

CD3 Close Control

THE MARSTAIR CD3 CLOSE CONTROL SYSTEMS ARE AVAILABLE WITH A WIDE RANGE OF DUTIES (4-20KW) USING R407C REFRIGERANT. THE UNITS ARE DESIGNED TO GIVE THE SPECIFIER MAXIMUM FLEXIBILITY, THE ENGINEER EASY ACCESS FOR INSTALLATION AND MAINTENANCE AND THE END USER EASE OF OPERATION. THESE CONFIGURABLE SYSTEMS ARE EXTENSIVELY USED FOR STORAGE ROOM APPLICATIONS REQUIRING CLOSE TEMPERATURE AND HUMIDITY CONTROL.

These applications include:

- Archive Rooms (Books and documents for libraries etc.)
- Material Storage (Plastic materials prior to processing etc.)
- High priced collectable products (Antique cars, paintings, musical instruments etc.)

The CD3 systems are manufactured to suit your specification with up flow or down flow configuration and single or twin circuit indoor units which can be matched to Marstair condensing units. The units are available in three cabinet sizes, manufactured in a powder-painted steel construction with an easy clean corrosion resistant drain tray, have a washable filter, a de-ice thermostat, a totally enclosed electrics panel and a choice of airflow configurations.

For more details on the CD series please contact our Technical Department on 01484 405666

Specification

- Microprocessor controls: Control tolerance $\pm 1^{\circ}\text{C}$, $\pm 5\%\text{RH}$
- Upflow or Downflow
- Grille or ducted discharge and inlet airflows
- DX split system or chilled water
- Various filtration specification options
- Class 'O' thermal and acoustic insulation
- Direct drive, double inlet forward curved centrifugal fans available in 2 fan speeds
- Twin circuit coil option
- Fitted with thermal expansion valve (TEV)
- Electronically controlled fan speeds
- Two stage electric heating
- Humidification / Dehumidification with electronic control
- Four pole mains isolator
- Alarms: temperature/humidity out of limits, fan fail, CU fail
- 3 phase - 400volts 50Hz supply voltage (some 1ph options available)
- Dirty filter indication
- Matching fully dressed CKC condensing units or ducted DCU+ condensing units.
- BACnet interface
- Master Slave and auto change over
- Sound Attenuator plenum
- De-ice thermostat



Technical Information

Direct Expansion - Performance

DIRECT EXPANSION COOLING CAPACITIES - kW													
CD3 MODEL	Ambient °C	25°C				30°C				35°C			
	Room Conditions	22°C/50% RH		24°C/50% RH		22°C/50% RH		24°C/50% RH		22°C/50% RH		24°C/50% RH	
	CKC+/DCU+	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible	Total	Sensible
008/1	1x80*	7.5	7.5	7.7	7.7	7.2	7.2	7.5	7.5	6.9	6.9	7.1	7.1
	1x100	10.2	9.0	10.8	9.2	9.8	8.8	10.4	9.0	9.3	8.6	9.9	8.8
008/02	2x30*	7.7	7.7	8.1	8.1	7.4	7.4	7.7	7.7	7.2	7.2	7.4	7.4
	2x50*	10.7	9.2	11.2	9.4	10.3	9.0	10.8	9.2	9.8	8.8	10.4	9.0
010/1	1x100	11.3	10.9	11.9	11.1	10.6	10.6	11.2	10.9	10.1	10.1	10.6	10.6
	1x130	12.2	11.2	12.8	11.5	11.7	11.0	12.3	11.3	11.1	10.8	11.8	11.1
010/2	2x50*	11.6	11.0	12.2	11.2	11.1	10.8	11.6	11.0	10.6	10.6	11.2	10.8
	2x60*	12.3	11.3	13.0	11.6	11.8	11.1	12.5	11.4	11.3	10.9	11.9	11.1
015/1	1x165	14.1	13.7	14.8	14.0	13.6	13.4	14.2	13.8	13.0	13.0	13.6	13.5
	1x180	16.8	14.8	17.5	15.1	16.0	14.5	16.8	14.8	15.2	14.1	16.1	14.5
015/2	2x80*	14.4	13.8	15.0	14.1	13.9	13.6	14.4	13.8	13.2	13.2	13.7	13.6
	2x100	19.5	16.1	20.8	16.5	18.8	15.7	20.0	16.1	17.9	15.3	19.0	15.7
020/1	1x180	17.4	16.8	18.3	17.2	16.8	16.6	17.6	17.0	16.0	16.0	16.8	16.6
	1x200	19.8	17.9	20.9	18.3	18.9	17.5	19.9	17.9	18.0	17.1	19.1	17.5
020/2	2x90	19.3	17.6	20.1	18.0	18.1	17.1	19.1	17.5	17.2	16.8	18.1	17.1
	2x130	22.8	19.2	24.0	19.6	21.9	18.8	23.1	19.2	20.9	18.4	22.1	18.8

