

# Installation and Operating Instructions

## LEHP2-AH23 Series



### APPLICATION:

The **E**-Accustat LEHP II series is a heat pump temperature control which can operate systems incorporating back-up electric heat (stage W3). It is designed for use on low voltage (24VAC) systems. The **E**-Accustat II has adjustable heat/cool comfort settings. Heat/cool cycle rates can be independently set, allowing you to fine tune the system's performance. The system can be set in heat, emergency heat, cool, or auto changeover mode and the fan can be set to operate continuously or to activate automatically with heating or cooling calls. The damper control provides fresh air for up to 50 minutes per hour. On selected models, the control can be operated to switch from economy or comfort set modes by remote sensors, programmable clock, motion sensor, computer or security system. The **E**-Accustat II has a locking cover for tamper proof settings.

### SPECIFICATIONS:

**Temperature Range:** 55°F to 85°F

**Sampling Rate:** Continuous

**Accuracy:** ± 1°F

**Cycle Rates:** Heat or Cool - 2 to 6 cycles per hour

**System Switches:** Heat/Emergency Heat/Auto/Cool and On/Off

**Valve Switch:** Selects "O" or "B" type function (rear of unit)

**Fan Switches:** Auto/On

**Input:** 18 to 30 Volts

**Load Rating:** Maximum Current: 1.2 Amp per stage\*\*

Minimum Current: 5mA (0.005 Amp)

**Setback Signal:** Unpowered Contacts

**Setback (Offset) Range:** ± 0°F to ± 10°F

**Fresh Air Minutes:** 0 to 50 minutes per hour

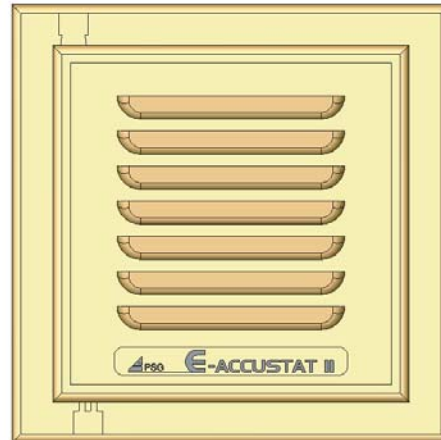
\*\*Combined total of Y and G must not exceed 1.2 Amps

### GENERAL INSTALLATIONS:

This control should be installed and serviced by a qualified contractor.

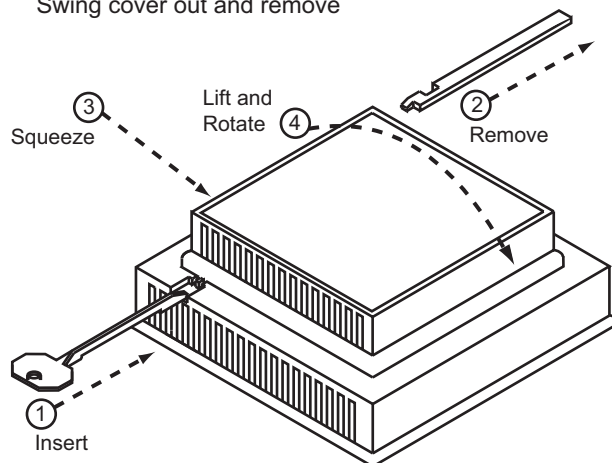
1. **▲ Caution:** Make sure that power to the control has been turned off before doing any installing or service work.
2. All wiring must conform to local and state codes and ordinances.
3. A thorough check-out of the system must be made after the control has been installed.
4. Be sure to identify which type of reversing valve is required by the installed system. Energize on cool = "O" type  
Energize on heat = "B" type  
Set the valve switch (unit rear) in the proper position. Make the valve wire connection to the "O/B" terminal.
5. **E**-Accustat II series controls have an integral locking cover. See instructions for removing and installing the cover. If an external locking cover was used to cover the old control, remove it. Otherwise it will hinder the performance of the **E**-Accustat II.
6. **Sensor Care:** After the control has been connected, replace the cover to prevent damage to the sensor.

