

Electro-HELPS VII

2-Speed Equipment, Control Interface

Reference and Assumptions

Generally for dual heat application 2-speed equipment probably also includes a 2-stage or variable burner gas furnace **with** ECM variable speed blower. When this is the case these two items will also need to be part of the interface control situation and wiring. Study through the following before proceeding to the next section.

1. **2-stage gas furnace** – from Electro’s experience all 2-stage gas furnace must have a W1 active or input before the furnace reacts to a W2 or other special variable burner second control wire. Realizing this, any W2 function from a 2H/2C roomstat can go directly to the furnace terminal block W2. There should be no reason to open or specially control this W2 wire within any of the following dual heat interface controls or discussion. The following items properly handle roomstat W1 as it relates to the proper dual heat interface and functions within the total system.
2. **ECM blower motor, typically furnace Y1 and Y2** – as a second document, you are encouraged to become familiar with *Electro-Helps VIII* dealing with all the known aspects of ECM blower motor and furnace Y1, Y2, O, G, BK, etc. This Helps document gives you various options relating to the various hardware configurations.

Air Conditioning

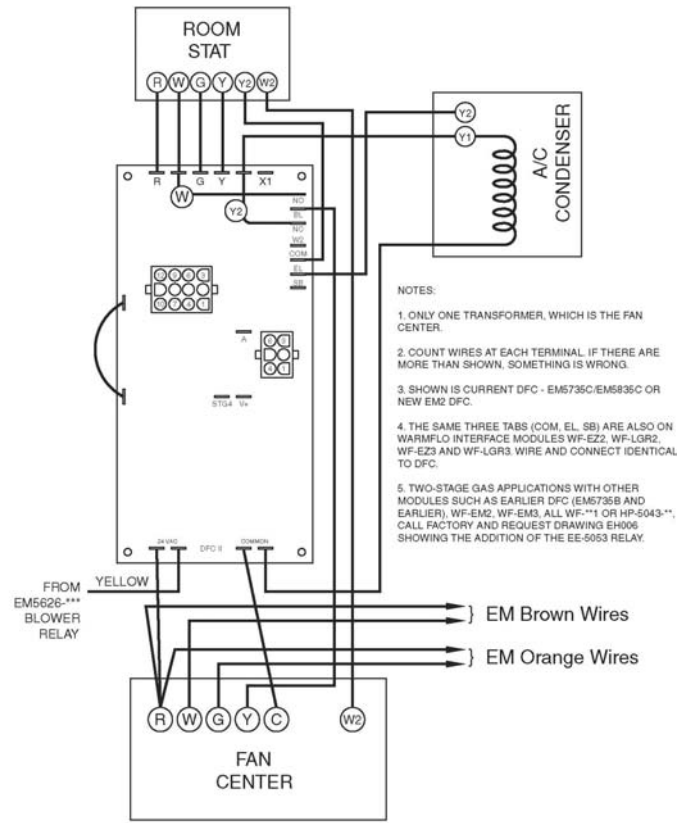
On the majority of the Electro dual heat Interface Modules there is a relay contact available on the board to load control open basic Y1 to the outdoor unit.

Similar to the 2-stage gas furnace statement above, Y2 at the air conditioner (or heat pump) is actually a function of Y1 similar to W1. **However**, in the case of cooling the Y2 will generally be somehow tied in or connected with the furnace Y2. Thus if the interface does not break Y2 during load control the furnace blower will probably be at its maximum high speed during summer load control. This may or may not be important but Electro feels running the blower during summer load control at continuous air (not highest speed) is more desirable. Thus the main reason for the following wiring arrangements is to keep the blower from high speed during cooling (or standby) interrupt.

