



## **HAN-L6 Support Information**

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## 1. Indoor Coil Sensor

If not fitted then: (i) in any Cooling cycle “DEICE” will flash on the display, (ii) in any Heating cycle the compressor will run for a short period and subsequently trip on HP (High Pressure switch).

Fitting the sensor to the outdoor coil by mistake would cause an HP trip in any Heating cycle as the indoor fan would not start but the system would run normally in any Cooling cycle.

If any one of the “Constant” fan modes is selected, or Dip Switch 4 on the wall plaque is set to the “ON” position then the system will run satisfactorily in any heating cycle if the sensor is not fitted or is located by mistake on the outdoor coil.

## 2. Indoor Fan Operation

FAN MODE Selectable: High, Med, Low speeds only, no compressor run.

DRY MODE Selectable: Low speed only, cycle’s compressor on cooling only.

COOL MODE Selectable: various speeds and fan automatically stops in dead zone unless ‘constant’ selected on wall plaque, runs compressor on cooling only.

HEAT MODE Automatically controls the speed and stops fan (in dead zone) as required to achieve maximum efficiency unless ‘constant’ selected on wall plaque, runs compressor on heating only.

AUTO MODE Selectable: various speeds and fan automatically stops in dead zone unless ‘constant’ selected on wall plaque, runs compressor on cooling and heating.

## 3. Temperature Control

Generally +/- 0.5°C of set point with 10 minute minimum changeover delay between heat and cool cycles in Auto Mode.

## 4. Remote Sensors/Extra Sensors/Averaging of Sensors

Up to 4 remote sensors can be connected to the PCB (in indoor unit control box) in addition to the wall plaque sensor and averaged.

The wall plaque can have a remote sensor fitted also (to plug TH1R) but in doing so jumper JP1 has to be re-positioned and this disables the on-board wall plaque sensor.

The Zone buttons on the wall display activates sensors. Any sensors that are to be considered for averaging must be switched on.

To activate the on-board wall plaque sensor (or a remote sensor that has been connected to plug TH1R on the wall plaque but not both), ZONE 1 must be ON.

To activate the remote sensor connected to TH2 on the PC board, ZONE 2 must be ON.

To activate the remote sensor connected to TH3 on the PC board, ZONE 3 must be ON.

To activate the remote sensor connected to TH4 on the PC board, ZONE 4 must be ON.

To activate the remote sensor connected to TH5 on the PC board, ZONE 5 must be ON.

If an attempt is made to switch off all the Zone buttons then the default will be to Zone 1 (the on-board sensor or sensor connected to TH1R).

If zones are turned on without sensors connected to their relative (TH) pins on the PC board then control will be from the sensors that are available and active and will be averaged if two or more.

If none of the zones active have sensors connected then the control will automatically default to the Zone 1 sensor.

If two or more wall plaques are connected together then the wall plaque that is the current MASTER has its on-board sensor (or sensor connected to TH1R) as ZONE 1.

## 5. Hot Start

Operates on initial power up in Heat Mode and on the Heat cycle in Auto Mode unless one of the Constant modes is selected.

In Auto mode as the mode crosses from Cool to Heat fan will stop unless a Constant mode is selected.

Indoor fan starts (on low speed) only once 33°C is reached at indoor coil sensor

Indoor fan changes to med speed when 39°C is reached at indoor coil sensor

Indoor fan changes to high speed when 45°C is reached at indoor coil sensor

## 6. Hot Keep (Heat Mode or Heat Cycle in Auto Mode)

Operates during dead zone when in a heating mode unless a constant mode has been selected.

Ramps the fan speed down to a stopped condition when signal is removed and back up to high speed when heat signal is remade.

Indoor fan changes to med speed when 38°C is reached at indoor coil sensor.

Indoor fan changes to low speed when 32°C is reached at indoor coil sensor.

Indoor fan stops when 27°C is reached at indoor coil sensor.

Indoor fan starts on low speed only once 33°C is reached at indoor coil sensor.

Indoor fan changes to med speed when 39°C is reached at indoor coil sensor.

Indoor fan changes to high speed when 45°C is reached at indoor coil sensor.

## 7. Cooling Only System

Should be set in COOL mode only (Dry and Fan mode are acceptable also).

Cannot be set in AUTO mode otherwise cooling would run when heating is called for. This may change when the Cool + Electric Heat version becomes available.

We recommend that dip switch 2 on the PC Board be changed such that the controller **will not** operate in HEAT or AUTO modes.

To achieve this set the controller to COOL mode, turn the power to the controller off, change dipswitch 2 on the main PC Board to the ON position, then turn the power and controller back on. Only **COOL, FAN and DRY** modes will be selectable and the Heat terminal will never have any voltage.

