



DCS / FCS Close Control Chilled Water Units



Engineering Data Manual 50/60Hz

Index

Description	Page
YORK Company Profile	3
This Product Range	3
Other YORK Close Control Product Ranges	3
Equipment Nomenclature	4
Unit Dimensions and Weights	4
Guide Specifications – Standard Items	5
Guide Specifications – Optional Items	7
General Engineering Details	9
Cooling Capacities 6/12°C & 7/13°C – 4 Row Coil	10
Cooling Capacities 8/14°C & 9/15°C – 5 Row Coil	11
Cooling Capacities 8/14°C & 9/15°C – 6 Row Coil	12
Cooling Capacities 10/16°C & 11/17°C – 6 Row Coil	13
Generic Dimensional Drawing	14
Generic Electrical Drawing	15
Electrical Details	16

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YORK COMPANY PROFILE

YORK – a Johnson Controls company, designs, manufactures, sells and services: heating and air conditioning systems and compressors for residential, commercial and industrial markets, gas compression equipment for industrial processing, industrial and commercial refrigeration equipment.

The company manufactures a wide range of air conditioning products including fan coil units, close control units, under-floor air distribution systems, telecom shelter units, variable air volume systems, air handling units, mini split systems, packaged air conditioners, roof top units, water cooled and air cooled chillers, heat pumps and absorption chillers. We also manufacture a variety of compressors including hermetic, scroll, reciprocating, screw and centrifugal types.

YORK products are installed in nuclear submarines operating deep in the ocean and in South African gold mines in the depth of the earth. Eurotunnel, which has the world's largest chilled water system, is served by YORK chillers as does the worlds tallest building the twin tower Petronas complex in Malaysia.

Other notable global installations are the Sydney Opera House, Charles de Gaulle and Jeddah Airports, most of the commercial buildings dominating the Hong Kong skyline, the Islamic University in Riyadh, the UK Houses of Parliament, the Kremlin, the United States Capitol and the Pentagon in Washington DC, the Eiffel Tower restaurant and the Prophets Mosque in Medina: all these and numerous installations world-wide. In our own way YORK influences the weather by providing snow on demand at the worlds major ski resorts.

THIS PRODUCT RANGE

DCS / FCS CHILLED WATER UNITS

The DCS/FCS range of Close Control Chilled Water units comprises 3 sizes providing nominal capacities of 60, 80 & 100 kW. Units are available in Upflow and Downflow configurations with top, bottom, front and rear return options. The range of units is ideal for very large data centre applications where Air Cooled or Water/Glycol Cooled Units would be impractical due to the size of the building close control cooling load. As standard the DCS/FCS range of Close Control Chilled Water units are equipped with: high SHR Cooling Coils, EU4 Filtration, 3 Port Control Valve with bypass DRV, Twin Belt driven forward curved Centrifugal Fans, Water Leak Detection, Autosequence/Autorotate, Volt Free Contacts for unit status, Common Alarm, Remote Start Stop and the latest Delta range of DIN rail mounted Microprocessor Controllers which have optional built in Modbus & Bacnet communications. Options available include: Humidifier, Electric Reheat, 3 Way Discharge Plenums, Graphic Display, Drain Trap, Smoke Detection, Fire Detection, Floorstand, loss of Chilled Water Flow Switch and Condensate Pump.

OTHER YORK CLOSE CONTROL PRODUCT RANGES

CLOSE CONTROL MODULAR UNITS

Modular units for computer room and telecom applications with capacities from 10 to 120kW. Units are available in Upflow and Downflow configurations with top, bottom, front and rear return options. Cooling media available are direct expansion using Air or Water/Glycol and Chilled Water.

CLOSE CONTROL AIR COOLED TWIN CIRCUIT UNITS

The Close Control Twin Circuit range comprises 3 sizes providing nominal capacities of 30, 40, 50, 60, 70 & 80 in 10kW increments. Units are twin circuit in a single frame and are available in Upflow and Downflow configurations. Cooling is by air cooled direct expansion only.

