TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

GENERAL

Climate Wizard coolers are characterised by the supply of 100% fresh, cool, outside air with NO additional moisture added, with greatly reduced energy consumption relative to an equivalent refrigerated system performing the same duty.

The coolers comprise of a supply air fan, an indirect heat exchanger pack, integrated water reservoir, pump, and chlorinator system.

CW-H15S and CW-H15S Plus can be operated in "Supercool" mode producing even colder supply air with added moisture (direct cooling). Supercool coolers have an additional pump and Chillcel® pads.

CABINET

The cabinet is constructed from coated marine grade aluminium incorporating the motor/fan assembly, non-corrodible heat exchange core and other ancillary equipment mounted on a heavy gauge base frame for structural stability.

Forklift tine channels are provided within the frame to facilitate transport and lifting.

Components are effectively treated to ensure corrosion resistance and mechanical fasteners are zinc coated, stainless steel or aluminium.

Connection surfaces are provided for outlet supply air and exhaust ductwork to be fitted using established industry practices.

FAN & MOTOR

The fan is a multi-blade, centrifugal type with backward curved blades. It has a cast aluminium rotor and plastic impeller which is statically and dynamically balanced.

The fan is directly mounted to the electric motor. The electric motor is high efficiency, inverter driven and responsive to 0-10V control signals to implement speed control that delivers optimum efficiency at lower speed operation.

HEAT EXCHANGE CORE

The heat exchange cores are designed to facilitate heat exchange between the wet air passages and the dry air passages such that high efficiency heat transfer takes place without the addition of any additional moisture.

They are designed to provide long life and consistent, long term high efficiency.

Supercool models are fitted with additional Chillcel® fabricated honeycomb, direct cooling pads.

WATER MANAGEMENT SYSTEM

The water supply connection is a ½" BSP fitting that connects directly to the internally mounted solenoid valve.

Water is held in an internal reservoir manufactured as a one-piece moulded polymer construction to ensure durability and corrosion resistance.

Heat exchange core saturation is achieved through internally mounted pumps delivering water to a specially designed non-clog water distribution system guaranteeing continuous uniform flow.

The pumps are manufactured from engineering plastics, with stainless steel shafts and fully encapsulated synchronous motors with thermal overload protection. They are provided with an easily cleanable strainer within the reservoir section.

An electronic water management system controls the maximum salinity level and chlorination of the reservoir water through continuous monitoring and replenishment.

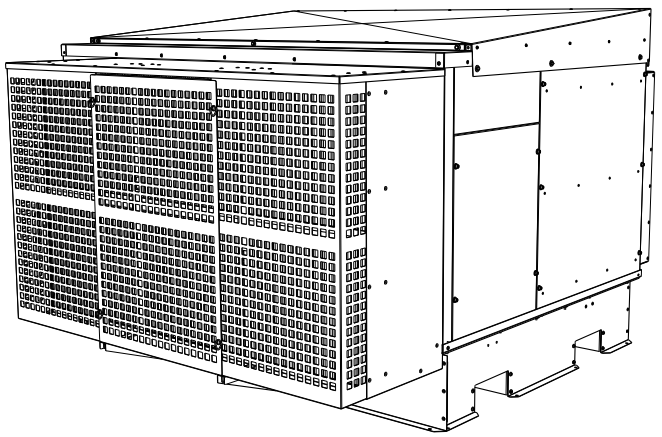
The reservoir is drained by an electric drain valve which responds to the water management control system. The design of the reservoir ensures that no water remains after draining.

ELECTRICAL CABINET AND CONTROLS

All electrical control equipment including supply connection terminals, motor control hardware, BMS interface electronics, and water management hardware is pre-wired and factory mounted within a robust IP66 enclosure meeting the requirements for outdoor mounting.