## 8. Indoor Freeze Protection

Compressor stops if it has run for 10 minutes and indoor coil has reached -1.0°C. Resets when 10°C is reached and providing 4 minutes has elapsed compressor restarts.

## 9. External Time Clock Compatibility

There are three ways to involve an external time clock or other method of controlling the unit external to the on-board HAN-L6 time clock. They are: -

### (a) CSD Plug

The connection of an external time clock (with volt free contacts) or any other external switching device such as a fire trip to the CSD plug (2 pins) can switch the HAN-L6 controller off and on.  
**Remove bridge to fit plug.**

Power remains on to board at all times – no battery usage.

This cannot be over ridden if the CSD circuit is broken for any reason then no control is available at the wall display keypad, i.e. local over-ride not available.

PC Board wakes up in the same mode as when it was switched off, if in a time clock mode it will respond to the current time clock setting.

On board timers can be used as well as the external time clock.

As one of the CSD pins has a voltage output they cannot be connected in parallel or series with any other HAN-L6 controller. They must be independently wired or have interposing relays to isolate them.

### (b) DDC Plug

Momentary/pulse switch action to DDC plug (3 pin) turns on or off and has facility for LED signal.

Suits connection to DDC or BMS for remote switching. **Must be a pulse signal.**

Power remains on to board at all times – no battery usage.

This can be over ridden by switching on/off button on wall display allowing full use of the keypad, i.e. local over-ride is available.

RH pin (closest to connector block) is common 5V, Centre pin is signal on/off, LH pin is LED output (LED anode to this pin and cathode to RH common pin).

As one of the CSD pins has a voltage output they cannot be connected in parallel or series with any other HAN-L6 controller. They must be independently wired or have interposing relays to isolate them.

### (c) Mains Power Wiring

Wiring of the mains power through the external time clock or any other external switching device.

Wire 230V mains to Fan “Line” in then loop back through time clock volt free contacts and back to Main “Line” in so that time clock does not carry the fan load.

As power is lost to the board the battery back up will get heavier use than the other options.

This cannot be over ridden if the circuit is broken for any reason then no control is available at the wall display keypad, i.e. local over-ride not available.

Board wakes up live as though there had been a power cut.

## 10. Dip Switch Changing

Always power off before changing dip switch settings.

This is always good practise and some changes may not take effect if this is not done. Removal of the battery is not necessary.

## 11. Dip Switch Settings

### *PC Board*

DIP 1 - **Off** normal operation; **On** service/test mode (timer by-pass)

DIP 2 - **Off** cool/heat operation; **On** cool only operation

DIP 3 - **Off** (not assigned, leave in Off position)

DIP 4 - **On** (not assigned, leave in On position)

### *Wall Plaque*

DIP 1 - Used when multiple wall plaques are connected together

DIP 2 - Used when multiple wall plaques are connected together

DIP 3 - **Off** enables memory of last control settings; **On** disables this memory

DIP 4 - **Off** 'constant' fan selection by pressing keypad; **On** locks "constant" fan operation

## 12. Voltage Selection

This is achieved by the way the controller is wired.

Power to the controller PCB (terminals LINE & NEUT) must always be 230 Volt AC.

Separate LINE & NEUT terminals are provided for the fan control to allow whatever voltage is desired. Either 230 Volt AC for direct fan motor operation or 24 Volt AC/DC (or any other low voltage) for fan relay operation.

Separate LINE & NEUT terminals are provided for the compressor, reversing valve and electric heat control to allow whatever voltage is desired. Allows either 230 Volt AC for direct contactor and solenoid coil operation or 24 Volt AC/DC (or any other low voltage) for relay operation.

## 13. Auto Restart

If the power switch is on when the power supply failed, control will automatically restart/resume when power is restored providing Dip Switch 3 on the wall plaque is set to "Off".

If the power switch is off when the power supply failed, control will not restart when power is restored, it will await being switched on or a time clock start.

## 14. Sleep Mode

Reduces (or increases) set point temperature 2°C over a 2 hour period and holds this offset temperature until the sleep button is pressed again to reset.

Only works in COOL and HEAT modes, not in auto mode.

## 15. Temporary Cancellation of Time Clock Functions (For Holiday)

Cancel time clock settings by pressing "Reset/Recall" button for each on/off time.

Reinstate time clock settings by pressing "Reset/Recall" button for each on/off time.

## 16. Boost Heat

EH2 terminal provides a boost heat signal when the temperature deviates by 1.0°C below set point in any heating cycle i.e. 0.5°C beyond the EH1/R/V signal.

