



Close Control Modular Range



**Engineering Data Manual 50/60Hz
R407C**

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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 other critical Building Services applications. EDPAC systems are designed to provide optimum operating conditions in close control environments.

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 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. This allows for quick and simple room upgrades with minimum disruption. 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. An additional ECX free cooling coil can be provided on direct expansion type units. This ECX coil will result in significant energy saving by providing free cooling in low outdoor ambient conditions with greatly reduced compressor run time. As standard the Modular Range Units are equipped with: Scroll Compressors, Electrode Steam Boiler Humidifiers, Stainless Steel Tubular Finned Electric Reheat, EU4 Filtration, Belt Driven forward curved Centrifugal Fans and R407C Refrigerant. 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 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 in 10kW increments. Units are twin circuit in a single frame and are available in upflow and downflow configurations. 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.

DCS / FCS CHILLED WATER UNITS

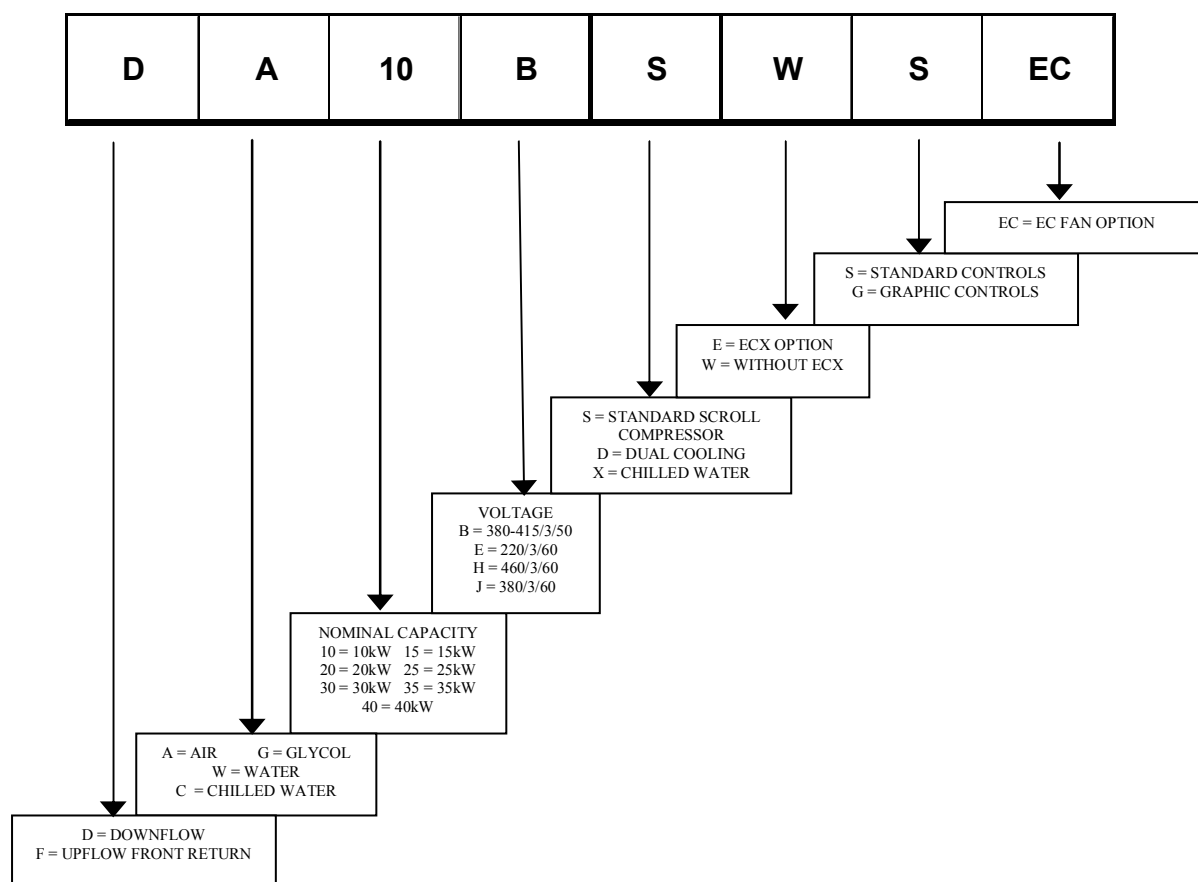
The DCS / FCS range of Close Control Chilled Water units comprises 4 sizes providing nominal capacities of 60, 80, 100 & 120 kW. Units are available in upflow and downflow configurations with top, bottom, front and rear return options. The range of units is ideal for very large data centre applications 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 Modular range of equipment is comprised of single and twin circuit units in modular format with cooling capacities from 10 - 80kW. Units are available in Air, Water, Glycol, ECX and Chilled Water versions and are supplied with matching Air Cooled Condensers and Drycoolers to match your local ambient conditions. Condensers and Drycoolers in this manual are selected for 30°C, 35°C, 40°C & 45°C ambients. For other conditions please refer to your local distributor or the EDPAC Applications Engineering. The equipment nomenclature for a single circuit unit is as below. Duplex or Twin Circuit units have an extra module indicated, for e.g.: DA10/10 BSWs is a 20kW Twin Circuit Air Cooled Unit.



MODULAR RANGE DIMENSIONS AND WEIGHTS

MODULAR RANGE UNITS

Dimensions (mm)

Model	10	15	20	25	30	35	40
W x D x 1980H	775 x 775	775 x 775	1208 x 775	1208 x 775	1308 x 775	1308 x 775	1500 x 775
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
W x D x 1980H	1550 x 775	1550 x 775	2416 x 775	2416 x 775	2616 x 775	2616 x 775	3000 x 775

Weight (kg)

Model	10	15	20	25	30	35	40
Air Cooled	340	340	405	405	470	470	540
Water/Glycol Cooled	360	360	425	425	490	490	560
Chilled Water	280	280	325	325	370	370	430
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air Cooled	680	680	810	810	940	940	1080
Water/Glycol Cooled	720	720	850	850	980	980	1120
Chilled Water	560	560	650	650	740	740	860

CONDENSERS - DIMENSIONS AND WEIGHTS

30 °C Ambient Selection

Model	10	15	20	25	30	35	40
Condenser Model x 1	AGS 402A	AGS 402A	AGS 403A	AGS 501C	AGS 502A	AGS 502A	AGS 502B
Condenser Input Power (kW)	0.6	0.6	0.9	0.7	1.4	1.4	1.4
Freefield SPL @ 10m (dBA)	46	46	48	43	46	46	46
Model	10/10	15/15	10/10	25/25	30/30	35/35	40/40
Condenser Model x 2	AGS 402A	AGS 402A	AGS 403A	AGS 501C	AGS 502A	AGS 502A	AGS 502B
Condenser Input Power (kW)	0.6	0.6	0.9	0.7	1.4	1.4	1.4
Freefield SPL @ 10m dBA	46	46	48	43	46	46	46
Dimensions W x D (mm)	1380x555	1380x555	1980x555	1105x828	2005x828	2005x828	2005x828
Weight (kg) 1No. / 2No.	33 / 66	33 / 66	42 / 84	47 / 94	76 / 152	76 / 152	85 / 170

35 °C Ambient Selection

Model	10	15	20	25	30	35	40
Condenser Model x 1	AGS402A	AGS 402B	AGS403B	AGS403B	AGS502B	AGS502B	AGS502C
Condenser Input Power (kW)	0.6	0.6	0.9	0.9	1.4	1.4	1.4
Freefield SPL @ 10m (dBA)	46	46	48	48	46	46	46
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Condenser Model x 2	AGS402A	AGS 402B	AGS403B	AGS403B	AGS502B	AGS502B	AGS502C
Condenser Input Power (kW)	0.6	0.6	0.9	0.9	1.4	1.4	1.4
Freefield SPL @ 10m (dBA)	46	46	48	48	46	46	46
Dimensions W x D (mm)	1380x555	1380x555	1980x555	1980x555	2005x828	2005x828	2005x828
Weight (kg) 1No. / 2No.	33 / 66	38 / 76	51 / 102	51 / 102	85 / 170	85 / 170	93 / 186

