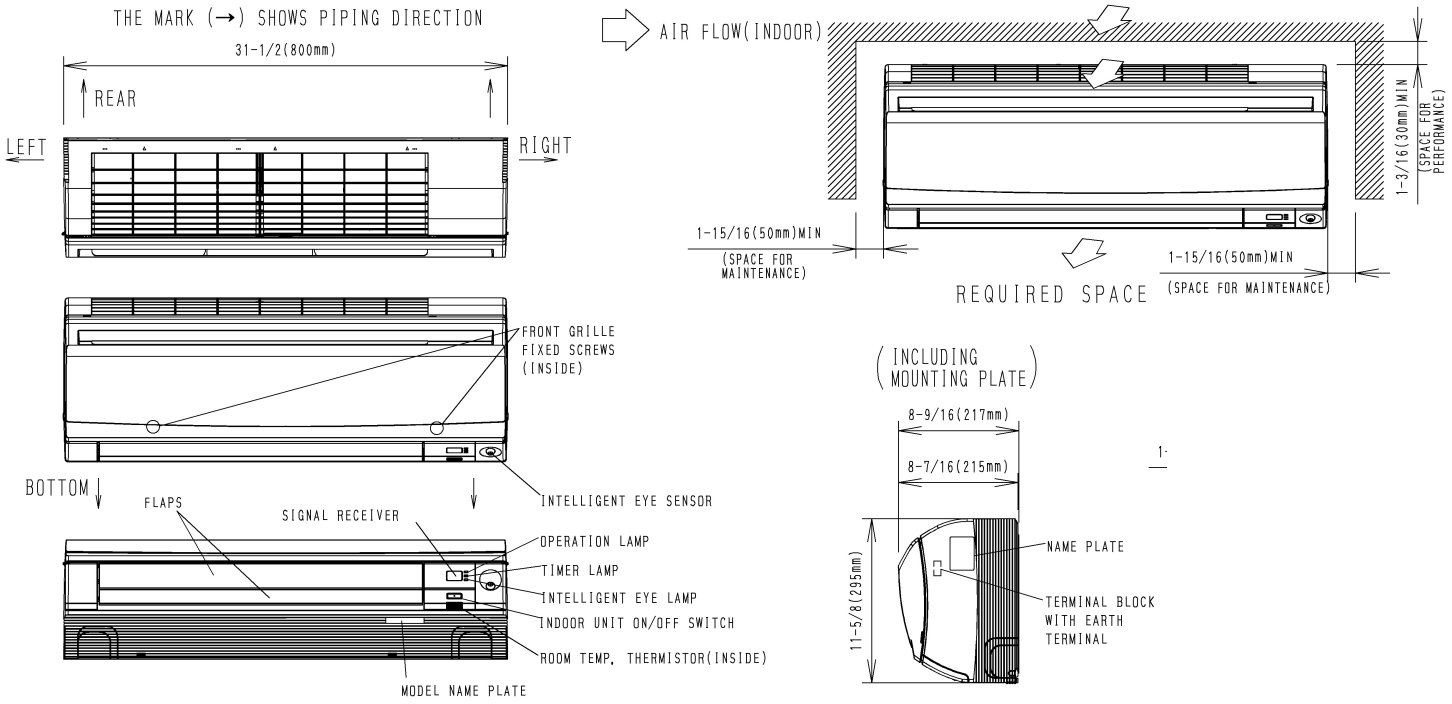
Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

DIMENSIONAL DRAWING

CTXS07LVJU



Submittal Data Sheet

1.0-Ton Wall Mounted Unit - CTXS12HVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

FEATURES

- Connects with multi-split systems
- Intelligent eye occupancy sensor
- Vertical and horizontal auto swing
- Hot start technology
- 12 year limited parts and compressor warranty with online registration

BENEFITS

- Low ambient heat operation down to 0° F
- LCD wireless remote with backlit display

Submittal Data Sheet

1.0-Ton Wall Mounted Unit - CTXS12HVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

PERFORMANCE

Indoor Unit Model No.	CTXS12HVJU	Indoor Unit Name:	1.0-Ton Wall Mounted Unit
Type:	Wall Mounted	Rated Cooling Conditions:	Indoor (°F DB/WB): 80 / 67 Ambient (°F DB/WB): 95 / 75
Rated Cooling Capacity (Btu/hr):	11,500	Rated Heating Conditions:	Indoor (°F DB/WB): 70 / 70 Ambient (°F DB/WB): 47 / 43
Sensible Capacity (Btu/hr):		Rated Piping Length(ft):	
Cooling Input Power (kW):	0.040	Rated Height Separation (ft):	
Rated Heating Capacity (Btu/hr):	11,500		
Heating Input Power (kW):	0.05		

