EDPAC®

Close Control Air Cooled Twin Circuit Range

Engineering Data Manual 50/60Hz
R407C

Index

EDPAC COMPANY PROFILE

HISTORY
Formed in 1968, EDPAC has grown through worldwide distribution to an installed base of over 50,000 units. EDPAC currently services the markets of Europe, the Americas, the Middle East, and the Far East. As one of the pioneers of Precision Air Conditioning the EDPAC name has become synonymous with quality and reliability. With its highly skilled and experienced team EDPAC has established not only a modern manufacturing plant, but also a sophisticated and innovative product development programme. Since 1987 EDPAC International located in Cork Ireland, has controlled the entire activities of the group.

PRODUCT RANGE
EDPAC manufactures a broad range of Precision Air Conditioning equipment for the Computer Room, Telecoms and Building Services applications. EDPAC systems are designed to provide optimum operating conditions in close control environments. Control is microprocessor based with installations ranging from single units to multiple units on networks in a Windows based environment.

QUALITY
All suppliers of materials and components used in manufacturing are assessed and qualified by EDPAC. The EDPAC guarantee of quality is also complimented by rigorous in-factory quality assessment and quality control testing prior to product dispatch. The overall activity of the factory is customer focused and conforms to the strict norms of IS/ISO9001/EN29001. EDPAC was awarded and has retained this certificate since 18th March, 1992.

THIS PRODUCT RANGE

CLOSE CONTROL AIR COOLED TWIN CIRCUIT UNITS
The Close Control Twin Circuit range comprises 4 sizes providing nominal capacities of 30, 40, 50, 60, 70, 80 & 100 kW . Units are twin circuit in a single frame and are available in Upflow and Downflow configurations with top, bottom, front and rear return options. As standard the Twin Circuit Air Cooled range units are equipped with: Scroll Compressors, Electrode Steam Boiler Humidifiers, Stainless Steel Tubular Finned Electric Reheat Elements, EU4 Filtration, belt driven forward curved Centrifugal Fans, R407C Refrigerant and the latest Delta range of microprocessor controllers. The air cooled twin circuit range has an option also for backward curved EC plug fans which offer tremendous savings in fan power due to the fan/motor efficiency & the control options available in running the fans smartly in the modern data centre. Other options available include: Water Leak Detection, Autosequence/Autorotate, 3 Way Discharge Plenums, Graphic Display, Drain Trap, Smoke Detection, Fire Detection, Floorstand, loss of Chilled Water Flow Switch, Condensate Pumps & many more items. BMS interface cards are available for all of the most commonly-used protocols including but not limited to MODBUS, BACnet, LON, JCI METASYS & they all can be integrated into most BMS systems by RS 485 or over TCP/IP. Cooling media available is air cooled direct expansion only. There is an option for a dual cooling version with the addition of a chilled water coil.

ASSOCIATED PRODUCT RANGES

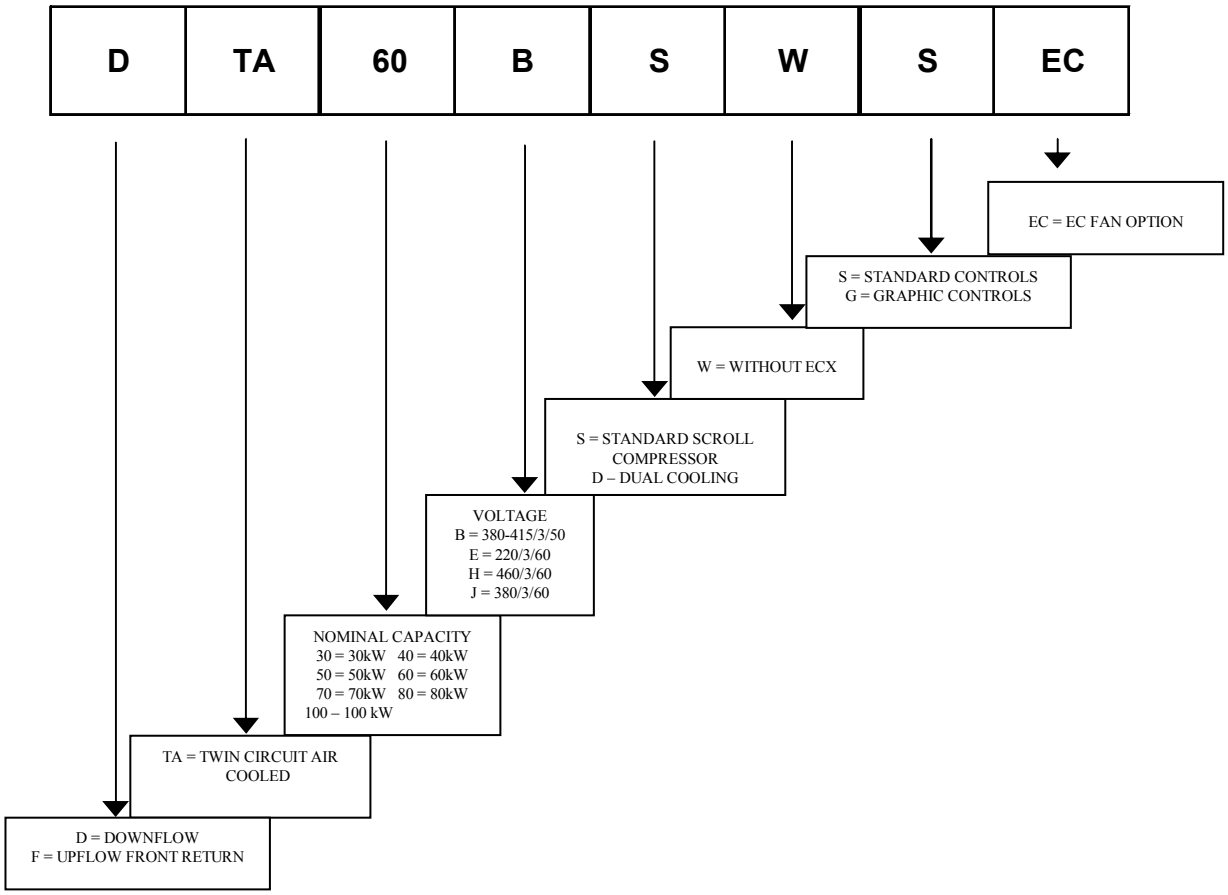
CLOSE CONTROL MODULAR UNITS
The Close Control Modular range is comprised of 4 module sizes providing nominal capacities of 10, 15, 20, 25, 30, 35 & 40 kW per module. These modules form the basis of the EDPAC modular concept. Unit selections can be based on a single module for a single circuit system or any combination of 2 modules to give a twin circuit or Duplex system. The Duplex configuration is advantageous as both modules can be positioned at different locations within the room.