**Prior to mounting the thermostat to the wall, check the jumper on the reverse side of the case. The unit was shipped with the jumper in the left position for "B" type reverse valve. The jumper in the right position is for "O" type reverse valve.**



### TO OPEN:

1. Align key with slot and insert all the way
2. Brown pin will emerge. Pull out completely
3. Gently squeeze left side of cover to release catches
4. Let right side work as a hinge  
Swing cover out and remove



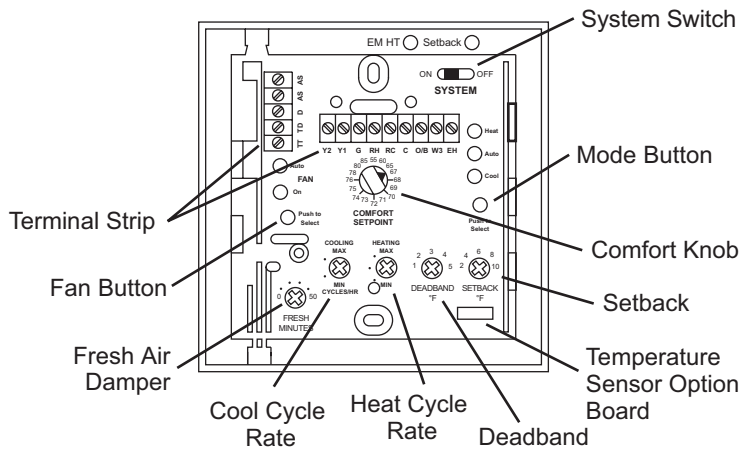
### TO CLOSE: (Reverse Procedure)

1. Hinge right side of cover and close it
2. Gently squeeze left side of cover and snap shut
3. Orient the brown pin as shown and slide in until end is below surface of cover (audible snap is heard when pin is properly seated)

### MOUNTING THE CONTROL:

1. Open case as shown.
2. Choose a location about 5 feet above the floor, in an area where you have good air circulation.
3. Use the screws supplied to mount the case on the wall.
4. This control is not position sensitive. However, heat rises and some heating does occur in the control. It is recommended that the unit be mounted with the top up.
5. Connect the system wires as shown in the wiring section.

## HOW TO SET UP E-ACCUSTAT II



### 1. Comfort Setting

Adjust the comfort knob to the desired comfort temperature.

### 2. Heat/Cool Deadband

The deadband determines the heat and cool operating points. The deadband knob is adjustable 1 to 5.

I.E. If the comfort is set at 70°F and the deadband is set to 2, the average heating temperature is 68°F and the average cooling temperature is 72°F. The comfort and deadband settings establish the switch setpoints of the system.

### 3. Cycle Rates

The heat and cool cycle rates are independent of each other. Therefore, you can fine tune the cycling to maximize the systems performance. The faster the cycle rate, the closer the room differential is maintained. Normally, for best comfort, you want the heating system to cycle at a faster rate. The cooling equipment must be cycled at a rate as established by the equipment manufacturer. Normally, the compressor should not be cycled more than 6 times per hour. Cycle rates are important for proper comfort. Air velocity will effect the cycle rate. Higher air velocity will cause a faster cycle rate.

### 4. Emergency Heat and Back-up

Electric resistance heat (W3) is engaged in normal "Heat" mode when the compressor is unable to keep up with the demand. "W3" normally operates 6° lower than the "Y" stages. When "Emergency Heat" mode is selected the "Y" stages are disabled and replaced by the "W3" stage. A red LED indicates that Emergency Heat is operating.

### 5. Multi-stage models

Three (3) stage models have a built-in difference between stages one and two of 4°F. So, when the setpoint is 4°F away from the deadband setting, the second stage will turn on. Between stages one and three there is a difference of 6°F. When the setpoint is 6° away from deadband, the third stage will turn on.

### 6. Fresh Minutes (LEHP2-AH23AS-RD)

The fresh air damper opens for the specified number of minutes per hour. If there is a call for heating or cooling, the damper will also cycle until the minutes are used. If there are minutes left after the call for heating or cooling, the damper will remain open for the time remaining.

### 7. Setback (LEHP2-AH23AS-RD)

The setback determines the number of degrees that the control will be during the economy period. The setback knob is adjustable 2 to 10.