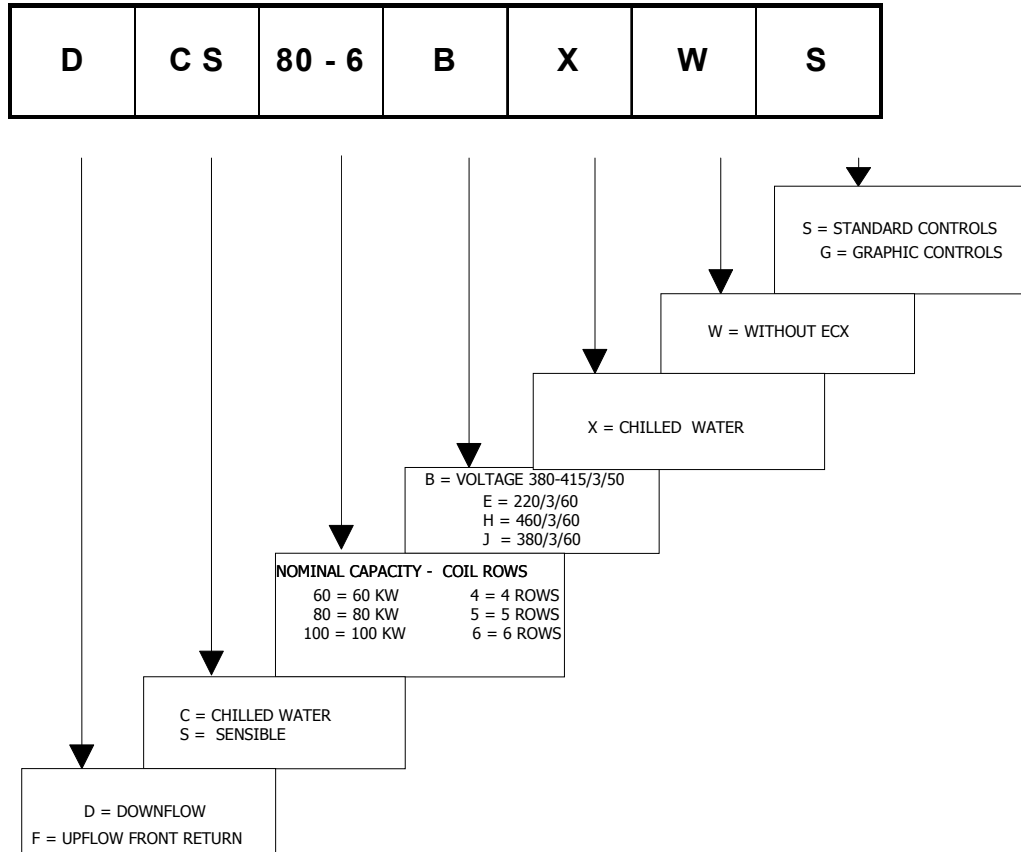
CLOSE CONTROL PLUG FAN UNITS

The Close Control Plug Fan range comprises 3 sizes providing nominal capacities of 15-100 kW in 8 models in the Chilled Water version and 15-80 kW in 7 models in the DX version.

EQUIPMENT NOMENCLATURE

The DCS/FCS range of Close Control Chilled Water units comprises 3 sizes providing nominal capacities of 60, 80 & 100 kW. Units are available in Upflow and Downflow configurations with top, bottom, front and rear return options. The range of units is ideal for very large data centre applications where Air Cooled or Water/Glycol Cooled Units would be impractical due to the size of the building close control cooling load.

As standard the DCS/FCS range of Close Control Chilled Water units are equipped with: high SHR Cooling Coils, EU4 Filtration, 3 port control valve with bypass DRV, twin belt driven forward curved Centrifugal Fans, water leak detection, autosequence/autorotate, volt free contacts for unit status, common alarm, remote start stop and the latest Delta range of DIN rail mounted microprocessor controllers which have optional built in Modbus & Bacnet communications and full Windows networking capability.



DIMENSIONS AND WEIGHTS

Dimensions (mm)

Model	60	80	100
Unit W x D x 1980H	1660 x 875	2000 x 875	2500 x 875
DCS Return Air Acoustic Plenum	1660 x 875 x 600	2000 x 875 x 600	2500 x 875 x 600
FCS Top Discharge Plenum	1660 x 875 x 600	2000 x 875 x 600	2500 x 875 x 600

Weight (kgs)

Model	60	80	100
Unit – Dry	595	725	895
Unit – Operating	625	765	945
DCS Return Air Acoustic Plenum	50	60	70
FCS Top Discharge Plenum	60	70	80

STANDARD FEATURES**Cabinet**

The cabinet frames shall be constructed of formed 2.0 mm Zintec steel sections. Paint finish is Epoxy Powder Coated with an "Orange Peel" textured finish. Interior panels to be manufactured from galvanised steel in all cases. Exterior panels are to be as cabinet except in 1.2 mm Zintec. Paint Colour to be RAL 9018. The front panels shall be fastened to the frame using quarter turn fasteners. Side panels shall be secured to the frame using chrome plated screws. All panels shall be flush fitting, sealed to the frame sections with closed cell foam and insulated with a non-shedding material, which shall be non-combustible, when tested in accordance with B.S. 476 Part 6 and 7. The units shall be fully accessible and serviceable from the front.

Cooling Coil

The cooling coils shall be multi-row (4, 5 or 6 row) constructed from $\frac{3}{8}$ " O/D copper tubes with aluminum fins. Large surface areas shall ensure high sensible heat ratios and low airside pressure drops, resulting in reduced fan power requirements and noise levels. All coils shall be tested to 25 Bar and all water coils shall be tested to 10 Bar.

3 Port Control Valve

Units shall be fitted with a 3 way modulating valve having manual over-ride facility. The control valve shall be selected to have an authority of 0.3 to 0.5. A regulating valve is provided on the bypass line for commissioning purposes.

Chilled Water Pipe Connections

F&R connections to be terminated in a capped male BSP thread.

Fans

Large, low speed, double inlet, double width fans with forward curved impellers and "sealed for life" self aligning bearings shall be used to minimise noise levels. Fans are belt driven. All units have twin fans on a common shaft. The fan/motor assembly is on a separate isolated deck.

Twin Belts

Twin grooved pulleys and belts giving a fixed speed are being provided for each fan/motor.

Motors

The motor shall comply with IP55 TEFC insulated to Class F.

Filtration

Filters shall be disposable deep pleated 100mm thick. The filters shall have an atmospheric dust spot efficiency of 30% - 40% Ashrae 52/76. This equates to a Eurovent 4/5 rating of G4. They shall be fitted in the return air stream and be accessible from the front of an Upflow Unit and the top of a Downflow Unit.