INDOOR UNIT DETAILS

Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Airflow Rate (H/M/L) (CFM):	388/335/283
Power Supply Connections:	L1, L2, Ground	Moisture Removal (Gal/hr):	
Min. Circuit Amps MCA (A):		Gas Pipe Connection (inch):	3/8
Max Overcurrent Protection (MOP) (A):		Liquid Pipe Connection (inch):	1/4
Dimensions (HxWxD) (in):	11-7/16 x 31-5/16 x 9-3/8	Condensate Connection (inch):	11/16
Panel (HxWxD) (in):		Sound Pressure (H/M/L) (dBA):	45/41/36
Net Weight (lb):	20	Sound Power Level (dBA):	
Panel Weight (lb):		Ext. Static Pressure (Rated/Max) (inWg):	0.00 / 0.00

Submittal Data Sheet

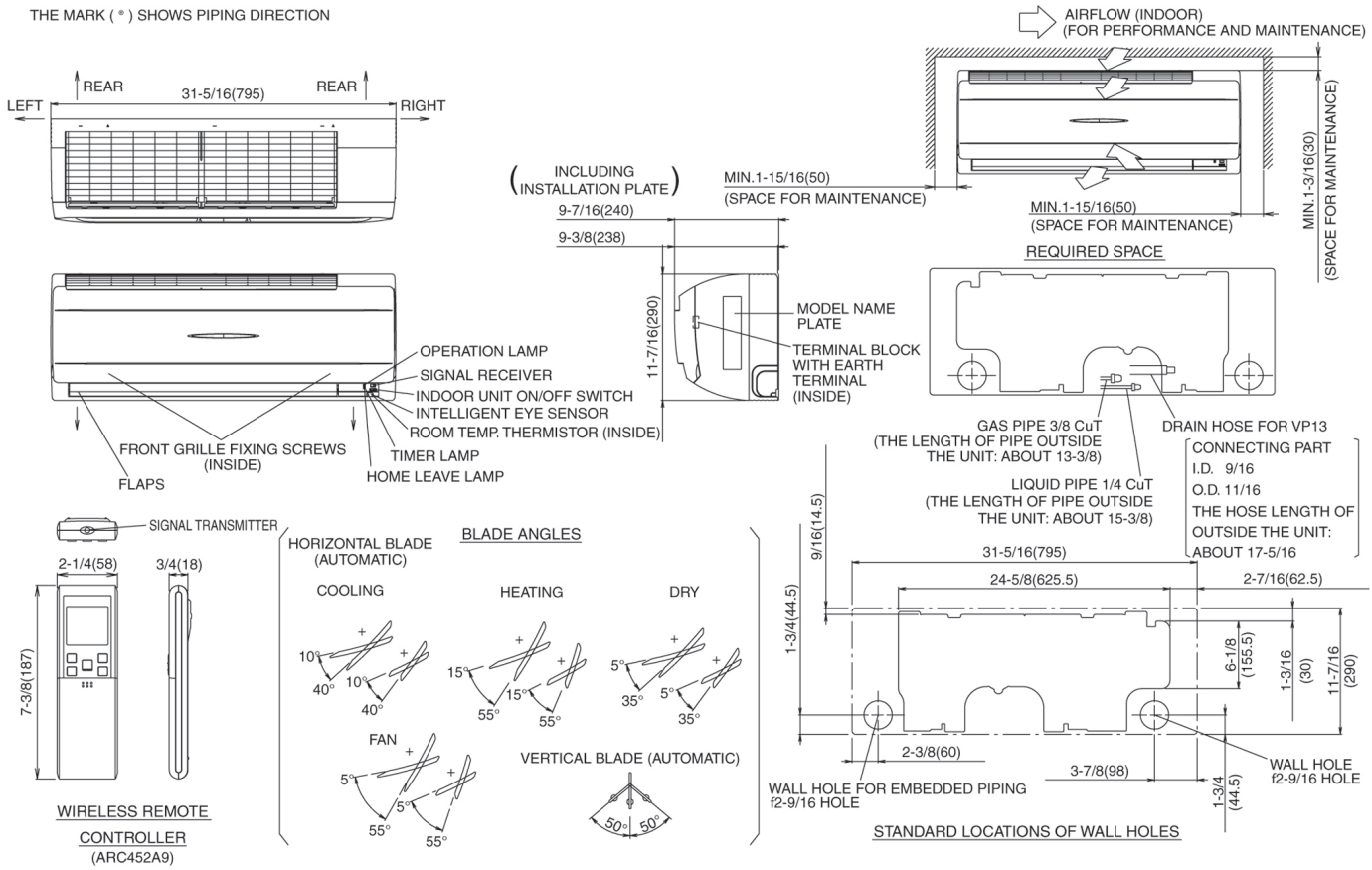
1.0-Ton Wall Mounted Unit - CTXS12HVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

DIMENSIONAL DRAWING



Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON - 4MXS36NMVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