DCS / FCS CHILLED WATER UNITS
The DCS / FCS range of Close Control Chilled Water units comprises 4 sizes providing nominal capacities of 60, 80, 100 & 120 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.

SMALL SYSTEMS
The Small Systems range comprises 2 module sizes providing nominal capacities of 6, 12 and 18 kW per module. The modules form the basis of the EDPAC Small Systems concept. units are available in downflow with top return and upflow with front return. Cooling media include direct expansion using air and chilled water.

EQUIPMENT NOMENCLATURE

The Close Control Twin Circuit range comprises 4 sizes providing nominal capacities of 30, 40, 50, 60, 70, 80 & 100 kW . Units are twin circuit in a single frame and are available in Upflow and Downflow configurations with top, bottom, front and rear return options. As standard the Twin Circuit Air Cooled range units are equipped with: Scroll Compressors, Electrode Steam Boiler Humidifiers, Stainless Steel Tubular Finned Electric Reheat Elements, EU4 Filtration, belt driven forward curved Centrifugal Fans, R407C Refrigerant and the latest Delta range of microprocessor controllers.



CLOSE CONTROL TWIN CIRCUIT - DIMENSIONS AND WEIGHTS

CLOSE CONTROL TWIN CIRCUIT UNITS

Dimensions (mm)

Model	30	40	50	60	70	80	100
W x D x 1980H	1660 x 875	1660 x 875	2000 x 875	2000 x 875	2500 x 875	2500 x 875	2800 x 875

Weight (kgs)

Model	30	40	50	60	70	80	100
Air Cooled	590	590	675	675	895	895	985
Return Air Acoustic Plenum	50	50	60	60	70	70	70
Top Discharge Plenum	60	60	70	70	80	80	80

AIR COOLED CONDENSERS - DIMENSIONS AND WEIGHTS

30°C Ambient Selection

Model	30	40	50	60	70	80	100
Condenser Model x 2 No.	AGS402A	AGS403A	AGS501C	AGS502A	AGS502A	AGS502B	AGS503B
Condenser Input Power (kW)	0.6	0.9	0.7	1.4	1.4	1.4	2.1
Freefield SPL @ 10m dBA	46	48	43	46	46	46	48
Airflow (m^3/hr)	6464	9697	6935	15280	15280	14550	21830
Fan No. x Diameter (mm)	2 x 400	3 x 400	1 x 500	2 x 500	2 x 500	2 x 500	3 x 500
Condenser Inlet/Outlet (mm)	22/18	28/22	28/22	28/22	28/22	28/22	35/28
Dimensions W x D (mm)	1380x555	1980x555	1105x828	2005x828	2005x828	2005x828	2905x828
Weight (kg) 1No. / 2No.	33 / 66	42 / 84	47 / 94	76 / 152	76 / 152	85 / 170	123 / 246

35°C Ambient Selection

Model	30	40	50	60	70	80	100
Condenser Model x 2 No.	AGS402B	AGS403B	AGS403B	AGS502B	AGS502B	AGS502C	AGS503B
Condenser Input Power (kW)	0.6	0.9	0.9	1.4	1.4	1.4	2.1
Freefield SPL @ 10m dBA	46	48	48	46	46	46	48
Airflow (m^3/hr)	6036	9053	9053	14590	14590	13920	21890
Fan No. x Diameter (mm)	2 x 400	3 x 400	3 x 400	2 x 500	2 x 500	2 x 500	3 x 500
Condenser Inlet/Outlet (mm)	22/18	28/22	28/22	28/22	28/22	28//22	35/28
Dimensions W x D (mm)	1380x555	1980x555	1980x555	2005x828	2005x828	2005x828	2905x828
Weight (kg) 1No. / 2No.	38 / 76	51 / 102	51 / 102	85 / 170	85 / 170	93 / 186	123 / 246

40°C Ambient Selection

Model	30	40	50	60	70	80	100
Condenser Model x 2 No.	AGS501C	AGS502A	AGS502B	AGS502C	AGS503B	AGS503B	AGS504C
Condenser Input Power (kW)	0.7	1.4	1.4	1.4	2.1	2.1	2.8
Freefield SPL @ 10m dBA	43	46	46	46	48	48	49
Airflow (m^3/hr)	6985	15340	14630	13970	21950	21950	27940
Fan No. x Diameter (mm)	1 x 500	2 x 500	2 x 500	2 x 500	3 x 500	3 x 500	4 x 500
Condenser Inlet/Outlet (mm)	22/20	28/22	28/22	28/22	35/28	35/28	42/35
Dimensions W x D (mm)	1105x828	2005x828	2005x828	2005x828	2905x828	2905x828	3805x828
Weight (kg) 1No. / 2No.	47 / 94	76 / 152	85 / 170	93 / 186	123 / 246	123 / 246	178 / 356

45°C Ambient Selection

Model	30	40	50	60	70	80	100
Condenser Model x 2 No.	AGS502B	AGS502C	AGS503A	AGS503C	AGS504B	AGS504C	AGS634B
Condenser Input Power (kW)	1.4	1.4	2.1	2.1	2.8	2.8	5.0
Freefield SPL @ 10m dBA	46	46	48	48	49	49	52
Airflow (m^3/hr)	14680	14020	23050	21030	29350	28040	44380
Fan No. x Diameter (mm)	2 x 500	2 x 500	3 x 500	3 x 500	4 x 500	4 x 500	4 x 630
Condenser Inlet/Outlet (mm)	28/22	28/22	35/28	35/28	42/35	42/35	54/42
Dimensions W x D (mm)	2005x828	2005x828	2905x828	2905x828	3805x828	3805x828	4335x1033
Weight (kg) 1No. / 2No.	85 / 170	93 / 186	111 / 222	136 / 272	178 / 366	192 / 384	342 / 684

Notes:

1. Standard air cooled condensers have 4 Pole motors. For 6 Pole & 8 Pole low noise versions, consult factory.
2. All condensers are shipped with mounting feet. When mounted in a horizontal, condenser models AGS 401 – 403 are 712mm high, condenser models AGS 501- 504 are 846 mm high and condenser model AGS634B is 1171mm high.
3. Condenser model AGS634B power is 400V/3Ph/50Hz. All others are 220V/1Ph/50Hz.
4. For all models, 2 no. condensers are required, 1 per refrigerant circuit.
5. All condenser data is per condenser.