Electrical Panel

The electrical panel shall be constructed and assembled in compliance with IEC standards with all components VDE approved. All sub circuits are protected by MCB's. The high and low voltage sections shall be segregated and all high voltage electrical components shall be touch safe.

Water Leak detection

Point type water leak detection shall be installed in unit and mounted in the floor beneath the unit. Volt free contacts to be provided to signal a water leak back to the BMS.

Handshake - Autosequence / Autorotate

For interconnection of up to 16 units. Interconnection by means of a shielded twisted pair cable from interface board to interface board between units. This shall provide N+1 with one unit always in standby in case of duty unit failure. Standby unit shall be rotated over time. Changeover shall be set between 1- 168 hours (1 hour – 1 week). In case of high temperature alarm standby unit shall run & revert to standby once temperature is corrected.

Unit Status On/Off

A set of volt free contacts are provided to indicate unit status on/off. It can be hardwired to the building BMS.

Common Alarm

A set of volt free contacts are provided to indicate common alarm. It can be hardwired to the building BMS.

Remote shutdown

Unit shall have terminals to enable time scheduled or discrete shutdown remotely by a volt free contact from the BMS.

Microprocessor Controls

All Units shall be fitted as standard with the latest Delta range of DIN rail mounted Microprocessor Controls. The Control System utilises a main Microprocessor Interface Board equipped with a set of terminals necessary to connect the Board to the controlled devices (e.g. valves, compressors, fans, reheats, sensors and humidifiers). The Main Board is equipped with 8 digital inputs, 9 digital outputs, 5 analogue inputs and 4 analogue outputs. All software is permanently stored in flash RAM and is therefore protected even in a power failure. Unit software is uploaded to the Microprocessor using a RAM key. On multi unit sites this quickens unit commissioning. The software can also easily be changed or upgraded on site by qualified service personnel. The Microprocessor also has optional built in Modbus & Bacnet communications and full Windows networking capability. When communicating in Modbus or Bacnet the protocol converter is in the software & there is no need for external Gateways.

The Microprocessor based Terminal Unit is complete with LCD Display, keypad and LED Indicators allowing the user to easily set the main control parameters (setpoints, differentials and alarm thresholds) and carry out the main working operations (on/off and displaying controlled variables).

The Terminal Unit also performs the following functions:

- Initial programming procedure with access protected by a password.
- Possibility of changing the basic operation parameters any time, without stopping the program.
- Indication of any alarm condition via acoustic and visual signals (buzzer and alarm messages appearing on the display).
- Visualisation of the active functions by means of LED indicators.
- Visualisation of the measured variables.

An optional Graphical Terminal Unit is also available. This is a graphical display, LED Backlit with 128 x 64 pixel graphical resolution. This graphical screen allows:

- Configurability of character fonts to represent any alphabet type (Chinese, Arabic etc.).
- Creation of graphic objects for more vivid alarm visualization.
- Display of graphical trends of temperature and humidity.

For sensitive sites for both Delta and Delta Graphical controls, the main interface board can act as a stand-alone processor. The terminal unit need only be connected to modify alarms or modify set parameters.

OPTIONAL FEATURES

Electric Heaters

Electric heaters shall have stainless steel sheathed elements with stainless steel finning, balanced over three phases and rated to operate at black heat. Control shall be in two stages. Protection is by a high temperature safety cut-out stat. The stat shall be a capillary type mounted in the airstream resettable from the control section of the electrical panel.

Humidification

The humidifier shall be of the electrode-boiler type. Features shall include selectable steam output and microprocessor control with alarms and diagnostic facilities. The humidifier control system shall allow the use of a wide range of mains water conditions namely: inlet mains water pressure of 1-10 Bar, total hardness of 15-30 French degrees & water inlet electrical conductivity of 400-800 micro siemens. Unit shall optimise drain down frequency for maximum operational economy.

Duplexing

Units can be Duplexed giving a twin circuit option of catalogued values. Duplexed units have 2 identical modules with a single electrical supply and 2 sets of Chilled Water flow, return coil connections and double the stated catalogue capacities. The Duplex configuration is advantageous as both modules can be positioned at different locations within the room.

Floor Stand

Floorstands are shipped flat-pack and need to be assembled on site. They are suitable for raised floor heights of 150mm to 600mm. The legs are notched at 50mm intervals for cutting on site. There is also a final adjustment on the foot of +/- 50mm. Scoops are also available as an option with the floorstand. Floorstands and scoops are painted and finished to match the unit colour.

Air Discharge Plenum

For Upflow units which are to be installed in a freeblow situation. Plenum consists of an insulated sheet metal assembly with 3 discharge grilles. Grilles are double deflector type. Plenum colour will match unit colour.

High Efficiency Filters

Higher specification filtration can be provided in addition to the EU4/G4 filters. These filters are of the rigid bag type and have an efficiency of 80% ASHRAE 52/76 (Eurovent EU7/F7). These filters are fitted in the return air side of the unit on a Downflow type and on the supply air side of the unit on an Upflow type.

Fresh Air Kit and Filter

Units can be supplied with a fresh air inlet connection and disposable EU4/G4 filter element. This will admit approximately 3-5% of the recirculated air volume. On Twin Circuit Units a filter is fitted in each module.

