

## INSTALLATION INSTRUCTIONS FOR MODEL HAN-L5 / PCB-058V2 MICROPROCESSOR AIR CONDITIONING SYSTEM CONTROLLER.

### APPLICATION

The HAN-L5 microprocessor air conditioning controller is suitable for installation with all split or one piece packaged air conditioning units. The HAN-L5 will operate with reverse cycle, cool/electric element heat or add on cooling systems used with warm air furnaces and chilled water/hot water fan coil units. Dip switches located on the rear of the HAN-L5 wall control allow the control set up to be changed to suit the installed equipment.

The HAN-L5 is supplied with the control dip switches set for reverse cycle operation.

### PACKING CHECKLIST

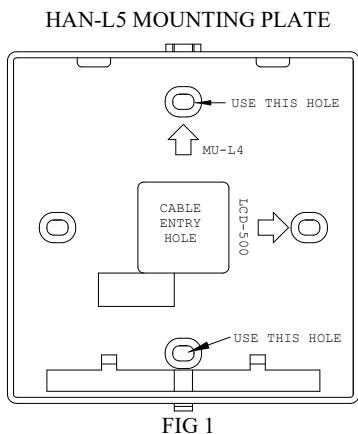
The HAN-L5/PCB-058V2 when supplied contains the following items:

- HAN-L5 room wall control and mounting plate.
- PCB-058V2 power relay board.
- 10 metre interconnecting lead with quick connect plugs at each end of lead.  
(25 metre extended interconnecting lead optionally available).
- 2 x AAA batteries.
- Installation instructions / Wiring diagram.

### INSTALLATION PROCEDURE

#### A) HAN-L5 ROOM WALL CONTROL

The HAN-L5 is supplied with a separate wall mounting plate which is fastened to the wall and allows the control to be installed with all fastening screws concealed.



Check the wall where the HAN-L5 is to be located is flat and true before fastening the wall mounting plate. Fixing the mounting plate to a distorted surface may damage the control.

Fasten the wall mounting plate by the screw holes as indicated in FIG 1. Always use the top and bottom holes as indicated. It is essential to use the lower hole to provide sufficient support to the mounting plate when removing the HAN-L5.

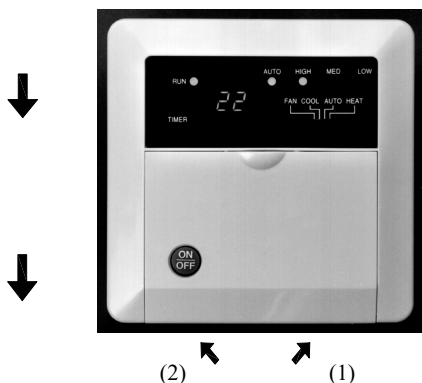
Drill hole in wall to allow cable entry.

Install interconnecting cable supplied. **Fill around cable with foam or cover hole with PVC tape to prevent draft from wall cavity affecting control operation. Do not use aluminium duct tape.**

**Important :** When installed, excess cable length should not be coiled as an electrical field could result causing a control fault.

To install HAN-L5 onto mounting plate, locate the pegs on the top of the control with the recesses in the mounting plate. Carefully press in the bottom of the control to engage the lower fasteners.

#### HAN-L5 REMOVAL (For service or adjustment) FIG 2



To remove HAN-L5 from the wall mounting plate after installation, place one hand on the control and exert downward pressure.

Place tip of small flat blade screw driver under the bottom edge of the HAN-L5 between sensor and edge of control (1) and twist softly.

Repeat on the bottom edge on the other side of control (2) and the HAN-L5 will be released from the mounting plate.

Lift the HAN-L5 from the mounting plate to access the interconnecting lead plug and dip switches.

## B) PCB-058V2 (PCB) POWER RELAY MODULE

The power relay module can be located at the outdoor (condenser) unit or at the indoor (fan coil) unit. Install the PCB in a well ventilated location where it will not be exposed to moisture or high temperatures.

