DATA SHEET 1501

ECP60-01 Wet Box Large

Down Discharge • Top Discharge • Side Discharge

The ECP60-01 evaporative cooler is manufactured by EcoCooling in an ISO 9002 quality environment. The cooler is designed to meet all European electrical, water and other safety legislation.

- The ECP60-01 can be configured as a top, side or down discharge wet box.
- It cools air through evaporation of water as part of a ventilation system, but does not drive air flow.
- The cooler can handle 13,500m³/hr or 18,000m³/hr of fresh air dependent on its configuration.
- All air supplied to the area being cooled must be extracted or exhausted from it.

Material

- Cabinet components are injection moulded in polypropylene.
- The cabinets are UV stabilised and corrosion resistant.

Weights, Dimensions and Ductwork Connections

See configuration sheets for the above information

Electrical Supply

Voltage	1~ 240V 50Hz
Current	0.25A running
Protection	External isolator supplied

Water Requirements

Water Supply	
Water quality	Fresh potable water only
Minimum supply rate	500l/hr minimum
Minimum pressure	1 bar
Maximum pressure	7 bar
Connection	15 mm compression fitting to braided hose c/w adjustable flow restrictor
Control	• Solenoid inlet valve • Float level probe activated shut off • Optional actuated valves available for frost protection
Compliance	• WRAS compliant • Double check valve recommended
Drain	
Capacity	2,000 l/hr minimum
Connection offered	1" BSP male thread
Control	Drive Open-Drive Close drain valve

Cooling Pads

Manufacturer	Munters
Material	CELdek® 5090
Saturation Efficiency	85-89%
Dimensions	860 x 960 x 100 mm

Circulation Pump

Flow Rate	30l/min (intermittent)
Power	50W
Voltage	220-240V
Running Current	0.23A
Pump Type	Centrifugal
Motor Type	Encapsulated shaded pole
Transmission	Magnetically coupled
Protection	Auto-reset Overload

Control Options

- EcoCooling PLC control system
  See associated documentation for further detail.
- Interface with BMS
  - VFC input to activate cooling mode
  - 12VAC output (pulsed) denotes cooler status
  - Modbus RTU RS485

Air Filtration

- Integrated Insect Screens
- Optional EU4 filtration
  See separate sheet for detail.

Maintenance

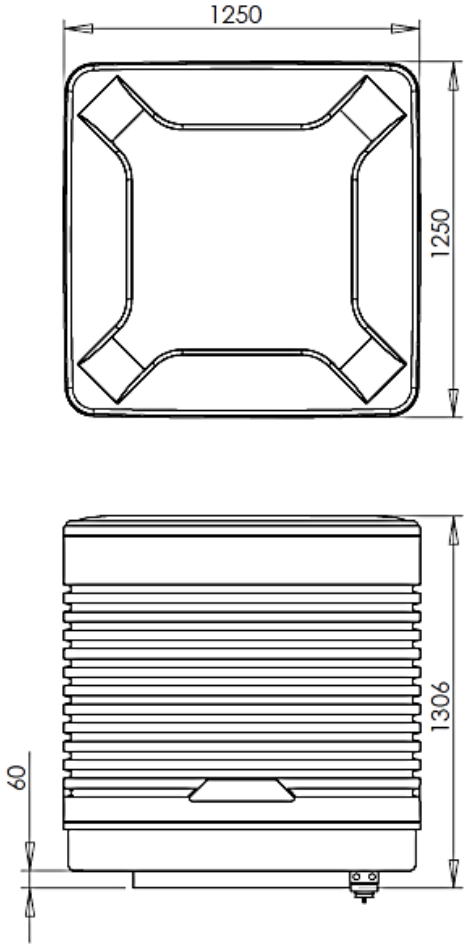
- Integrated testing sequence
- Recommended interval of 3-6 months
  Contact the manufacturer for application specific advice

Warranty

2 years parts only

ECP60-01 Configuration Details

Down Discharge



Configuration Features

Maximum Flow Rate	18,000m³/hr or 5 m³/s
Cooling Pad Area	3.3m²
Unit Size (H x W x D) *Installed* *Delivered (incl. pallet)*	 1306 x 1250 x 1250 mm *1350 x 1300 x 1300 mm*
Duct Connection Port Square Round	 750 mm I/D (Female) 725 mm Ø O/D (Male)
Weight Ventilation mode Cooling mode Sump at full capacity Delivered	 100 kg 165 kg 185 kg 115 kg

Serviceable Cooling Load (kW)