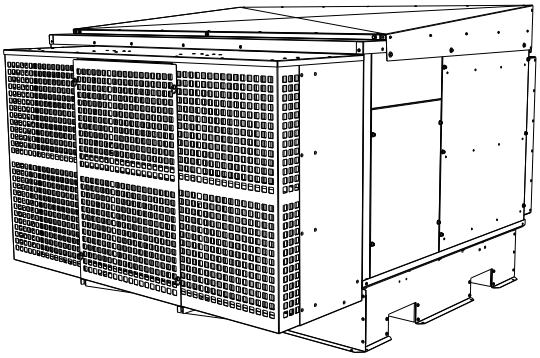
AIR FILTER

Intake air is filtered through aluminium framed, washable, pleated filters. The assembly includes a safety screen to protect the fan and a cover to minimise intrusion of rain.



TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

CW-H15



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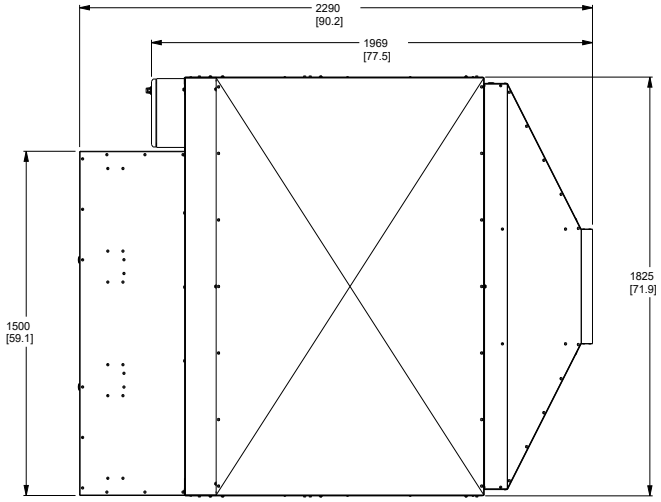

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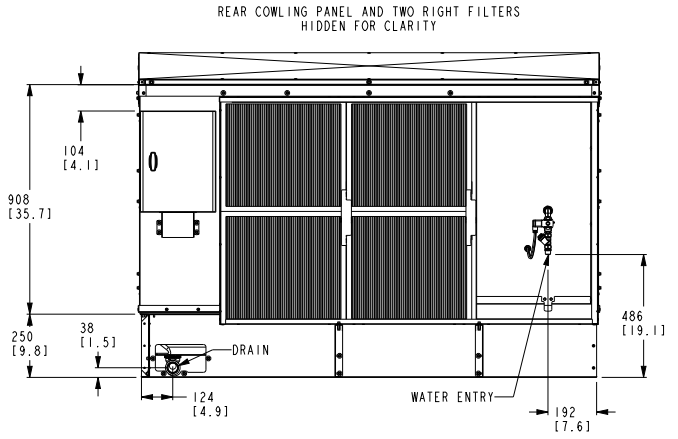
REAR



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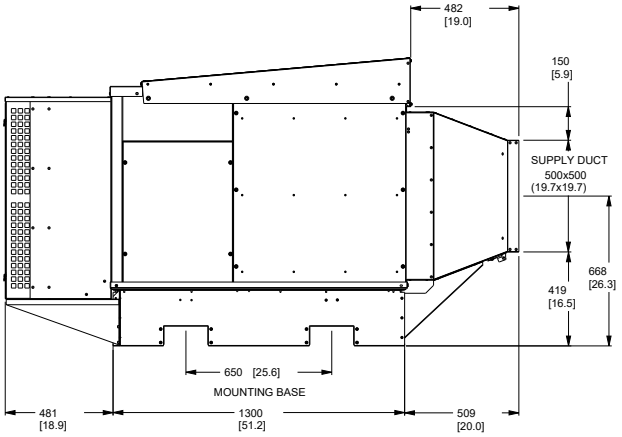
SIDE