FEATURES

- Up to 18.9 SEER / Up to 12.7 EER / Up to 12.5 HSPF
- High-efficiency inverter driven swing compressor
- Low ambient cooling to 5°F / -4°F with optional drain pan heater
- Specialized drain pan design for improved cold climate drainage

BENEFITS

- 12 Year limited parts warranty with online registration
- 5 Year limited parts warranty for commercial applications
- High efficiency cooling and heating operation provides utility bill savings
- Multiple indoor unit style options: wall mounted, floor standing, ceiling cassette, slim duct
- May qualify for regional utility rebates and incentives
- Compatible with optional Daikin ENVi Wi-Fi capable Smart Control

Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON - 4MXS36NMVJU

Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

PERFORMANCE			
Outdoor Unit Model No.	4MXS36NMVJU	Outdoor Unit Name:	4 PORT HP, DUCTLESS OD 3 TON
Type:	Heat Pump	Rated Cooling Conditions:	Indoor (°F DB/DB): 80 / 67 Ambient (°F DB/WB): /
Rated Cooling Capacity (Btu/hr):	36,000	Rated Heating Conditions:	Indoor (°F DB/WB): / Ambient (°F DB/WB): /
Max/Min Cooling Capacity (Btu/hr):	38,000 /	Rated Piping Length(ft):	25
Cooling Input Power (kW):		Rated Height Difference (ft):	49.00
Rated Heating Capacity (Btu/hr):	36,000	SEER (Non-Ducted/Ducted):	17.70 / 14.00
Max/Min Heating Capacity (Btu/hr):	43,000 /	HSPF (Non-Ducted/Ducted):	12.2 / 8.2
Heating Input Power (kW):		Heating COP (Non-Ducted/Ducted):	4.5 / 3.5

OUTDOOR UNIT DETAILS			
Power Supply (V/Hz/Ph):	208-230 / 60 / 1	Compressor Type:	Inverter
Power Supply Connections:	L1, L2, L3, Ground	Capacity Control Range (%):	-
Min. Circuit Amps MCA (A):	19.75	Airflow Rate (H) (CFM):	2,613
Max Overcurrent Protection (MOP) (A):	20.00	Gas Pipe Connection (inch):	1/2
Max Starting Current MSC(A):	17.50	Liquid Pipe Connection (inch):	1/4
Rated Load Amps RLA(A):	17.5	Sound Pressure (H) (dBA):	54
Dimensions (HxWxD) (in):	29 x 34-1/4 x 12-5/8	Sound Power Level (dBA):	
Net Weight (lb):	139		