40 °C Ambient Selection

Model	10	15	20	25	30	35	40
Condenser Model x 1	AGS 402B	AGS 501C	AGS 502A	AGS 502B	AGS 502C	AGS 503B	AGS 503B
Condenser Input Power (kW)	0.6	0.7	1.4	1.4	1.4	2.1	2.1
Freefield SPL @ 10m (dBA)	46	43	46	46	46	48	48
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Condenser Model x 2	AGS 402B	AGS 501C	AGS 502A	AGS 502B	AGS 502C	AGS 503B	AGS 503B
Condenser Input Power (kW)	0.6	0.7	1.4	1.4	1.4	2.1	2.1
Freefield SPL @ 10m (dBA)	46	43	46	46	46	48	48
Dimensions W x D (mm)	1380x555	1105x828	2005x828	2005x828	2005x828	2905x828	2905x828
Weight (kg) 1No. / 2No.	38 / 76	47 / 94	76 / 152	85 / 170	93 / 186	123 / 246	123 / 246

45 °C Ambient Selection

Model	10	15	20	25	30	35	40
Condenser Model x 1	AGS 501C	AGS 502B	AGS 502C	AGS 503A	AGS 503C	AGS 504B	AGS 504C
Condenser Input Power (kW)	0.7	1.4	1.4	2.1	2.1	2.8	2.8
Freefield SPL @ 10m (dBA)	43	46	46	48	48	49	49
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Condenser Model x 2	AGS 501C	AGS 502B	AGS 502C	AGS 503A	AGS 503C	AGS 504B	AGS 504C
Condenser Input Power (kW)	0.7	1.4	1.4	2.1	2.1	2.8	2.8
Freefield SPL @ 10m dBA	43	46	46	48	48	49	49
Dimensions W x D (mm)	1105x828	2005x828	2005x828	2905x828	2905x828	3805x828	3805x828
Weight (kg) 1No. / 2No.	47 / 94	85 / 170	93 / 186	111 / 222	136 / 272	178 / 356	192 / 384

Notes:

- Standard Condensers have 4 Pole motors. For 6 Pole & 8 Pole low noise versions, consult factory.
- All Condensers are shipped with mounting feet. When mounted in the horizontal, Condenser models AGS 401 – 403 are 712mm high and Condenser models AGS 501 – 504 are 846 mm high.
- All Condenser data is per Condenser.

DRYCOOLERS - DIMENSIONS AND WEIGHTS

30 °C Ambient Selection

Model	10	15	20	25	30	35	40
Drycooler – Model	DGS 501A	DGS 501A	DGS 501C	DGS 502A	DGS 502B	DGS 502B	DGS 502C
Drycooler Input Power (kW)	0.7	0.7	0.7	1.4	1.4	1.4	1.4
Dimensions W x D (mm)	1105x828	1105x828	1105x828	2005x828	2005x828	2005x828	2005x828
Weight (kg)	67	67	71	117	127	127	140
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Drycooler – Model	DGS 501C	DGS 502B	DGS 502C	DGS 503B	DGS 503C	DGS 504B	DGS 504C
Drycooler Input Power (kW)	0.7	1.4	1.4	2.1	2.1	2.8	2.8
Dimensions W x D (mm)	1105x828	2005x828	2005x828	2905x828	2905x828	3805x828	3805x828
Weight (kg)	71	127	140	182	198	234	252

35 °C Ambient Selection

Model	10	15	20	25	30	35	40
Drycooler – Model	DGS 501B	DGS 502A	DGS 502B	DGS 502C	DGS 503B	DGS 503B	DGS 503C
Drycooler Input Power (kW)	0.7	1.4	1.4	1.4	2.1	2.1	2.1
Dimensions W x D (mm)	1105x828	2005x828	2005x828	2005x828	2905x828	2905x828	2905x828
Weight (kg)	67	117	127	140	182	182	198
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Drycooler – Model	DGS 502B	DGS 503B	DGS 503C	DGS 504C	DGS 634B	DGS 634C	DGS 635B
Drycooler Input Power (kW)	1.4	2.1	2.1	2.8	5.0	5.0	6.3
Dimensions W x D (mm)	2005x828	2905x828	2905x828	3805x828	4335x1034	4335x1034	5335x1034
Weight (kg)	127	182	198	252	328	351	409

40 °C Ambient Selection

Model	10	15	20	25	30	35	40
Drycooler – Model	DGS 501B	DGS 502A	DGS 502B	DGS 502B	DGS 503B	DGS 503B	DGS 503C
Drycooler Input Power (kW)	0.7	1.4	1.4	1.4	2.1	2.1	2.1
Dimensions W x D (mm)	1105x828	2005x828	2005x828	2005x828	2905x828	2905x828	2905x828
Weight (kg)	67	117	127	127	182	182	198
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Drycooler – Model	DCS 502B	DCS 503B	DCS 503C	DGS 504C	DGS 634B	DGS 634C	DGS 635B
Drycooler Input Power (kW)	1.4	2.1	2.1	2.8	5.0	5.0	6.3
Dimensions W x D (mm)	2005x828	2905x828	2905x828	3805x828	4335x1034	4335x1034	5335x1034
Weight (kg)	127	182	198	252	328	351	409

45 °C Ambient Selection

Model	10	15	20	25	30	35	40
Drycooler – Model	DGS 502A	DGS 502B	DGS 503B	DGS 503B	DGS 504B	DGS 504B	DGS 504C
Drycooler Input Power (kW)	1.4	1.4	2.1	2.1	2.8	2.8	2.8
Dimensions W x D (mm)	2005x828	2005x828	2905x828	2905x828	3805x828	3805x828	3805x828
Weight (kg)	117	127	182	182	234	234	252
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Drycooler – Model	DGS 503B	DGS 504B	DGS 504C	DGS 634C	DGS 635B	DGS 635C	DGS 636C
Drycooler Input Power (kW)	2.1	2.8	2.8	5.0	6.3	6.3	7.5
Dimensions W x D (mm)	2905x828	3805x828	3805x828	4335x1034	5335x1034	5335x1034	6335x1034
Weight (kg)	182	234	252	351	409	441	527

Notes:

- Standard Drycoolers have 4 Pole motors. For 6 Pole & 8 Pole low noise versions, consult factory.
- All Drycoolers are shipped with mounting feet. When mounted in the horizontal, Drycooler models DGS 501 - 504 are 846 mm high and Drycooler models DGS 632 - 636 are 1171 mm high.
- Drycooler Freefield SPL @ 10m: 501A-C = 43dBA, 502A-C = 46dBA, 503A-C = 48dBA, 632A-C = 49dBA, 633A-C = 51dBA, 634A-C = 52dBA, 635A-C = 53dBA, 636A-C = 54dBA.

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 $\frac{3}{8}$ " 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

Modules shall have independent refrigerant circuits, each with a liquid distributor, expansion valve, solenoid valve, sight glass and filter drier. Pumpdown is standard on air cooled units.

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.

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 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.

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 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 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, settle 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 & Hysteresis adjustment: It shall be possible to adjust the set & hysteresis % values of stepped outputs within the control software.

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 Trend & 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. Groups up to 16 units can be connected & controlled for ma remote display.

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 & 70% for DX 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 instead 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 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 dBA 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.

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 proportional 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.

