



OFC-5023

Oil Furnace 2 or 3 Speed PSC Fan Motor Control

Part Number: 47-50231

Installation and Operating Manual

OFC-5023 Kit Includes:

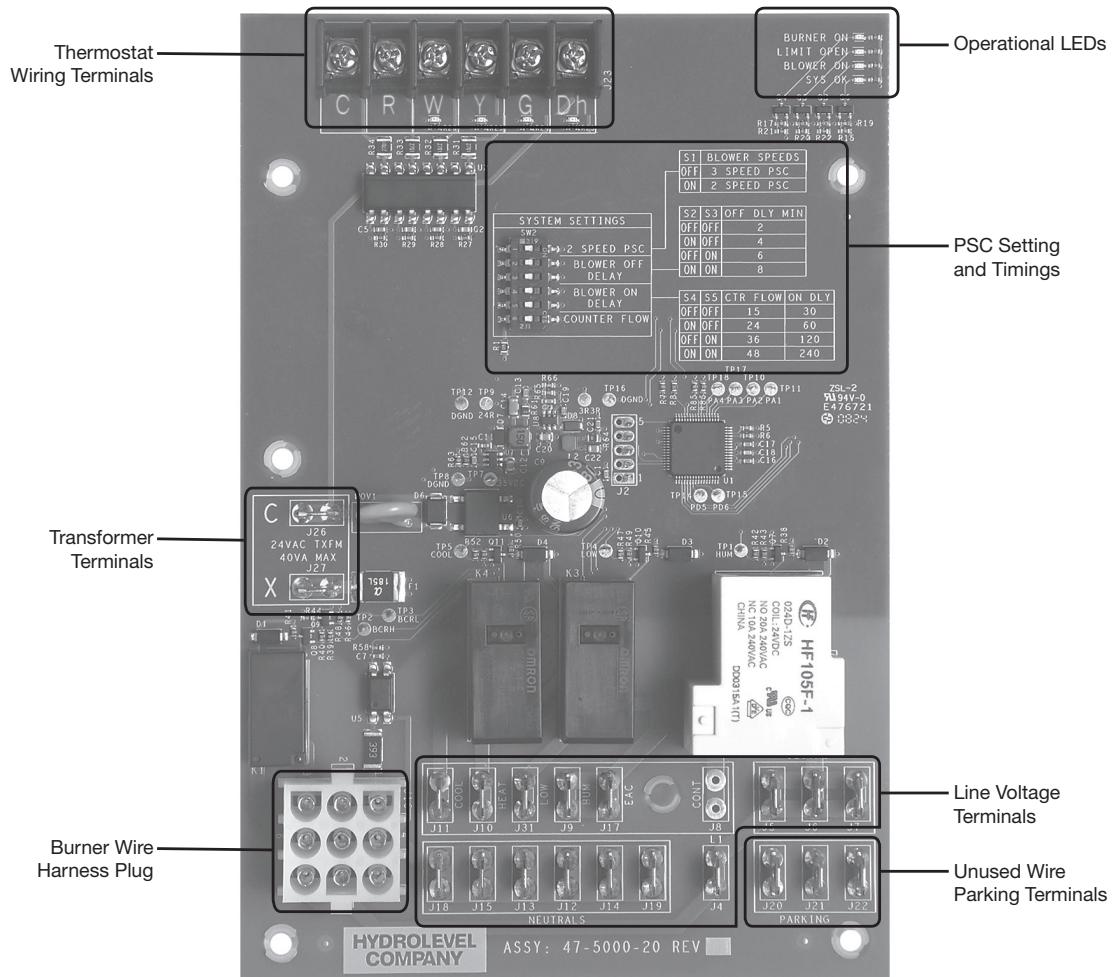
- Controller Board
- Installation and Operating Instructions
- 900 Ohm Resistor for Power Stealing Thermostats
- Mounting Screws (4)
- 1/4"/.250 quick connect for retrofit applications

Direct Replacement for:

- UTEC Models 1158-100, 1158-110, 1158-120
- Resideo Model ST9103A

Does not replace Hydrolevel Model OFC-5031.

