



ECP07 Evaporative Cooler Engineering Guide 2007

SAFETY NOTES

Safety – Electrical Hazard

Whenever the unit is being worked on with the side panels removed the unit should be electrically isolated. There are both 240V and 24V systems within the unit.

Safety – Moving Parts Hazard

Whenever the units is being worked on with the side panels removed the unit should be electrically isolated. If this is not complied with then the fan can be started remotely. Panel securing screws shall be replaced when work is completed.

INSTALLATION

The EcoCooler must be mounted level with a minimum clearance of 300mm from each side to enable removal of side frames. Do not install where fumes or other contaminants may be drawn into the EcoCooler. An EcoCooler has an operating weight of 120Kg

Down Discharge Cooler – This is supported by a 645mm vertical, square, plain edged duct with the top edges horizontal. The cooler sits over the duct and should be fixed with appropriate fasteners. This must allow a minimum of 150mm above the roof to allow access for connection of services to the underside of the cooler.

Side and Top Discharge EcoCoolers – There are four support points moulded into the sump which are on 920mm centres. All ductwork for side and top discharge coolers must be self supporting and put no load on the cooler.

All operations should be carried out by appropriated qualified personnel. All installations should comply with local regulations regarding electricity, water and drainage.

SERVICE CONNECTIONS

Electricity – The EcoCooler requires a 240V AC 15A single phase supply. This is connected to the external isolator fixed to the base of the cooler. It is recommended that the cooler is protected with an RCD.

Water – The EcoCooler requires a 15mm town mains water supply min 1 bar max 7 bar. The connection to the EcoCooler is ½”BSP. A flexible braided hose, with integral isolating valve, is provided and can be found inside the cooler on delivery. This has ½”BSP/15mm compression ends.

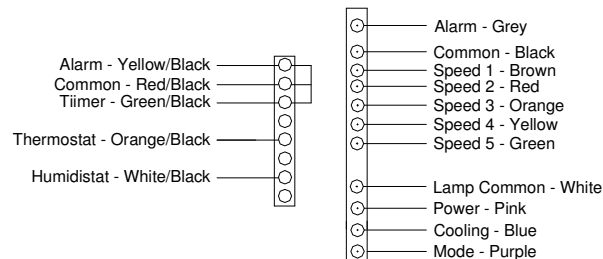
Drain – On delivery the drain valve is electrically connected but requires mechanically fitting to the base of the sump. The drain valve fitting is 1”BSP. If the drain valve requires pipe work then standard 28mm pipe components can be obtained from Wolsey Group

Part No	Description
555043	C/B 28MM X 1” F.I COMPRESSION COUPLING
555012	C/B28MM COMPRESSION ELBOW
515122	HEP20 28MMx3M P/BUTYLENE PIPE

Wall Control Cable – A 30m 16core control cable is delivered connected to the main cooler control box coiled and fastened to the base of the cooler. This control cable can be extended up to 500m using standard multi-core cable available from LAPP cables Type 1119116 OLFLEX CLASSIC 111 16 Core .75mm² in 500m lengths. The connections to the control box are 2.8mm x 0.5mm spade connectors. Crimp connectors can be obtained from RS Components Part No 239-4240

CONNECTION OF WALL CONTROLLER

The wall controller is delivered packed inside the cooler. Final connections are made after the control cable has been routed. The 16 cores are connected to the two terminal strips inside the Wall Controller. **The Alarm and Timer must be bridged as shown below or the cooler will not run.**



AUTO BUTTON

If no thermostat is going to be used then the Auto button should be removed and associated wires terminated. A blanking plug can be found in the control box.

CONNECTION OF REMOTE ITEMS

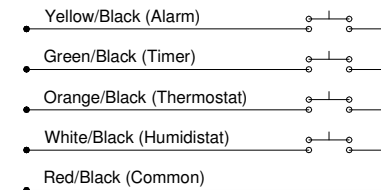
The Alarm, Timer, Thermostat and Humidistat should all be volt free contacts using the Red/Black as a common. These can be connected to the cores provided in the wall control or directly to the EcoCooler.

Alarm – Closed for the cooler to run. If this is not connected then the alarm light on the wall control flashes 6 times and “6” appears on the main controller LED

Timer – Closed for the cooler to run. If this is not connected then “to” appears on the main controller LED

Thermostat – Closed at temperature over set point.

Humidistat – Closed at RH below set point. If humidistat is not used then this contact should be bridged.