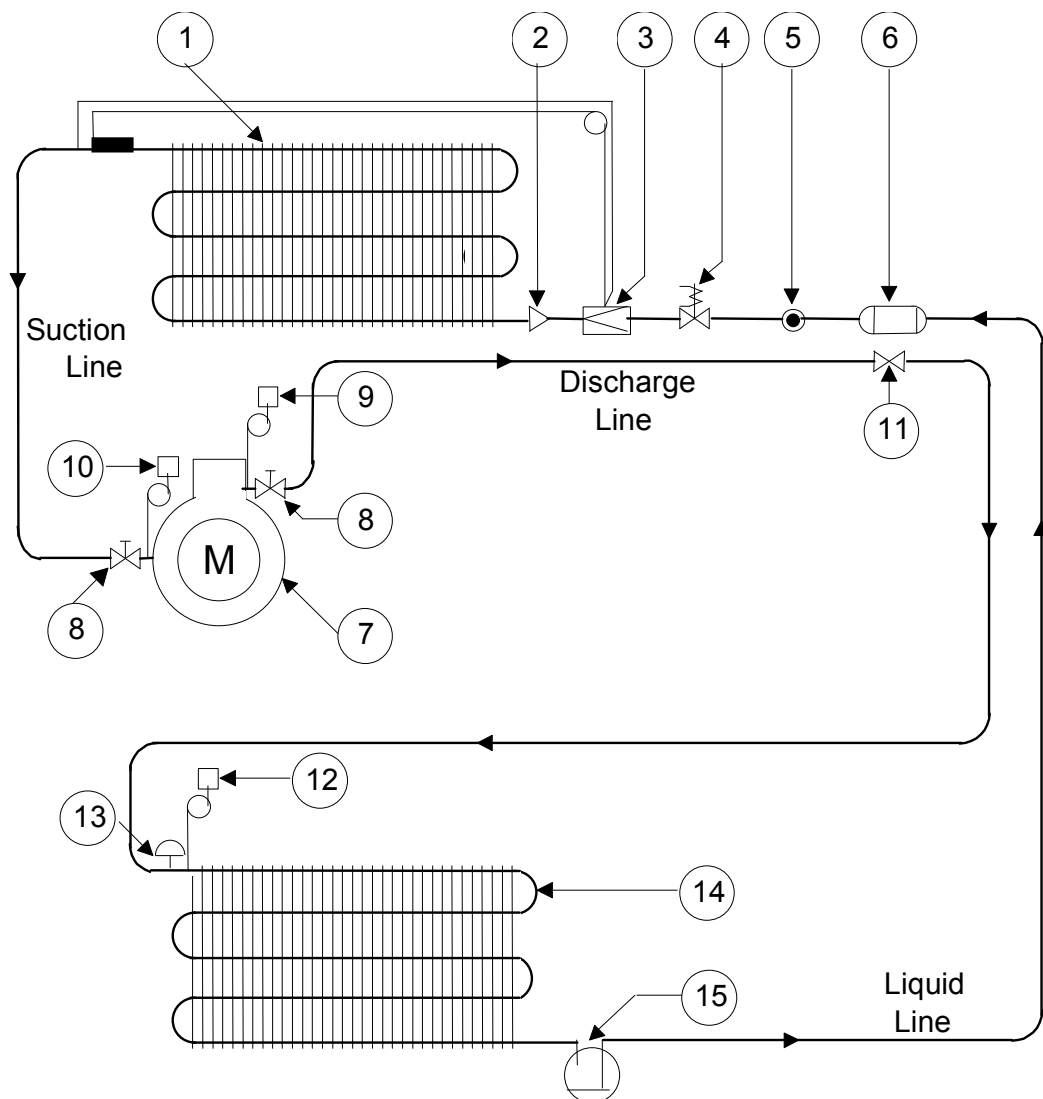
GENERAL ENGINEERING DETAILS

Downflow or Upflow Module								
Module Size		10	15	20	25	30	35	40
All Heat Reject Types								
Coil Data								
Coil Face Area - DX	m ²	0.60	0.60	0.82	0.82	1.10	1.10	1.34
Coil Face Area – C.Water & ECX	m ²	0.60	0.60	0.82	0.82	1.10	1.10	1.34
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	3000	4500	6000	7500	9000	10500	12000
External Static Pressure ESP	Pa	75	75	75	75	75	75	75
Standard FC Centrifugal Fan								
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Fans	-	1	1	1	1	1	1	1
Optional EC Plug Fan								
Quantity		1	1	1	1	1	1	1
Fan Diameter		450	450	500	500	500	560	630
Fan Motor	kW	1.0	1.0	2.7	2.7	2.7	3.1	2.9
Fan Absorbed Power	kW	0.4	0.8	0.9	1.3	2.0	2.2	2.3
Filter Data								
Downflow Filter Size Code	-	1	1	2	2	3	3	1
Downflow Filter Quantity	No.	2	2	4	4	4	4	4
Upflow Filter Size Code	-	1	1	2	2	3	3	4
Upflow Filter Quantity	No.	1	1	2	2	2	2	2
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	55	54	56	55	57	59
Air Cooled Units								
Discharge Connection Size	mm	16	16	22	22	22	22	28
Liquid Connection Size	mm	12	12	12	16	16	16	16
Condenser Conns. Inlet/Outlet 30°C	mm	22/18	22/18	22/18	22/20	28/22	28/22	28/22
Condenser Conns. Inlet/Outlet 35°C	mm	22/18	22/18	28/22	28/22	28/22	28/22	28/22
Condenser Conns. Inlet/Outlet 40°C	mm	28/22	22/20	28/22	28/22	28/22	35/28	35/28
Condenser Conns. Inlet/Outlet 45°C	mm	22/20	28/22	28/22	35/28	35/28	42/35	42/35
Scroll Compressor -50Hz	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Scroll Compressor -60Hz	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Water, Glycol & ECX Cooled								
Condenser Water F&R Pipe Size	mm	25	25	32	32	32	32	32
Drycooler Conns. Inlet/Outlet 30°C	mm	25	25	32	32	40	40	40
Drycooler Conns. Inlet/Outlet 35°C	mm	25	32	40	40	50	50	50
Drycooler Conns. Inlet/Outlet 40°C	mm	25	32	40	40	50	50	50
Drycooler Conns. Inlet/Outlet 45°C	mm	32	40	50	50	65	65	65
Scroll Compressor - 50Hz	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Scroll Compressor - 60Hz	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Chilled Water Cooled								
Chilled Water F&R Pipe Size	mm	28	28	35	35	35	35	35
Control Valve Size	mm	25	25	25	25	32	32	32
Control Valve Kv	-	6.3	6.3	10.0	10.0	16.0	16.0	16.0

Notes

- Indoor unit Freefield SPL dBA levels are measured at 3m. For Duplex or Twin Circuit Units add 3dBA.
- Data is for one module only. For Duplex or Twin Circuit Units, the data must be multiplied accordingly.
- Downflow Filter Size Code: 1 = 495mm x 695mm, 2 = 495mm x 572mm, 3 = 495mm x 622mm.
- Upflow Filter Size Code: 1 = 775mm x 460mm, 2 = 775mm x 448mm, 3 = 775mm x 498 & 4 = 775mm x 590mm.
- All standard filters are 100mm thick and have an efficiency rating of G4 in accordance with EU Standard EN779.
- Water feed electrical conductivity for the humidifier should be in the range of 400-800 micro siemens.
- For Drycooler connection inlet/outlet sizes for Duplex or Twin Circuit Units, refer to Drycooler Drawing or factory.
- For correct installation pipe sizes refer to Refrigerant & Water pipe sizing tables.