NOTICE Read these instructions completely before proceeding with the installation. Retain instructions for future reference.



WARNING **Electrical shock hazard.** To prevent electrical shock, death or equipment damage, disconnect power supply before installing or servicing control. Only qualified personnel may install or service this control in accordance with local codes and ordinances. Read instructions completely before proceeding.



CAUTION To prevent serious burns, furnace should be thoroughly cooled before installing or servicing control.



WARNING **Frozen pipes/water damage.** Central heating systems are prone to shut down as a result of power or fuel outages, safety related fault conditions or equipment failure. Installation of freeze protection monitoring or other precautions is recommended for unattended dwellings in climates subject to sustain below-freezing temperatures.



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REPLACING AN EXISTING CONTROL BOARD

WARNING

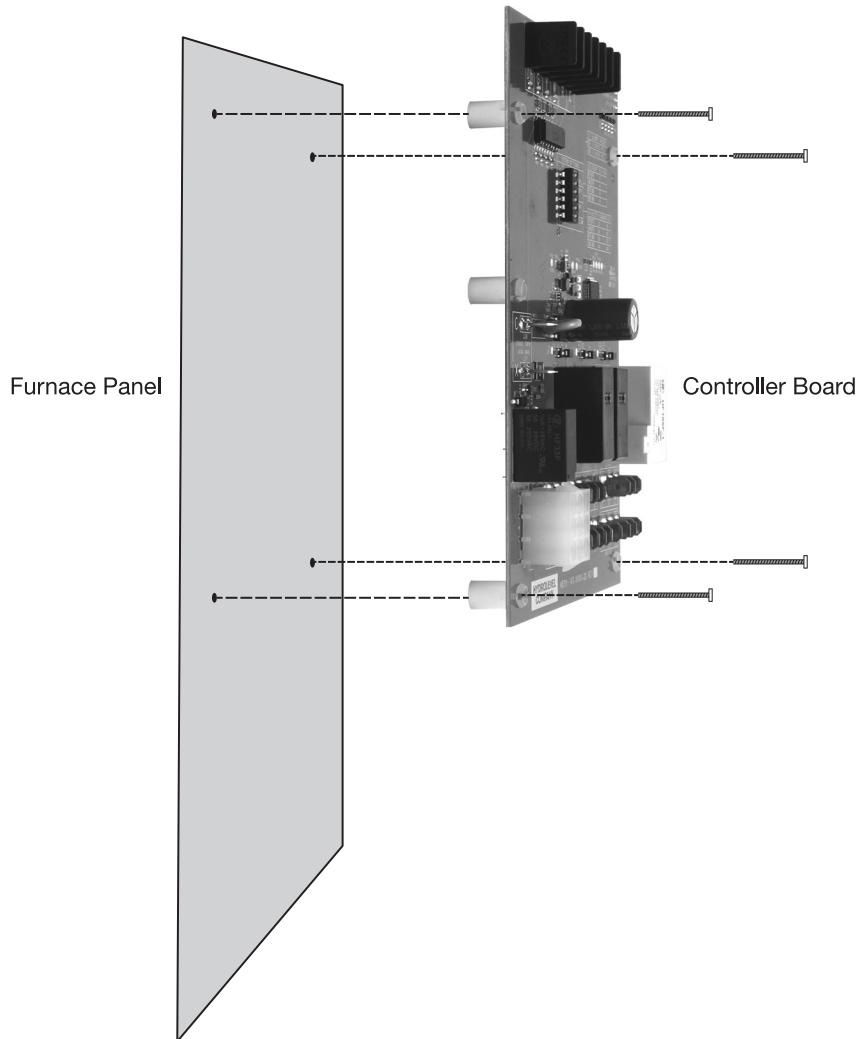
Electrical shock hazard. To prevent electrical shock, death or equipment damage, disconnect power supply before installing or servicing control. Only qualified personnel may install or service this control in accordance with local codes and ordinances.