Special Colours

Special Colours must be specified when placing orders (quote BS or RAL number or other if known).

Upsized Fan Motors

For applications where fan power requirements exceed the capacity of the standard motors, an upsized motor can be fitted. Standard unit ESP is 75 Pa. Units can normally be upgraded to 300 Pa. In these instances please consult the factory.

Condensate Pump

Where, due to location, it is not possible to gravity drain units, a condensate pump can be fitted to collect any condensate and pump it to the nearest convenient drain point (pump duty is 6 l/min Vs 6 m head). For units fitted with humidifiers or units requiring a lift in excess of 6m equivalent head, a larger capacity sump pump is available (pump duty is 6 l/min Vs 10 m head).

Top Entry Pipework

The unit pipework can be modified to allow entry/connection of piping through the top of the unit.

Fire/Smoke Detector

A fire/smoke detector can be mounted in the return air path to interface with the unit controls and generate an alarm.

Fire Stat

A fire stat can be located in the return air path within the unit to interface with the unit controls and indicate an alarm.

Loss of Chilled Water Flow

Factory fitted flow switch which activates an alarm to indicate an interruption in Chilled Water supply to the unit.

Differential Pressure Set

Factory fitted TA type Differential Pressure control valve set to be prepiped in unit by unit manufacturer.

Flow Measurement

Factory fitted valve with fixed orifice measurement device FOMD. Can carry out functions of flow measurement, flow regulation and flow isolation.

Flow Isolation

Factory fitted quarter turn ball type isolation valve. Can be fitted in conjunction with flow measurement valve to isolate.

Delta Graphical Controls

An optional Graphical Terminal Unit is also available. This is a graphical display, LED Backlit with 128 x 64 pixel graphical resolution. This graphical screen allows:

- Configurability of character fonts to represent any alphabet type (Chinese, Arabic etc.).
- Creation of graphic objects for more vivid alarm visualization.
- Display of graphical trends of temperature and humidity.

For sensitive sites for both Delta and Delta Graphical controls the main interface board can act as a stand-alone processor. The terminal unit need only be connected to modify alarms or modify set parameters. For more detailed information refer to Detailed Controls Manuals.

GENERAL ENGINEERING DETAILS

Model		60	80	100
Standard Features				
Air Side Data				
Air Volume	m ³ / hr	15,500	19,000	25,000
	m ³ / s	4.30	5.28	6.94
External Static Pressure ESP	Pa	75	75	75
No. of Fans	No.	1	2	2
Fan Motor	kW	5.5	5.5	7.5
Filter Data				
Downflow Filter Size Code	-	1	2	3
Downflow Filter Quantity	No.	6	6	8
Upflow Filter Size Code	-	1	2	3
Upflow Filter Quantity	No.	4	4	4
Water Side Data				
Control Valve Size	mm	40	40	40
Control Valve Kv	-	25	25	25
Chilled Water F&R Pipe Size	mm	54	54	54
Cooling Coil Data				
Coil Face Area	m ²	1.52	1.89	2.42
Coil Rows	No.	4,5,6	4,5,6	4,5,6
Coil Drain Connection	inch	1 BSPF	1 BSPF	1 BSPF
Noise Data				
Freefield SPL @ 3m	dB(A)	59	59	58
Optional Features				
Humidifier Data				
Capacity	kg/hr	8	8	8
Inlet Connection	inch	¾ BSPM	¾ BSPM	¾ BSPM
Drain Connection	inch	¾ BSPF	¾ BSPF	¾ BSPF
Water Feed Pressure	Bar	1-10	1-10	1-10
WaterFeed Electrical Conductivity	uS	400 – 800	400 – 800	400 – 800
French Degrees Water Hardness	-	15-30	15-30	15-30
Electric Reheat Data				
Capacity	kW	15	15	25
No. of Stages	No.	2	2	2

Notes

1. All filters are 100mm thick and have an efficiency rating of G4 in accordance with EU Standard EN779.
2. Downflow Filter Size Code: 1 = 495mm x 545mm, 2 = 545mm x 622mm, 3 = 545mm x 595mm.
3. Upflow Filter Size Code: 1 = 445mm x 622mm, 2 = 545mm x 622mm, 3 = 545mm x 895mm.

COOLING CAPACITIES - 6/12 °C Chilled Water

Model: DCS / FCS		60 - 4	80 - 4	100 - 4
Air On: 22°C,45% RH				
Total Cooling	kW	54.4	69.7	92.9
Sensible Cooling	kW	54.4	69.7	92.9
Chilled Water Flow	l/s	2.2	2.8	3.7
Unit Pressure Drop	kPa	25.1	40.7	68.4
Air On: 22°C,50% RH				
Total Cooling	kW	57.0	74.1	99.4
Sensible Cooling	kW	53.2	67.5	89.7
Chilled Water Flow	l/s	2.3	2.9	4.0
Unit Pressure Drop	kPa	27.5	45.4	77.4
Air On: 24°C,45% RH				
Total Cooling	kW	64.3	83.6	112.4
Sensible Cooling	kW	60.9	77.4	102.7
Chilled Water Flow	l/s	2.6	3.3	4.5
Unit Pressure Drop	kPa	34.9	56.0	96.6
Air On: 24°C,50% RH				
Total Cooling	kW	70.5	91.6	123.2
Sensible Cooling	kW	59.4	75.2	99.9
Chilled Water Flow	l/s	2.8	3.6	4.9
Unit Pressure Drop	kPa	40.9	66.7	114.1