* DCU+ available in these sizes

Chilled Water - Performance

CHILLED WATER COOLING CAPACITIES - kW						
CD3 Model	Chilled Water		Room Conditions			
			22°C/50% RH		24°C/50% RH	
	In °C	Out °C	Total	Sensible	Total	Sensible
008	5	11	7.80	7.80	11.25	9.38
	6	11	8.19	8.10	11.56	9.51
	6	12	7.00	7.00	9.63	8.70
	7	12	7.34	7.34	10.00	8.86
010	5	11	11.28	10.86	15.53	12.63
	6	11	11.49	10.95	15.52	12.63
	6	12	9.91	9.91	13.57	11.82
	7	12	10.04	10.04	13.61	11.83
015	5	11	15.41	14.24	20.93	16.55
	6	11	15.59	14.32	20.83	16.50
	6	12	13.04	13.04	18.41	15.48
	7	12	13.19	13.19	18.36	15.46
020	5	11	20.72	18.28	27.10	20.94
	6	11	20.38	18.13	26.49	20.68
	6	12	17.60	16.92	24.12	19.66
	7	12	17.34	16.81	23.57	19.42

Heating Capacities LPHW

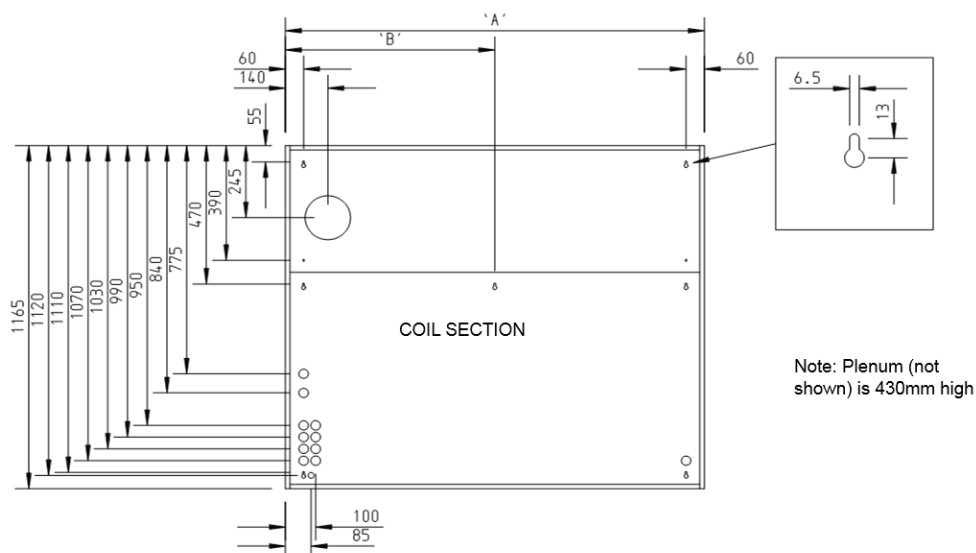
LOW PRESSURE HOT WATER (LPHW) HEATING CAPACITIES - kW						
MODEL	LPHW		ROOM TEMPERATURE			
	In °C	Out °C	16 °C	18 °C	20 °C	22 °C
008	80	70	9.4	9.0	8.6	8.3
010	80	70	12.0	11.5	11.1	10.6
015	80	70	13.0	12.6	12.0	11.5
020	80	70	16.1	15.5	14.9	14.3