NOTE: Prior to replacing the existing controller, note the DIP switch settings and the location of all wires. Taking pictures is a good way to preserve the existing wiring and setup information for future reference.

STEP 1: Remove the existing controller

1. Turn off power.
2. Note the DIP switch settings and the location of all wires on the original controller.
3. Remove the wire harnesses from the existing control board.
4. Remove the control board assembly from the furnace.

STEP 2: Install the OFC board using (4) screws included with this board (screws will be mounted through white stand-offs).



STEP 3: Plug in the wire harnesses in the same locations as the original control. **NOTE:** For proper wiring and setup consult the furnace manufacturer's installation manual.

SETUP

Refer to furnace manufacturer's Installation and Operating Manual for required settings.
See page 1 for location of DIP switches on circuit board.

SYSTEM SETTINGS: DIP Switch Legend

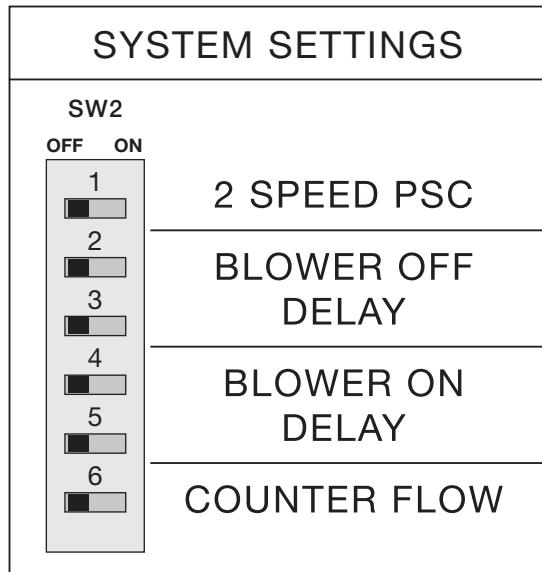
Switch S1: Blower Speeds (2 or 3 speed)

Switch S2 & S3: Blower OFF Delay Timings

Switch S4 & S5: Counter Flow + Blower ON Delay Timings

Switch S6: Counter Flow On/Off

Notice: All DIP Switches are factory set to OFF position



S1	BLOWER SPEEDS	
OFF	3 SPEED PSC	
ON	2 SPEED PSC	

S2	S3	OFF DLY MIN
OFF	OFF	2
ON	OFF	4
OFF	ON	6
ON	ON	8

S4	S5	CTR FLOW	ON DELAY
OFF	OFF	15	30
ON	OFF	24	60
OFF	ON	36	120
ON	ON	48	240

S6	CTR FLOW ON/OFF
OFF	CTR FLOW OFF
ON	CTR FLOW ON

Operational LEDs

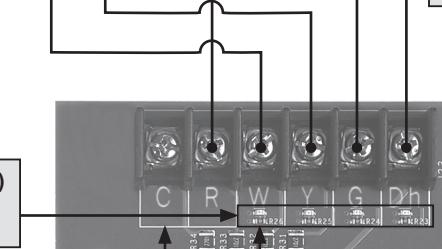
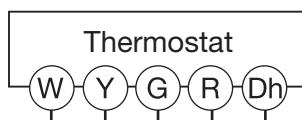
BURNER ON (YELLOW) – The controller has sent a signal to the burner to run.

LIMIT OPEN (RED) – The normally closed limit switch is open. This is a flashing indicator.

BLOWER ON (YELLOW) – The controller has energized the blower motor.