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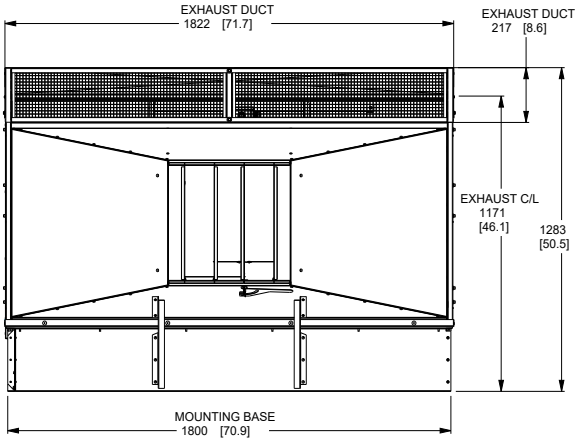

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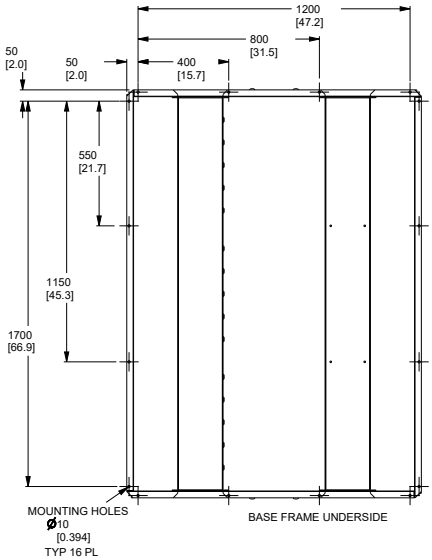
BOTTOM



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NOTE: Installers must allow adequate access to and around the cooler for Maintenance. Provision must be made for access to power, control, water supplies and drains. It is important that the cooler is level in all directions. Refer to the Installation Manual for full details.

TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

MODEL:			CW-H15	CW-H15S	CW-H15S PLUS
SERVICES	Electrical	Voltage	380-415V / 3N~ / 50Hz	380-415V / 3N~ / 50Hz	380-415V / 3N~ / 50Hz
		Rated Current	4.9 A	4.9 A	4.9 A
		Input Power	1.8 kW	1.8 kW	2.1 kW
	Water	Supply	10 L/min Minimum 20 L/min Recommended @ 100 kPa - 800 kPa	10 L/min Minimum 20 L/min Recommended @ 100 kPa - 800 kPa	10 L/min Minimum 20 L/min Recommended @ 100 kPa - 800 kPa
		Max Temperature	40 °C	40 °C	40 °C
		Inlet	1/2" Male BSP	1/2" Male BSP	1/2" Male BSP
		Drain	40mm Flexible Coupling	40mm Flexible Coupling	40mm Flexible Coupling
		Drain Flow Rate	35 L/min	35 L/min	35 L/min
	Duct Connections	Supply Air	Side Discharge 500 x 500 mm	Side Discharge 500 x 500 mm	Side Discharge 500 x 500 mm
		Exhaust Air	Side Discharge 1825 x 220 mm	Side Discharge 1825 x 220 mm	Side Discharge 1825 x 220 mm
ENVIRONMENT	Max Inlet Air Temperature		55 °C	55 °C	55 °C
AIR SYSTEMS	Supply Air Fan/Motor	Fan	1x 560mm Centrifugal Backward Curve	1x 560mm Centrifugal Backward Curve	1x 560mm Centrifugal Backward Curve
		Motor	3.5 kW	3.5 kW	3.5 kW
