The AC-Enhancer®

Enhances the Efficiency and Dehumidification Capacity of Virtually Any Central Air Conditioning System.

ACE-3.3

Technician Wiring:

The AC-Enhancer® is installed in the control wiring circuit between the Thermostat and the air handler. The input side of The AC-Enhancer® is connected to the thermostat. R, G, Y, O, C, and W on the IN terminal block must be connected. If the system is not a heat pump then a jumper should be installed from Y-In to O-in. On the OUT terminal block the R, G-Low, W, and C terminals must be connected to the corresponding terminals on the air handler or furnace. The condensing unit control wires are connected to the Y-COND and C terminals on the Out terminal block only. The connection to the G-High terminal on the OUT terminal block depends on which of the two cases you have below.

1. Air Handler or Furnace with a circuit board with low blower speed control for Continuous Fan Speed:
If energizing the G terminal without the Y will cause the fan to run on a reduced blower speed and energizing the G and Y terminals causes the fan to run on the cooling speed, then simply connect the G-High terminal from The AC-Enhancer® output side to the Y terminal on the air handler or furnace. This plus the above connections will be the complete wiring of the unit. Do not connect the low voltage wiring from the condensing unit to the Y terminal in the air handler. The AC-Enhancer® will control the condensing unit operation and the blower speed.

2. Air Handler or Furnace without a reduced blower speed for Continuous Fan Speed:
An additional 90370 type single pole double throw relay with a 24v coil must be installed in the system to adjust the blower speed. The common side of the relay is connected to the cooling blower speed wire coming from the existing blower relay in the air handler. The Normally Closed side of the added relay is connected to the lowest blower speed tap available. The Normally Open side of the added relay is connected to the standard cooling speed tap. The coil of the additional relay is connected to the G-High and C terminals from The AC-Enhancer® OUT terminal block.

Always disable any Ramping or Enhanced mode on Variable Speed Motors. Set all cooling off cycle fan timers to Zero.

Dip Switch Settings:

The time delay dip switches on The AC-Enhancer™ should be set as follows:

Delay #1: TD-1
Range 20 to 40 seconds. For most cases 30 is ideal, setting two switches on and two switches off. The minimum setting with all switches in the ON position is 20 seconds. Each switch set to the OFF position will add 5 seconds to the time.

Delay #2: TD-2
Range 30 to 150 seconds. For most cases 90 is ideal, two switches on and two switchs off. The minimum setting with all switches in the ON position is 30 seconds. Each switch set to the OFF position will add 30 seconds to the time.

Changes to Standard Settings:

- **For 2-Stage or 2-Speed systems** Time Delay #1 should be set to the Maximum Time of 40 Seconds. That is all 4 dip switches set to the OFF Position. This is to allow extra time for the first stage of cooling to cool the evaporator coil down. Time Delay #2 should be set to either 120 or 150 seconds. That is either 3 or 4 dip switches in the off position.

- **For Systems with Long Line Sets**. Time Delay #1 should be set to 35 Seconds (3 Dip Switches turned OFF) and Time Delay #2 should be set to 120 Seconds (3 Dip Switches turned OFF).

- **For Older Systems with Slightly Restricted Evaporator Coils**. Time Delay #1 should be set to 20 or 25 Seconds (0 or 1 Dip switch turned to OFF). And Time Delay #2 should be set to 30 to 60 Seconds (0 or 1 Dip Switch turned to OFF). These settings are to keep the evaporator coil from getting too cold when the system starts.

- **Heat Pump Systems**. Do not install a jumper from Y-In to O-In. Time Delay #1 should be set the same as for cooling listed above. Time delay #2 does not apply in the heat mode but does apply in the cooling mode. Running the compressor before turning on the blower allows the coil to warm up before the blower comes on to minimize the cold draft of air on start up.

- **On Heat Pumps Energizing the Reversing Valve with B** instead of O there is a wiring diagram on the website www.theacenhancer.com showing how to install a relay to reverse the action so that The AC-Enhancer will control it properly.

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Sequence of Operation:

Cooling Mode:

With a call for Cooling and Fan, energizing O, Y, and G terminals on the IN terminal block.

- The outside condensing unit energizes instantly through the Y-Cond terminal on the OUT terminal block.
- If the fan has been in the continuous fan mode, it will stop. If it is in the automatic mode it will remain off.
- Once Delay #1 time has expired it will bring the fan on the low or continuous fan speed through a signal on the G-Low terminal on the OUT terminal block.
- After Delay #1 has expired then Delay #2 time begins.
- At the end of Delay #2 it will bring the fan on at full cooling speed through a signal on the G-High terminal on the OUT terminal block.
- When the thermostat satisfies and there is no longer a signal on the Y- IN terminal then the condensing unit stops right away. G-High de-energizes right away and the blower runs on Continuous fan speed (G-Low) for 4 seconds. If the thermostat was set to continuous fan operation then The AC-Enhancer® will hold the fan off for 10 minutes before it allows the fan to come back on the continuous fan speed.

Heating Mode:

Heat Pump Operation: Y and G terminals energized on the IN terminal block, O-In not energized.

- The outside condensing unit energizes instantly through the Y-Cond terminal on the OUT terminal block.
- If the fan has been in the continuous fan mode, it will stop. If it is in the automatic mode it will remain off.
- Once Delay #1 time has expired it will bring the fan on low fan speed through a signal on the G-Low terminal on the OUT terminal block. After a time delay of 30 seconds it will bring the fan on full speed through a signal from G-High on the OUT terminal block.
- When the thermostat satisfies and there is no longer a signal on the Y terminal on the IN terminal block then the condensing unit stops right away. G-High de-energizes right away and the blower runs on Continuous fan speed (G-Low) for 30 seconds.

Non-Heat Pump Heating: O-In is not energized, W-In is energized.

- W-In energizes W-Out instantly.
- For Electric heat models if G-In is energized then G-Low energizes after a 30 second delay. After an additional 30 Second delay G-High energizes the high speed. When W-In de-energizes G-High de-energizes instantly and G-Low is forced to run for 45 seconds.

Terminal Designations:

- R – 24 volt Power
- G-Low – Fan or Blower
- C – 24 volt Common
- W – Heat
- Y-Cond – Cooling signal for Condensing Unit First Stage if Multiple.
- Y IN Terminal – Cooling call signal from the Thermostat
- G-High Terminal – Signal to energize cooling fan speed

Concerns:

- **THIS UNIT WILL NOT WORK WITH POWER ROBBING THERMOSTATS** without adding additional relays on the input side to allow for the thermostat to get its bleed through power. See supplemental wiring diagram on the website www.theacenhancer.com.
- **This Unit should NOT be used with Mercury Bulb Thermostats.** They may cause unusual operation due to Heating and Cooling Anticipator bleed voltages
- The system should be in good operating condition. Refrigerant charge and temperature drop across the coil should be set properly before installing The AC-Enhancer®.
- Systems with restricted airflow should have the problem repaired. If it cannot be repaired then Delay #1 and Delay #2 may need to be set to lower values than normal.
- Setting either Delay time to long may cause sweating of units or ducts in very humid climates. Care should be exercised when setting delays higher than recommended settings.