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 constructed from 10mm O/D copper tubes with aluminium 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 DX coils shall be tested to 25 bar.

DX Units

Each unit shall have 2 independent refrigerant circuits, each with a liquid distributor, expansion valve, sight glass and filter drier.

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 twin belts giving a fixed speed are provided for each fan assembly.

Motors

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

Filtration

The filters shall be 100mm thick disposable pleated panel filter rated G4 in accordance with EN779. They shall be fitted in the return air stream and be accessible from the front of a Upflow unit and the top of a Downflow unit.

Compressors

Compressors shall be high efficiency hermetically sealed scroll type. Back seating service/isolating valve, high and low pressure switches, motor overload protection and crankcase heaters shall be provided. The compressors shall be mounted on resilient neoprene mountings for vibration isolation.

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.

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 resetable 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.

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). All software is permanently stored in flash RAM and is therefore protected even in the event of a power failure. Unit software is uploaded to the Microprocessor using a RAM key or personal computer. On multi unit sites this quickens unit commissioning. The software can also be easily changed or upgraded on site by qualified service personnel.

The Microprocessor based Terminal Unit is complete with a 4 line x 20 character backlit LCD Display, keypad and LED Indicators allowing the user to easily set the main control parameters (set-points, differentials and alarm thresholds) and carry out the main working operations (on/off and displaying controlled variables).

Main features of controller are :

Status: The display shall indicate current temperature, current humidity, temperature & humidity set points, cooling status, heating status, humidification status & dehumidification status.

Redundancy Management & Master Control: The controls shall be capable of redundancy management & master control setup / " Handshake " of groups of up to 16 units without addition of any hardware.

Alarms: Controls shall be capable of storing last 100 alarms, identified by type, date stamped & indicating also the temperature & humidity conditions when the alarm occurred & also the setpoints of temperature & humidity when the alarm occurred. There are 36 alarms & all alarms can be either set as " serious " or " non-serious". A serious alarm shuts down the unit.

Hours Thresholds: It shall be possible to to set run hours thresholds for major components to facilitate preventative maintenance.

Manual Procedure: With the unit powered off & the controls powered on it shall be possible to check all analogue & digital outputs & to run the devices.

Temperature & Humidity Zone setback: It shall be possible to create up to 4 periods in a 24 hour period with dedicated set points of temperature & humidity.

System Auto Restart: For start up after power failure, the unit shall automatically restart with an ability to stagger the starting of multiple units by setting a time delay of up to 999 seconds.

Security: The microprocessor shall have multiple levels of security (5 no. 4 digit passwords) to prevent unauthorised parameter adjustment.

Time Delays: It shall be possible to create or adjust if necessary the unit on time delay, unit off time delay, compressor interstage delay, compressor minimum run time, compressor minimum stop time, heater interstage delay, winter start time delay, temperature alarm time delay, humidity alarm time delay, serious alarm time delay & non-serious alarm time delay.

Sensor Calibration: It shall be possible to recalibrate the temperature & humidity sensors in software.

Inputs / Outputs: It shall be possible to view the current status of all inputs & outputs while the unit is running.

Set & Hysterisis adjustment: It shall be possible to adjust the set & hysterisis % values of stepped outputs within the control.

BMS / BAS interfacing: It shall be possible with the addition of a simple communications card to communicate all Analog, Digital & Interger variables in the following protocols : LON FTT 10, BACnet over RS485 MSTP, BACnet over TCP/IP, SNMP over TCP/IP, MODBUS over RS485, Metasys & OPC Server.

Remote Display panel: It shall be possible to connect an additional shared LCD display which is wired back to the unit & this remote display shall have full control access to the unit from a distance of up to 100m.

Remote Temperature & Humidity sensing: It shall be possible to remotely locate the Temperature/Humidity sensor to better meet the sites cooling needs. The sensor can be located a distance of up to 30m from the unit.

OPTIONAL FEATURES

EC Plug Fans

Available instead of forward curved belt driven fans. The EC plug fan is a backward curved fan with integrated EC electrically commutated motor which is controlled directly from the microprocessor using a 0-10V output. Options on setup are :

Unit is set up with a discrete fan speed based on a fixed 0-10V output to the EC motor based on the design point of operation of the fan. This is the default setting on units shipped.

Unit set up to track the cooling control temperature band with set voltage limits whereby max voltage / fan air volume is at set point plus control band & min voltage / fan air volume at set point. Max air volume is typically design air volume & min air volume is around 60% for chilled water units. This is something that can be proven on site. Minimum value needs to ensure there are no hot spots due to lack of airflow & that there is no loss of sensible cooling capacity to latent cooling capacity at the cooling coil.

Unit set up to give a reduced fan air volume in dehumidification mode to conserve energy in dehumidification while quickly achieving the dehumidification effect at the cooling coil. This output voltage is again user selectable.

Unit is set up via an underfloor pressure transducer to give a fixed underfloor pressure all the time. Underfloor pressure setpoint is input through the unit user display.

3 Stage Reheat

Available in lieu of 2 stage by adding a electrical contactor & configuring the software to 3 stage.

Proportional Electric Reheat

Units shall be fitted with electric reheat controlled by a thyristor giving a fully proportional 0-10V output of the reheat capacity.

Hot Water Reheat

Units shall be fitted with a Low Pressure Hot Water (LPHW) heating coil in place of the standard electrical heating. Water flow through the coil is controlled by a 2 or 3 way modulating valve. Duties of these coils are nominally the same as standard electric heating, based on flow and return hot water temperatures of 82°C and 71°C respectively.

Cleanable Humidifier Cylinder

Humidifier cylinder is servicable whereas standard humidifier cylinder is disposable.