### Outdoor (condenser) unit installation

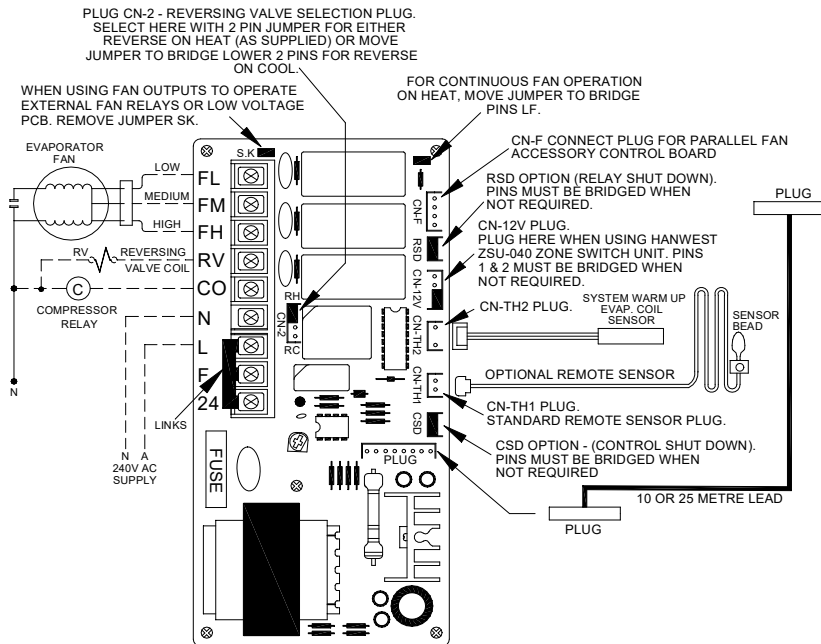
Locate the PCB in the electrical box or a suitable location for electrical equipment with adequate weather protection. Do not locate in leaving condenser air stream as the excessive heat in summer could affect control operation.

### Indoor (fan coil) unit installation

Locate the PCB in a suitable location for electrical control equipment. Do not install the PCB where it will be subject to the air leaving the indoor coil. On the cooling cycle, the leaving air can be at a near saturated condition and could cause condensation/moisture accumulation on the PCB resulting in damage to the PCB. During winter operation high temperatures in the fan coil can be experienced which could affect control operation.

If the fan coil unit does not have an external electrical box, install the PCB in the ventilated enclosure (Part no. – PBEC-1) available from your control supplier.

PCB-058V2 connection layout (FIG 3)



After installing the PCB-058 connect the 240V active to the terminal “L” and the neutral to terminal “N”. Check the polarity is correct with the active to the “L” terminal or the control will not function correctly.

Connect the control outputs to the following terminals:

- Term. “CO” Compressor contactor.
- “RV” Reversing valve connection.
- Term. “FL” Indoor fan Low speed connection.
- “FM” Indoor fan Medium speed connection.
- “FH” Indoor fan High speed connection.

## PCB-058V2 HAN-L5/PCB-058V2 Microcontroller DIP Switch Settings and Service Information

### DIP SWITCH SETTINGS (FIG 4)

FUNC	TIME	HEATING	FAN SPEED	SWING DAMP	DISPLAY	FAN COIL	ROOM TEMP DISP	ROOM SNSR	REMOTE SNSR
SW No.	1	2	3	4	5	6	7	8	9
ON	Service	Electric	<b>3</b>	No	°F	Yes	<b>ON</b>	<b>ON</b>	<b>ON</b>
OFF	<b>Normal</b>	<b>Rev Cycle</b>	2	Yes	°C	No	OFF	OFF	OFF

NOTE: Bold letters & figures in the above table indicate standard (default) settings for reverse cycle operation.

The DIP switches are located in the room controller and are accessed by removing the control unit back cover or if the controller is mounted, remove the control from the wall.

DIP switch settings as indicated above are the settings when the control is used on a reverse cycle air conditioning system & should not be changed.