		Control	0-10V Variable Speed	0-10V Variable Speed	0-10V Variable Speed
		Max Speed	1390 rpm	1390 rpm	1460 rpm
	Air Filters	Inlet	6x ISO Coarse Washable 444 x 495 x 44mm	6x ISO Coarse Washable 444 x 495 x 44mm	6x ISO Coarse Washable 444 x 495 x 44mm
HEAT EXCHANGERS	Indirect Evaporative		3 Cores	3 Cores	3 Cores
	Direct Evaporative		NONE	3 Chillcel® Pads	3 Chillcel® Pads
WATER SYSTEMS	Tank (Reservoir) Capacity		65 L	65 L	65 L
	Inlet Valve		12Vdc Solenoid Valve	12Vdc Solenoid Valve	12Vdc Solenoid Valve
	Pumps Indirect Heat Exchangers		2 Pumps 13 LPM @ 1.5m Head 230V 50Hz 30W ea.	2 Pumps 13 LPM @ 1.5m Head 230V 50Hz 30W ea.	2 Pumps 13 LPM @ 1.5m Head 230V 50Hz 30W ea.
	Pump Direct Heat Exchangers		NONE	1 Pump 13 LPM @ 1.5m Head 230V 50Hz 30W ea.	1 Pump 13 LPM @ 1.5m Head 230V 50Hz 30W ea.
	Salinity Management		Conductivity Probe	Conductivity Probe	Conductivity Probe
	Chlorinator		12 Vdc	12 Vdc	12 Vdc
	Drain Valve		12 Vdc Vertical	12 Vdc Vertical	12 Vdc Vertical
DIMENSIONS	Shipping		2290mm Long 1950mm Wide 1270mm High	2290mm Long 1950mm Wide 1270mm High	2290mm Long 1950mm Wide 1270mm High
	Operating inc. Accessories		2290mm Long 1825mm Wide 1285mm High	2290mm Long 1825mm Wide 1285mm High	2290mm Long 1825mm Wide 1285mm High
WEIGHT	Shipping		340 kg	355 kg	355 kg
	Operating inc. Water/Accessories		330 kg	345 kg	345 kg
STANDARDS COMPLIANCE	Electrical Safety : IEC 60335.1:2011 +A1 +A2, AS/NZS 60335.1:2011 +A1, +A2, +A3, +A4, +A5 IEC 60335.2.98:2002 +A1 +A2, AS/NZS 60335.2.98:2005 +A1, +A2 Ingress Protection : IEC 60529:2011 EMC : IEC 61000-6-3:2006, AS/NZS 61000-6-3:2012 EMF : EN 62233:2008				