Low Conductivity Humidifier Cylinder

Disposable type but for water supply with low electrical conductivity.

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 to 200 Pa or 400 Pa. In these instances please advise the factory on ESP Pa required.

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 manufactured from galvanised steel.

Damper & On/Off Actuator Kit

Addition of a damper & on/off actuator shipped loose which can be integrated into floorstand of downflow unit & to discharge of upflow unit. Actuator powered from unit electrical panel.

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. Plenums can also be manufactured as 1 way or 2 way discharge, please consult factory.

3 way discharge plenum complete with up to F9 rigid bag filters.

Plenum is mounted on top of unit. Plenum is 1000mm high with a 292mm long F9 rigid bag filter. Plenum has a diffusion section and 3 no. Air outlet grilles. Grilles on the front and 2 sides. It is also possible to have the F8/F9 discharge section on its own, plenum is 400mm high.

Rear Return

For upflow units. Required when unit is located in a service area outside the conditioned space. Fan deck is turned through 180 degrees. Return air is taken in the rear. Rear panel generally has a duct connection and filters are withdrawable from outside the unit.

Bottom return

For upflow units. Required if air is returned from a floor void. Bottom of unit is opened up and base components are mounted on rails. Filters cannot be fitted in unit and are shipped loose for installation beneath the unit on site.

Return Air Attenuator 500mm high.

Attenuator mounted on top of downflow unit. Attenuators have internal baffles and provide 8-10 db reduction on airborne noise.

F5/6/7 Panel Filters

Upgrade of standard G4 disposable panel filters to F5/6/7 disposable panel filters.

G2 Pre-filter with G4 Main Filter

100mm G4 disposable filter replaced with 50mm G2 disposable plus 50mm G4 disposable filter.

Washable Filters

Upgrade of standard disposable 100mm G4 disposable filters to washable 50mm G3 type plus 50mm G4 disposable filter.

Filter Clog

An additional pressure differential switch mounted in the unit to sense airside pressure drop across the filters. Once the pressure drop is exceeded a filter clog (filter change) alarm is generated.

Different Unit Colour

Units can be manufactured in a different colour to the standard RAL 9018. RAL number to be specified.

Double Skin Panels

All units. Inner perforated galvanized steel or solid painted or unpainted galvanized steel.

Fresh Air Connection

Units can be supplied with a fresh air inlet connection and disposable G4 filter. This will admit approximately 3-5% of the recirculated air volume.

Hot Gas Bypass

Hot gas bypass line including hot gas bypass valve fitted to provide capacity control in low load situations.

Liquid Receiver

Liquid receiver fitted in unit base of indoor unit. Receiver is complete with rotalock valve on the discharge.

Oil Separator

Oil separator fitted in indoor unit to prevent migration of oil away from compressor.

Compressor Acoustic Jacket

High mass barrier insulation to reduce compressor noise.

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). A cheaper cold condensate pump is available for units without humidifiers.

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. In the group of up to 16 unit, any number can be running & any number can be set in standby.

Smoke Detector

A smoke detector shall be provided & mounted in the return air path to interface with the unit controls and generate an alarm.

Fire Detector

A fire detector shall be provided & mounted in the return air path to interface with the unit controls and generate an alarm.

Fire Stat

A fire stat shall be provided & mounted in the return air path within the unit to interface with the unit controls and indicate an alarm.

Water Detection – Point Type

Consists of a water detection module mounted in unit & point sensor which can be placed in unit or under the floor. Multiple point sensors can be placed in series with each other. A cable type water warning is also available.

RS 485 Communications Card

Serial interface card for Microprocessor board. For BMS setup. Can communicate on Delta 2 own Protocol & Modbus without an external Gateway.

BACnet over RS 485

Serial interface card for Microprocessor board. For BMS setup. Runs on BACnet protocol over RS 485. Final setup by BMS system integrator.

BACnet over TCP/IP

Serial interface card for Microprocessor board. For BMS setup. Runs on BACnet protocol over TCP/IP. Final setup by BMS system integrator.

SNMP over TCP/IP

Serial interface card for Microprocessor board. For BMS setup. Runs on SNMP protocol over TCP/IP. Final setup by BMS system integrator.

LON Communication Card

Serial interface card for Microprocessor board. For BMS setup. Runs on LON FTT 10 protocol. Final setup by LON system integrator.

TREND Communication Card

Serial interface card for Microprocessor board. For BMS setup on TREND BMS. Final setup by TREND system integrator.

Condenser Factory Wired Disconnect

Factory wired disconnect fitted to condenser.

MCB and Contactor Condenser Control

MCB and contactor fitted in unit per condenser providing condenser on/off control interlocked with compressor.

MCB, Contactor and Pressure Switch Condenser Control

MCB, contactor and pressure switch fitted in unit per condenser fan providing condenser on/off based on condenser fan activated on pressure switch pressure signal.

MCB, Contactor and Pressure Activated Fan Speed Control

MCB and contactor per condenser fan. Condenser fans are all 220V/1 Ph and unit has a single or dual input Johnson pressure activated fan speed control.

Condenser Fan Control with VSD

Uses a VSD to give a 0-10V proprtional output to the condenser to maintain refrigerant head pressure control.

Graphic Display

An optional Graphical Terminal Unit is also available. This is a graphical display, LED Backlit with 132 x 64 pixel graphical resolution.