Before altering DIP switch settings, turn off power to the PCB-058 board at the main switch.

For air conditioning units where the reversing valve is energised on the cooling cycle move jumper CN-2 to bridge pin “RC” and the centre pin. Jumper CN-2 is located behind the main terminal strip.

### 24 volt control

For air conditioning units with 24 volt control circuit remove link between terminal “L” & “F”. Connect 24 volt supply to terminal “24” and all outputs will be 24 volt.

### 240 volt fan and 24 volt compressor and reversing valve

When 240 volt fan outputs and 24 volt “CO” & “RV” outputs are required, place link between “L” & “F” and remove the link between “F” & “24”. Connect 24 volt supply to terminal “24”.

## DIP SWITCH FUNCTIONS:

DS NO	POSITION
1	OFF (Down) . Switch on (Up) only for commissioning or service. For normal operation switch must be OFF (Down).
2	RV OFF (Down). Electric heat ON (Up).
3	ON (Up). Always leave DS No. 3 ON. If 2 speed fan used, bridge “FL” & “FM” terminals & connect low fan to “FL” and high fan to “FH”.
4	ON (Up). Always leave DS No. 4 in ON position.
5	OFF (Down). Select ON only if °F display required.
6	OFF (Down). Select ON (Up) only for chilled/hot water fan coil operation.
7	ON (Up). For room temp. to be displayed. OFF (Down) if set point display only required.
8	ON (Up). Room control sensor active.
9	OFF (Down). Remote sensor from PCB-058V2 OFF. If remote sensor from PCB-058V2 used switch ON (Up).

## SENSOR (Temperature) AVERAGING

When Dip SW 8 and Dip SW 9 are both switched on, the control will average between the sensor in wall control and the remote sensor connected to the PCB-058V2. Sensor TH1 and a remote sensor from plug 3 on the HAN-L5 wall control **can not** be used together.

## DISPLAY CALIBRATION

All controllers are factory calibrated and tested prior to shipment. However, should the display be out of calibration this is field adjustable. To calibrate the control obtain a copy of service bulletin number CON-15A.

Before calibrating the control check the following.

- 1) Is a draft of air entering the rear of the control from a cavity wall through the cable hole in the control mounting plate. Cover the cable entry hole with PVC tape (do not use aluminium or silver foil tape).
- 2) Is the control mounted on an external wall subject to cold or heat which could be influencing sensor on bottom of the control.

## INDOOR FAN OPERATION

On the heat cycle the HAN-L5/PCB-058V2 controller automatically stops the indoor fan when the compressor stops on the heat cycle. The control provides a cold draft inhibit cycle as a 2 stage fan delay cycle on the unit restart on heat. When the compressor restarts on the heat cycle the indoor fan has a 7.5 second start delay before starting on low speed. After a further 18 seconds the fan moves to medium or high speed as selected.

## CONTINUOUS FAN ON HEAT OPTION (Refer Fig 3)

For installations requiring continuous fan on heat, a jumper (LF) is located on the PCB-058V2 power relay board (PCB). For continuous fan on heat the commissioning technician needs to move the jumper LF to bridge the 2 LF pins. The fan will then run continuously on heat with the jumper pins bridged.

## SYSTEM WARM UP ACCELERATOR OPTION

The PCB-058V2 is designed with a system warm up function to improve cold start operation of airconditioning units on reverse cycle heating and eliminate cold drafts on completion of the defrost cycle. To use this function the **optional sensor** type HWU-S is required.