		MAXIMUM SPEED SOUND POWER LEVEL (DB RE 1 PW)							
		OCTAVE BAND CENTRE FREQUENCY							
FREQUENCY (HZ)		125	250	500	1K	2K	4K	8K	TOTAL
CW-H15	RADIATED	84	68	65	62	55	51	44	70
CW-H15S	RADIATED	68	69	64	63	60	53	44	73
CW-H15S PLUS	RADIATED	71	70	66	64	61	55	48	75

TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

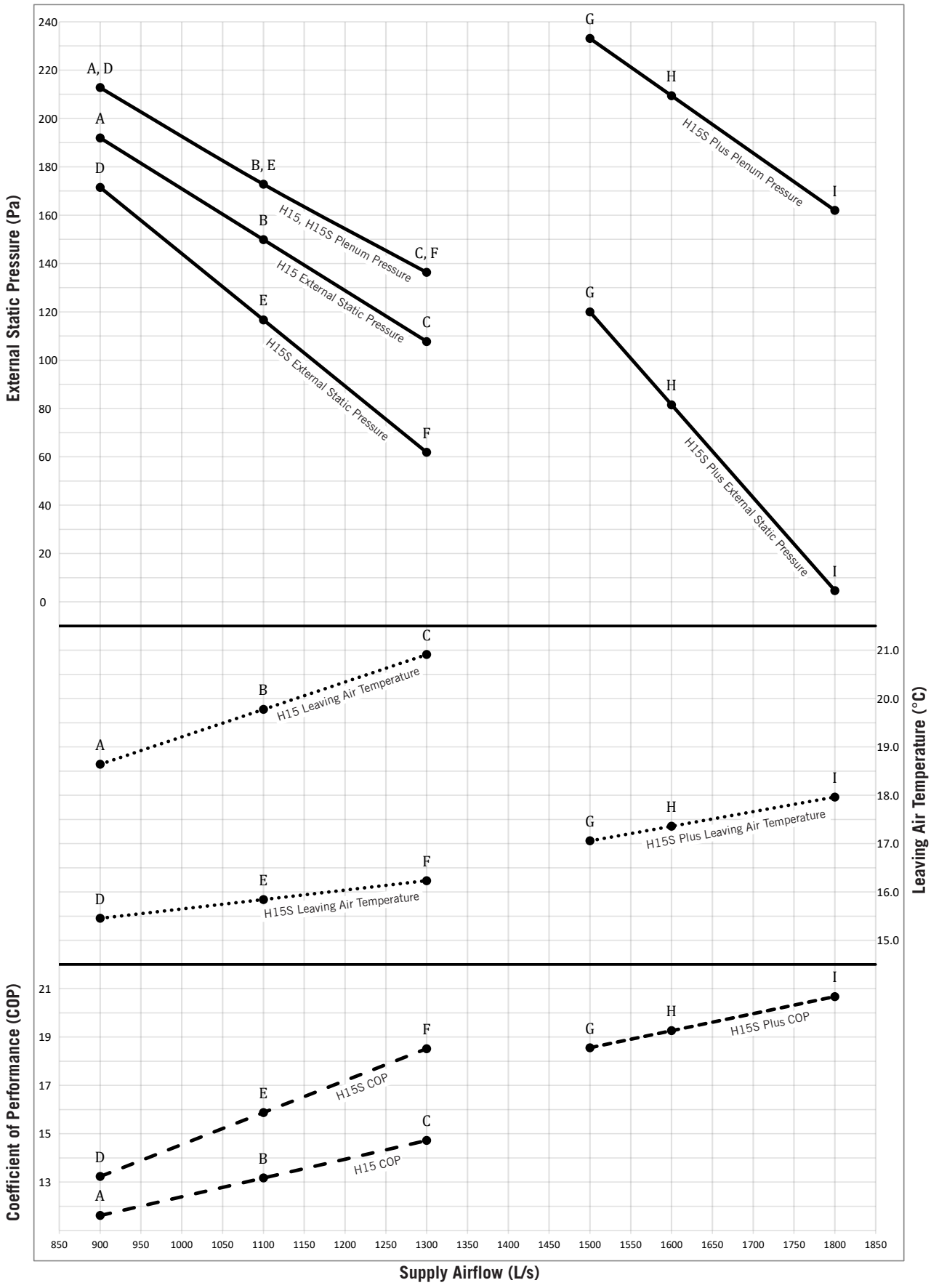
CW-H15 MAXIMUM SPEED PERFORMANCE SUMMARY*			
	A	B	C
EXTERNAL STATIC PRESSURE (Pa)	192	150	108
SUPPLY AIR FLOWRATE (L/s)	900	1100	1300
EXHAUST AIR FLOWRATE (L/s)	1040	925	805
IEC LEAVING AIR TEMPERATURE (ºC)	18.6	19.8	20.9
STANDALONE COOLING CAPACITY (kW)	9	10	10
PRE-COOLING CAPACITY (kW)	21	24	27
INPUT POWER (kW)	1.8	1.8	1.8
STANDALONE COP	5	5	6
PRE-COOLING COP	12	13	15
WATER CONSUMPTION (L/h)	51	51	51

CW-H15S MAXIMUM SPEED PERFORMANCE SUMMARY*			
	D	E	F
EXTERNAL STATIC PRESSURE (Pa)	171	117	62
SUPPLY AIR FLOWRATE (L/s)	900	1100	1300
EXHAUST AIR FLOWRATE (L/s)	1060	945	825
IEC LEAVING AIR TEMPERATURE (ºC)	20.2	21.0	21.9
IDEC LEAVING AIR TEMPERATURE (ºC)	15.5	15.8	16.2
STANDALONE COOLING CAPACITY (kW)	13	15	17
PRE-COOLING CAPACITY (kW)	25	29	34
INPUT POWER (kW)	1.8	1.8	1.8
STANDALONE COP	7	8	9
PRE-COOLING COP	13	16	19
WATER CONSUMPTION (L/h)	56	59	62