Weights and Dimensions

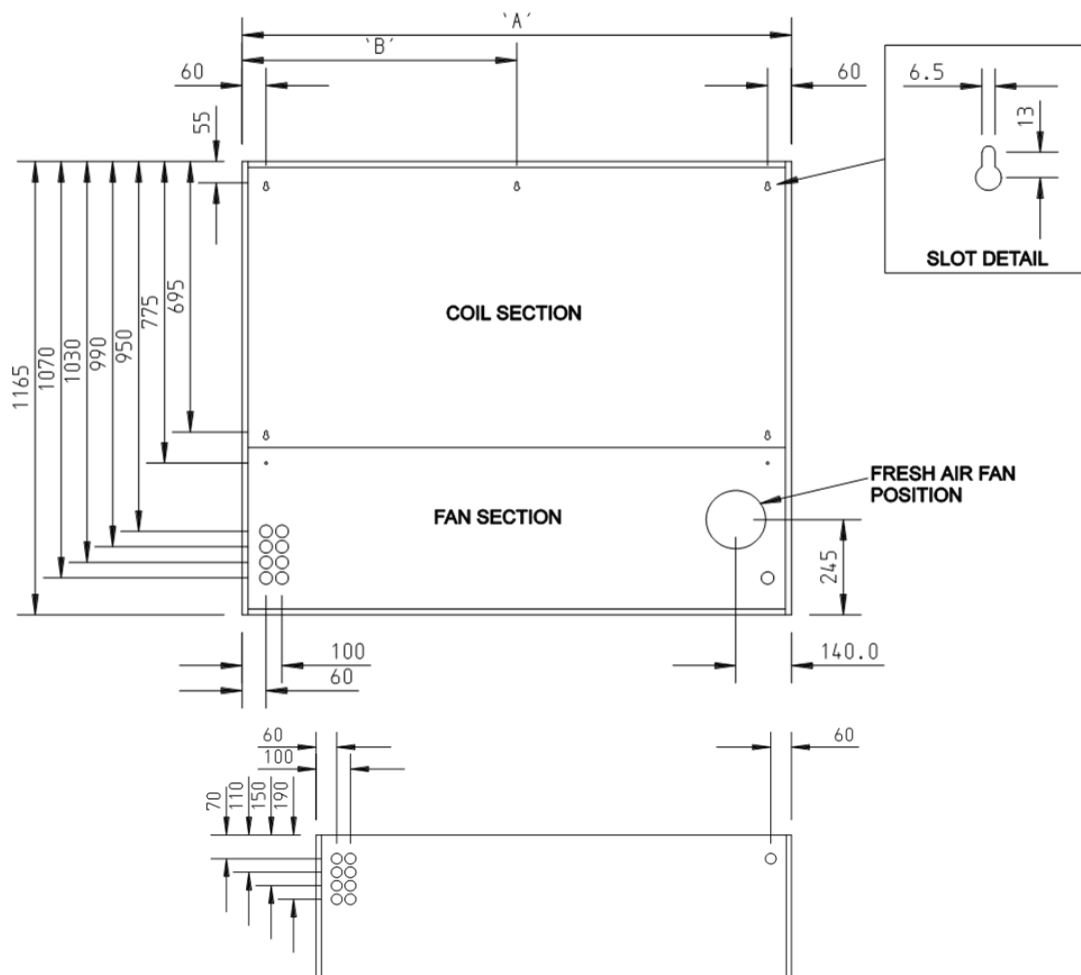
WEIGHTS AND DIMENSIONS UNPACKED								
MODEL	HEIGHT mm	WIDTH (A) mm	WIDTH (B) mm	DEPTH mm	WEIGHT Kg	Additional Plenum* Height mm	Additional Plenum* Weight Kg	Additional Floor Plinth Height mm
008	1165	1230	-	430	124	430	18	75
010	1165	1380	690	430	142	430	20	75
015	1165	1380	690	430	151	430	20	75
020	1165	1580	790	430	160	430	22	75