1. **Electro-Mate DFC type** – drawing EH001, page 2, after revision 7-20-05.
 - a. Roomstat Y2 – COM tab (inside, upper right side)
 - b. EL tab – compressor Y2 **and** typically furnace Y2 (assuming BL is connected to Y1)
2. **HeatChoice** – installation manual EI203, page 12, after revision 7-25-05.
 - a. Roomstat Y2 – COM tab (inside, upper right side)
 - b. EL tab – compressor Y2 **and** typically furnace Y2 (assuming BL is connected to Y1)
3. **Electro-EZ-Mate (WF+ board)** – installation manual EI820, page 9.
 - a. Roomstat Y2 – COM tab (inside, top center)
 - b. EL tab – compressor Y2 **and** typically furnace Y2
4. **Dual Energy Furnace, DEC type** – installation manual DI101, page 5.
 - a. Roomstat Y2 – COM tab
 - b. EL tab – compressor Y2 **and** typically furnace Y2
5. **WarmFlo interface, WF-EM3** – requires additional relay, must use relay EE-5051 as detailed on drawing HH323, revision 12-10-04 and above.
6. **WarmFlo Select SL1** – installation manual EI709, page 12, and drawing EH712.
 - a. Roomstat Y2 – COM tab (inside, top center)
 - b. EL tab – compressor Y2 **and** typically furnace Y2

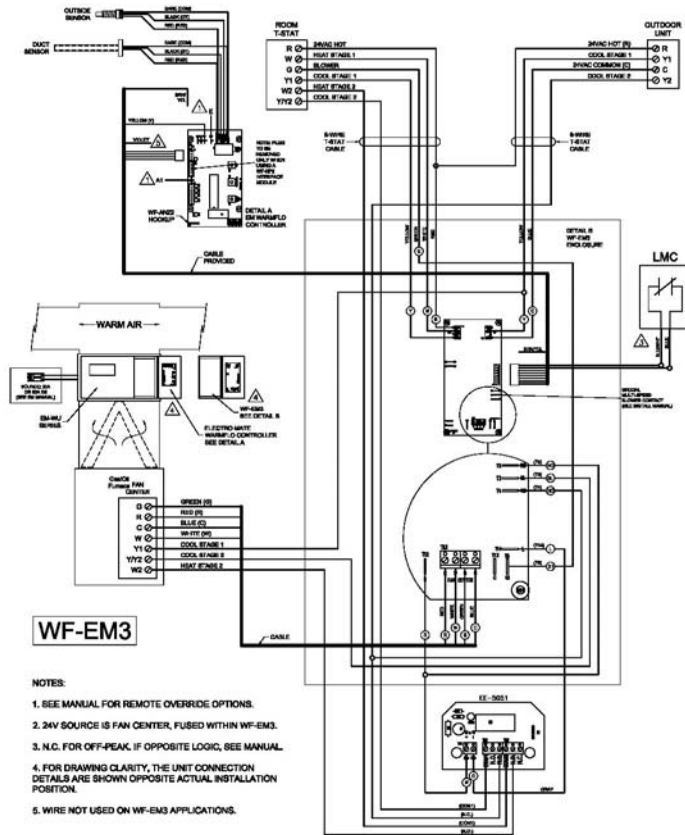
Note: In some cases there may be a 1-minute or 3-minute delay because the same interrupting relay is also part of the built-in blower purge cycle for the heating mode.

DFC / AIR CONDITIONING HOOKUP - TWO-STAGE A/C & TWO-STAGE GAS



ELECTRO INDUSTRIES, INC.
MONTICELLO, MN 55362

EH001 P2
WF P 01-17-06



Heat Pump – Electro-Mate/WarmFlo

WarmFlo Select SL2 – All functions from conventional 2H/2C room thermostat to 2-stage or 2-stage outdoor unit, and variable speed furnace are included within this Electro-Mate series.

Installation manual EI710 provides the details and the very simple or basic hookup is shown on EH710. The field setups on pages 14, 15, and 16 provide the options and choices relating to the specific installation. These need to be carefully consider and followed through.