WATER COOLED SYSTEM SCHEMATIC



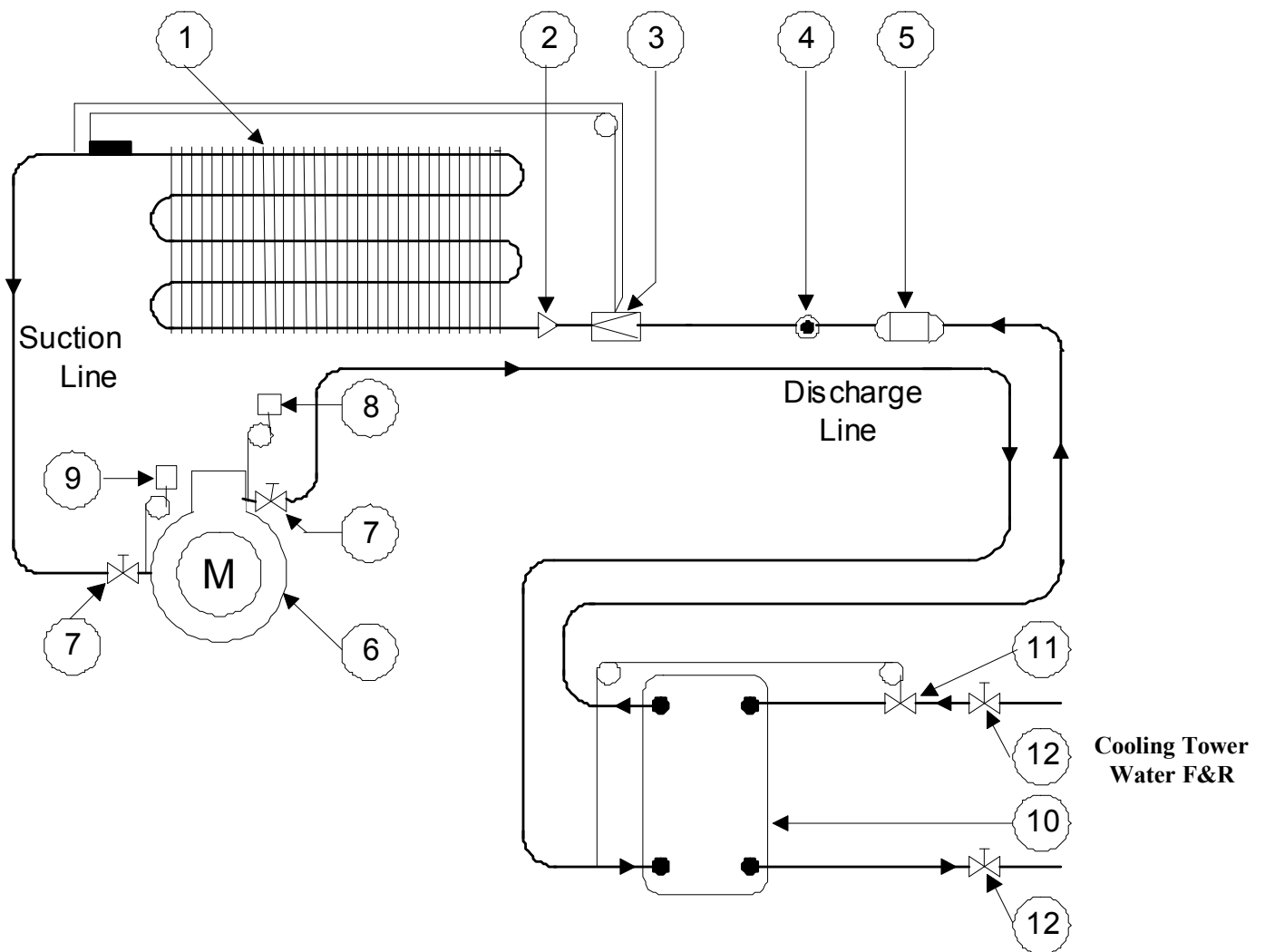
System Components

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).

Note:

1. Items 11, 13 and 15 are supplied by others and field fitted by others.

WATER COOLED SYSTEM SCHEMATIC



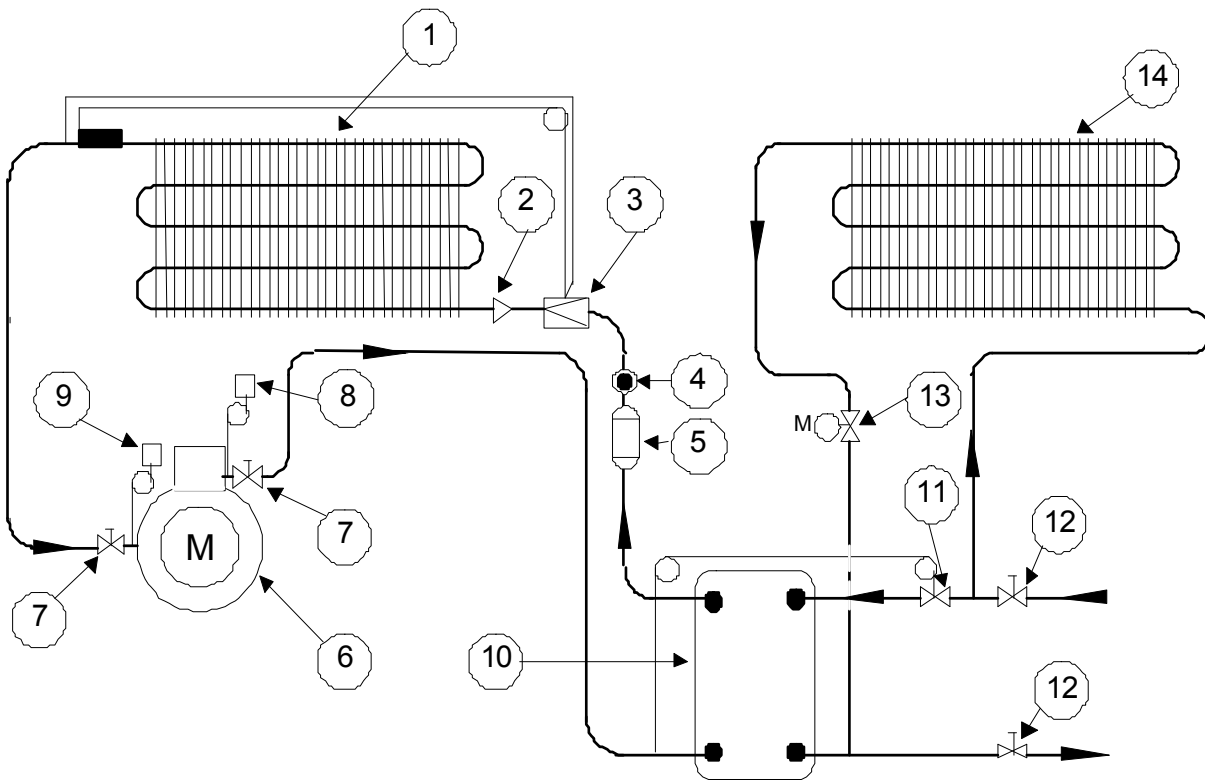
System Components

1. Evaporator Coil.
2. Liquid Distributor.
3. Thermostatic Expansion Valve (externally equalised).
4. Liquid Sight Glass (including moisture indicator).
5. Filter Drier.
6. Compressor.
7. Compressor Service Valves.
8. High Pressure Switch (manual reset).
9. Low Pressure Switch (automatic reset).
10. Plate Heat Exchanger.
11. Water Regulating Valve.
12. Isolating Valves.

Note:

1. Item 12 is field fitted by others.
2. Water regulating valve shown is 2 port, 3 port option available.

GLYCOL COOLED AND ECX FREECOOLING SYSTEM SCHEMATIC



System Components

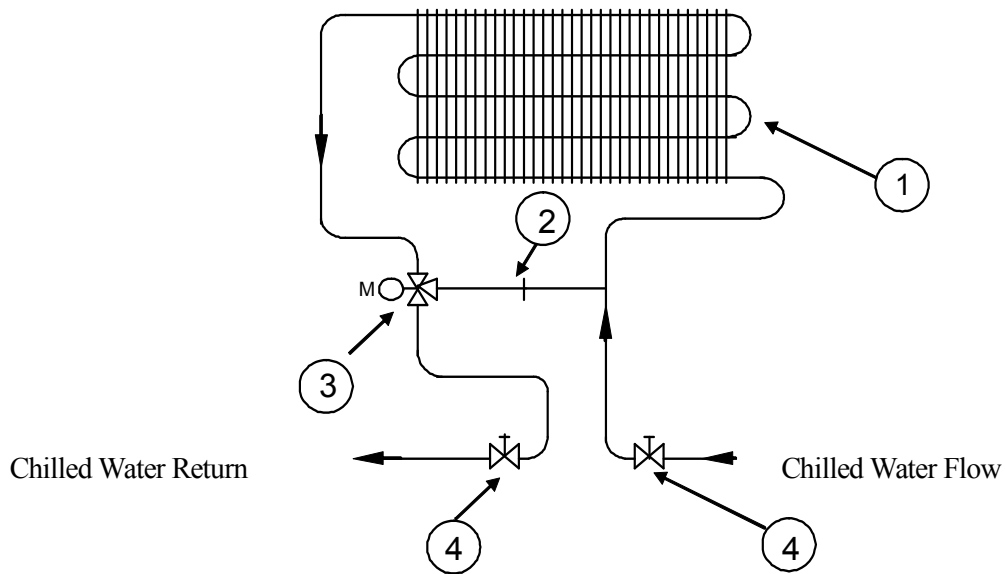
1. Evaporator Coil.
2. Liquid Distributor.
3. Thermostatic Expansion Valve (externally equalised).
4. Liquid Sight Glass (including moisture indicator).
5. Filter Drier.
6. Compressor.
7. Compressor Service Valves.
8. High Pressure Switch (manual reset).
9. Low Pressure Switch (automatic reset).
10. Plate Heat Exchanger.
11. Water Regulating Valve.
12. Isolating Valves.
13. Freecooling Valve.
14. Freecooling Coil.