Submittal Data Sheet

4 PORT HP, DUCTLESS OD 3 TON - 4MXS36NMVJU

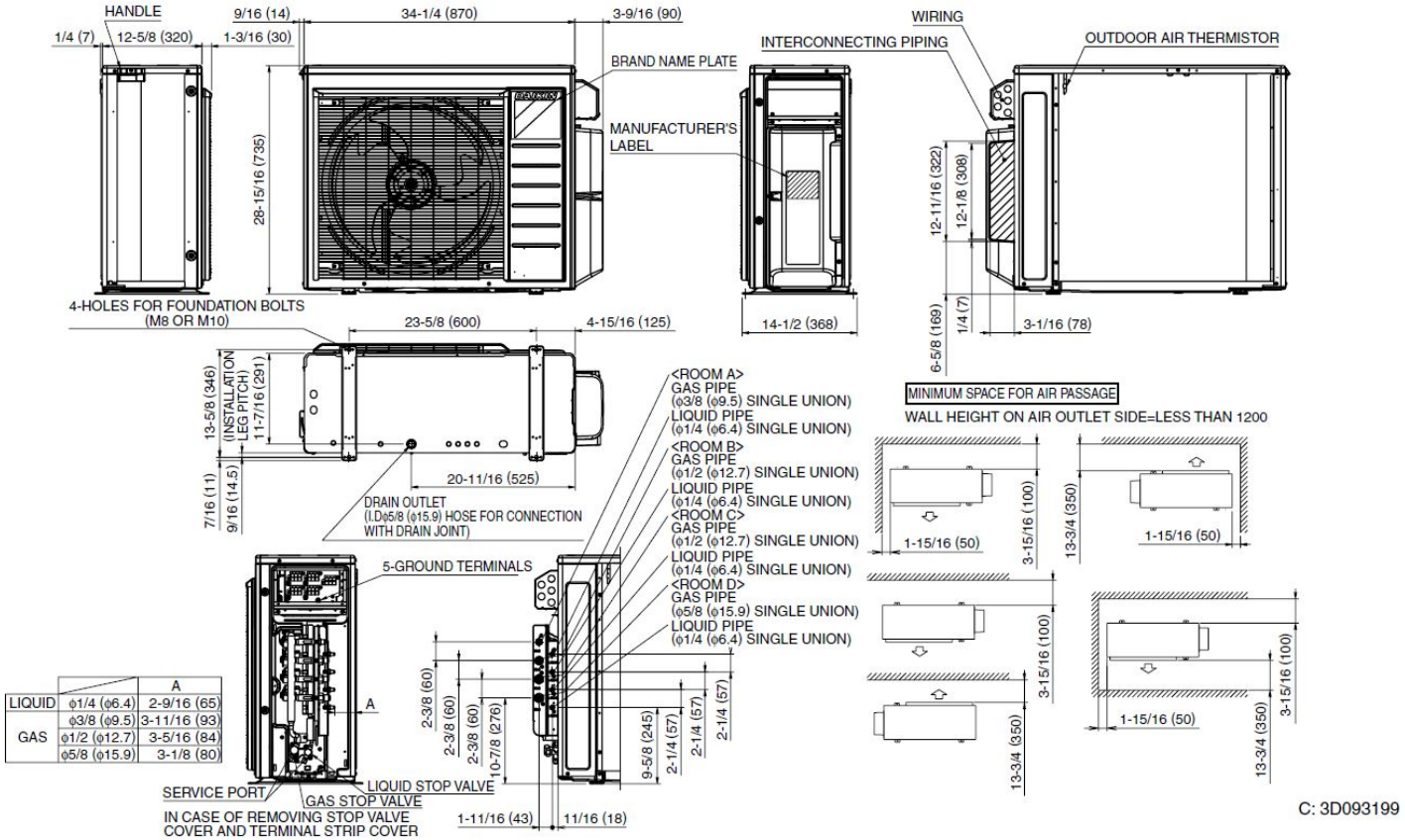
Project: Spurwink

Submitted by: Anne Charpentier of F W WEBB CO on 5/8/2015

Submitted to: No Engineer Name Specified

SYSTEM DETAILS			
Refrigerant Type:	R-410A	Cooling Operation Range (°F DB):	14 - 115
Holding Refrigerant Charge (lbs):	6.2	Heating Operation Range (°F WB):	5 - 72
Additional Charge (lb/ft):	0.01	Max. Pipe Length (Vertical) (ft):	
Pre-charge Piping (Length) (ft):		Cooling Range w/Baffle (°F DB):	-
Max. Pipe Length (Total) (ft):	230	Heating Range w/Baffle (°F WB):	-
Max Height Separation (Ind to Ind ft):	49		

DIMENSIONAL DRAWING



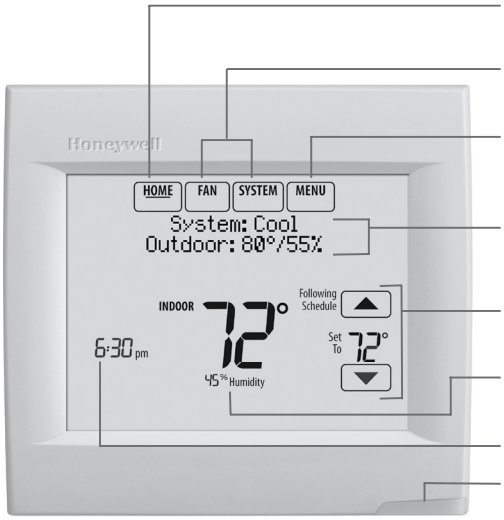
Honeywell

Wi-Fi VisionPRO® 8000

Installation Guide

PRO install

Reference to key features



Current display. Underlined label signifies the current display.

Mode control buttons. Use to change settings for Fan or System Heat/Cool.

Menu. Select options to: set schedules, view equipment status, change IAQ settings, access installer options*, etc.

Current status. Shows system mode (heat/cool), outdoor temperature and humidity.

Current schedule. Shows desired temperature and schedule status.

Indoor conditions. Shows indoor temperature and humidity.

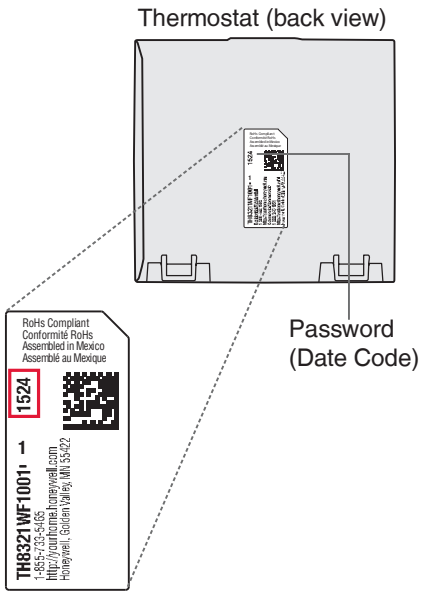
Current Time.

Alert Light. On when alert message is active or system is set to Em Heat.

* Password is the date code.