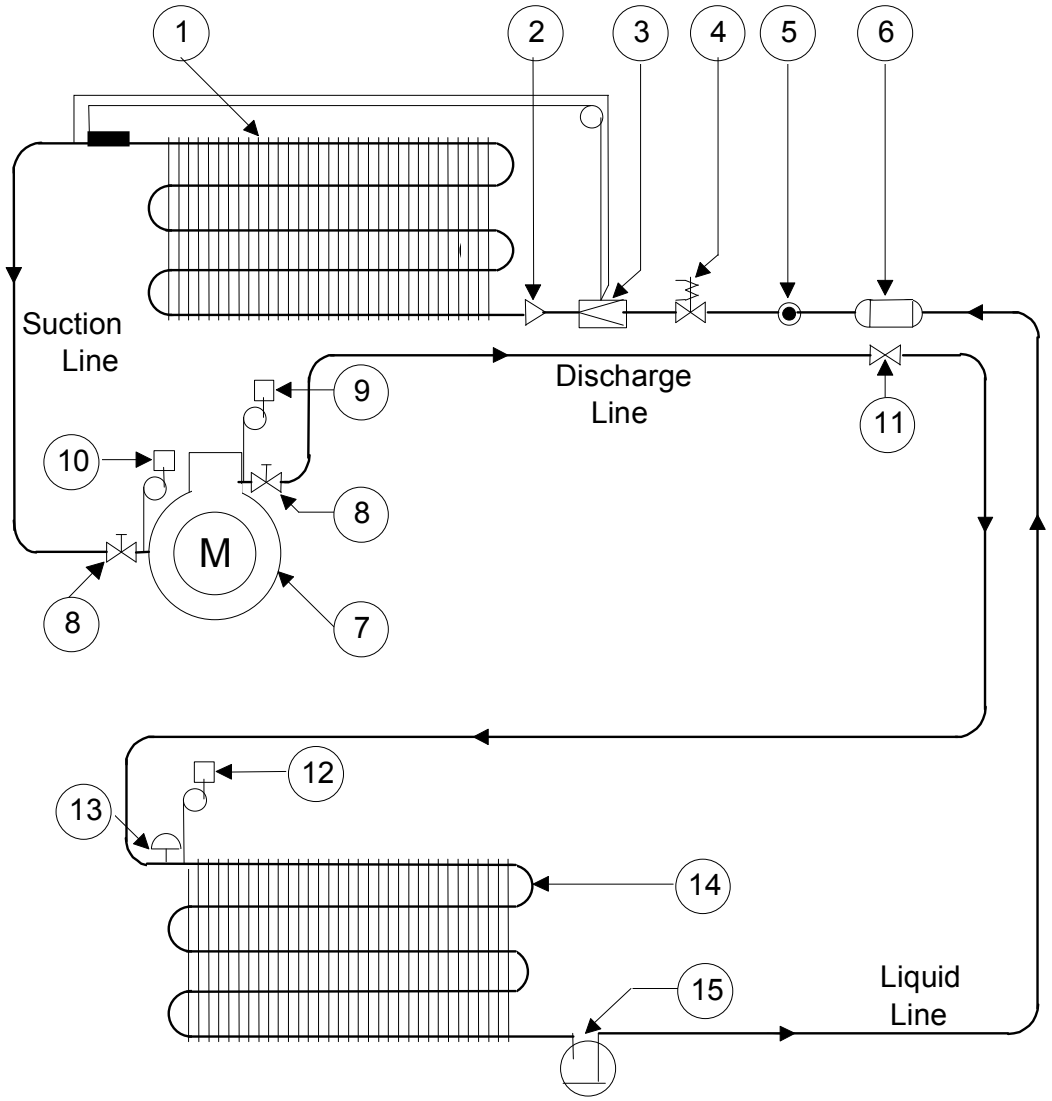
GENERAL ENGINEERING DETAILS

Downflow or Upflow Unit								
Unit Size		**30**	**40**	**50**	**60**	**70**	**80**	**100**
Coil Data								
Coil Face Area - DX type	m^2	1.5	1.5	1.8	1.8	2.4	2.4	2.8
Circuit Quantity	No.	2	2	2	2	2	2	2
Rows	-	4	4	4	4	4	4	4
Coil Drain Connection BSPF	inch	¾	¾	¾	¾	¾	¾	¾
Air Side Data								
Air Volume	m^3/hr	8250	11000	13750	15500	18000	20500	25000
External Static Pressure ESP	Pa	75	75	75	75	75	75	75
Standard FC Centrifugal Fan								
Quantity	-	1	1	2	2	2	2	2
Fan Motor	kW	1.5	2.2	4.0	5.5	4.0	5.5	7.5
Motor Quantity	-	1	1	1	1	1	1	1
Optional EC Plug Fan								
Quantity		1	1	2	2	2	2	3
Fan Diameter		500	560	500	500	500	560	500
Fan Motor	kW	2.7	3.1	2.7	2.7	2.7	3.1	2.7
Fan Absorbed Power	kW	1.5	2.1	2.2	2.8	3.8	4.0	3.8
Filter Data								
Downflow Filter Size Code	-	1	1	2	2	3	3	4
Downflow Filter Quantity	No.	6	6	6	6	8	8	8
Upflow Filter Size Code	-	1	1	2	2	3	3	4
Upflow Filter Quantity	No.	4	4	4	4	4	4	8
Humidifier Data								
Inlet Connection BSPM	inch	1	1	1	1	1	1	1
Drain Connection BSPF	inch	1	1	1	1	1	1	1
Water Feed Pressure	Bar	1-10	1-10	1-10	1-10	1-10	1-10	1-10
French Degrees Water Hardness	-	15-30	15-30	15-30	15-30	15-30	15-30	15-30
Noise Data								
Freefield SPL	dBA	53	52	58	59	57	59	59
Compressor Data								
Scroll Compressor – 50Hz	-	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190	ZR250
Compressor Quantity	No.	2	2	2	2	2	2	2
Scroll Compressor – 60Hz	-	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Quantity	No.	2	2	2	2	2	2	2
Piping Data								
Discharge Connection Size	mm	16	22	22	22	22	28	28
Liquid Connection Size	mm	12	12	16	16	16	16	16
Condenser Connections Inlet/Outlet 30°C	mm	22/18	28/22	28/22	28/22	28/22	28/22	35/28
Condenser Connections Inlet/Outlet 35°C	mm	22/18	28/22	28/22	28/22	28/22	28/22	35/28
Condenser Connections Inlet/Outlet 40°C	mm	22/20	28/22	28/22	28/22	35/28	35/28	42/35
Condenser Connections Inlet/Outlet 45°C	mm	28/22	28/22	35/28	35/28	42/35	42/35	54/42
Dual Cool Chilled Water Data								
Coil Face Area	m^2	1.5	1.5	1.8	1.8	2.4	2.4	2.8
Chilled Water F&R Pipe Size	mm	54	54	54	54	54	54	54
Control Valve Size	mm	40	40	40	40	40	40	40
Control Valve Kv	-	25	25	25	25	25	25	25

Notes

1. Indoor unit Freefield SPL dBA levels are measured at 3m.
2. Downflow Filter Size Code: 1 = 495mm x 545mm, 2 = 545mm x 622mm, 3 = 545mm x 595mm, 4 = 545mm x 695mm.
3. Upflow Filter Size Code: 1 = 445mm x 622mm, 2 = 545mm x 622mm, 3 = 545mm x 895mm, 4 = 545mm x 545mm.
4. All filters are 100mm thick and have an efficiency rating of G4 in accordance with Standard EN779.
5. Water feed electrical conductivity for the humidifier should be in the range of 400 - 800 microsiemens.
6. Refrigerant pipe connections only indicated. For correct installation pipe sizes refer to refrigerant pipe sizing tables.

