



## DB-Aire II Systems 50/60Hz

Precision Environmental Control Unit  
Cooling Capacity: 2 to 26 TR (7 to 91 kW)



DB-Aire II (Outdoor Unit)



DB-Aire II (Indoor Unit)



# DUNHAM-BUSH®

Products that perform...By people who care



# DB-AIRE II

## Precision Environmental Control Systems For Technological Room Applications

### DB-AIRE II AIR-COOLED DX & CHILLED WATER SYSTEMS

Today's technology rooms require precise, stable environments and design in order for sensitive electronics to operate optimally. Precision air conditioning is designed for close temperature and humidity control. It provides high reliability operation with the ease of service, system flexibility and redundancy necessary to keep the electronic equipments up and running 24 hours a day, 365 days a year.

DB-AIRE II another milestone series offers a wide range of capacities in superior compact, stylish black themed attractive furniture grade cabinets in Upflow/ Downflow configuration to provide room-based cooling, control of perfect humidification and air filtration.

## GENERAL INFORMATION

DB-Aire II units are precision environmental control systems that bring a new standard of compact, flexibility and reliable performance to the computer room. Because room requirements differ, DB-Aire II offers a wide range of sizes and styles.

DB-Aire II units (R410A) are ETL listed for North America and Canada regions and certified to AHRI Standard 1360. Optional ETL listed for other regions are available.

### DB-AIRE II SYSTEMS

DBAIRE II comes in 2 systems under Air cooled DX and Chilled water system. The nominal capacity range is 2 to 26TR (7 to 91kW) of cooling.

### COMPUTER COMFORT

Computer rooms require air which is clean and properly distributed with precisely controlled temperatures and humidity. Building HVAC systems simply are not designed to meet these demands. But, DB-Aire II units easily accomplish these goals with top-rated efficiency, 24 hours per day 7 days a week! DB-Aire II units have been designed to meet the demanding requirements of the most advanced computer room.

Although building HVAC systems cool your staff, they fall short of your computer's comfort need. And they are unable to provide the close humidity control required in a modern data processing centre.

### DESIGN FEATURES

- Compact cabinet with anodized aluminum frame, stylish black powder coated panels of 25mm thickness with closed cell Polyethylene (PE) foam insulation.
- High efficiency single (DBA 02-13) and dual (DBA 14-26) scroll compressors with rotalock connection for ease of service (for Air Cooled DX Systems).

- High-low pressure cutout to protect compressor (for Air Cooled DX Systems).
- Specially built with non screw fixed panels where no special tools required, front access for easier service and maintenance
- TEFC motor with low speed belt driven DIDW centrifugal fan.
- Large faced area evaporator coil with hydrophilic fins.
- Deep pleated disposable filter of MERV 7 (Ashrae 52.2). Stainless steel finned tabular type electric heater.
- 3-way modulating valve provides accurate temperature control and dehumidification (for Chilled Water Systems).
- Integrated control system within the unit with panel mounting 4.3" graphical color touch screen for temperature/ humidity/alarm control and monitoring.
- Vision 2020i connectivity to BMS for telemonitoring.
- Electronic Expansion Valve (EEV) for efficient capacity modulation and improve performance (optional).
- Hot gas reheat for Air Cooled DX systems (optional).
- Supply air plenum box for upflow model (optional).
- Steam generator humidifier (optional).
- Floor water detection alarm (optional).
- VFD applied to regulate airflow thus reducing fan input power for energy saving (optional).

### HIGH PERFORMANCE LOW COST

DB-Aire II's high-tech, furniture look is clue to its high performance but belies its more than competitive price. Every DB-Aire II unit comes with a commitment to excellence as standard equipment.

## TABLE OF CONTENTS

	Page No		Page No
General Information .....	2	Dual Coils Option .....	14
Nomenclature .....	3	Electrical Data .....	15
DB-Aire II Monitoring/ Control .....	4	Dimensional Data .....	19
DB-Aire II Design Features .....	7	Remote Air-Cooled Condensers .....	20
Performance and Technical Data .....	8	Typical Wiring Schematic .....	21
		Guide Specifications .....	25



Product that perform...By people who care

# NOMENCLATURE

## INDOOR UNIT

String	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	D	B	A	D	0	2	G	A	U	D	B	H	G	S	K	P	S	E	V	N	1	Q

**1 & 2 DB-AIRE II**

**3 SYSTEM**  
 A = Air-Cooled (DX)  
 C = Chilled Water (CW)  
 D = Dual Coils (DX+CW)\*  
 R = Air-Cooled DX with Hot Gas Reheat  
*\*Model 26 Dual Coils not available*