* Plenums supplied as standard with upflow models

Upflow Service and Fixing Hole Centres (excluding discharge plenum)



Downflow Service and Fixing Hole Centres



Sound Pressure Levels

SOUND PRESSURE LEVELS (dBA)								
MODEL	Top discharge and front return		Front discharge with plenum and front return		Front discharge and front return		Downflow	
	Min	Max	Min	Max	Min	Max	Min	Max
008	52	67	52	59	47	67	41	53
010	55	67	53	59	50	65	46	54
015	56	65	56	57	50	65	46	54
020	57	68	59	58	52	67	48	56

* Sound Pressure levels (SPL) at 3m distance from the front of the unit in an office installation

Pipe Sizes - Direct Expansion

ELECTRICAL DATA AND PIPE SIZES				
MODEL	CIRCUITS	CONNECTION SIZES (DX)		CONDENSATE MM OD
		SUCTION INS OD	LIQUID INS OD	
008/1	SINGLE	1 x 1/2	1 x 3/8	1 x 15
080/2	TWIN	2 x 3/8	2 x 3/8	1 x 15
010/1	SINGLE	1 x 3/8	1 x 3/8	1 x 15
010/2	TWIN	2 x 1/2	2 x 3/8	1 x 15
015/1	SINGLE	1 x 7/8	1 x 1/2	1 x 15
015/2	TWIN	2 x 5/8	2 x 3/8	1 x 15
020/1	SINGLE	1 x 7/8	1 x 1/2	1 x 15
020/2	TWIN	2 x 5/8	2 x 3/8	1 x 15

Recommended Fuse Sizes - Direct Expansion

The system and its supply/interconnecting wiring must be protected by fuses, preferably H.R.C. motor rated types to BS60269 or miniature circuit breakers to BS60898 or local codes having similar time lag characteristics that allow starting of the compressor yet still afford close over current protection under running conditions. The ratings below are for H.R.C. motor rated or semi enclosed wire fuses.

Standard Cooling

System	S 08 S	S 10 S	S 15 S	S 20 S	S 08 T	S 10 T	S 15 T	S 20 T
Model Combination	CD008 + CKC(+) 100	CD010 + CKC(+) 130	CD015 + CKC(+) 180	CD020 + CKC(+) 200	CD008 +2x CKC(+) 50	CD010 +2x CKC(+) 60	CD015 +2x CKC(+) 100	CD020 +2x CKC(+) 130
1 Phase Cool Only	-	-	-	-	40	40	-	-
1 Phase Cool and Heat	-	-	-	-	50	50	-	-
3 Phase Cool Only	20	25	35	40	16	20	32	35
3 Phase Cool and Heat	20	32	40	40	20	32	40	40
3 Phase Cool/Heat/Hum/Dehum	40	40	63	63	40	40	50	63

High Sensible Cooling

System	HS 08 S	HS 10 S	HS 15 S	HS 20 S	HS 08 T	HS 10 T	HS 15 T	HS 20 T
Model Combination	CD008 + CKC(+) 80	CD010 + CKC(+) 100	CD015 + CKC(+) 165	CD020 + CKC(+) 180	CD008 +2x CKC(+) 30	CD010 +2x CKC(+) 50	CD015 +2x CKC(+) 80	CD020 +2x CKC(+) 90
1 Phase Cool Only	32	-	-	-	32	40	50	63
1 Phase Cool and Heat	50	-	-	-	50	50	50	63
3 Phase Cool Only	16	20	32	40	16	20	25	32
3 Phase Cool and Heat	20	32	40	40	20	32	40	40
3 Phase Cool/Heat/Hum/Dehum	40	40	63	63	40	40	50	63