Note:

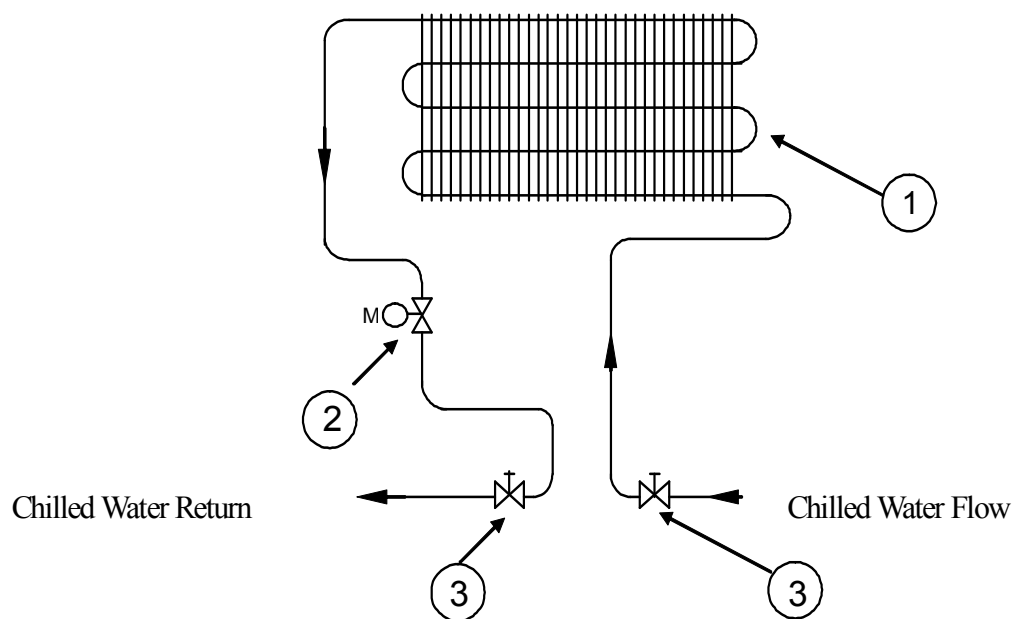
1. Item 12 is field fitted by others.
2. Items 13 & 14 on "ECX Freecooling" option only.
3. Item 11 & 13 water regulating & free-cooling valves shown are 2 port, 3 port options also available.

CHILLED WATER SYSTEM SCHEMATIC

3 Way Valve System



2 Way Valve System



System Components

	3 Way Valve System	2 Way Valve System
1	Chilled Water Coil	Chilled Water Coil
2	Balancing Orifice	2 Way Modulating Valve
3	3 Way Modulating Valve	Isolating Valves
4	Isolating Valves	

Note: Isolating valves are field fitted by others.

AIR COOLED UNITS - COOLING CAPACITIES 50Hz

Model: DA / FA		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	10.5	15.3	21.4	23.9	32.2	34.9	40.9
Sensible Capacity	kW	9.8	13.8	19.9	21.8	29.4	31.6	37.7
Air On: 24°C, 50% RH								
Total Capacity	kW	10.9	16.0	22.3	24.9	33.4	36.5	42.6
Sensible Capacity	kW	9.5	14.2	19.9	22.0	29.7	31.6	37.3
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	9.6	9.6	9.6	15.0	15.0	15.0	15.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Model: DA / FA		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	21.1	30.7	42.8	47.9	64.3	69.9	81.8
Sensible Capacity	kW	19.5	27.7	39.8	43.6	58.9	63.2	75.5
Air On: 24°C, 50% RH								
Total Capacity	kW	21.9	31.9	44.5	49.8	66.9	72.9	85.1
Sensible Capacity	kW	19.0	28.4	39.7	44.0	59.5	63.3	74.5
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	9.6	9.6	15.0	15.0	15.0	15.0	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	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.

WATER COOLED UNITS - COOLING CAPACITIES 50Hz

Model: DW / FW		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	10.6	15.6	21.7	24.3	32.6	35.7	41.6
Sensible Capacity	kW	9.9	14.1	20.2	22.1	29.9	32.2	38.3
Water Flow	l/s	0.6	1.0	1.3	1.5	2.0	2.2	2.6
Unit Pressure Drop	kPa	31	42	58	54	75	48	60
Air On: 24°C, 50% RH								
Total Capacity	kW	11.1	16.2	22.5	25.2	33.9	37.2	43.2
Sensible Capacity	kW	9.6	14.4	20.1	22.3	30.2	32.3	37.8
Water Flow	l/s	0.6	1.0	1.3	1.5	2.0	2.2	2.6
Unit Pressure Drop	kPa	31	42	58	54	75	48	60
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	9.6	9.6	9.6	15.0	15.0	15.0	15.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Model: DW / FW		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	21.3	31.2	43.4	48.6	65.2	71.3	83.1
Sensible Capacity	kW	19.7	28.1	40.3	44.2	59.7	64.5	76.7
Water Flow	l/s	1.2	2.0	2.6	3.0	4.0	4.4	5.2
Unit Pressure Drop	kPa	31	42	58	54	75	48	60
Air On: 24°C, 50% RH								
Total Capacity	kW	22.1	32.4	45.1	50.5	67.8	74.4	86.4
Sensible Capacity	kW	19.2	28.8	40.2	44.6	60.3	64.6	75.7
Water Flow	l/s	1.2	2.0	2.6	3.0	4.0	4.4	5.2
Unit Pressure Drop	kPa	31	42	58	54	75	48	60
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	9.6	9.6	15.0	15.0	15.0	15.0	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8

Notes

- Capacities are based on R407C refrigerant.
- For capacities at other conditions, please refer to the product selection program.
- Units are also available for R134A applications, please contact the factory.
- For 410A, please refer to the R410 catalogue or product selection program.
- Selections based on 5°C flow/return water temperature difference.
- Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

GLYCOL COOLED UNITS - COOLING CAPACITIES 50Hz

Model: DG / FG		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	10.2	14.9	20.6	23.1	30.9	33.5	39.3
Sensible Capacity	kW	9.5	13.4	19.1	21.0	28.3	30.3	36.3
Air On: 24°C, 50% RH								
Total Capacity	kW	10.6	15.4	21.4	24.0	32.2	35.0	40.9
Sensible Capacity	kW	9.8	13.9	19.9	21.9	29.4	31.6	37.7
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	9.6	9.6	9.6	15.0	15.0	15.0	15.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Glycol Flow (25%)	l/s	0.4	0.6	0.8	0.9	1.2	1.3	1.6
Unit Pressure Drop	kPa	29	41	48	42	53	43	40
Drycooler Press. Drop	kPa	34	40	34	36	36	29	37
Model: DG / FG		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	20.4	29.7	41.2	46.2	61.8	67.0	78.7
Sensible Capacity	kW	18.9	26.8	38.3	42.1	56.6	60.6	72.5
Air On: 24°C, 50% RH								
Total Capacity	kW	21.2	30.9	42.9	48.1	64.3	70.0	81.9
Sensible Capacity	kW	19.7	27.8	39.8	43.8	58.9	63.3	75.5
Scroll Compressor	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	9.6	9.6	15.0	15.0	15.0	15.0	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8
Glycol Flow (25%)	l/s	0.8	1.2	1.6	1.8	2.4	2.8	3.2
Unit Pressure Drop	kPa	29	41	48	42	53	43	40
Drycooler Press. Drop	kPa	34	40	37	38	34	28	37

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. Above cooling capacities are for Glycol Cooled Units with Drycoolers. If units are fitted with additional ECX Freecooling coil see also page 23 for the cooling capacity of the additional ECX Freecooling coil.
6. Selections based on 8°C flow/return water temperature difference.
7. Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

AIR COOLED UNITS - COOLING CAPACITIES 60Hz

Model: DA / FA		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	10.3	15.6	20.9	25.6	28.7	38.7	41.9
Sensible Capacity	kW	9.5	14.0	19.4	23.3	26.3	35.0	38.7
Air On: 24°C, 50% RH								
Total Capacity	kW	10.7	16.2	21.7	26.6	29.9	40.2	43.7
Sensible Capacity	kW	9.2	14.4	19.4	23.5	26.6	34.9	38.2
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	12.8	12.8	12.8	20.0	20.0	20.0	20.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Model: DA / FA		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	20.6	31.2	41.8	51.2	57.4	77.4	83.8
Sensible Capacity	kW	19.0	28.0	38.8	46.6	52.6	70.0	77.4
Air On: 24°C, 50% RH								
Total Capacity	kW	21.4	32.4	43.4	53.2	59.8	80.4	87.4
Sensible Capacity	kW	18.4	28.8	38.8	47.0	53.2	69.8	76.4
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	12.8	12.8	20.0	20.0	20.0	20.0	32.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8

Notes

- Capacities are based on R407C refrigerant.
- For capacities at other conditions, please refer to the product selection program.
- Units are also available for R134A applications, please contact the factory.
- For R410A, please refer to the R410A catalogue or product selection program.
- Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.
- Electric reheat capacity is based on 460V/3Ph/60Hz. For 220V/3Ph/60Hz & 380V/3Ph/60Hz capacity see product selection program.