May not operate in any mode where the fan can stop in dead zone so to this end dip switch 4 on the wall plaque should be set to “ON”. This locks fan in “Constant” condition; no mode can be selected where the fan stops in dead zone.

## 17. Time Clock Not Advancing (Fault)

The white (or maybe yellow) wire may not be connected properly at either end or there may be a break in the wire between the wall plaque and PCB.

This could also be a possible fault on the PC Board.

## 18. Wall Plaque Flashing “Defrost” or “De-Ice”

If flashing “Defrost” move dip switch 4 on PC Board to “ON” position.

If flashing “De-Ice” in cooling mode then it could be operating normally and indicating that the indoor coil has reached too low temperature and the compressor has been turned off to clear frost from the indoor coil.

Could also indicate missing or open circuit indoor coil sensor.

## 19. Activating A Remote Fresh Air and/or Exhaust Fan

Temperzone has available a relay with pin connection that can be connected to the DDC pins that will automatically start a remote item such as a fresh air intake or exhaust fan. This will also allow several to be paralleled together in a daisy chain so that any one unit will start the remote item.

There is a drawback with this; the DDC plug is then no longer available for external control [refer clause 9(b)] so it limits the options to either 9(a) *CSD Plug* or 9(c) *Mains Power switching*.

## 20. Calibration

On the rear of the wall plaque, find and use VR1 calibration screw (located just above the dip switches) to calibrate any given sensor. Ensure the correct sensor temperature is selected on the front of the display and use a mercury bulb thermometer for accuracy.

## 21. Reset Procedure

The controller may behave erratically if its memory has been corrupted. Before condemning the controller as faulty, try the Reset procedure to clear its memory, as follows:

- i. With the main power and controller switched **ON**, remove the wall plaque from its mounting plate and change dip switch 3 to the ON position.
- ii. Press the RESET button which is located just below and to the left of the dip switches. Once the display has returned, switch dip switch 3 back to OFF position.
- iii. Replace the wall plaque on its mounting plate.

## 22. Zone Control

Zone control consists of the ability to add or remove zones based on the zone switches on the front of the wall plaque. This is achieved by using the Zone Accessory Kit that has six on-board relays to switch/drive up to six dampers/motors open or shut.

Note that modulating zone damper control is not available.

Individual control of the temperature in each zone is not possible but temperature sensor averaging from the included zones is.

If a zone is switched ON (eg Zone 2) then the damper motor will drive open and if a sensor is fitted to the corresponding remote sensor pins on the PCB (eg TH2) then that sensor will be included with any other sensors for temperature averaging purposes.

If a zone is switched OFF (eg Zone 3) then the damper motor will be driven closed and if a sensor is fitted to the corresponding remote sensor pins on the PCB (eg TH3) then that sensor will not be included with the other sensors for temperature averaging purposes.

The controller will not allow all zones to be closed; one will always remain open, the default being Zone 1. It is also possible to have some outlets in a zone that are permanently open and uncontrolled by the Zone buttons, however this is best only done on Zone 1, that way the uncontrolled outlets will be in the default zone and therefore temperature controlled from that zone.

Multiple wall plaques can be connected together to allow the master control to be from different zones at different times of the day or as manually selected. Each wall plaque may have a different temperature and/or zone set up, however, only one wall plaque is in command at any one time so the temperature setpoint of that plaque is for all zones that are being controlled by that plaque.

Information regarding the connection of the Zone Accessory Kit is viewable on the web site [www.temperzone.biz](http://www.temperzone.biz) by following the path: Detailed Product Information/DX Air Cooled/Accessories.

## 23. Controller Dormant (Sleeping)

There are a number of possible causes for a controller to effectively go into a dormant (sleeping) condition (i.e. the power light is on but nothing is happening). Before condemning the controller check the following: -

- i. That the interface cable between the wall plaque and the main PCB is connected correctly. A loose or poor connection could result in the controller intermittently stopping.
- ii. That the connection screws at the interface terminals have not been over-tightened thereby cracking the track where the terminal block is soldered to the PCB.
- iii. That excess cable is not coiled up somewhere. If there is excess cable, trim the excess and reconnect; at the very least uncoil the excess.
- iv. Consider upgrading the communication cable to the more expensive Beldon 4 core with screen. Use the four cores for the main connections and use the screen as a totally separate screen earthed at one end only.

While the HAN-L6 has protection built in against EMC emission (electromagnetic interference) from other equipment within the standard allowable limits, it is possible that the area where the controller is located has emissions that exceed the standard allowable.

If this is the case try swapping the wall plaque and/or PCB first but it is possible there may be no resolve to the problem and a different type of controller may have to be used.