Example: The comfort setting is 72° and the setback knob is set at 10. During the economy period, the heating setpoint will be 62° and the cooling setpoint will be 82°.

### 8. Remote Sensing (LEHP2-AH23-R and LEHP2-AH23AS-RD)

Located on the front of the E-Accustat are two (2) screw terminals marked "TD and TT". Detailed instructions on installation and testing are covered in the instruction sheet enclosed in the remote sensor box.

#### Connecting/Operation:

1. Up to two (2) remote sensors may actively control the E-Accustat. Additional sensors may be wired, but only two (2) may be active.
2. Wiring shall be parallel.
3. The models with "-R" designation will also have a removable sensor on the base unit. This permits incorporation of "Base Sensing" along with SRT-3 remote units.

## SYSTEM CHECKOUT

### Checkout of heating system

1. Power off and then on.
2. Set deadband to 1.
3. Set the heating cycle rate to maximum.  
Wait 3 minutes for the control to stabilize to room temperature.
4. Set the mode button to "Heat".
5. Set the comfort setting to a temperature above the actual room temperature.  
Heating system should turn on within three minutes.
6. Set the comfort setting below the room temperature, heating system should turn off.

### Checkout Cooling System

1. Power off and then on.
2. Set deadband to 1.
3. Set the cooling cycle rate to maximum.  
Wait 3 minutes for the control to stabilize to room temperature.
4. Set mode button to "Cool".
5. Set the comfort setting to a temperature below the actual room temperature.  
Cooling system should turn on within three minutes.
6. Set the comfort setting above the room temperature, cooling system should turn off.

### Checkout Emergency Heat

1. Power off and then on.
2. Set the mode button "EM HT".
3. The red LED should be on.
4. Set the comfort setting to a temperature above the actual room temperature.  
Heating system should turn on within three minutes.
5. Set the comfort setting below the room temperature, heating system should turn off.

### Fan

1. Power off and then on
2. Press fan button to toggle to "On".
3. Press fan button to toggle to "Auto".

## SYSTEM SET-UP

1. Set the comfort set point to desired setting.
2. Set the deadband to desired setting.
3. Set the cycle rates for both heat and cool.
4. Replace the locking cover.
5. Allow the room temperature to stabilize for at least 60 minutes before monitoring room temperature.

### Trouble Shooting

Before you start to examine the system make sure the system has been properly wired to the control. The control outputs should be tested using a voltmeter. **Do Not Use** an electromechanical voltage detector such as a Wigginton type tester. If the system cools when it should heat or vice-versa, check the reversing valve switch setting on the rear of the stat.

## TROUBLE SHOOTING TESTS

### Fan Circuit

1. Place system switch to on position. Press the fan button to on.
2. Place the voltmeter leads on RC and G. The meter should read "0".
3. Press the fan button to auto. The voltmeter should read 18 to 30 volts when cooling system is not calling for cool. If cooling system is on, the reading should be 3 volts or less.

### Cooling Circuits

1. Place system switch to on position.
2. Place the voltmeter leads on RC and Y1. The voltmeter should read 18 to 30 volts when control is not calling for cooling. If control calls for cooling, the voltmeter should read 3 volts or less.
3. Set comfort level below room temperature so cooling turns off. The voltmeter should read 18 to 30 volts.