WATER COOLED UNITS - COOLING CAPACITIES 60Hz

Model: DW / FW		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	10.4	15.7	21.2	25.9	29.0	39.2	42.6
Sensible Capacity	kW	9.7	14.2	19.7	23.6	26.5	35.4	39.3
Water Flow	l/s	0.7	1.0	1.3	1.6	1.8	2.3	2.6
Unit Pressure Drop	kPa	29	43	57	54	61	54	62
Air On: 24°C, 50% RH								
Total Capacity	kW	10.8	16.4	22.1	26.9	30.1	40.7	44.4
Sensible Capacity	kW	9.4	14.6	19.7	23.8	26.8	35.3	38.9
Water Flow	l/s	0.7	1.0	1.3	1.6	1.8	2.3	2.6
Unit Pressure Drop	kPa	29	43	57	54	61	54	62
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	12.8	12.8	12.8	20.0	20.0	20.0	20.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Model: DW / FW		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	20.8	31.4	42.4	51.8	58.0	78.4	85.2
Sensible Capacity	kW	19.4	28.4	39.4	47.2	53.0	70.8	78.6
Water Flow	l/s	1.4	2.0	2.6	3.2	3.6	4.6	5.2
Unit Pressure Drop	kPa	29	43	57	54	61	54	62
Air On: 24°C, 50% RH								
Total Capacity	kW	21.7	32.8	44.1	53.9	60.3	81.4	88.8
Sensible Capacity	kW	18.8	29.2	39.4	47.6	53.7	70.7	77.7
Water Flow	l/s	1.4	2.0	2.6	3.2	3.6	4.6	5.2
Unit Pressure Drop	kPa	29	43	57	54	61	54	62
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	12.8	12.8	20.0	20.0	20.0	20.0	32.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	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 Factory.
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.
6. Electric reheat capacity is based on 460V/3Ph/60Hz. For 220V/3Ph/60Hz & 380V/3Ph/60Hz capacity see product selection program.

GLYCOL COOLED UNITS - COOLING CAPACITIES 60Hz

Model: DG / FG		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	9.9	15.0	20.1	24.7	27.8	37.3	40.4
Sensible Capacity	kW	9.1	13.5	18.7	22.5	25.5	33.7	37.2
Air On: 24°C, 50% RH								
Total Capacity	kW	10.3	15.6	20.9	25.7	29.0	38.8	42.1
Sensible Capacity	kW	8.9	13.9	18.7	22.7	25.8	33.7	36.8
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	12.8	12.8	12.8	20.0	20.0	20.0	20.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Glycol Flow (25%)	l/s	0.5	0.7	0.8	1.0	1.2	1.4	1.8
Unit Pressure Drop	kPa	27	43	46	47	46	43	42
Drycooler Press. Drop	kPa	33	40	34	36	35	29	37
Model: DG / FG		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	19.8	30.0	40.2	49.3	55.6	74.6	80.8
Sensible Capacity	kW	18.2	27.0	37.4	45.0	51.0	67.4	74.4
Air On: 24°C, 50% RH								
Total Capacity	kW	20.6	31.2	41.8	51.4	58.0	77.6	84.2
Sensible Capacity	kW	17.8	27.8	37.4	45.4	51.6	67.4	73.6
Scroll Compressor	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	12.8	12.8	20.0	20.0	20.0	20.0	32.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8
Glycol Flow (25%)	l/s	1.0	1.4	1.6	2.0	2.4	2.8	3.6
Unit Pressure Drop	kPa	27	43	46	47	46	43	42
Drycooler Press. Drop	kPa	34	35	37	38	34	28	37

Notes

- Capacities are based on R407C refrigerant.
- For capacities at other conditions, please refer to the Factory.
- Units are also available for R134A applications, please contact the factory.
- Above cooling capacities are for Glycol Cooled Units with Drycoolers. If units are fitted with additional ECX Freecooling coil see also page 23 for the cooling capacity of the additional ECX Freecooling coil.
- Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.
- Electric reheat capacity is based on 460V/3Ph/60Hz. For 220V/3Ph/60Hz & 380V/3Ph/60Hz capacity see product selection program.

ECX FREECOOLING UNITS - COOLING CAPACITIES 50/60Hz

Model: DG_E / FG_E		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	9.5	13.6	17.5	21.0	24.2	27.5	35.0
Sensible Capacity	kW	9.5	13.6	17.4	21.0	24.2	27.4	34.7
Air On: 24°C, 50% RH								
Total Capacity	kW	10.7	15.4	19.8	23.8	27.5	31.0	39.4
Sensible Capacity	kW	10.7	15.3	19.8	23.7	27.3	30.9	39.1
Scroll Comp. - 50Hz	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Scroll Comp. - 60Hz	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	1	1	1	1	1	1	1
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	9.6	9.6	9.6	15.0	15.0	15.0	15.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Glycol Flow (25%)	l/s	0.5	0.7	0.9	1.1	1.4	1.5	1.8
ECX Coil Press. Drop	kPa	22	48	32	39	49	41	60
Model: DG_E / FG_E		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	19.0	27.2	35.0	42.0	48.4	55.0	70.0
Sensible Capacity	kW	19.0	27.2	34.8	42.0	48.4	54.8	69.4
Air On: 24°C, 50% RH								
Total Capacity	kW	21.4	30.8	39.6	47.6	55.0	62.0	78.8
Sensible Capacity	kW	21.4	30.6	39.6	47.4	54.6	61.8	78.2
Scroll Comp. – 50Hz	-	ZR48	ZR72	ZR94	ZR108	ZR144	ZR160	ZR190
Compressor Input Power	kW	3.2	4.7	6.3	6.9	9.1	10.3	12.3
Scroll Comp. – 60Hz	-	ZR40	ZR61	ZR81	ZR94	ZR108	ZR144	ZR160
Compressor Input Power	kW	3.2	4.8	6.4	7.6	8.3	10.9	12.4
Compressor Quantity	No.	2	2	2	2	2	2	2
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	9.6	9.6	15.0	15.0	15.0	15.0	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8
Glycol Flow (25%)	l/s	1.0	1.4	1.8	2.2	2.8	3.0	3.6
ECX Coil Press. Drop	kPa	22	48	32	39	49	41	60

Notes

- Capacities are based on a 25% water glycol solution with a 6°C coil entering temperature and the flow rate of a Glycol unit.
- Tabulated cooling capacities are only for the ECX Freecooling coil fitted in Glycol type units with a Freecooling option. For the main unit cooling capacity when operating in compressor mode, refer to page 19 for 50Hz Glycol units and page 22 for 60 Hz Glycol units.
- Cooling performances are gross. For nett capacities please deduct motor power as outlined on general engineering details page.

CHILLED WATER COOLED UNITS - COOLING CAPACITIES 50/60Hz

Model: DC / FC		10	15	20	25	30	35	40
Air On: 22°C, 50% RH								
Total Capacity	kW	11.6	16.0	22.5	26.8	30.8	34.6	40.7
Sensible Capacity	kW	10.5	15.9	21.1	25.4	30.7	34.5	40.6
S.H.R.	-	0.91	0.99	0.94	0.95	1.00	1.00	1.00
Chilled Water Flow	l/s	0.5	0.6	0.9	1.1	1.2	1.4	1.6
Unit Pressure Drop	kPa	20	37	27	38	29	35	49
Air On: 24°C, 50% RH								
Total Capacity	kW	12.4	16.2	23.8	27.7	35.9	40.3	47.3
Sensible Capacity	kW	10.9	15.4	21.3	25.9	31.7	35.9	41.8
S.H.R.	-	0.88	0.95	0.89	0.94	0.88	0.89	0.88
Chilled Water Flow	l/s	0.5	0.6	0.9	1.2	1.5	1.7	2.0
Unit Pressure Drop	kPa	23	40	31	42	37	45	63
Airflow	m ³ /s	0.83	1.25	1.67	2.08	2.50	2.92	3.33
No. of Fans	No.	1	1	1	1	1	1	1
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	1	1	1	1	1	1	1
Electric Reheat	kW	9.6	9.6	9.6	15.0	15.0	15.0	15.0
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	3.0	3.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	2.2	2.2	5.8	5.8	5.8
Model: DC / FC		10/10	15/15	20/20	25/25	30/30	35/35	40/40
Air On: 22°C, 50% RH								
Total Capacity	kW	23.2	32.0	45.0	53.6	61.6	69.2	81.4
Sensible Capacity	kW	21.0	31.8	42.2	50.8	61.4	69.0	81.2
S.H.R.	-	0.91	0.99	0.94	0.95	1.00	1.00	1.00
Chilled Water Flow	l/s	1.0	1.2	1.8	2.4	2.6	3.0	3.4
Unit Pressure Drop	kPa	21	39	28	40	31	37	52
Air On: 24°C, 50% RH								
Total Capacity	kW	24.8	32.4	47.6	55.4	71.8	80.6	94.6
Sensible Capacity	kW	21.8	30.8	42.6	51.8	63.4	71.8	83.6
S.H.R.	-	0.88	0.95	0.89	0.94	0.88	0.89	0.88
Chilled Water Flow	l/s	1.0	1.2	1.8	2.4	3.0	3.4	4.0
Unit Pressure Drop	kPa	23	40	31	42	37	45	63
Airflow	m ³ /s	1.66	2.50	3.34	4.16	5.00	5.84	6.66
No. of Fans	No.	2	2	2	2	2	2	2
Fan Motor	kW	0.75	1.10	1.50	2.20	2.20	3.00	4.00
No. of Motors	No.	2	2	2	2	2	2	2
Electric Reheat	kW	9.6	9.6	15.0	15.0	15.0	15.0	24.9
No. of Steps	No.	2	2	2	2	2	2	2
Humidifier Capacity	kg/hr	3.0	3.0	8.0	8.0	8.0	8.0	8.0
Humidifier Power	kW	2.2	2.2	5.8	5.8	5.8	5.8	5.8