**4 CONFIGURATION**  
 U = Upflow  
 D = Downflow

**5 & 6 MODEL**  
 # Std Airflow, CFM(m<sup>3</sup>/h)  
 02 1,500 (2,548)  
 03 1,500 (2,548)  
 04 2,000 (3,398)  
 05 2,500 (4,247)  
 07 4,000 (6,796)  
 09 5,000 (8,495)  
 11 6,000 (10,194)  
 13 6,500 (11,043)  
 14 8,000 (13,592)  
 16 10,000 (16,989)  
 19 11,000 (18,688)  
 22 11,000 (18,688)  
 26 13,000 (22,086) - Dual Coils System Not Available

**7 REFRIGERANT**  
 P = R407C  
 G = R410A  
 N = R22 / Chilled Water Unit

**8 & 9 VOLTAGE OPTIONS**  
 AU = 380~415V/3ph/50Hz  
 AR = 460V/3ph/60Hz  
 AX = 460V/3ph/60Hz\*\*  
 CD = 208V/3ph/60Hz\*\*  
 AN = 230V/3ph/60Hz\*\*  
 EF = 380V/3ph/60Hz  
*\*\*Units are ETL listed (except units with R407C or R22 refrigerant).*

**10 DRAIN PAN OPTIONS**  
 D = Standard GI Painted  
 T = Stainless Steel

**11 DISCHARGE PLENUM OPTION (for Upflow model only)**  
 B = Discharge Plenum  
 N = Not Selected

**12 HUMIDIFIER OPTION**  
 H = Humidifier (water conductivity 75 to 350µS/cm)\*\*  
 N = Not Selected  
*\*\*\*Please consult factory for other water conductivity.*

**22 OTHER SPECIAL OPTION**  
 Q = Special Option  
 N = Not Selected  
*\*\*\*Oil separator is essential for equivalent length more than 100ft [31m]. Please consult factory for further information.*

**21 BMS COMMUNICATION OPTIONS**  
 1 = ModBus RTU RS485  
 2 = ModBus TCP/IP  
 3 = BACnet TCP/IP  
 4 = BACnet MSTP  
 5 = BACnet PTP  
 6 = LONworks  
 7 = GSM Modem  
 8 = SNMP  
 N = Not Selected (Standard unit with one ModBus RTU RS485)

**20 FUTURE OPTION**  
 N = Not Selected

**19 VFD OPTION**  
 V = VFD  
 N = Not Selected

**18 HEATER OPTION**  
 E = Standard Electric Heater  
 N = Hot Gas Reheat  
 (Electric Heater Not Furnished)

**17 SMOKE DETECTOR OPTION**  
 S = Smoke Detector  
 N = Not selected

**16 UNDER FLOOR WATER DETECTOR OPTION**  
 P = Pinhole Probe  
 N = Not selected

**15 PANEL INSULATION OPTIONS**  
 K = Double Skin Panel  
 N = Not Selected. Single Skin Closed Cell Polyethylene (PE) Foam Insulation Panel

**14 EVAPORATOR CONTROL OPTIONS**  
 N = Standard Thermal Expansion Valve (TXV) / Chilled Water System  
 S = Standard Thermal Expansion Valve (TXV) & Liquid Line Solenoid Valve  
 X = Electronic Expansion Valve (EEV)

**13 HOT GAS BYPASS OPTION**  
 G = Hot Gas Bypass  
 N = Not Selected

## Outdoor Unit Nomenclature (for Air Cooled DX-System/ Dual Coils System/ DX-System with Hot Gas Reheat)

String	1	2	3	4	5	6	7	8	9	10	11	12	13
	D	B	R	C	0	4	G	A	U	A	L	1	Q

**1,2,3 & 4 AIR COOLED CONDENSER**

**5 & 6 MODEL**  
 04  
 06  
 08  
 10  
 11  
 13  
 17  
 20  
 26  
 30  
 34  
 40  
 44

**7 REFRIGERANT**  
 P = R22 / R407C  
 G = R410A

**13 OTHER SPECIAL OPTION**  
 Q = Special Option  
 N = Not selected

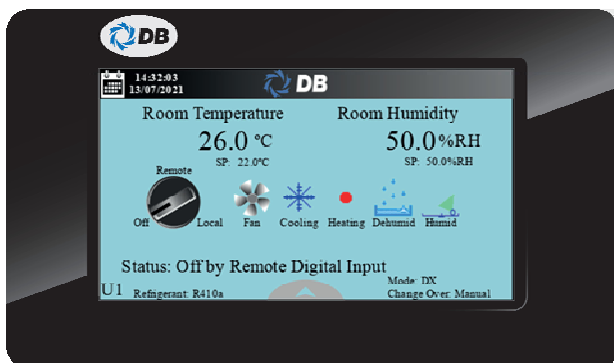
**12 REFRIGERATION CIRCUIT(S)**  
 1 = 1-Circuit (for standard indoor model 02-13)  
 2 = 2-Circuits (for standard indoor model 14-26)