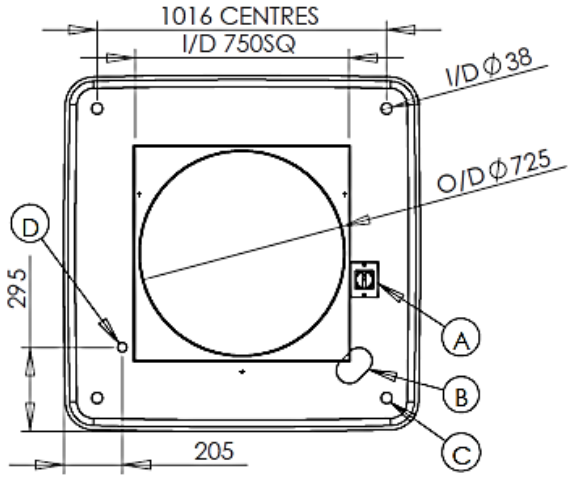
Dependant on:

- Temperature rise between supply and exhaust.
- Volumetric air flow rate.

Note that this does not describe the adiabatic cooling function.

Temp. Rise, ΔT Air Flow	5°C	7.5 °C	10 °C	12.5 °C	15 °C
18,000 m³/hr	31	46	61	76	91
13,500 m³/hr	23	34	46	57	68
9,000 m³/hr	16	23	31	38	46
4,500 m³/hr	8	12	16	19	23

Calculated using $\dot{Q} = (\dot{m}C_p)_{air}\Delta T$ with $\rho_{air,NTP} = 1.204$ & $C_{p,air,NTP} = 1.005$

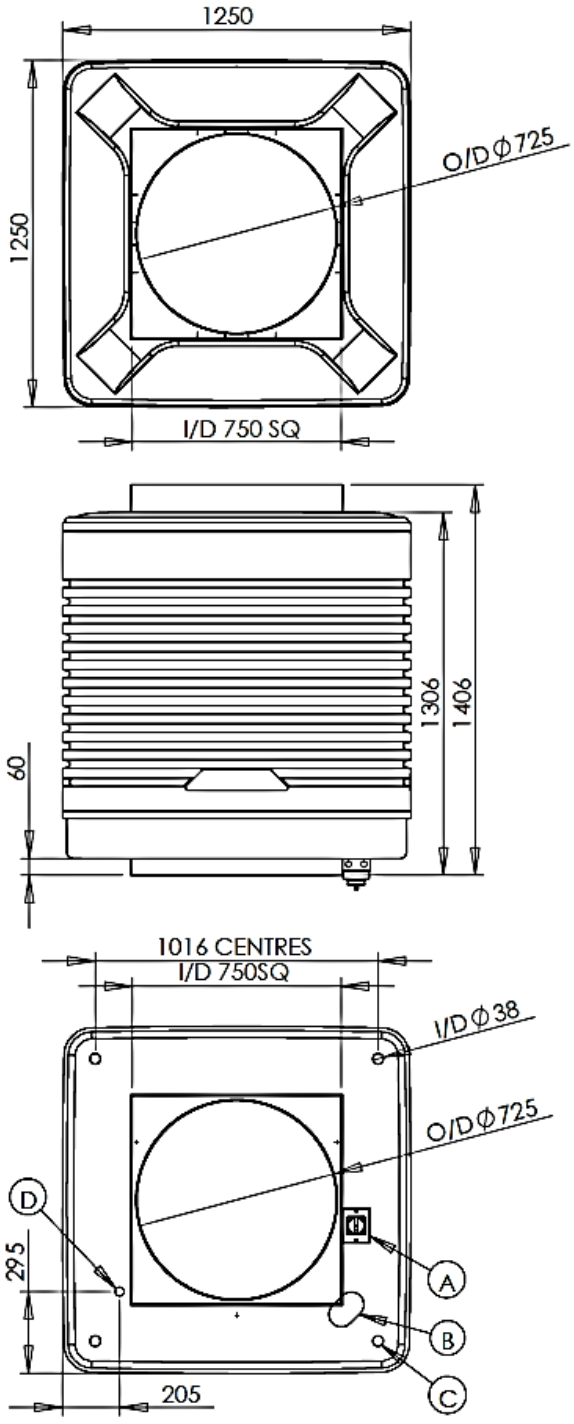


Note that all dimensions shown are nominal and have a ±10mm tolerance due to manufacturing processes employed.

A	Rotary Isolator
B	Control Panel Port
C	Support Socket (x4)
D	1" BSP Drain Valve

ECP60-01 Configuration Details

Top Discharge



Note that all dimensions shown are nominal and have a ±10mm tolerance due to manufacturing processes employed.