Notes

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

Air Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.1	2.7	3.6	4.9	4.9	6.4	8.3
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	21.7
Humidifier FLA	3.2	3.2	3.2	3.2	8.4	8.4	8.4
Scroll Compressor FLA	6.2	8.3	12.0	12.9	16.3	19.0	24.9
Condenser FLA 30°C	2.4	2.4	3.6	3.0	6.0	6.0	6.0
Condenser FLA 35°C	2.4	2.4	3.6	3.6	6.0	6.0	6.0
Condenser FLA 40°C	2.4	3.0	6.0	6.0	6.0	9.0	9.0
Condenser FLA 45°C	3.0	6.0	6.0	9.0	9.0	12.0	12.0
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.2	5.4	7.2	9.8	9.8	12.8	16.6
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	35.9
Humidifier FLA	3.2	3.2	8.4	8.4	8.4	8.4	8.4
Scroll Compressor FLA	12.4	16.6	24.0	25.8	32.6	38.0	49.8
Condenser FLA 30°C	4.8	4.8	7.2	6.0	12.0	12.0	12.0
Condenser FLA 35°C	4.8	4.8	7.2	7.2	12.0	12.0	12.0
Condenser FLA 40°C	4.8	6.0	12.0	12.0	12.0	18.0	18.0
Condenser FLA 45°C	6.0	12.0	12.0	18.0	18.0	24.0	24.0

Water Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.1	2.7	3.6	4.9	4.9	6.4	8.3
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	21.7
Humidifier FLA	3.2	3.2	3.2	3.2	8.4	8.4	8.4
Scroll Compressor FLA	6.2	8.3	12.0	12.9	16.3	19.0	24.9
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.2	5.4	7.2	9.8	9.8	12.8	16.6
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	35.9
Humidifier FLA	3.2	3.2	8.4	8.4	8.4	8.4	8.4
Scroll Compressor FLA	12.4	16.6	24.0	25.8	32.6	38.0	49.8

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Glycol / ECX Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.1	2.7	3.6	4.9	4.9	6.4	8.3
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	21.7
Humidifier FLA	3.2	3.2	3.2	3.2	8.4	8.4	8.4
Scroll Compressor FLA	6.2	8.3	12.0	12.9	16.3	19.0	24.9
Drycooler FLA 30°C	1.4	1.4	1.4	2.8	2.8	2.8	2.8
Drycooler FLA 35°C	1.4	2.8	2.8	2.8	4.2	4.2	4.2
Drycooler FLA 40°C	1.4	2.8	2.8	2.8	4.2	4.2	4.2
Drycooler FLA 45°C	2.8	2.8	4.2	4.2	5.6	5.6	5.6
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.2	5.4	7.2	9.8	9.8	12.8	16.6
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	35.9
Humidifier FLA	3.2	3.2	8.4	8.4	8.4	8.4	8.4
Scroll Compressor FLA	12.4	16.6	24.0	25.8	32.6	38.0	49.8
Drycooler FLA 30°C	1.4	2.8	2.8	4.2	4.2	5.6	5.6
Drycooler FLA 35°C	2.8	4.2	4.2	5.6	9.9	9.9	12.4
Drycooler FLA 40°C	2.8	4.2	4.2	5.6	9.9	9.9	12.4
Drycooler FLA 45°C	4.2	5.6	5.6	9.9	12.4	12.4	14.9

Chilled Water Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.1	2.7	3.6	4.9	4.9	6.4	8.3
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	21.7
Humidifier FLA	3.2	3.2	3.2	3.2	8.4	8.4	8.4
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.2	5.4	7.2	9.8	9.8	12.8	16.6
Reheat FLA	13.9	13.9	13.9	21.7	21.7	21.7	35.9
Humidifier FLA	3.2	3.2	8.4	8.4	8.4	8.4	8.4

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Air Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.8	4.9	6.6	8.9	8.9	11.6	15.1
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	39.5
Humidifier FLA	5.8	5.8	5.8	5.8	15.3	15.3	15.3
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0
Condenser FLA 30°C	2.8	2.8	4.2	3.9	7.8	7.8	7.8
Condenser FLA 35°C	2.8	2.8	4.2	4.2	7.8	7.8	7.8
Condenser FLA 40°C	2.8	3.9	7.8	7.8	7.8	11.7	11.7
Condenser FLA 45°C	3.9	7.8	7.8	11.7	11.7	15.6	15.6
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	7.6	9.8	13.2	17.8	17.8	23.2	30.2
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	65.3
Humidifier FLA	5.8	5.8	15.3	15.3	15.3	15.3	15.3
Scroll Compressor FLA	20.0	29.2	40.4	48.0	51.6	65.2	76.0
Condenser FLA 30°C	5.6	5.6	8.4	7.8	15.6	15.6	15.6
Condenser FLA 35°C	5.6	5.6	8.4	8.4	15.6	15.6	15.6
Condenser FLA 40°C	5.6	7.8	15.6	15.6	15.6	23.4	23.4
Condenser FLA 45°C	7.8	15.6	15.6	23.4	23.4	31.2	31.2

Water Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.8	4.9	6.6	8.9	8.9	11.6	15.1
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	39.5
Humidifier FLA	5.8	5.8	5.8	5.8	15.3	15.3	15.3
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	7.6	9.8	13.2	17.8	17.8	23.2	30.2
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	65.3
Humidifier FLA	5.8	5.8	15.3	15.3	15.3	15.3	15.3
Scroll Compressor FLA	20.0	29.2	40.4	48.0	51.6	65.2	76.0

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Glycol / ECX Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.8	4.9	6.6	8.9	8.9	11.6	15.1
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	39.5
Humidifier FLA	5.8	5.8	5.8	5.8	15.3	15.3	15.3
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0
Drycooler FLA 30°C	3.9	3.9	3.9	7.8	7.8	7.8	7.8
Drycooler FLA 35°C	3.9	7.8	7.8	7.8	11.7	11.7	11.7
Drycooler FLA 40°C	3.9	7.8	7.8	7.8	11.7	11.7	11.7
Drycooler FLA 45°C	7.8	11.7	11.7	11.7	15.6	15.6	15.6
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	7.6	9.8	13.2	17.8	17.8	23.2	30.2
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	65.3
Humidifier FLA	5.8	5.8	15.3	15.3	15.3	15.3	15.3
Scroll Compressor FLA	20.0	29.2	40.4	48.0	51.6	65.2	76.0
Drycooler FLA 30°C	3.9	7.8	7.8	11.7	11.7	15.6	15.6
Drycooler FLA 35°C	7.8	11.7	11.7	15.6	18.4	18.4	23.0
Drycooler FLA 40°C	7.8	11.7	11.7	15.6	18.4	18.4	23.0
Drycooler FLA 45°C	11.7	15.6	15.6	18.4	18.4	23.0	27.6