COOLING CAPACITIES - 7/13 °C Chilled Water

Model: DCS / FCS		60 - 4	80 - 4	100 - 4
Air On: 22°C,45% RH				
Total Cooling	kW	51.0	65.2	87.0
Sensible Cooling	kW	51.0	65.2	87.0
Chilled Water Flow	l/s	2.0	2.6	3.5
Unit Pressure Drop	kPa	22.0	36.0	60.5
Air On: 22°C,50% RH				
Total Cooling	kW	51.0	66.5	89.2
Sensible Cooling	kW	51.0	66.3	85.3
Chilled Water Flow	l/s	2.0	2.6	3.5
Unit Pressure Drop	kPa	22.0	36.0	60.5
Air On: 24°C,45% RH				
Total Cooling	kW	58.2	75.7	101.7
Sensible Cooling	kW	58.2	74.0	98.2
Chilled Water Flow	l/s	2.3	3.0	4.0
Unit Pressure Drop	kPa	28.6	47.2	80.4
Air On: 24°C,50% RH				
Total Cooling	kW	63.1	82.2	110.5
Sensible Cooling	kW	56.1	71.2	94.6
Chilled Water Flow	l/s	2.5	3.3	4.4
Unit Pressure Drop	kPa	33.6	54.8	93.7

Note: Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

COOLING CAPACITIES - 8/14 °C Chilled Water

Model: DCS / FCS		60 - 5	80 - 5	100 - 5
Air On: 22°C,45% RH				
Total Cooling	kW	54.9	68.8	91.5
Sensible Cooling	kW	54.9	68.8	91.5
Chilled Water Flow	l/s	2.2	2.7	3.6
Unit Pressure Drop	kPa	32.8	51.7	94.2
Air On: 22°C,50% RH				
Total Cooling	kW	54.0	68.0	90.6
Sensible Cooling	kW	54.0	68.0	90.6
Chilled Water Flow	l/s	2.2	2.7	3.6
Unit Pressure Drop	kPa	32.8	51.7	94.2
Air On: 24°C,45% RH				
Total Cooling	kW	62.5	78.5	104.6
Sensible Cooling	kW	62.5	78.5	104.6
Chilled Water Flow	l/s	2.5	3.1	4.2
Unit Pressure Drop	kPa	41.9	66.0	120.6
Air On: 24°C,50% RH				
Total Cooling	kW	67.1	85.2	114.7
Sensible Cooling	kW	60.6	75.4	100.7
Chilled Water Flow	l/s	2.7	3.4	4.6
Unit Pressure Drop	kPa	47.7	77.7	120.9

COOLING CAPACITIES - 9/15 °C Chilled Water

Model: DCS / FCS		60 - 5	80 - 5	100 - 5
Air On: 22°C,45% RH				
Total Cooling	kW	51.5	64.6	85.9
Sensible Cooling	kW	51.5	64.6	85.9
Chilled Water Flow	l/s	2.0	2.5	3.4
Unit Pressure Drop	kPa	29.0	45.6	82.8
Air On: 22°C,50% RH				
Total Cooling	kW	50.3	63.0	84.3
Sensible Cooling	kW	50.3	63.0	84.3
Chilled Water Flow	l/s	2.0	2.5	3.3
Unit Pressure Drop	kPa	29.0	45.6	79.8
Air On: 24°C,45% RH				
Total Cooling	kW	58.6	73.5	97.9
Sensible Cooling	kW	58.6	73.5	97.9
Chilled Water Flow	l/s	2.3	2.9	3.9
Unit Pressure Drop	kPa	37.1	58.5	106.8
Air On: 24°C,50% RH				
Total Cooling	kW	60.0	76.2	102.2
Sensible Cooling	kW	57.7	71.8	95.1
Chilled Water Flow	l/s	2.4	3.0	4.1
Unit Pressure Drop	kPa	38.8	63.0	117.1

Note: Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

COOLING CAPACITIES - 8/14 °C Chilled Water

Model: DCS / FCS		60 - 6	80 - 6	100 - 6
Air On: 22°C,45% RH				
Total Cooling	kW	56.6	70.6	91.5
Sensible Cooling	kW	56.6	70.6	91.5
Chilled Water Flow	l/s	2.2	2.8	3.6
Unit Pressure Drop	kPa	31.1	51.9	94.2
Air On: 22°C,50% RH				
Total Cooling	kW	59.6	74.9	90.6
Sensible Cooling	kW	53.9	66.9	90.6
Chilled Water Flow	l/s	2.4	3.0	3.6
Unit Pressure Drop	kPa	34.4	58.5	94.2
Air On: 24°C,45% RH				
Total Cooling	kW	68.5	86.3	104.6
Sensible Cooling	kW	62.2	77.4	104.6
Chilled Water Flow	l/s	2.7	3.4	4.2
Unit Pressure Drop	kPa	44.4	75.5	120.6
Air On: 24°C,50% RH				
Total Cooling	kW	73.5	92.9	114.7
Sensible Cooling	kW	59.8	74.9	110.7
Chilled Water Flow	l/s	2.9	3.7	4.6
Unit Pressure Drop	kPa	50.7	85.8	142.9