Pipe Connections - Chilled Water

CD3	CW inlet & outlet (mm)	LPHW inlet & outlet (mm)	Condensate connection (mm)
008	22	15	15
010	22	15	15
015	28	15	15
020	28	15	15

Electrical Data - Chilled Water

CD3	1Ph 230V 50Hz	3 Ph 400V 50Hz		
	Full Load Amps	Full Load Amps		
	Cooling Only	Cooling Only	Col & Heat	Cool / Heat / Hum / Dehum
	Amps	A/PH	A/PH	A/PH
008	5.4	5.4	16.7	32.7
010	7.4	7.4	17.7	32.7
015	9.0	9.0	26.0	41.0
020	9.4	9.4	33.3	49.3

Option for configurable units

- Condensate pump (5m head with high water alarm)
- Fresh air spigot, fan and filter
- Floor Plinth
(recommended for floor mounted applications)
- High efficiency filters (BS EN 779 F7)
- Disposable filters (BS EN 779 G3)
- Top ducting spigot
- Sound attenuator section
- Double deflection grille
- Four pole mains isolator
- Auto-change over on alarm and/or time
- Master/Slave configuration
- Single phase conversion kit
(for use when the condensing unit is CKC+ 90 or smaller and electric heating is 8kW or less)
- Electric heating
- Low pressure hot water
- Humidifier
- De-ice thermostat
- Mains isolator
- Plenum
- Downflow supply plinth
- Electro-mechanical controls
- Water cooled package
- Compressor pack
- Glycol cooled package
- Chilled water
- Micro-processor controls
- Modulating valve



Microprocessor Control

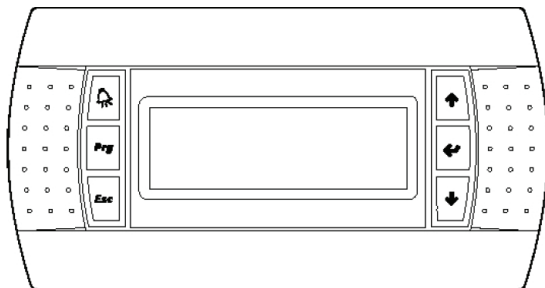
The standard controller is a 24 volt AC microprocessor. Interface with the control system is via a user display on the front of the unit. Standard features offered by the user display are shown in the diagram below.

The display panel features digital read-out of sensor values of air temperature and humidity, and permits easy adjustment of set point values.

Specific alarm indicators are available for humidifier cylinder change and dirty filter, with further alarm functions displayed as numerical values. An audible alarm board and two PCB's providing all necessary volt free contacts for remote indication of unit status are available options.

All electrical components are situated out of the air stream within a fully enclosed housing. Access to all electrics is from the front of the unit through a removable cover panel.

PGD0 Terminal with 6 buttons



ALARM	UP
PRG	ENTER
ESC	DOWN

Button	Description
ALARM	Displays the alarms, mutes the buzzer and deletes the active alarms
UP	If the cursor is in the home position (top left corner), scrolls up the screens in the same group; if the cursor is in a setting field, increases the value
DOWN	If the cursor is in the home position (top left corner), scrolls down the screens in the same group; if the cursor is in a setting field, decreases the value
ENTER	Used to move the cursor from the home position (top left corner) to the setting fields, in the setting fields confirms the set value and moves to the next parameter
PRG	Accesses the menu for selecting the group of parameters to be displayed/modified (access to the parameters is confirmed by pressing the [Enter] button)
PRG + ENTER	Temporarily display the pLAN serial address of the board

Alarms

DESCRIPTION	PACKAGE	CONFIGURABLE	PART NO.
Water spillage*	N/A	Option	92919066
Fan failure	Standard	Option	92919069
Condensing unit 1 trip	Standard	Option	92919073
Condensing unit 2 trip	Standard	Option	92919075
Humidity out of limits	Standard	Standard (with humidifier)	-
Temperature out of limits	Standard	Standard	-
Dirty filter indication	Standard	Option	92919071
Common alarm (volt free relay)	N/A	Option	92919056

*Available only when condensate pump option is fitted.