CW-H15S PLUS MAXIMUM SPEED PERFORMANCE SUMMARY*			
	G	H	I
EXTERNAL STATIC PRESSURE (Pa)	120	82	5
SUPPLY AIR FLOWRATE (L/s)	1500	1600	1800
EXHAUST AIR FLOWRATE (L/s)	575	535	450
IEC LEAVING AIR TEMPERATURE (ºC)	24.0	24.8	26.3
IDEC LEAVING AIR TEMPERATURE (ºC)	17.1	17.4	18.0
STANDALONE COOLING CAPACITY (kW)	19	19	21
PRE-COOLING CAPACITY (kW)	38	40	44
INPUT POWER (kW)	2.1	2.1	2.1
STANDALONE COP	9	9	10
PRE-COOLING COP	19	19	21
WATER CONSUMPTION (L/h)	61	63	66

* Leaving Air Temperatures, Cooling Capacities, COP and Water Consumption tested to Australian Standard AS 2913-2000 and ASHRAE 143 with design condition of: 38 ºC dry-bulb, 21 ºC wet-bulb and 27.4 ºC room exit temperature.

TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS



TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

OPTIONS, FEATURES & ACCESSORIES

Multi-Magic® coolers are supplied with a series of interface terminals inside the electrical enclosure for use with additional accessories.

ITEM	ID	TYPE
MODBUS	+	RS-485 MODBUS Communication for Wall Controller or 3rd Party Master
	-	
	GND	
POWER SUPPLY	24 VDC	DC Power Supply for Wall Controller, Sensors or BMS
	0 VDC	
MULTI-MAGIC SENSORS (sold separately)	S1	Flexible Sensor Inputs for use with Optional Sensors. See next page.
	S2	
	S3	
	S4	
FAN STATUS	FAN STS	Fan Run Output. Relay Output Dry Contact, Adjustable Timer
	FAN COM	
FIRE	FIRE	Fire Terminals. Bridge to Run.
	FIRE	

Multi-Magic® coolers can be controlled via 4 different methods

OPTION 1: BUILDING MANAGEMENT SYSTEM (BMS)

Multi-Magic® coolers are supplied with a series of low voltage BMS Interface Terminals to allow external devices, such as 3rd party controllers, to control the basic functions of the cooler.

ITEM	ID	TYPE
BMS	IEC	Digital Input Dry Contact
	DEC	Digital Input Dry Contact
	SPD	Supply Fan Speed: Analogue Input 0-10Vdc equates to Speeds 0 to 10
	ERR	Error: Relay Output Dry Contact. Configurable NO/NC
	GND	GND

OPTION 2: MULTI-MAGIC® WALL CONTROLLER

(sold separately)

- MODBUS RS-485 to control up to 15 Devices
- Temperature & Relative Humidity Sensors
- Manual IEC, Supercool & Fan Speed Control
- Thermostatic Speed Control
- Supercool Humidity Setpoint
- 7-Day Thermostatic Program
- Room Sensor Averaging
- Ambient Condition Monitoring
- Min & Max Fan Speed Limits
- Screen Security Lock
- Auto-Restart Function
- Device Fault History
- English, Spanish, French, Italian, Portuguese

OPTION 3: RS-485 MODBUS PRIMARY

Modbus Registers are available for controlling and monitoring the basic functions of the connected coolers.

REGISTER	TYPE		DETAILS
COMMANDS			
9200	UINT	Bit 0	IEC Enable
		Bit 1	DEC Enable
		Bit 2	Fault Reset
		Bit 3	Manual Drain
9201	UINT	0-1000	Supply Fan Speed (0-100%)
STATUS			
9205	UINT	Bit 0	Fault State
		Bit 1	Low Probe WET
		Bit 2	High Probe WET
		Bit 3	Inlet Solenoid Valve OPEN
		Bit 4	Drain Valve OPEN
		Bit 5	Indirect Pump RUNNING
		Bit 6	Direct Pump RUNNING
		Bit 7	Chlorinator RUNNING
9206	UINT	0-100	Supply Fan Speed (0-100%)
9207	UINT	0-6615	Water Salinity Level
9208	UINT	0-100	Chlorinator Output (%)
9209	UINT		Fault Code
9210	INT	S1	Sensor Values depend on sensor type Temperature °C/10 Relative Humidity %/10 Pressure Pa/100
9211	INT	S2	
9212	INT	S3	
9213	INT	S4	

OPTION 4: BACNET MS/TP OR BACNET IP

BACnet objects are available for controlling and monitoring the basic functions of the connected coolers.