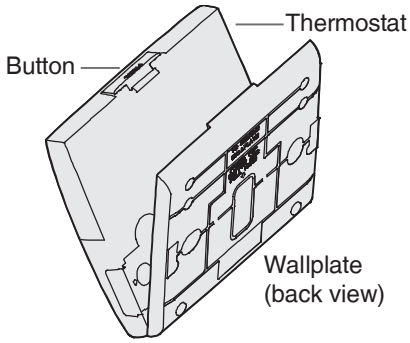
Getting started

Follow these basic steps to install this thermostat, set installer options, and connect to the Wi-Fi network.



Installing the thermostat

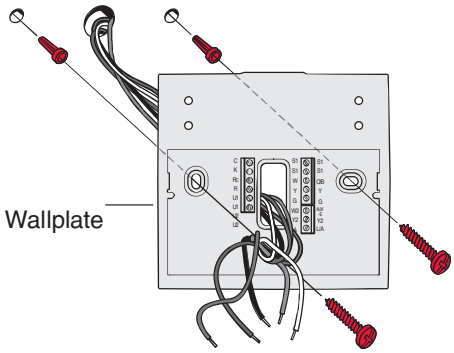
1 **Separate wallplate from thermostat.**
Press button on top and pull to remove the wallplate.



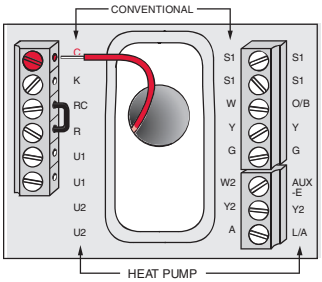
2 **Mount wallplate as shown.**
Mount new wallplate using screws and anchors included with the thermostat.

Drill 3/16-in holes for drywall.

Drill 7/32-in holes for plaster.

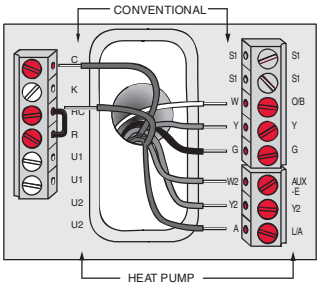


3 Connect power.
24VAC power is required. Connect common side of transformer to C terminal.

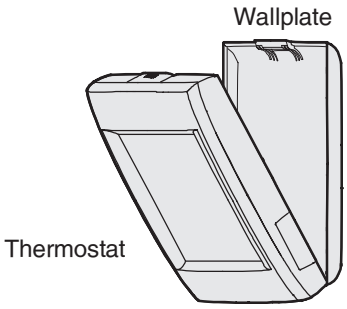


4 Wire the thermostat.
Refer to the table and wiring diagrams on the next page.

a Turn on 24VAC **NOW**.
24VAC (C wire) is required.



5 Mount thermostat on wallplate.
Align thermostat at bottom and snap into place as shown.



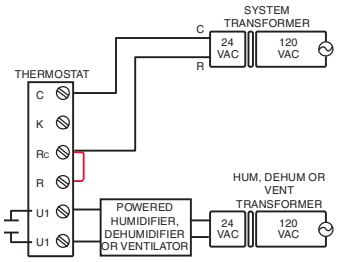
Terminal Designations

Conventional System		Heat Pump	
Terminal	**Description**	**Terminal**	**Description**
C	Common wire from secondary side of cooling transformer (if 2 transformers).	C	Common wire from secondary side of cooling transformer.
Rc*	Cooling power.	Rc	Cooling power.
R*	Heating power.	R	Heating power.
W	Heat Stage 1	O/B	Changeover valve for heat pumps.
W2	Heat Stage 2	AUX-E	Backup Heat/Emergency Heat
Y	Compressor Stage 1	Y	Compressor Stage 1
Y2	Compressor Stage 2	Y2	Compressor Stage 2
G	Fan Relay	G	Fan Relay
A	Connect to Economizer Module or Lighting Panel (TOD).	L/A	Connect to Compressor Monitor, Zone Panel, Economizer Module or Lighting Panel (TOD).
U1 / U1	Universal relay for humidification, dehumidification, ventilation, or a stage of heating/cooling.	U1 / U1	Universal relay for humidification, dehumidification, ventilation, or a stage of heating/cooling.
S1 / S1	Universal input for a wired indoor, outdoor or discharge sensor.	S1 / S1	Universal input for a wired indoor, outdoor or discharge sensor.
K**	Connect to K on Wire Saver module.	K**	Connect to K on Wire Saver module.

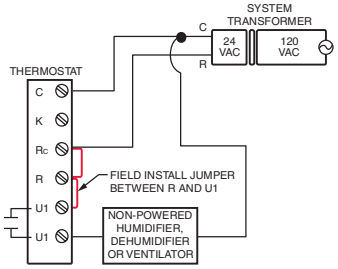
* Remove factory installed jumper for two transformer systems.