COOLING CAPACITIES - 9/15 °C Chilled Water

Model: DCS / FCS		60 - 6	80 - 6	100 - 6
Air On: 22°C,45% RH				
Total Cooling	kW	53.1	66.2	85.9
Sensible Cooling	kW	53.1	66.2	85.9
Chilled Water Flow	l/s	2.1	2.6	3.4
Unit Pressure Drop	kPa	27.4	45.8	82.8
Air On: 22°C,50% RH				
Total Cooling	kW	53.5	67.2	84.3
Sensible Cooling	kW	51.4	63.9	84.3
Chilled Water Flow	l/s	2.1	2.7	3.3
Unit Pressure Drop	kPa	27.4	47.2	79.8
Air On: 24°C,45% RH				
Total Cooling	kW	62.4	78.4	97.9
Sensible Cooling	kW	59.8	74.3	97.9
Chilled Water Flow	l/s	2.5	3.1	3.9
Unit Pressure Drop	kPa	36.9	62.7	106.8
Air On: 24°C,50% RH				
Total Cooling	kW	66.2	83.3	102.2
Sensible Cooling	kW	56.8	70.6	95.1
Chilled Water Flow	l/s	2.6	3.3	4.1
Unit Pressure Drop	kPa	41.8	71.4	117.1

Note: Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

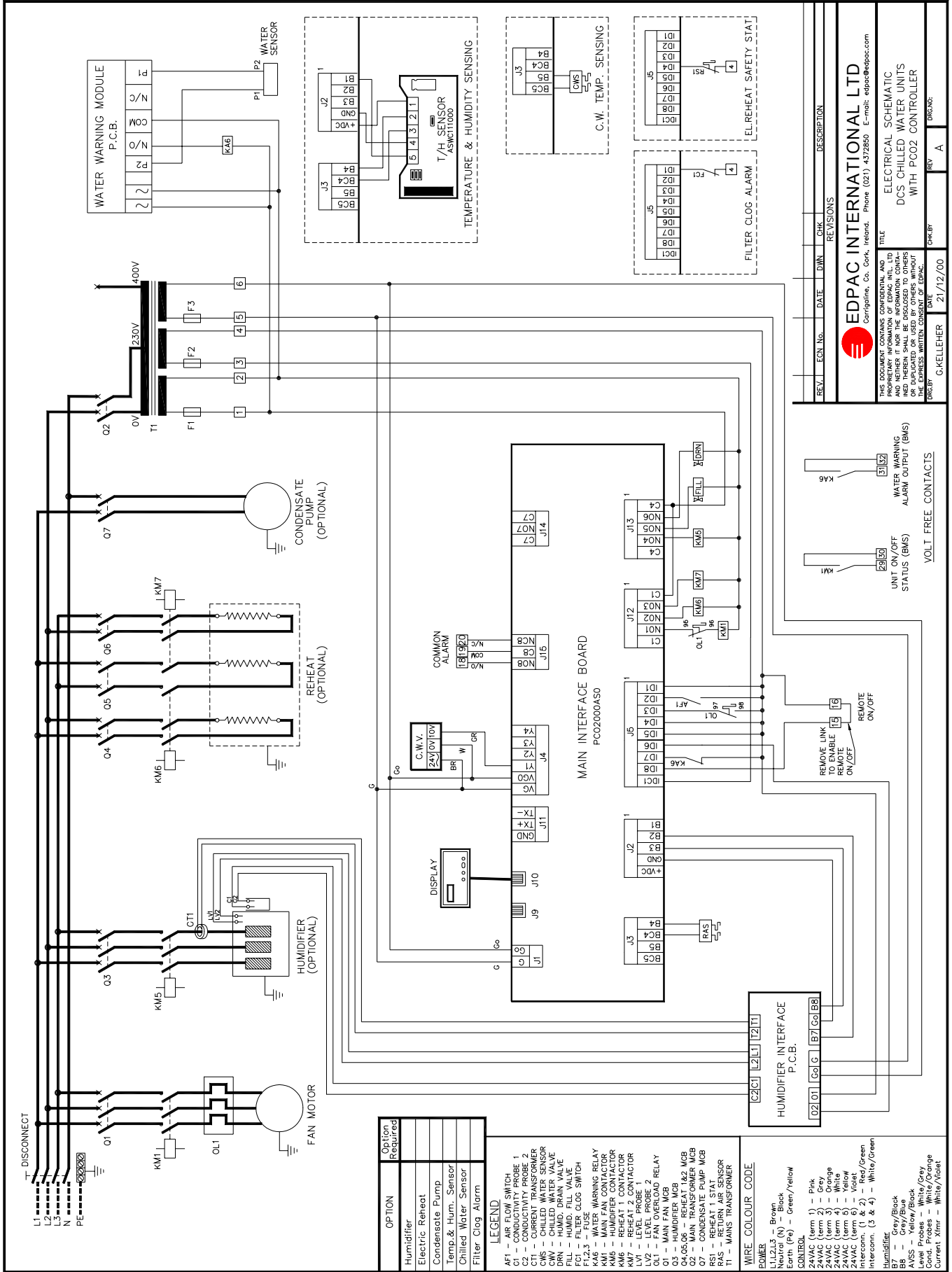
COOLING CAPACITIES - 10/16 °C Chilled Water