Heat Pump – Non-Electro-Mate or Resistance Heat

Typically the controller recommended for dual fuel gas furnace arrangements is the WF-DFHP1. In the case of 2-speed equipment there is a companion controller WF-DFHP2 specially setup and configured with all wiring connections for 2-speed heat pump.

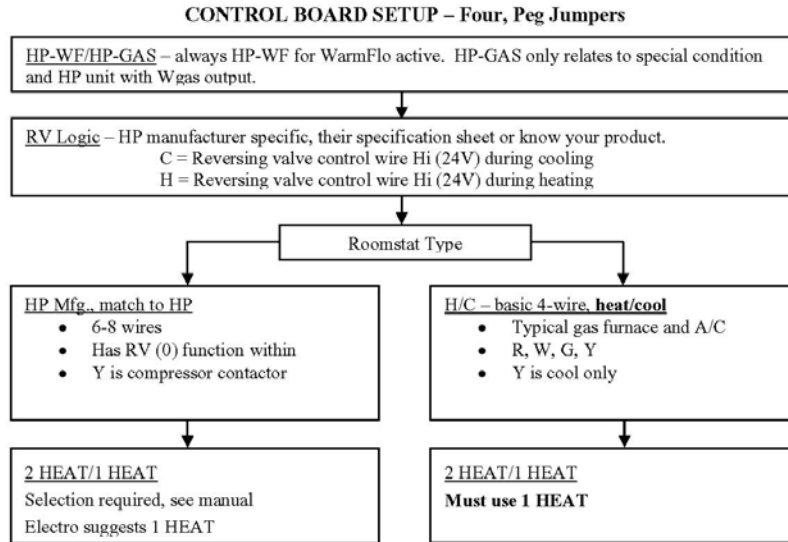
Comment: Often dual fuel heat pumps are configured and controlled with a multi-stage heat pump thermostat with outdoor sensor (example – Honeywell Vision Pro, etc.). When using 2-speed equipment this arrangement gets more complex and presents other non-desirable operating conditions for 2-speed equipment. The WF-DFHP2 is the answer.

WF-HP2

The WF-HP2 has its own installation manual with a matrix table showing 8 heat pump manufacturers' terminology and hookup tying back to the WF-HP2 terminology. Generally control wiring is point to point from this hookup matrix chart – the provided illustrations are examples only.

Note: The WF-HP2 has various setup requirements, pin jumper selection, dial switch setting, and the proper thermostat wiring in relationship to the setup settings for proper function and operation. It is imperative that the installer studies the WF-HP2 installation manual for proper success.

WF-HP2 SETUP



WARNING: After any peg jumper change, must do power off – 10 seconds – power on (reset).

Example – Conventional, 2H/2C Stat* – Hookup Connection – WF-HP2 I/F Module

WF-HP2	Carrier			Bryant			Rudd ®			Trane (Am. Std.)		
	Stat H/C ®	HP 2-speed	Gas 170	Stat H/C ®	HP 698B	Gas 315A 355M	Stat H/C	HP	Gas	Stat H/C	HP 2 stage	Gas variable
Stat												
R	R			R			R			R		
W	W1			W1			W1			W1		
G	G			G			G			G		
Y1	Y1			Y1			Y1			Y1		
O												
C												
Y2	Y2			Y2			Y2			Y2		
W2				W2								
E WF ®												
E GAS ®												
HP												
R		R			R			R			R	
Y		Y1			Y1			Y1			Y1	
RV		O			O			B			O	
Y2		Y2			Y2			Y2			Y2	
C		C			C			C			B	
W1		W2			W2			W1			X2	
SP		-			-						-	
L		-			-						-	
W GAS		-			-						-	
Furnace												
R			R		R			24V				R
W			W/W1		W/W1			W				W1
G			G		G			G				G
C			COM		COM			24C				B
® W2			® W2		® W2			V				®
Y1			Y1		-			Y1				-
Y2			Y/Y2		Y			Y2				Y
O			-		-			-				-

*This product has provisions for conventional 1H/1C, 4-wire stat – see installation manual page 12 for comments.