** The THP9045A1023 Wire Saver module is used on heat/cool systems when you only have four wires at the thermostat and you need a fifth wire for a common wire. Use the K terminal in place of the Y and G terminals on conventional or heat pump systems to provide control of the fan and the compressor through a single wire—the unused wire then becomes your common wire. See THP9045 instructions for more information.

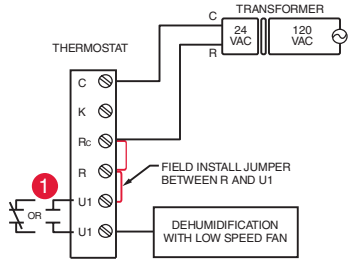
POWERED HUMIDIFIER, DEHUMIDIFIER OR VENTILATOR



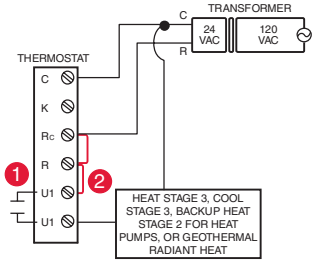
NON-POWERED HUMIDIFIER, DEHUMIDIFIER OR VENTILATOR



DEHUMIDIFICATION WITH LOW SPEED FAN



CONNECTING A HEAT OR COOL STAGE TO U1



1. Wire the thermostat universal relay to the low speed fan for dehumidification control at the equipment. The thermostat relay can be set to normally open or normally closed in the thermostat installer setup.

   Normally open, dry contacts

   Normally closed, dry contacts

1. U1 terminals are normally open dry contacts when set up for a stage of heating or cooling.
2. You must install a field jumper if the stage of heating or cooling is powered by system transformer. Do NOT install a field jumper if the stage of heating has its own transformer.

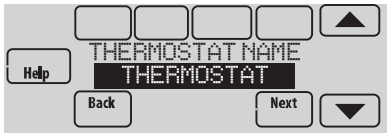
Performing installer setup

Setup options define the type of system you are installing and preferences for the display.

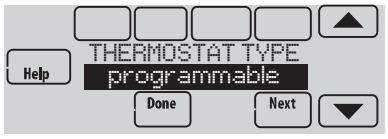
1 Follow prompts on the screen to select the appropriate options. Among the screens you might see wil be options for:

1.1 Application, either Residential or Commercial.

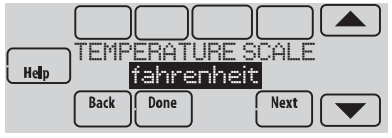
1.2 Thermostat Name, which will enable you to identify it if you're installing more than one thermostat (for a zoned HVAC application, for instance).



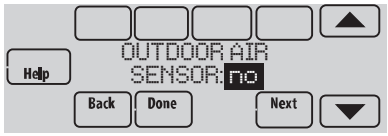
1.3 Thermostat Type, either programmable or not, depending on preference.



1.4 Temperature scale, either Fahrenheit or Celsius.



1.5 Any Outdoor Air Sensors installed.



NOTE: If you are using a Wired Outdoor Sensor or the outdoor temperature from the Wi-Fi connection to lockout the compressor or Auxiliary heat, select **Yes** to see the installer options for lockout temperatures.

1.6 The type of heating system.

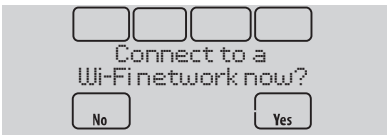
1.7 For all installer options, press the ▲ or ▼ buttons to change the option.

1.8 Press **Next** to move to the next setting, and **Done** when setup is complete.

Connecting to Wi-Fi

After installer setup, you will be prompted to connect to a Wi-Fi network.

NOTE: If you select **No**, the homeowner can connect to the Wi-Fi network later. (See "Connecting to Wi-Fi later" on page 8 or in the User's Guide.) The thermostat will display its Home screen and thermostat setup is complete.



1 Connect to the Wi-Fi network now.

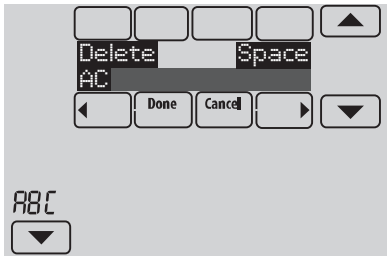
1.1 Press **Yes**.
The thermostat will scan for available Wi-Fi networks.

1.2 Use the arrow buttons to scroll up/down or left/right. Press the Wi-Fi network name, then press **Select**.

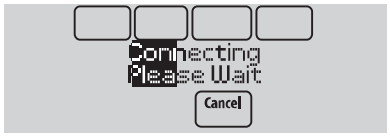
NOTE: If the Wi-Fi network name is hidden, see "Connecting to a hidden Wi-Fi network" on page 10.

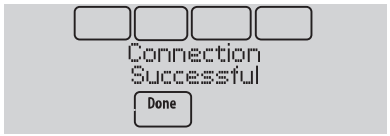
1.3 When prompted, press the screen to edit the password (if necessary).