Model: DCS / FCS		60 - 6	80 - 6	100 - 6
Air On: 22°C,45% RH				
Total Cooling	kW	43.6	54.5	70.2
Sensible Cooling	kW	43.6	54.5	70.2
Chilled Water Flow	l/s	1.7	2.2	2.8
Unit Pressure Drop	kPa	19.7	33.0	58.9
Air On: 22°C,50% RH				
Total Cooling	kW	48.1	59.9	77.6
Sensible Cooling	kW	48.1	59.9	77.6
Chilled Water Flow	l/s	1.9	2.4	3.1
Unit Pressure Drop	kPa	23.1	38.6	69.4
Air On: 24°C,45% RH				
Total Cooling	kW	56.7	70.7	91.8
Sensible Cooling	kW	56.7	70.7	91.8
Chilled Water Flow	l/s	2.3	2.8	3.6
Unit Pressure Drop	kPa	31.2	52.1	94.5
Air On: 24°C,50% RH				
Total Cooling	kW	59.5	74.9	90.6
Sensible Cooling	kW	54.1	67.2	90.6
Chilled Water Flow	l/s	2.4	3.0	3.6
Unit Pressure Drop	kPa	34.2	58.3	94.5

COOLING CAPACITIES - 11/17 °C Chilled Water

Model: DCS / FCS		60 - 6	80 - 6	100 - 6
Air On: 22°C,45% RH				
Total Cooling	kW	38.9	48.6	62.5
Sensible Cooling	kW	38.9	48.6	62.5
Chilled Water Flow	l/s	1.6	1.9	2.5
Unit Pressure Drop	kPa	15.9	26.7	47.2
Air On: 22°C,50% RH				
Total Cooling	kW	44.2	55.1	71.3
Sensible Cooling	kW	44.2	55.1	71.3
Chilled Water Flow	l/s	1.8	2.2	2.8
Unit Pressure Drop	kPa	19.9	33.2	59.6
Air On: 24°C,45% RH				
Total Cooling	kW	53.4	66.5	85.8
Sensible Cooling	kW	53.4	66.5	85.8
Chilled Water Flow	l/s	2.1	2.6	3.4
Unit Pressure Drop	kPa	27.5	46.0	83.8
Air On: 24°C,50% RH				
Total Cooling	kW	53.3	67.0	84.0
Sensible Cooling	kW	51.8	64.4	84.0
Chilled Water Flow	l/s	2.1	2.7	3.3
Unit Pressure Drop	kPa	27.5	46.9	80.6

Note: Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.



REV.	ECN No.	DATE	DN	CHK	REVISIONS	DESCRIPTION

EDPAC INTERNATIONAL LTD
 Carrigrohane, Co. Cork, Ireland. Phone (021) 4372850 E-mail: edpac@edpac.com

TITLE
 ELECTRICAL SCHEMATIC
 DCS CHILLED WATER UNITS
 WITH PCO2 CONTROLLER

DESIGNED BY
 G. KELLEHER

DATE
 21/12/00

CHK BY
 A

REV
 A

068306

UNIT ON/OFF **STATUS (BMS)** **UNIT ON/OFF** **WATER WARNING** **ALARM OUTPUT (BMS)**

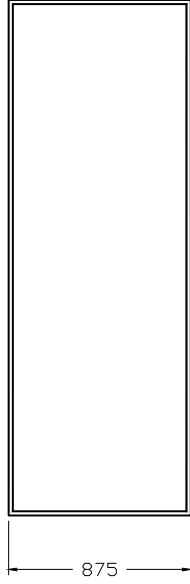
VOLT FREE CONTACTS

REMOVE LINK **ENABLE** **REMO** **REMO**

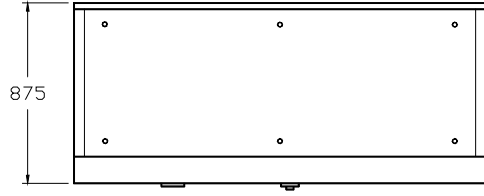
ON/OFF **ON/OFF** **ON/OFF** **ON/OFF**

GENERIC DIMENSIONAL DRAWING

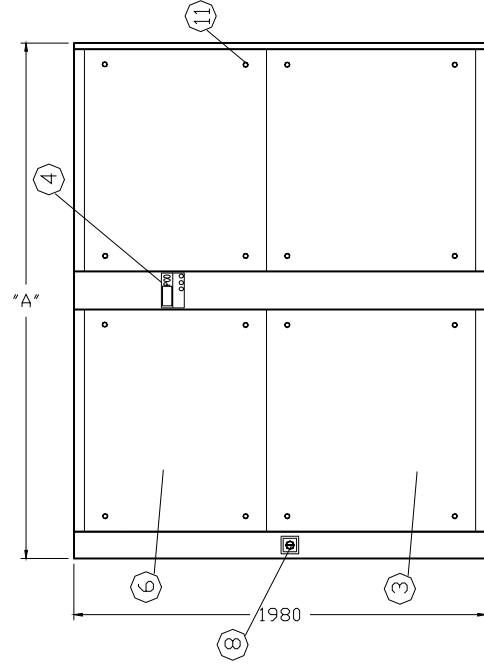
DCS/FCS 60	1650mm
DCS/FCS 80	2000mm
DCS/FCS 100	2500mm
UNIT DIMENSION "A"	