AIR COOLED SYSTEM SCHEMATIC



System Components (per circuit)

1. Evaporator Coil.
2. Liquid Distributor.
3. Thermostatic Expansion Valve (externally equalised).
4. Liquid Line Solenoid Valve(optional).
5. Liquid Sight Glass (including moisture indicator).
6. Filter Drier.
7. Compressor.
8. Compressor Service Valves.
9. High Pressure Switch (manual reset).
10. Low Pressure Switch (automatic reset).
11. Check Valve (See Note).
12. Fan speed Controller (pressure operated head pressure control, if fitted).
13. Pressure relief Valve (See Note).
14. Air Cooled Condenser.
15. Liquid Receiver (See Note).

Notes:
1. Items 11, 13 and 15 are supplied by others and field fitted by others.
2. All units are Twin Circuit Air Cooled.

AIR COOLED UNITS - COOLING CAPACITIES 50 Hz

Model: DTA / FTA		30	40	50	60	70	80	100
Air On: 22°C, 50% RH								
Total Capacity	kW	30.6	42.8	47.8	64.4	69.8	81.8	108.6
Sensible Capacity	kW	28.0	39.0	44.8	60.6	66.6	78.3	100.8
Air On: 24°C, 50% RH								
Total Capacity	kW	32.0	44.6	49.8	66.8	73.0	85.2	112.8
Sensible Capacity	kW	28.0	39.1	43.9	59.6	66.8	77.9	101.3
Scroll Compressor	-	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190	ZR250
Compressor Input Power	kW	4.7	6.3	6.9	9.1	10.3	12.3	16.3
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m^3/s	2.29	3.06	3.82	4.31	5.00	5.69	6.94
No. of Fans	No.	1	1	2	2	2	2	2
Fan Motor	kW	1.5	2.2	4.0	5.5	4.0	5.5	7.5
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	15.0	15.0	15.0	15.0	24.9	24.9	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	5.8	5.8	5.8	5.8	5.8	5.8	5.8

AIR COOLED UNITS - COOLING CAPACITIES 60Hz

Model: DTA / FTA		30	40	50	60	70	80	100
Air On: 22°C, 50% RH								
Total Capacity	kW	31.1	41.8	51.2	57.5	77.3	83.9	98.5
Sensible Capacity	kW	28.5	38.1	48.0	54.1	73.8	80.3	91.5
Air On: 24°C, 50% RH								
Total Capacity	kW	32.4	43.5	53.2	59.8	80.4	87.4	102.5
Sensible Capacity	kW	28.4	38.1	47.0	53.3	73.6	79.9	92.0
Scroll Compressor	-	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	4.8	6.3	7.5	8.4	11.2	12.6	15.2
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m^3/s	2.29	3.06	3.82	4.31	5.00	5.69	6.94
No. of Fans	No.	1	1	2	2	2	2	2
Fan Motor	kW	1.5	2.2	4.0	5.5	4.0	5.5	7.5
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	15.0	15.0	15.0	15.0	24.9	24.9	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	5.8	5.8	5.8	5.8	5.8	5.8	5.8

Notes

1. Capacities are based on R407C refrigerant.
2. For capacities at other conditions, please refer to the product selection program.
3. Units are also available for R134A applications, please contact the factory.
4. For R410A, please refer to the R410A catalogue or product selection program.
5. Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

DUAL COOLED - CHILLED WATER COOLING CAPACITIES 50/60 Hz

4 ROW COIL

Model: DTA / FTA		30	40	50	60	70	80	100
Air On: 22°C, 50% RH								
Total Capacity	kW	32.9	40.9	52.3	57.1	70.7	77.8	94.7
Sensible Capacity	kW	31.1	40.9	50.8	57.1	67.2	75.1	91.6
Chilled Water Flow	l/s	1.3	1.6	2.1	2.3	2.8	3.1	3.8
Unit Pressure Drop	kPa	9	13	20	23	35	41	44
Air On: 24°C, 50% RH								
Total Capacity	kW	38.5	48.0	61.1	66.8	69.7	90.6	95.3
Sensible Capacity	kW	33.4	42.6	54.2	60.1	66.7	80.8	91.8
Chilled Water Flow	l/s	1.6	1.9	2.4	2.6	2.7	3.6	3.8
Unit Pressure Drop	kPa	11	16	23	27	34	51	44

5 ROW COIL

Model: DTA / FTA		30	40	50	60	70	80	100
Air On: 22°C, 50% RH								
Total Capacity	kW	36.5	46.0	58.5	64.3	78.3	86.8	105.6
Sensible Capacity	kW	33.0	42.9	53.2	60.0	70.9	79.3	105.6
Chilled Water Flow	l/s	1.5	1.8	2.3	2.5	3.2	3.5	4.2
Unit Pressure Drop	kPa	9	15	23	26	41	51	55
Air On: 24°C, 50% RH								
Total Capacity	kW	36.0	53.5	59.2	64.0	86.1	93.9	117.2
Sensible Capacity	kW	32.5	45.6	53.8	59.5	74.7	81.5	101.1
Chilled Water Flow	l/s	1.5	2.1	2.3	2.5	3.4	3.7	4.6
Unit Pressure Drop	kPa	9	19	23	26	47	57	63

6 ROW COIL

Model: DTA / FTA		30	40	50	60	70	80	100
Air On: 22°C, 50% RH								
Total Capacity	kW	38.8	49.6	62.7	69.3	83.5	93.1	113.2
Sensible Capacity	kW	33.9	44.1	55.1	62.1	74.0	82.1	100.1
Chilled Water Flow	l/s	1.6	2.0	2.5	2.7	3.3	3.7	4.5
Unit Pressure Drop	kPa	12	18	26	32	48	59	65
Air On: 24°C, 50% RH								
Total Capacity	kW	42.7	52.2	69.8	75.8	99.2	108.6	134.9
Sensible Capacity	kW	35.6	44.9	58.0	64.3	80.2	108.6	108.8
Chilled Water Flow	l/s	1.7	2.1	2.7	3.1	3.9	4.3	5.4
Unit Pressure Drop	kPa	13	19	32	36	63	76	83

Notes

1. Capacities are based on a 6°C chilled water coil entering temperature & the tabulated flow rate.
2. Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.
3. For cooling performance at other conditions, please refer to the selection program.