1.4 Enter the password.
Press the ▲ or ▼ buttons to change the letter or number.
Press the ▶ button to move to the next character, or the ◀ button to move to the previous character.
Use the ▲ or ▼ buttons at the bottom to change letter case.
Press **Done** when complete.



1.5 The screen will let you know when the connection is successful. Press **Done** when the connection is successful.
If the connection is not successful, the screen will explain why not. See "Unsuccessful connection" on page 9. Follow instructions on the screen to try again.





NOTE: Press the **Help** button for more information about an unsuccessful connection.

2 The homeowner must have a Total Connect Comfort account.

2.1 Have the homeowner go to www.mytotalconnectcomfort.com and follow the instructions to login or create an account.

2.2 Press the ▼ button to display Wi-Fi signal strength, status, IP address, MAC and CRC.

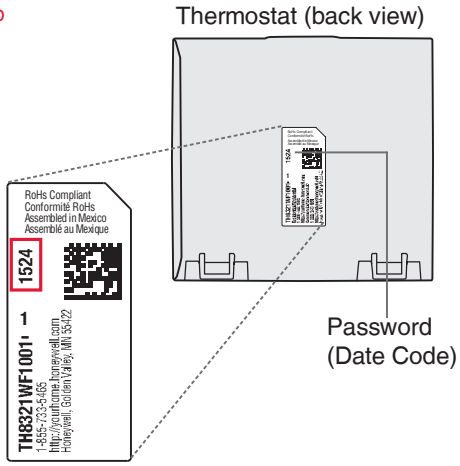
2.3 Note the Thermostat MAC and CRC; they will be needed during registration. Or, refer to the User's Guide.

Finding the password (Date Code)

- To make changes to Installer Setup
- To perform an Installer Test

Finding the password

You can find the date code on the back of the thermostat, or touch **Menu**, select **Dealer Information**, and scroll to the bottom to see Date Code.



1 Touch **Menu**.

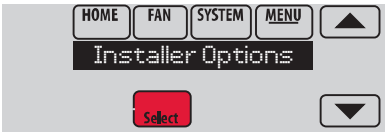
2 Select **Dealer Information**.

3 Scroll down to see the Date Code.

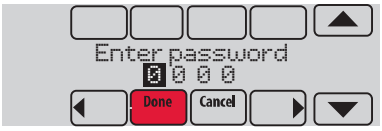
Making changes to Installer Setup and performing an Installer Test

1 Touch **Menu**.

2 Select **Installer Options**.



3 Enter password (date code) and touch **Done**. See “Finding the password” on page 7 to find the date code.

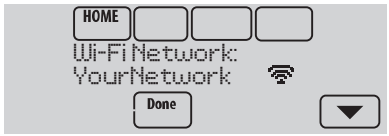


4 Select **Installer Setup** or **Installer Test**.

5 Follow prompts on the screen to select the desired setup options or to perform an equipment test.

Checking signal strength

After you successfully connect to the Wi-Fi network (see “Connecting to Wi-Fi” step 1.5), the thermostat will display signal strength. The signal strength symbols have the following meanings:



- Signal strength is 75%–100%
- Signal strength is 50%–75%
- Signal strength is 0%–50%

You can also check signal strength at any time after the thermostat is connected to the Wi-Fi network by pressing **MENU** then **Wi-Fi Setup**.

Connecting to Wi-Fi later

1 Press **MENU**, then **Wi-Fi Setup**.

2 Follow the prompts on-screen (and in “Connecting to Wi-Fi”) to select the Wi-Fi network and enter the password.

NOTE: To view and set the Wi-Fi thermostat remotely, the homeowner **must** have a Total Connect Comfort account. See “Connecting to Wi-Fi” step 2.

Unsuccessful connection

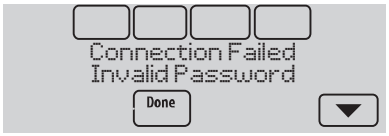
If you are unsuccessful in connecting the thermostat to the Wi-Fi network, you will see a Connection Failed screen. Press the ▼ button for other tips about this failed connection. Here are three specific reasons the connection might be unsuccessful.

For all Connection Failed screens, pressing **Done** will return to the Menu screen.

Invalid Password

The password you entered is invalid. Check that you have the right password and try again.

Press **Back** to return to “Connecting to Wi-Fi” step 1.3 on page 6.



No IP Address

The thermostat was unable to obtain an IP address from the router. Verify the router is correctly set up to automatically assign IP addresses. This connection can take several minutes. If there is still no connection, remove the thermostat from the wallplate for 10 seconds, then snap it back into place.

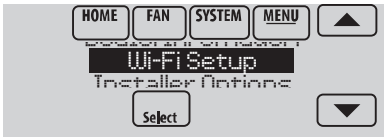
No Internet Link

The thermostat connected to the Wi-Fi network but was unable to establish a connection to the internet. Check the router settings and try again. Make sure the Ethernet cable is plugged into the router and try rebooting the router if necessary.