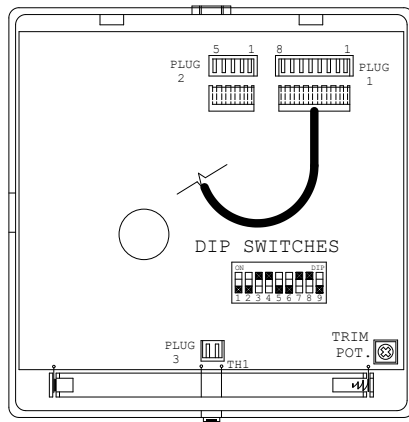
### Warm up sensor installation

It is essential that the sensing bulb be located at the mid point of one of the refrigerant circuits in the indoor coil. Gently open the fins in the indoor coil on the leaving air side and implant the sensor in the coil as close as possible to the copper tubes. It is not recommended that the sensor be clipped to a return bend as poor heat transfer will prevent correct operation of the control. If installing onto the indoor coil suction (large) header it should be mounted adjacent to the entry pipe. The system warm up function does not operate on the cooling cycle.

To connect the sensor to the PCB-058V2, remove the jumper from terminal CN-TH2. Plug the sensor P/N HWU-S onto terminal pins CN-TH2.

## OPTIONAL ZONE SWITCH ZSU CONNECTOR

The PCB-058V2 is designed to easily interface with the optional ZSU-040 zone switch unit. The connector “CN-12V” allows the ZSU-040 to plug directly to the PCB-058V2. Full installation instructions are included with the ZSU-040.



Rear view of HAN-L5 wall control without rear mounting plate showing location of interconnecting cable plug, dip switches and trim pot.

Turn power to control off before changing dip switch settings.

Turn power off before unplugging interconnecting cable.

Plug 1 : Main interface cable to PCB-058V2.

Plug 2 : Optional remote IR control station.

Plug 3 : Optional remote temperature sensor. When using remote sensor from this plug cut one wire of the on board sensor.

## OPTIONAL ACCESSORIES

- **REMOTE SENSOR - Part No: RES-10**

This is a remote sensor supplied on a 10 metre cable and a plug to connect the sensor to the power relay board or the HAN-L5 control.

- **REMOTE SENSOR WALL ENCLOSURE - Part No: RWB-1**

An attractive compact enclosure when the remote sensor is required to be wall mounted.

- **DUAL SENSOR KIT - Part No: HAN2SR/AC**

The dual sensor kit is used when 2 zones are installed on a single air conditioner such as a day and night zone. The HAN2SR/AC allows a sensor to be installed in each area and connects to the 240V supply of one zone damper motor. When that damper motor is switched to the open position the dual sensor kit will redirect control to the sensor in that zone. For further information refer to Bulletin No. :- CON-07A & CON-08A.

- **ZONE SWITCH KIT - Part No: ZSU-040**

The ZSU-040 kit is for installations with 2 to 4 zone dampers where individual switching is required. An attractive slim plastic moulding designed to mount beside the HAN-L5 has 4 zone switches. Each switch has a green LED to indicate when the zone is on. Labels are supplied to identify the various zones. The ZSU-040 is supplied with relay board and low voltage interface cable. This provides safe low voltage switching at the wall control.

- **INFRARED REMOTE CONTROL STATION - Part No: IRM-20**

For installations where a remote control station is required in a separate location from the HAN-L5 controller. The small remote receiver is mounted in an attractive wall enclosure and supplied with a 20 metre interconnecting cable which plugs on to the HAN-L5 wall control. A green run LED in the remote module indicates the system is on.

- **INFRARED REMOTE CONTROL - Part No: IR-RC**

A hand held infrared remote control for use with the IRM-20 will allow all control functions (other than mode switching) to be carried out from remote location in the building.

- **TAMPER PROOF COVERS - Part No: TPC-5**

A clear acrylic cover which simply fastens to the HAN-L5 with 4 screws to prevent unauthorised persons altering control settings. The HAN-L5 (with optional infrared receiver fitted) can be adjusted using the infra red remote control (Part No: IR-RC) without removing the cover.

- **EXTENDED INTERFACE CABLE - Part No: IC-25**

For installations where the distance between the HAN-L5 wall control and PCB-058 exceeds 10 metres, the IC-25 is 25 metres long and replaces the 10 metre cable supplied as standard with the controller.

- **INTERFACE CABLE JOINERS - Part No: ICJ-8**

Double 8 pin male plugs allow two interface cables to be easily joined where extended cable lengths are required.