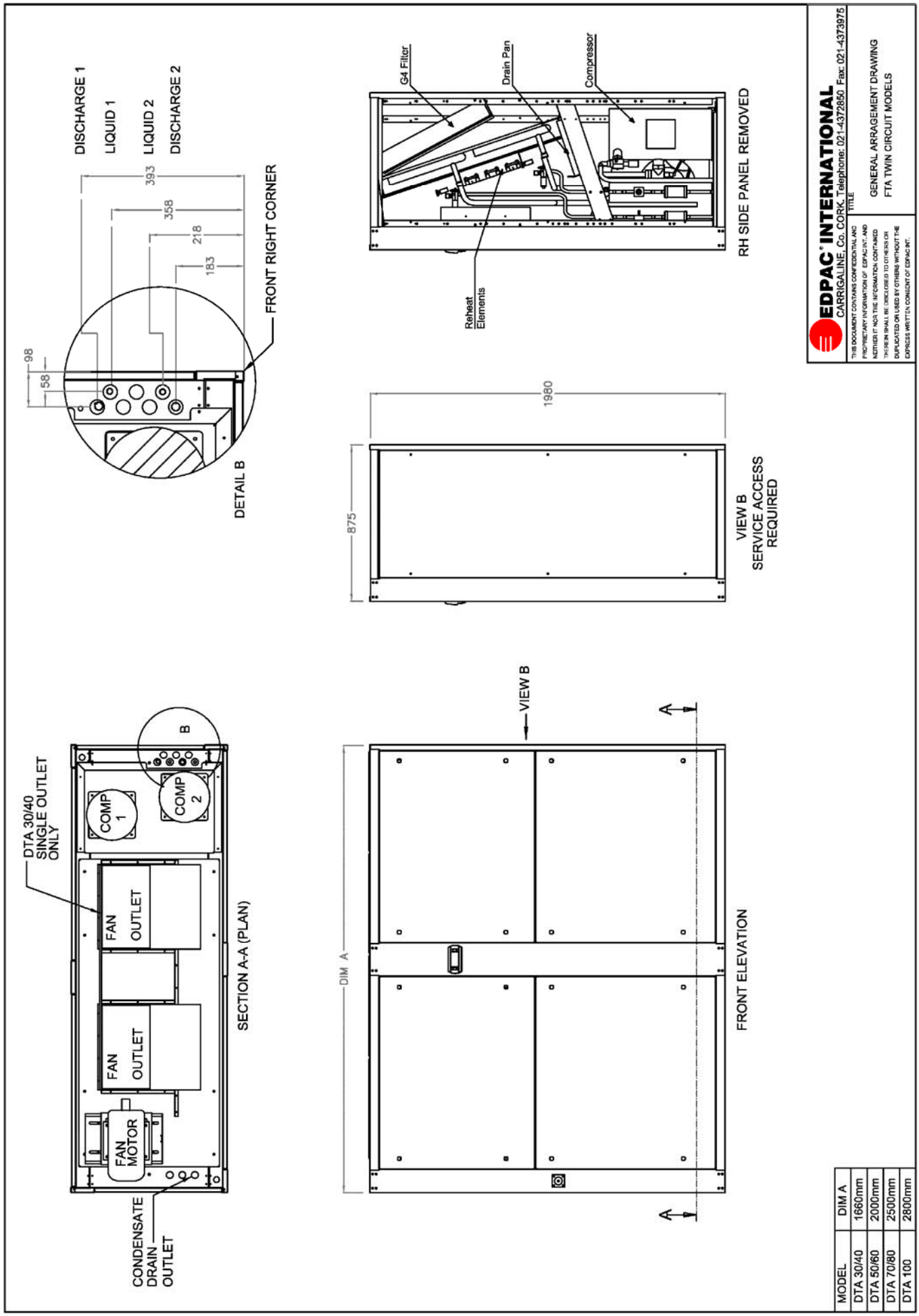
ELECTRICAL DETAILS

	30	40	50	60	70	80	100
400V/3PH/50Hz							
Fans FLA	3.6	4.9	8.3	11.0	8.3	11.0	14.3
Reheat FLA	21.7	21.7	21.7	21.7	35.9	35.9	35.9
Humidifier FLA	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Scroll Compressor FLA	8.3	12.0	12.9	16.3	19.0	24.9	27.7
Condenser FLA 30°C	2.4	3.6	3.0	6.0	6.0	6.0	9.0
Condenser FLA 35°C	2.4	3.6	3.6	6.0	6.0	6.0	9.0
Condenser FLA 40°C	3.0	6.0	6.0	6.0	9.0	9.0	12.0
Condenser FLA 45°C	6.0	6.0	9.0	9.0	12.0	12.0	10.0
220V/3PH/60Hz							
Fans FLA	6.6	8.9	15.1	20.0	15.1	20.0	26.0
Reheat FLA	39.5	39.5	39.5	39.5	65.3	65.3	65.3
Humidifier FLA	15.3	15.3	15.3	15.3	15.3	15.3	15.3
Scroll Compressor FLA	14.6	20.2	24.0	25.8	32.6	38.0	49.8
Condenser FLA 30°C	2.8	4.2	3.9	7.8	7.8	7.8	11.7
Condenser FLA 35°C	2.8	4.2	4.2	7.8	7.8	7.8	11.7
Condenser FLA 40°C	3.9	7.8	7.8	7.8	11.7	11.7	15.6
Condenser FLA 45°C	7.8	7.8	11.7	11.7	15.6	15.6	16.0
380V/3PH/60Hz							
Fans FLA	3.8	5.2	8.8	11.6	8.8	11.6	15.1
Reheat FLA	22.8	22.8	22.8	22.8	37.8	37.8	37.8
Humidifier FLA	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Scroll Compressor FLA	7.3	10.1	12.0	12.9	16.3	19.0	24.9
Condenser FLA 30°C	1.2	1.8	1.6	3.2	3.2	3.2	4.8
Condenser FLA 35°C	1.2	1.8	1.6	3.2	3.2	3.2	4.8
Condenser FLA 40°C	1.6	3.2	3.2	3.2	4.8	4.8	5.6
Condenser FLA 45°C	3.2	3.2	4.8	4.8	5.6	5.6	8.4
460V/3PH/60Hz							
Fans FLA	3.1	4.3	7.2	9.6	7.2	9.6	12.4
Reheat FLA	25.1	25.1	25.1	25.1	41.3	41.3	41.3
Humidifier FLA	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Scroll Compressor FLA	8.8	12.1	14.4	15.5	19.6	22.8	29.9
Condenser FLA 30°C	1.6	2.4	1.0	2.0	2.0	2.0	3.0
Condenser FLA 35°C	1.6	2.4	2.4	2.0	2.0	2.0	3.0
Condenser FLA 40°C	1.0	2.0	2.0	2.0	3.0	3.0	3.0
Condenser FLA 45°C	2.0	2.0	3.0	3.0	4.0	4.0	4.0