SYS OK (GREEN)

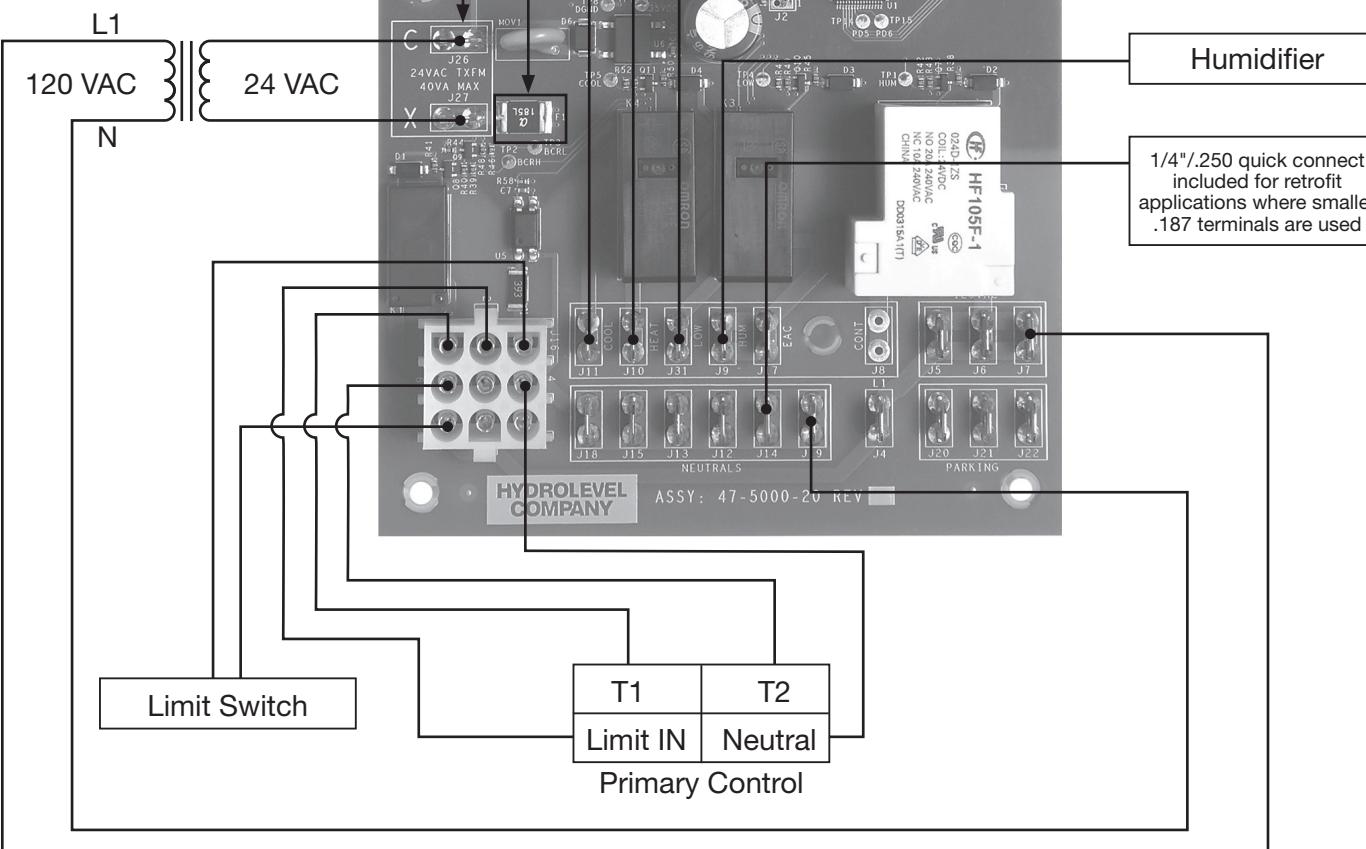
- LED flashing – The control has passed all its internal self-checks and is operational.
- LED off – indicates a problem in the 24 VAC circuit. Either the transformer is not supplying 24 VAC or the thermal fuse has tripped.
- LED on solid – The control has failed a self-check and will not function.



Thermostat Terminal LEDs (W,Y,G,Dh)
When lit, indicates thermostat has sent a signal to the specified terminal.

In order to power a "Power Stealing" Thermostat from the OFC 5023, a resistor needs to be installed between the C and W terminals as shown. A resistor is included with this product, but any 900 ohm resistor can also be used.