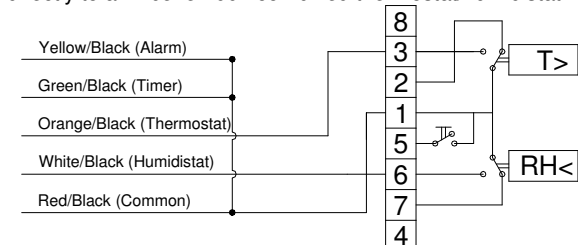


AUTOMATIC OPERATION

In Auto operation the cooler fan speed and cooling mode are set automatically. The EcoCooler control system looks at the thermostat every 10 minutes and speeds the fan up or down accordingly. Dip Switch 8 allows the cooler to stop completely during cool periods. The default setting is the cooler stays at speed 1/vent mode during cool periods. If a humidistat is used this disables the water circulation when RH is over set point. Full fan speed automatic control is retained.

CONNECTION OF EBERLE 7001

The EcoCooler control system is designed to connect directly to an Eberle 7001 combined thermostat/humidistat.



DIP SWITCH CONFIGURATION

The eight dipswitches on the control panel are used for special configuration

DP1 – Pre- Cool Cycle. The pads will soak for 5 minutes at the beginning of cooling mode before the fan starts.

DP2,3,4 – Sets the number of fill operations for salinity control. Default setting is 3 fills.

DP5 – 24 Hr dry cycle. Sets a 30min drying out period every 24 hrs

DP6 – Limits fan speed to 1200rpm

DP7 – Limits the fan speed to 1000rpm

DP8 – Enables complete stop in AUTO

Default settings are



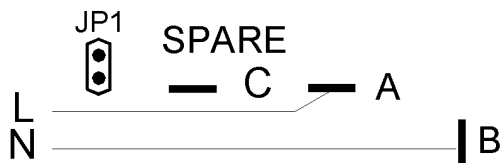
AUTOMATIC START OF AUXILIARY FAN

The 'SPARE' connection on the main control panel can be used to provide a control signal or power an extract fan. Contacts A and C are a switch which closes when the EcoCooler fan runs. This is typically used to control an extract fan to provide a balanced ventilation system.

A and C are, as default, a volt free contact switch protected by a 1A fuse. This fuse can be increased to a maximum of 8A using a 20mm fuse RS components part no 542-1480

By enabling jumper JP1 a 240VAC control signal is provided to contact A with contact B being neutral. When the board control signal is used DO NOT increase the fuse size over 1A.

Additional cabling is required for this feature to be used.



COMMISSIONING

The cooler is commissioned by cleaning, running test routine, checking wall control operation and finally, if applicable, checking remote items.

CLEAN ROUTINE

Clean the cooler by pressing the small switch for 7 seconds. Water automatically enters the cooler and drains. Use this routine to remove any debris in the sump. End the routine by pressing the switch once.

TEST ROUTINE

The cooler can be tested by pressing the small switch on the main cooler control panel for 5 seconds. The test can be stopped by pressing this switch once. The LED gives the status of the test.

F1, F2, F3, F4, F5 – Fan Speeds

Dr – Drain

V – Water Valves

L1, L2, L3, L4 – Level Probes

At the end of the test sequence L4 flashes. Test is ended by manually lifting top float or pressing the switch once. Use this routine to visually check all of the components of the cooler. Always complete the test routine or the cooler will not respond to the wall controls.

WALL CONTROL OPERATION

Check the operation of the cooler with the AUTO button off
Power – Switches the cooler on and off. The button should illuminate when operated.

Fan Speed – sets the five different speeds

Cool – enables the cooling function

Auto – enables Automatic Mode

Cool and Auto buttons are only illuminated if the Power button is on.

REMOTE ITEMS CHECKING

All remote items can be checked using the LED on the main control panel

Alarm – 6 shows when alarm contact is open

Timer – 'to' shows when timer contact is open

Thermostat and Humidistat can only be validated in Auto Mode.

Thermostat – "t" shows when thermostat is open

Humidistat – "h" shows when humidistat is open.

ALARM CODES

The Alarm Light on the Wall Control flashes when an alarm is present. The number of flashes indicates the Alarm Condition.

1 flash Slow fill

Run test routine, check water supply pressure, check inlet water filter.

2 flashes Overflow

Run test routine to check probe operation and water solenoid valves.

3 flashes Probes out of sequence

Run test routine to check probes, clean probes.

4 flashes Slow evaporation

Run test regime to check circulation pump operation.

5 flashes Slow drain

Run test routine to check drain valve operation, water level probes and water inlet solenoid valve.

6 flashes External Alarm

This is normally linked to a fire alarm. Check continuity.

MAINTENANCE

The maintenance procedure is:

- Remove side panels
- Remove insect screens and clean
- Clean filters with low pressure cold water
- Clean inlet water filter
- Replace filter pads as necessary
- Clean sump using Clean Routine
- Clean all other cooler parts
- Run Test Routine
- Check dipswitch configuration
- Replace insect screens and replace panels
- Check wall control operation

Celsius Design Limited
PO Box 141, Leamington Spa, Warwickshire CV32 5ZE
Tel: 01926 887470 Fax 01926 335485
www.celsiusdesign.co.uk
Email sales@celsiusdesign.co.uk