Notes

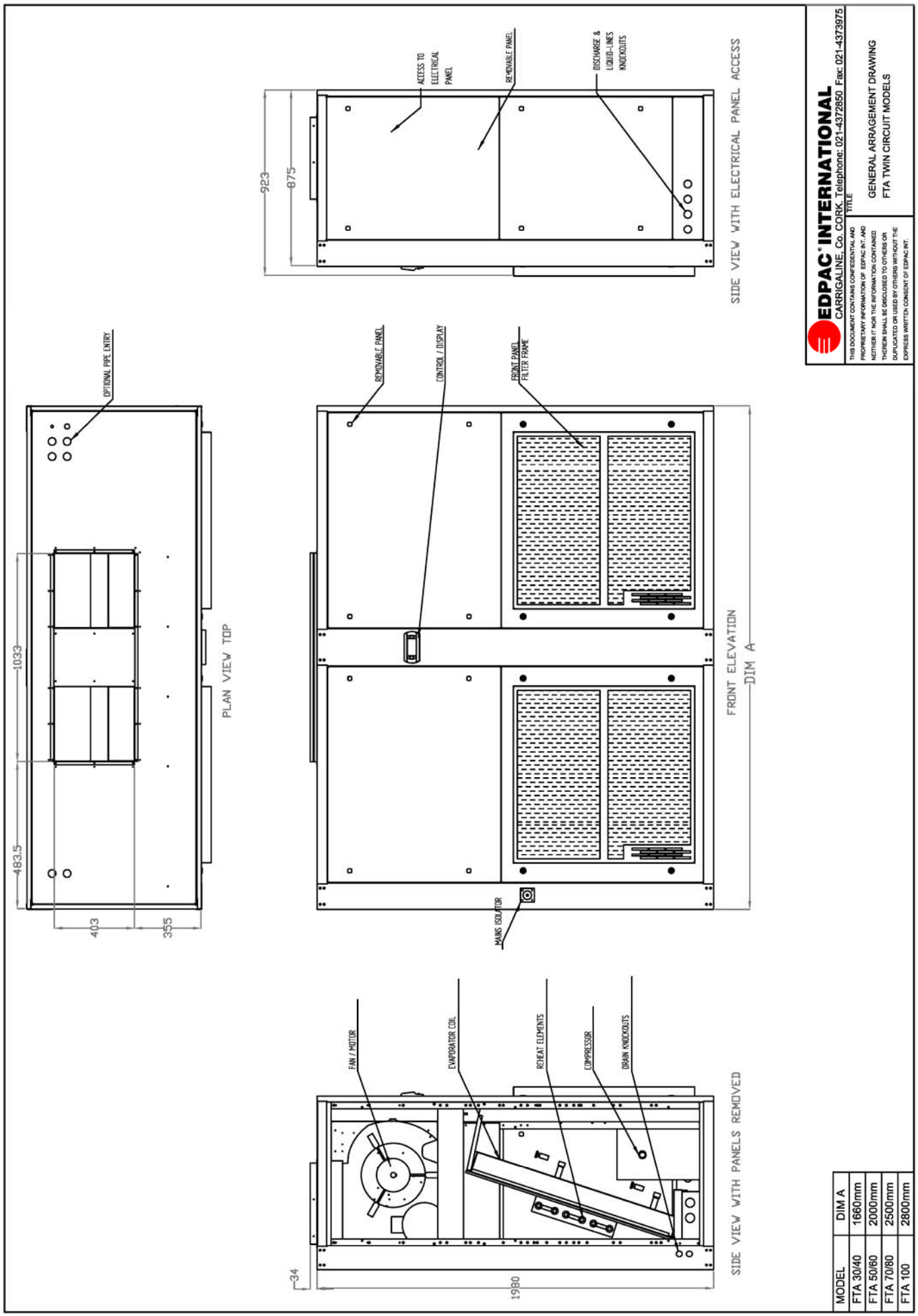
1. FLA = Full Load Amps.
2. Unit maximum FLA is the total of the components, which operate during maximum electrical load conditions. For full function units with humidifier & electric reheat the maximum FLA would be in dehumidification mode ie. cooling + reheat or in cooling and humidification mode ie. cooling + humidifier.
3. In dehumidification mode, calculate the max FLA based on single compressor FLA as only one compressor operates in this mode.
4. In cooling and humidification mode, calculate the max FLA based on dual compressor FLA as both compressors and the humidifier operate in this mode.
5. For all models 2 no. condensers are required, 1 per refrigerant circuit.
6. For compressor FLA, tabulated value is per compressor.
7. For condenser FLA, tabulated value is per condenser.
8. Fan FLA is based on standard AC motors.

GENERIC DIMENSIONAL DRAWING – DOWNFLOW UNIT



MODEL	DIM A
DTA 30/40	1660mm
DTA 50/60	2000mm
DTA 70/80	2500mm
DTA 100	2800mm

GENERIC DIMENSIONAL DRAWING – UPFLOW UNIT



GENERIC ELECTRICAL DRAWING