(2) 6" Wire Extensions included for transformer connection (if needed)



Thermal Fuse
Trips when a short is detected, and will automatically reset once the short is removed.

MODES OF OPERATION

The steps below contain general descriptions of each operational mode the OFC control features, including –

- Standby Mode
- Heating Mode
- Electronic Air Cleaner (EAC) Tab
- Fan Mode
- Dehumidify Mode
- Humidification (HUM) Tab
- Cooling Mode

For COOL, HEAT, LOW, EAC, HUM tab locations – see Page 1, under “Line Voltage Terminals”

For DIP Switch Settings – see Page 3

STANDBY MODE

- There is no demand from the heating / cooling system and all the outputs are off.

FAN MODE

- Thermostat Call for the fan to operate (R+G), absent a call for heat (W) or cool (Y)
- The control will energize the low-speed motor tab until the call is satisfied.
 - No on or off time delay for this mode of operation.
- If the control is operating in this mode and receives a call for heating or cooling, the control will exit this mode immediately and begin operation in heat or cool.
 - For a switch over to HEAT: the low-speed tab (or the heat tab if in 2 speed mode) will stay energized for the duration of the heat cycle on delay period. After the on delay is complete the control will turn off the low-speed tab and energize the heat motor tab.
 - For a switch over to COOL: the low-speed tab (or the heat tab if in 2 speed mode) will be turned off and the cool motor tab will be energized immediately.

COOLING MODE

- Thermostat Call for cooling (R+Y)
- The control will energize the cool motor tab and remain until the call is satisfied.
 - No on-time delay time
 - Fixed off-time delay.
- After the 45 second off delay is met, the control will return to standby.

HEATING MODE

- Thermostat Call for heat (R+W)
- The control will first close the T-T contact. Upon completion of the delay on time (set by SW2, switches 4 and 5) the motor heat tab will be energized. The heat tab will remain energized until the heat call is satisfied.
- After the call is satisfied, the burner T-T contact will be turned off and the blower motor will continue to run for the duration of the delay off time (set by SW2, switches 2 and 3). After the delay off time is met, the control will return to standby.

DEHUMIDIFY MODE

- Thermostat Call for dehumidification(R+Dh)
 - The call for dehumidification will only be recognized if a call for cooling, (R+Y), occurs as well or if the system is already in cooling mode.
- Upon receiving the call for dehumidify, the control will energize the low-speed tab (or the Heat tab if in 2 speed mode) until the call is satisfied. If a call for cooling still exists after dehumidify is satisfied, the system will turn off the low-speed (or Heat) tab and energize the cool tab. The system will then operate as a normal cooling cycle.
- If no call for cooling exists after the dehumidify call is satisfied, the system will return to standby after the fixed 45 second off delay is completed.

ELECTRONIC AIR CLEANER (EAC)

- The EAC tab will energize, 120VAC, when the system enters any operational mode that calls for the blower motor.

HUMIDIFICATION (HUM)

- The HUM tab will energize (120VAC) when the system enters any operational mode that calls for the blower motor.

MODES OF OPERATION continued

COUNTERFLOW – DESCRIPTION

On a counterflow/downflow orientation furnace, there is typically an auxiliary limit switch mounted to the blower to protect against stalled fans because limits in the outlet of these appliances would not see temperature like they would on a standard up-flow appliance.

To prevent nuisance trips and lockouts caused from rising heat from the heat exchanger, the OFC is equipped with a Counterflow option. The lower speed is brought on first to prevent the tripping of the limit while keeping the supplied air coming from the ductwork warmer and allow the heat exchanger to come to proper operating temperature without creating condensate.

Carefully review the manufacturer's manual to determine if the counterflow option is needed for the appliance.

COUNTERFLOW – OPERATION (HEAT MODE ONLY)

The counteflow option is used in Heat Mode ONLY. The control can operate with a single, fixed On Delay time (Two Speed Mode) or can be configured to operate in a two-stage On Delay setup (Three Speed Mode). DIP Switches 4 and 5 are used to set the On Delay for standard and counterflow operation.