A	Rotary Isolator
B	Control Panel Port
C	Support Socket (x4)
D	1" BSP Drain Valve

Configuration Features

Maximum Flow Rate	18,000m³/hr or 5 m³/s
Cooling Pad Area	3.3m²
Unit Size (H x W x D)	
Installed	1406 x 1250 x 1250 mm
Delivered (incl. pallet)	1450 x 1300 x 1300 mm
Duct Connection Port	
Square	750 mm I/D (Female)
Round	725 mm Ø O/D (Male)
Weight	
Ventilation mode	110 kg
Cooling mode	175 kg
Sump at full capacity	195 kg
Delivered	125 kg

Serviceable Cooling Load (kW)

Dependant on:

- Temperature rise between supply and exhaust.
- Volumetric air flow rate

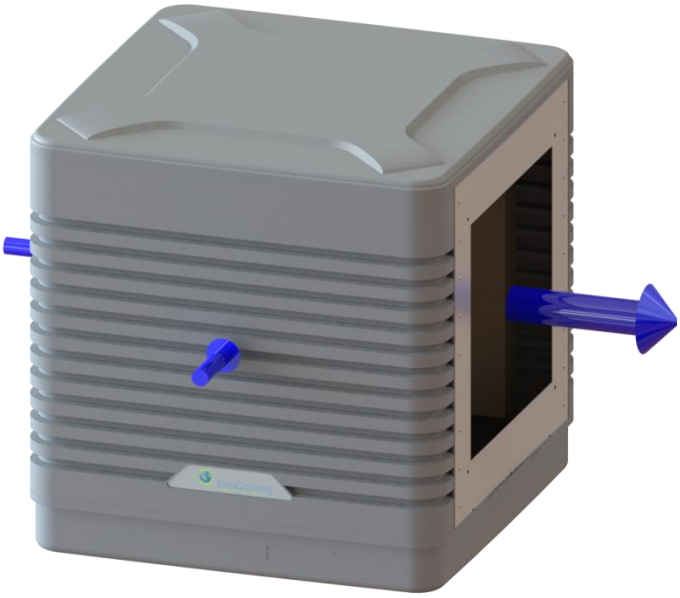
Note that this does not describe the adiabatic cooling function.

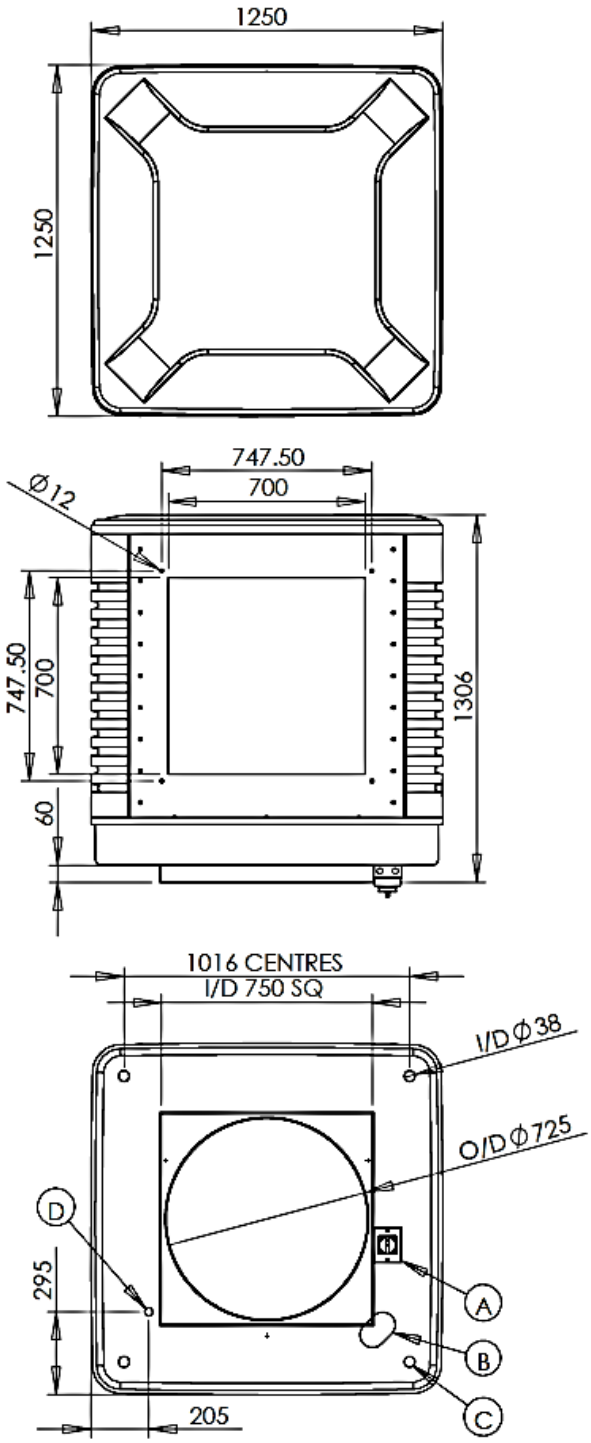
Temp. Rise, ΔT / Air Flow	5°C	7.5 °C	10 °C	12.5 °C	15 °C
18,000 m³/hr	31	46	61	76	91
13,500 m³/hr	23	34	46	57	68
9,000 m³/hr	16	23	31	38	46
4,500 m³/hr	8	12	16	19	23

Calculated using $\dot{Q} = (\dot{m}C_p)_{air}\Delta T$ with $\rho_{air,NTP} = 1.204$ & $C_{p,air,NTP} = 1.005$

ECP60-01 Configuration Details

Side Discharge





Note that all dimensions shown are nominal and have a ±10mm tolerance due to manufacturing processes employed.