OBJECT	DETAILS
COMMANDS	
CMD_IEC	IEC Enable
CMD_DEC	DEC Enable
CMD_Spd	0 to 10 Fan Speed
CMD_Drain	Manual Drain
BCN_CMD_ON_OFF	Cooler Run
CMD_FaultReset	Reset Fault Codes
STATUS	
STSIEC	IEC Pump RUNNING
STSDEC	DEC Pump RUNNING
STSERROR	Fault
STSLowProbe	Low Probe WET
STSHighProbe	High Probe WET
STSSolenoid	Inlet Solenoid OPEN
STSDrain	Drain Valve OPEN
STSChlorinator	Chlorinator RUNNING
STSSupplyFSpd	Supply Fan Speed Range 0 to 10
STSSalinity	Water Salinity Level (uS/cm)
STSChlPWM	Chlorinator PWM %
STSFaultCode	Fault Code.
STSensor1	Sensor Values depend on sensor type Ambient Sensor Temperature -40 to 70°C Room & Duct Sensor Temperature 0 to 50°C Relative Humidity 0 to 100 % Pressure Sensor 0 to 500 Pa
STSensor2	
STSensor3	
STSensor4	

TECHNICAL DATA SHEET – CW-H WITH MULTI-MAGIC CONTROLS

OPTIONAL SENSORS ACCESSORIES

(sold separately)

For all sensors:
Operating Voltage DC 24V
Signal Output DC 0...10 V
Accuracy at 23ºC and 50% r.h.
Temperature: ± 0.3K
Relative Humidity: ± 3% r.h.
Pressure ± 1%

Each CW-H cooler had four sensors inputs, configured in pairs, for use with the following optional sensors.
All sensors value are readable by Building Management Systems (Low Voltage, Modbus or BACnet).

ROOM TEMPERATURE & RELATIVE HUMIDITY SENSOR

Temperature Range
0...+50ºC

Relative Humidity Range
0...100% r.h.

IP30

When used in conjunction with the Multi-Magic® Wall Controller:

- Allows the Wall Controller to be located safely away from the conditioned space. Wall Controller sensor values are disabled and only Room Sensor used for setpoint control.
- Multiple Room Sensor values from multiple coolers can be averaged together to provide overall temperature and relative humidity values for larger spaces.

DUCT TEMPERATURE & RELATIVE HUMIDITY SENSOR

Temperature Range
0...+50ºC

Relative Humidity Range
0...100% r.h.

IP54
Probe length inside duct min. 90mm, max 150mm

- Can be used by Building Management Systems (Low Voltage, Modbus or BACnet) to monitor cooler supply air conditions.

AMBIENT TEMPERATURE & RELATIVE HUMIDITY SENSOR

Temperature Range
-40...+70ºC

Relative Humidity Range
0...100% r.h.

Radiation Shield
IP65

When used in conjunction with the Multi-Magic® Wall Controller:

- Ambient Condition Monitoring mode uses advanced formulas to calculate a predicted supply temperature. Coolers are disabled if the predicted supply temperature is greater than the current room temperature.
- Particularly suitable for applications which require room temperatures less than 20°C.

DIFFERENTIAL PRESSURE SENSOR

Pressure Range
0...500 Pa

IP66

LCD Display

Includes Static Pressure Tip
250mm insertion depth.

- Can be used by Building Management Systems (Low Voltage, Modbus or BACnet) to monitor pressure drops.