Chilled Water Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.8	4.9	6.6	8.9	8.9	11.6	15.1
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	39.5
Humidifier FLA	5.8	5.8	5.8	5.8	15.3	15.3	15.3
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	7.6	9.8	13.2	17.8	17.8	23.2	30.2
Reheat FLA	25.3	25.3	25.3	39.5	39.5	39.5	65.3
Humidifier FLA	5.8	5.8	15.3	15.3	15.3	15.3	15.3

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Air Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.2	2.9	3.8	5.2	5.2	6.8	8.8
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	20.6
Humidifier FLA	3.4	3.4	3.4	3.4	8.9	8.9	8.9
Scroll Compressor FLA	5.0	7.3	10.1	12.0	12.9	16.3	19.0
Condenser FLA 30°C	1.2	1.2	1.8	1.6	3.2	3.2	3.2
Condenser FLA 35°C	1.2	1.2	1.8	1.8	3.2	3.2	3.2
Condenser FLA 40°C	1.2	1.6	3.2	3.2	3.2	4.8	4.8
Condenser FLA 45°C	1.6	3.2	3.2	4.8	4.8	5.6	5.6
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.4	5.8	7.6	10.4	10.4	13.6	17.6
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	34.2
Humidifier FLA	3.4	3.4	8.9	8.9	8.9	8.9	8.9
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0
Condenser FLA 30°C	2.4	2.4	3.6	3.2	6.4	6.4	6.4
Condenser FLA 35°C	2.4	2.4	3.6	3.6	6.4	6.4	6.4
Condenser FLA 40°C	2.4	3.2	6.4	6.4	6.4	9.6	9.6
Condenser FLA 45°C	3.2	6.4	6.4	9.6	9.6	11.2	11.2

Water Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.2	2.9	3.8	5.2	5.2	6.8	8.8
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	20.6
Humidifier FLA	3.4	3.4	3.4	3.4	8.9	8.9	8.9
Scroll Compressor FLA	5.0	7.3	10.1	12.0	12.9	16.3	19.0
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.4	5.8	7.6	10.4	10.4	13.6	17.6
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	34.2
Humidifier FLA	3.4	3.4	8.9	8.9	8.9	8.9	8.9
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Glycol / ECX Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.2	2.9	3.8	5.2	5.2	6.8	8.8
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	20.6
Humidifier FLA	3.4	3.4	3.4	3.4	8.9	8.9	8.9
Scroll Compressor FLA	5.0	7.3	10.1	12.0	12.9	16.3	19.0
Drycooler FLA 30°C	1.6	1.6	1.6	3.2	3.2	3.2	3.2
Drycooler FLA 35°C	1.6	3.2	3.2	3.2	4.8	4.8	4.8
Drycooler FLA 40°C	1.6	3.2	3.2	3.2	4.8	4.8	4.8
Drycooler FLA 45°C	3.2	3.2	4.8	4.8	6.4	6.4	6.4
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.4	5.8	7.6	10.4	10.4	13.6	17.6
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	34.2
Humidifier FLA	3.4	3.4	8.9	8.9	8.9	8.9	8.9
Scroll Compressor FLA	10.0	14.6	20.2	24.0	25.8	32.6	38.0
Drycooler FLA 30°C	1.6	3.2	3.2	4.8	4.8	6.4	6.4
Drycooler FLA 35°C	3.2	4.8	4.8	6.4	13.6	13.6	17.0
Drycooler FLA 40°C	3.2	4.8	4.8	6.4	13.6	13.6	17.0
Drycooler FLA 45°C	4.8	6.4	6.4	13.6	17.0	17.0	20.4

Chilled Water Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	2.2	2.9	3.8	5.2	5.2	6.8	8.8
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	20.6
Humidifier FLA	3.4	3.4	3.4	3.4	8.9	8.9	8.9
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	4.4	5.8	7.6	10.4	10.4	13.6	17.6
Reheat FLA	13.2	13.2	13.2	20.6	20.6	20.6	34.2
Humidifier FLA	3.4	3.4	8.9	8.9	8.9	8.9	8.9

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For glycol Cooled Units with drycoolers, please note that drycooler fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Air Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	1.8	2.3	3.1	4.3	4.3	5.6	7.2
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	25.1
Humidifier FLA	2.8	2.8	2.8	2.8	7.3	7.3	7.3
Scroll Compressor FLA	6.0	8.8	12.1	14.4	15.5	19.6	22.8
Condenser FLA 30°C	1.6	1.6	2.4	1.0	2.0	2.0	2.0
Condenser FLA 35°C	1.6	1.6	2.4	2.4	2.0	2.0	2.0
Condenser FLA 40°C	1.6	1.0	2.0	2.0	2.0	3.0	3.0
Condenser FLA 45°C	1.0	2.0	2.0	3.0	3.0	4.0	4.0
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.6	4.6	6.2	8.6	8.6	11.2	14.4
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	41.3
Humidifier FLA	2.8	2.8	7.3	7.3	7.3	7.3	7.3
Scroll Compressor FLA	12.0	17.6	24.2	28.8	31.0	39.2	45.6
Condenser FLA 30°C	3.2	3.2	4.8	2.0	4.0	4.0	4.0
Condenser FLA 35°C	3.2	3.2	4.8	4.8	4.0	4.0	4.0
Condenser FLA 40°C	3.2	2.0	4.0	4.0	4.0	6.0	6.0
Condenser FLA 45°C	2.0	4.0	4.0	6.0	6.0	8.0	8.0

Water Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	1.8	2.3	3.1	4.3	4.3	5.6	7.2
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	25.1
Humidifier FLA	2.8	2.8	2.8	2.8	7.3	7.3	7.3
Scroll Compressor FLA	6.0	8.8	12.1	14.4	15.5	19.6	22.8
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.6	4.6	6.2	8.6	8.6	11.2	14.4
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	41.3
Humidifier FLA	2.8	2.8	7.3	7.3	7.3	7.3	7.3
Scroll Compressor FLA	12.0	17.6	24.2	28.8	31.0	39.2	45.6

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.

Glycol / ECX Cooled Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	1.8	2.3	3.1	4.3	4.3	5.6	7.2
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	25.1
Humidifier FLA	2.8	2.8	2.8	2.8	7.3	7.3	7.3
Scroll Compressor FLA	6.0	8.8	12.1	14.4	15.5	19.6	22.8
Drycooler FLA 30°C	1.0	1.0	1.0	2.0	2.0	2.0	2.0
Drycooler FLA 35°C	1.0	2.0	2.0	2.0	3.0	3.0	3.0
Drycooler FLA 40°C	1.0	2.0	2.0	2.0	3.0	3.0	3.0
Drycooler FLA 45°C	2.0	2.0	3.0	3.0	4.0	4.0	4.0
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.6	4.6	6.2	8.6	8.6	11.2	14.4
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	41.3
Humidifier FLA	2.8	2.8	7.3	7.3	7.3	7.3	7.3
Scroll Compressor FLA	12.0	17.6	24.2	28.8	31.0	39.2	45.6
Drycooler FLA 30°C	1.0	2.0	2.0	3.0	3.0	4.0	4.0
Drycooler FLA 35°C	2.0	3.0	3.0	4.0	11.2	11.2	14.0
Drycooler FLA 40°C	2.0	3.0	3.0	4.0	11.2	11.2	14.0
Drycooler FLA 45°C	3.0	4.0	4.0	11.2	14.0	14.0	16.8

Chilled Water Models

Model	10	15	20	25	30	35	40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	1.8	2.3	3.1	4.3	4.3	5.6	7.2
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	25.1
Humidifier FLA	2.8	2.8	2.8	2.8	7.3	7.3	7.3
Model	10/10	15/15	20/20	25/25	30/30	35/35	40/40
Controls FLA	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Fans FLA	3.6	4.6	6.2	8.6	8.6	11.2	14.4
Reheat FLA	16.1	16.1	16.1	25.1	25.1	25.1	41.3
Humidifier FLA	2.8	2.8	7.3	7.3	7.3	7.3	7.3

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 i.e. cooling + reheat.
3. In dehumidification in Duplex or Twin Circuit Units, calculate the max FLA based on single module compressor FLA as only one compressor operates in dehumidification mode.
4. For Air Cooled Units, the condenser fan FLA is based on all fans being single phase.
5. For Duplex or Twin Circuit Air Cooled units only consider 1 x condenser in maximum FLA calculator in dehumidification mode as only 1 x compressor can operate.
6. For Glycol Cooled Units with Drycoolers, please note that Drycooler Fans are all 3 phase on/off. Head pressure control is carried out by a water regulating valve in the indoor unit.