A	Rotary Isolator
B	Control Panel Port
C	Support Socket (x4)
D	1" BSP Drain Valve

Configuration Features

Maximum Flow Rate	13,500m³/hr or 3.7 m³/s
Cooling Pad Area	2.5m²
Unit Size (H x W x D) Installed Delivered (incl. pallet)	 1306 x 1250 x 1250 mm 1350 x 1300 x 1300 mm
Duct Connection Port Square Fixing points	 700 mm (Plain) 4 off M12 holes on 747.5 mm centres
Weight Ventilation mode Cooling mode Sump at full capacity Delivered	 100 kg 160 kg 180 kg 115 kg

Serviceable Cooling Load (kW)

Dependant on:

- Temperature rise between supply and exhaust.
- Volumetric air flow rate

Note that this does not describe the adiabatic cooling function.

Temp. Rise, ΔT Air Flow	5°C	7.5 °C	10 °C	12.5 °C	15 °C
13,500 m³/hr	23	34	46	57	68
10,125 m³/hr	17	26	34	43	51
6,750 m³/hr	12	17	23	29	34
3,375 m³/hr	6	9	12	15	17

Calculated using $\dot{Q} = (\dot{m}C_p)_{air}\Delta T$ with $\rho_{air,NTP} = 1.204$ & $C_{p,air,NTP} = 1.005$

ECP60-01 Control and Communications

BMS Integration

Wiring Details

The ECP60-01 is supplied with a 4 core control cable as described in the table below.

Colour	Description	Function	Requirement
Black	Control Common 12V-	Cooling Mode Enable	Volt Free Contact to enable
Blue	Cooling		
Grey	Status	Cooler Status	12VDC relay to monitor
White	Control Common 12V+		

Cooler Status Function

- The cooler has 8 states which are communicated via the 'Cooler Status' cores.
- The tables to the right and below give further detail.

Signal Type	Pulsed 12VDC
Time period	0.5s
Pulse length	1 period ON
Gap (within string)	1 period OFF
String break	2 periods OFF

Cooler Status Signals

Status Code	Description	*Each state is denoted by a unique string of pulses as depicted below. 'Available', is the only exception and is denoted by a permanent signal.*
0	Available	
1	Cooling	
2	Slow Fill	
3	Overflow	
4	Probe Error	
5	Slow Evaporation	
6	Slow Drain	
7	Clean/Test	

ECP60-01 Control and Communications

Modbus

Modbus Configuration

- The ECP60-01 has the facility for Modbus communication and control
- The tables to the right and below describe the configuration

Protocol/Type	Modbus RTU/RS485
Baud Rate	1200
Start Bit	1
End Bit	1

Modbus Registry

Address	Description	R/W	Range	Comment
0x01	Cool	R/W	0/1	Enable cool mode
0x08	Start Test	R/W	0/1	Enable test mode
0x10	Cancel Test	R/W	0/1	Cancel test mode
0x06	Address	R/W	1-200	Cooler Modbus address write
0x07	Cooler Status	R	1	Cooling Mode
			2	Slow fill
			3	Overflow
			4	Probe error
			5	Slow Evaporation
			6	Slow Drain
			7	Test Mode
0x10	Slow Fill	R	0	Normal
			1	EcoCooler Fault
0x11	Overflow	R	0	Normal
			1	EcoCooler Fault
0x12	Probe Error	R	0	Normal
			1	EcoCooler Fault
0x13	Slow Evaporation	R	0	Normal
			1	EcoCooler Fault
0x14	Slow Drain	R	0	Normal
			1	EcoCooler Fault
0x15	Water Level Probe - Level 1	R	0	Down
			1	Up
0x16	Water Level Probe - Level 2	R	0	Down
			1	Up
0x17	Water Level Probe - Level 3	R	0	Down
			1	Up
0x18	Water Level Probe - Level 4	R	0	Down
			1	Up
0x19	Water Inlet Valve	R	0	Closed
			1	Open
0x1a	Water Drain Valve – Open	R	0	Closed
			1	Open
0x1b	Water Drain Valve – Close	R	0	Open
			1	Closed
0x1c	Circulation Pump	R	0	Off
			1	On
0x1d	Operation Mode	R	0	Ventilation Mode
			1	Cooling Mode
0x1e	Test Mode	R	0	Normal
			1	Test Mode
0x1f				
0x1g				