Alarm Options

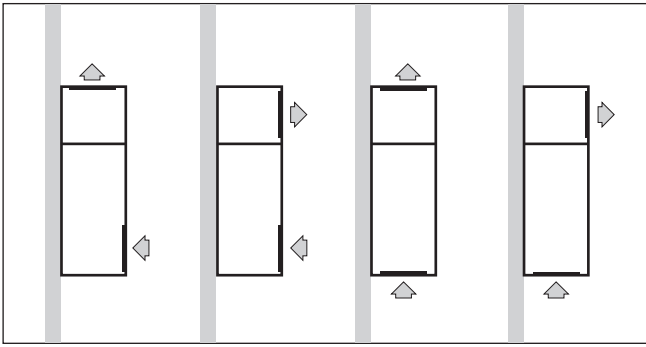
Add on PCB Includes

- High water level
- Water spillage
- Fan failure
- Compressor 1 fail
- Compressor 2 fail
- Humidity out of limits
- Temperature out of limits

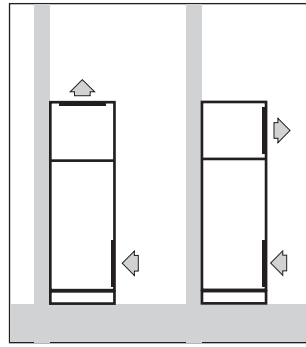
Airflows Arrangement

Each CD3 model features interchangeable modules which permit a wide choice of air flow arrangements. The optional multi purpose plenum can be used to vary air direction.