THREE SPEED MODE

To Activate:

DIP Switch 6 Must be set to ON

DIP Switch 1 Must be set to OFF

If counterflow is on with this configuration, on a call for heat, the low-speed tab will energize after proper counter flow time has been met. The control will stay in that state until the full on delay time has been met. At this point, the control will turn power to the low-speed tab off and energize the heat tab.

TWO SPEED MODE

To Activate:

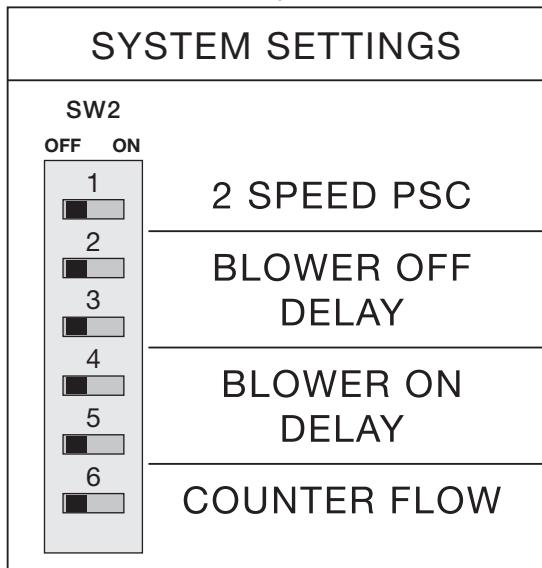
DIP Switch 6 Must be set to ON

DIP Switch 1 Must be set to ON

If counter flow is on with this configuration, the low-speed motor tab is not available, so the control will act differently. When the control receives a call for heat, it will wait for the selected counter flow delay time to pass, then energize the heat tab.

If the counter flow function is off, the control will act the same in both two and three speed modes. On a call for heat, the control will wait for the standard on delay time to be met. Once met, the control will energize the heat motor tab.

Notice: All DIP Switches are factory set to OFF position



		S1 BLOWER SPEEDS	
OFF		3 SPEED PSC	
ON		2 SPEED PSC	
		S2 S3 OFF DLY MIN	
OFF	OFF	2	
ON	OFF	4	
OFF	ON	6	
ON	ON	8	
		S4 S5 CTR FLOW ON DELAY	
OFF	OFF	15	30
ON	OFF	24	60
OFF	ON	36	120
ON	ON	48	240
		S6 CTR FLOW ON/OFF	
OFF		CTR FLOW OFF	
ON		CTR FLOW ON	

NOTES

NOTES

SPECIFICATIONS

Input line voltage	120VAC, 60hz	Transformer input (X-C)	24VAC, 60hz, 40VA typical
Humidifier(HUM)	1A at 120VAC	Thermostat	24VAC, 60hz
Electronic air cleaner (EAC)	1A at 120VAC	Dehumidifier (Dh).....	24VAC, 60hz
Blower outputs 3/4HP (maximum)		Parking	no connection
Cool, Heat, Low and			
Continuous fan (cont)			

LIMITED MANUFACTURER'S WARRANTY

We warrant products manufactured by Hydrolevel Company to be free from defects in material and workmanship for a period of two years from the date of manufacture or one year from the date of installation, whichever occurs first. In the event of any claim under this warranty or otherwise with respect to our products which is made within such period, we will, at our option, repair or replace such products or refund the purchase price paid to us by you for such products. In no event shall

Hydrolevel Company be liable for any other loss or damage, whether direct, indirect, incidental or consequential. This warranty is your EXCLUSIVE remedy and shall be IN PLACE OF any other warranty or guarantee, express or implied, including, without limitation, any warranty of MERCHANTABILITY or fitness for a particular purpose. This warranty may not be assigned or transferred and any unauthorized transfer or assignment thereof shall be void and of no force or effect.

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