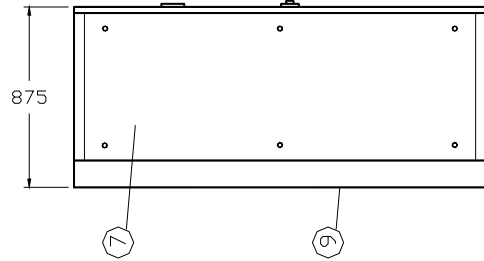
PLAN



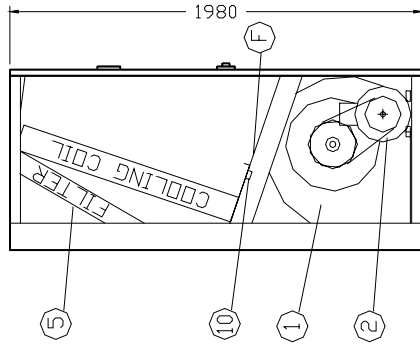
R.H.SIDE ELEVATION



FRONT ELEVATION



L.H.SIDE ELEVATION



L.H.SIDE ELEVATION
(PANEL REMOVED)

ITEM	DESCRIPTION
11	1/4 TURN LATCH
10	DRAIN PAN
9	REAR PANEL - REMOVEABLE
8	MAINS ISOLATOR
7	SIDE PANEL - REMOVEABLE
6	TOP PANEL - REMOVEABLE
5	G4 PANEL FILTER
4	CONTROL/DISPLAY PANEL
3	BOTTOM PANEL - REMOVEABLE
2	FAN MOTOR
1	FAN (BELT/DIRECT DRIVEN)

ITEM	DESCRIPTION
F	DRAIN CONNECTION 1" BSPF
E	POWER IN
D	HUMIDIFIER WATER IN
C	CONDENSATE DRAINS
B	WATER OUT (RETURN)
A	WATER IN (FLOW)

CUSTOMER CONNECTIONS

REV.	ECN No.	DATE	DRAWN	CHK	DESCRIPTION

EDPAC[®] INTERNATIONAL LTD <small>Cardiffville, Co. Cork, Ireland. Phone (0031) 4372850. Fax (0031) 4373975. Email: edpac@edpac.com</small>	
<small>THIS DOCUMENT IS THE PROPERTY OF EDPAC INTERNATIONAL LTD AND NEITHER THE INFORMATION CONTAINED HEREIN NOR THE DRAWINGS SHALL BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE EXPRESS WRITTEN CONSENT OF EDPAC.</small>	TITLE SUBMITTAL DETAILS DCS/FCS CHILLED WATER UNIT
DRCR: P. HURLEY	DATE 31-10-00
DRCR: A	REV A

ELECTRICAL DETAILS

400V/3PH/50Hz

Model	60	80	100
Controls FLA	1.0	1.0	1.0
Fans FLA	11.0	11.0	14.8
Reheat FLA	21.7	21.7	35.9
Humidifier FLA	8.4	8.4	8.4
Max Unit FLA - Cooling only	12.0	12.0	15.8
Max Unit FLA - Cooling & Dehumidification	33.7	33.7	51.7
Max Unit FLA – Heating & Humidification	42.1	42.1	60.1

220V/3PH/60Hz

Model	60	80	100
Controls FLA	1.0	1.0	1.0
Fans FLA	20.0	20.0	26.9
Reheat FLA	39.5	39.5	65.3
Humidifier FLA	15.3	15.3	15.3
Max Unit FLA - Cooling only	21.0	21.0	27.9
Max Unit FLA - Cooling & Dehumidification	60.5	60.5	93.2
Max Unit FLA – Heating & Humidification	75.8	75.8	108.5

380V/3PH/60Hz

Model	60	80	100
Controls FLA	1.0	1.0	1.0
Fans FLA	11.6	11.6	15.6
Reheat FLA	22.8	22.8	37.8
Humidifier FLA	8.8	8.8	8.8
Max Unit FLA - Cooling only	12.6	12.6	16.6
Max Unit FLA - Cooling & Dehumidification	35.4	35.4	54.4
Max Unit FLA – Heating & Humidification	44.2	44.2	63.2

460V/3PH/60Hz

Model	60	80	100
Controls FLA	1.0	1.0	1.0
Fans FLA	12.7	12.7	17.0
Reheat FLA	18.9	18.9	31.2
Humidifier FLA	7.3	7.3	7.3
Max Unit FLA - Cooling only	13.7	13.7	18.0
Max Unit FLA - Cooling & Dehumidification	32.6	32.6	49.2
Max Unit FLA – Heating & Humidification	39.9	39.9	56.5

Notes:

1. FLA = Full Load Amps.
2. Unit maximum FLA is the total of the components, which operate during maximum electrical load conditions.
3. Max FLA of cooling only unit : FLA = Controls + Fans
4. Max FLA of unit with reheat only in dehumidification : FLA = Controls + Fans + Reheat.
5. Max FLA of unit with heating & humidifiers : FLA = Controls + Fans + Reheat + Humidifier.
6. If Duplexed option is chosen, please add 1 x Fan FLA to Max FLA for additional slave module.