Connecting to a hidden Wi-Fi network

If the Wi-Fi network name is hidden and it doesn't show up in the list in "Connecting to Wi-Fi" follow these steps to connect to it.

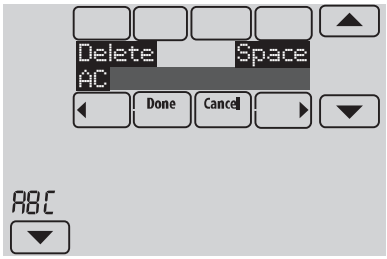
1 Press **MENU**, then **Wi-Fi Setup**.



2 Press **Other**, then press **Select**.

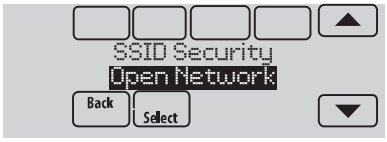
3 When prompted, press the screen to edit the network name.

4 Enter the network name.
Press the ▲ or ▼ buttons to change the letter or number.
Press the ▶ button to move to the next character, or the ◀ button to move to the previous character.
Use the ▲ or ▼ buttons at the bottom to change letter case.
Press **Done** when complete.



5 Select the appropriate network security setting, then press **Select**.

6 Enter the Wi-Fi network password as shown in "Connecting to Wi-Fi" step 1.4.



Specifications and replacement parts

Operating Ambient Temperature
Thermostat: 32 to 120° F (0 to 48.9° C)

Operating Relative Humidity
Thermostat: 5% to 90% (non-condensing)

Physical Dimensions (height, width, depth)
Thermostat: 4-15/16 x 4-5/8 x 1-1/8 inches (126 mm x 118 mm x 29 mm)

Wi-Fi Communication
Supports 802.11 B/G/N home wireless router
Frequency: 2.4 Ghz

Electrical ratings

Terminal	Voltage (50/60 Hz)	Max. Current Rating
W - OB	18 to 30 VAC and 750 mVDC	1.00A
Y (cooling)	18 to 30 VAC	1.00A
G (fan)	18 to 30 VAC	0.50A
W2 - Aux (heating)	18 to 30 VAC	0.60A
Y2 (cooling)	18 to 30 VAC	0.60A
A-L/A (output)	18 to 30 VAC	1.00A
U1/U1	30 VAC max.	0.50A

Accessories and replacement parts

Accessories / Replacement Parts	Part Number
Wired Outdoor Sensor 10k ohm NTC	C7089U1006
Wired Wall-mount Indoor Sensor 10k ohm NTC	C7189U1005
Wired Flush-mount Indoor Sensor 20k ohm NTC	C7772A1004, C7772A1012
Wired Wall-mount Indoor Sensor 20k ohm NTC	TR21
Wired Wall-mount Indoor Sensor 10k ohm NTC	TR21-A
Cover Plate (covers marks left by old thermostats)	THP2400A1019
Wire Saver Module	THP9045A1023

Model Numbering	TH8321WF	TH8321R	TH8320R	TH8110R
RedLINK™ or Wi-Fi	Wi-Fi	RedLINK™	RedLINK™	RedLINK™
Stages	3H/2C HP 2H/2C CONV	3H/2C HP 2H/2C CONV	3H/2C HP 2H/2C CONV	1H/1C HP 1H/1C CONV
Residential or Commercial	✓	✓	✓	✓
Dual Powered - C Wire or Battery	C Wire only	✓	✓	✓
Onboard Humidity Sensor	✓	✓		
Number of Universal Relays	1	1	0	0
Number of Universal Sensor Inputs	1	1	1	1
Economizer / TOD Output	✓	✓	✓	
Works with Optional Equipment Interface Module*		✓	✓	✓
Works with Optional TrueZONE Wireless Adapter*		✓	✓	✓

* The relay outputs and inputs on the thermostat do not function when used with an Equipment Interface Module or the TrueZONE Wireless Adapter.

DISCONNECT POWER BEFORE INSTALLATION. Can cause electrical shock or equipment damage.

MERCURY NOTICE: If this product is replacing a control that contains mercury in a sealed tube, do not place the old control in the trash. Contact the Thermostat Recycling Corporation at www.thermostat-recycle.org or 800-238-8192 for information on how and where to properly and safely dispose of your old thermostat.

PRO install **Must be installed by a trained, experience technician.** Read these instructions carefully. Failure to follow these instructions can damage the product or cause a hazardous condition.

Need Help?

For assistance please visit **http://customer.honeywell.com**
or call toll-free: **1-855-733-5465**

Automation and Control Systems
Honeywell International Inc.
1985 Douglas Drive North
Golden Valley, MN 55422
http://customer.honeywell.com

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