### Heating Circuits

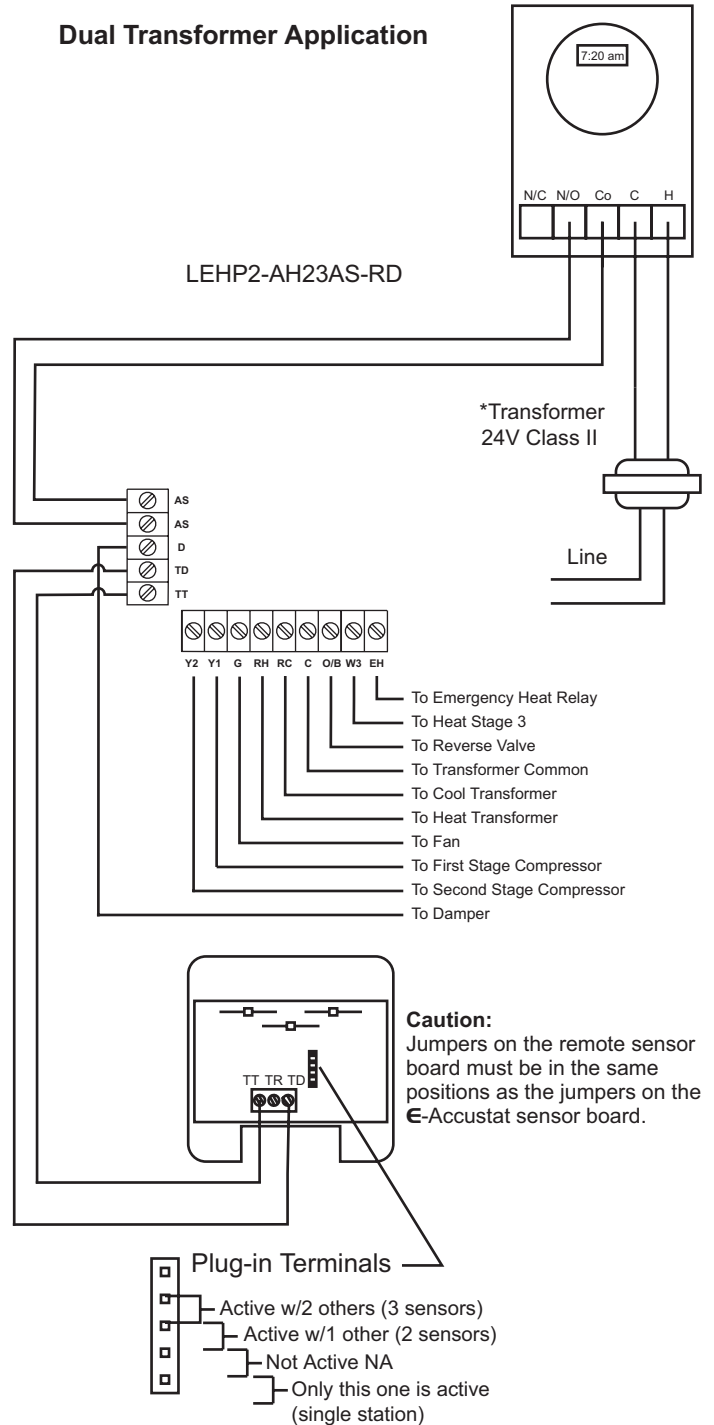
1. Place system switch to on position.
2. Place the voltmeter leads on RC and Y1 (first stage) and then RC and W3 (third stage). The voltmeter should read 18 to 30 volts when control is not calling for heating. If control calls for heating, the voltmeter should read 3 volts or less. W3 turns on 6°F lower than Y1.
3. Set comfort level above room temperature so heating turns off. The voltmeter should read 18 to 30 volts.

### Damper Circuits

1. Place voltmeter across RC and D1. The voltmeter should read 18 to 30 volts when the damper is closed. If the damper is open, the voltmeter should read 3 volts or less.

## Wiring

Connect the wires to the terminal strip located under the cover. See wiring diagrams