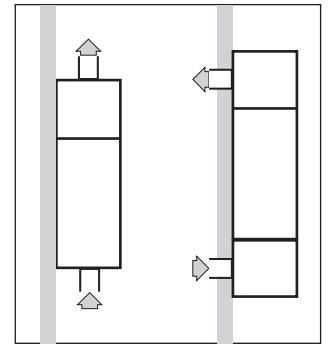
Upflow wall mounted with grilles



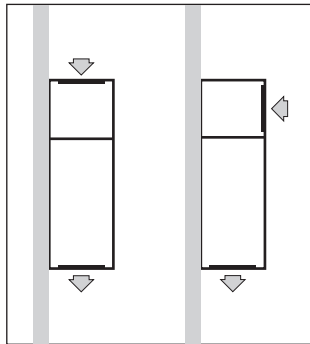
Upflow floor mounted with grilles



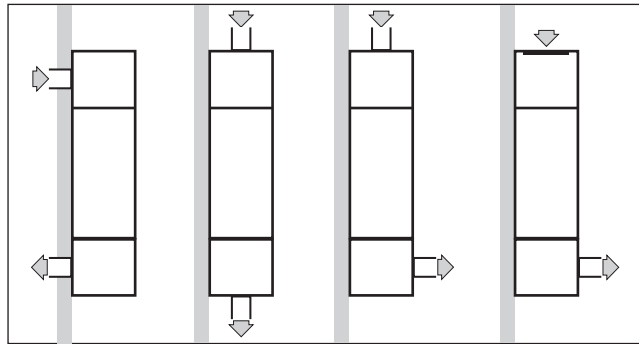
Upflow with ducts



Downflow wall mounted with grilles



Downflow ducted



Front discharge

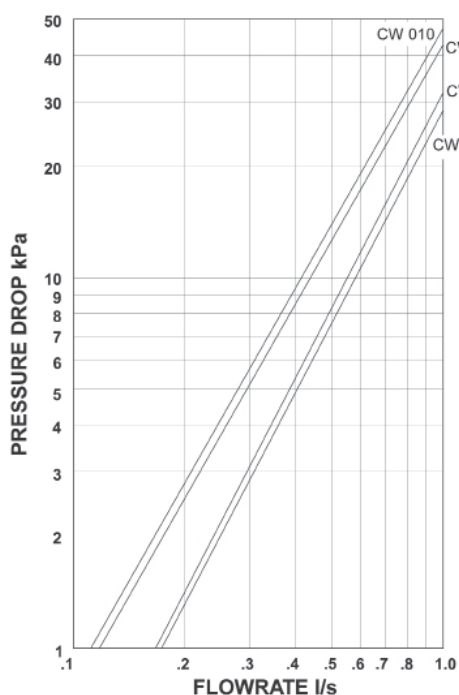
Airflows

AIRFLOWS		
MODEL	LOW FAN SPEED m³/s	HIGH FAN SPEED m³/s
008	0.42	0.78
010	0.67	1.04
015	0.72	1.23
020	0.92	1.51

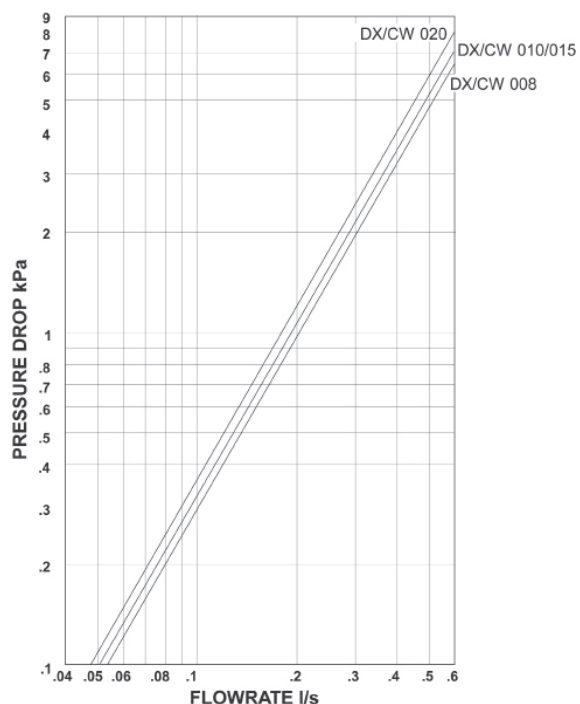
Note: Maximum external resistance at the maximum speed = 150Pa

CD3 Hydraulic Resistance (kPa) Chilled Water & LPHW

CD3 CHILLED WATER
HYDRAULIC RESISTANCE (kPa)



CD3 LOW PRESSURE HOT WATER
HYDRAULIC RESISTANCE (kPa)



Condensing Units

Matching CD3 models with Marstair CKC(+) or DCU(+) condensing units allows further flexibility, standard or high sensible cooling may be satisfied with the selection of appropriate combinations.

The CKC(+) is suitable for wall mounting or free standing, these stylish and efficient outdoor units incorporate the latest technology to deliver low sound levels.

The DCU(+) are particularly suited to visually sensitive applications or where local planning regulations do not allow equipment on the outside of the buildings.



CKC(+)



DCU(+)

Specification

- Suction and liquid service valves
- Fan speed head pressure control
- Low ambient start timer
- 3 minute delay timer / random start timer
- Crankcase Heater (reciprocating only)
- Contactor
- LP switch (auto) & HP switch (auto)

Options

- CSR 1 Phase
- Overload on 1 Phase (Standard on 3ph)
- Wall mounting kit
- Volt free relay / HP switch (with alarm output)
- Isolator

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In partnership with



Part No: 06617482-18

TEV has earned management system accreditations – BSI 14001: 2015 Environmental Management and BSI 9001: 2015 Quality Management.