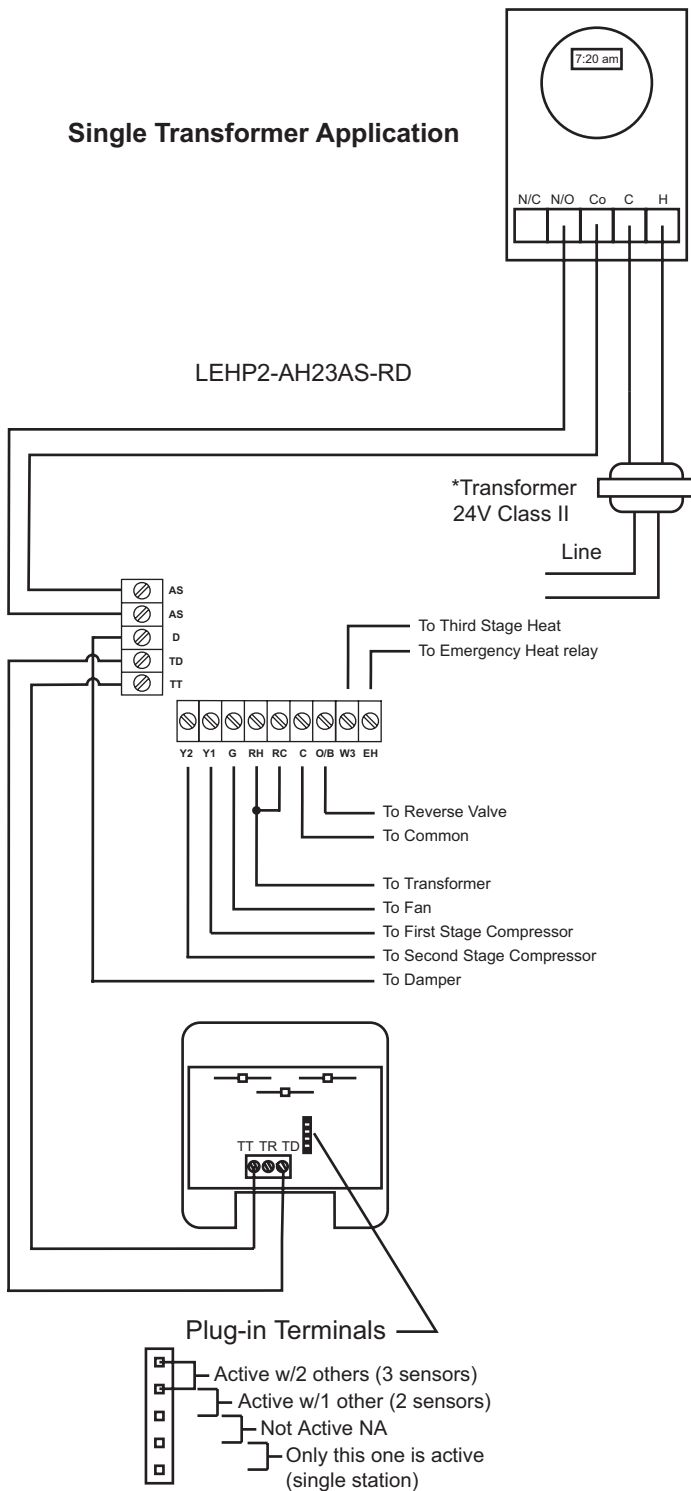


### NOTE:

Pay special attention to temperature sensor wiring during installation. Do not damage insulation. At printed circuit board, take care that all strands are connected to proper terminal. Shorting to adjacent circuitry may cause damage or erratic operation.

**Over for more wiring diagrams**

## Single Transformer Application



## Wiring Notes:

1. When the "AS" terminals are connected together, the control setting changes to the setback temperature offsets. Multiple **E**-Accustat II's will each need their own set of contacts
2. For wiring of PSG Controls remote setback sensors, programmable timers or to computer/security systems, see the specific wiring for those units.
3. The following remote economy/comfort devices are available from PSG:  
Programmable 7 day clock - Catalog Number T24-7
4. When wired as shown, the programmed "ON" time will start the economy period. If it is desirable for the programmed "ON" time to start the comfort period, simply connect the clock "NO" wire to "NC" instead. Power failure to the 24V transformer will automatically place all connected zones in comfort. The clock will continue to keep time via its internal lithium battery. Normal program will resume automatically when power returns. Normally NO RESET attention is required except for Daylight Savings Time adjustment.

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Any PSG product that proves defective within the above described warranty period will be repaired or replaced (at PSG's option) free of any charge if returned to the PSG factory at 1225 Tunnel Road, Perkasie, PA. 18944 with transportation charges prepaid. Prior to returning this product to PSG, the purchaser shall give PSG notice in writing stating how this product fails to fulfill this warranty. No product shall be accepted for repair or replacement without a required written notice and without prior written authorization and shipping instructions having been received by the purchaser from PSG. Only PSG's factory is authorized to perform services under this warranty.

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Toll free technical assistance is available  
via our technical hotline: 1-800-523-2558  
Mon-Fri, 8:00 A.M. to 4:30 P.M. Eastern Standard Time?

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