**11 BLACK PAINT (EXTERNAL) OPTION**  
 L = Black Paint on Unit External  
 N = Not selected

**10 CONDENSER FIN OPTIONS**  
 A = Standard Aluminium  
 H = Hydrophilic  
 C = Copper Fin

**8 & 9 VOLTAGE OPTIONS**  
 AU = 380~415V/3ph/50Hz  
 AR = 460V/3ph/60Hz  
 AX = 460V/3ph/60Hz\*\*  
 CD = 208V/3ph/60Hz\*\*  
 AN = 230V/3ph/60Hz\*\*  
 EF = 380V/3ph/60Hz\*\*  
*\*\*Units are ETL listed (except units with R407C or R22 refrigerant).*

# DB-AIRE II MONITORING/ CONTROL



## DB5+ VISION 2020i CONTROLLER

The Vision2020i is a microprocessor-based, programmable electronic controller come with DBGX terminal and optional remote management devices. These devices represent a powerful control system that can be easily interfaced with most Building Management Systems (BMS) available on the market. The Vision2020i controller has been developed by Dunham-Bush to provide solutions to precision air-conditioning in general. In a DBLAN network (Vision2020i Local Area Network) the Vision2020i can be performed as master and slave by connecting to other Vision2020i controllers. Up to 16 devices (DB5+ controllers and DBGX terminals) can be connected together, allowing highly efficient sharing of information. Each device in the DBLAN network can exchange digital or analogue data with all the others.

## DBGX 4.3" COLOR TOUCH SCREEN TERMINAL

The DBGX 4.3" graphic terminal is part of the family of touch screen terminals designed to simplify user interface with the Vision 2020i family for Dunham-Bush's application. The electronic technology used and the new 65K color display means high quality images and advanced functions are available for a superior appearance. The touch screen panel makes interaction between the user and the unit much easier by simplifying navigation between the various screens.

## OPERATION

DBGX touch screen panel makes interaction between the user and the unit much easier by simplifying navigation between the various screens. Touch screen on the DBGX panel allows unit on/off operation, menu selection, operational information, diagnostics, historical data and trend graph. Multi-level authorization password feature prevents unauthorized access. Another feature is that all menu programmed information for basic system operation and alarm

parameters is stored in a non-volatile EEPROM and FLASH-MEMORY where backup battery is not required.

## PROGRAMMABLE FUNCTIONS/ MONITORING

The user friendly touch screen color display permits step-by-step programming and display of the following functions:

- Temperature Set Point 10 to 50°C (50°F- 122°F)
- Temperature Sensitivity 0.5 to 2.7°C (1°F- 5 °F)
- Humidity Set Point (40% - 60% RH)
- Humidity Sensitivity (1% - 10% RH)
- Temperature Alarm Set points
- Humidity Alarm Set points
- Unit Start Time Delay

Normal functions are monitored and displayed on the display panel and include, in addition to the above set points, the following:

- Current Temperature (deg C or deg F)
- Current Humidity (%RH)
- Cooling Stages 1, 2 as applicable
- Heating Stages 1, 2, 3
- Humidification
- Dehumidification

## ALARMS

Alarm conditions are also monitored on the display panel and are enunciated by an audible alarm. The alarm silence button will quiet the audible alarm but the display will continue to indicate the alarm condition until the problem is corrected.

The following alarms are standard:

- Compressor High/Low Pressure
- High and Low Temperature
- High And Low Humidity
- No Airflow
- Filters Blocked
- Humidifier Failure
- Power Failure Restart
- Compressor Short Cycle
- Temperature Sensor Error
- Humidity Sensor Error
- Local Alarm Customer Input Alarm
- Maintenance Due

With add-on optional sensors, the following alarm status can be monitored:

- Under the floor water detection
- No water flows
- Smoke alarm and etc.

In addition, incomparable control settings will be identified on the display panel.

# DB-AIRE II MONITORING/ CONTROL

## HISTORICAL DATA

In order to facilitate maintenance and service, component run times for fan motor, compressor operation, reheat stages, humidification and dehumidification can be recalled and displayed on the DBG5 display panel. The current temperature and humidity, with the minimum and maximum readings for the last 24 hours of operation, can be recalled and displayed. The last ten alarms and hours since occurrence can also be recalled and displayed. The historical data base is stored in FLASH-MEMORY which does not require backup battery in the event of power failure.

## DIAGNOSTICS

Automatic and manual diagnostic sequences simplify troubleshooting.

## PROGRAMMING KEY



The programming keys for the Vision 2020i controllers provide easy software updates during both end-of production testing and maintenance procedures.

## VISION 2020i BMS COMMUNICATION INTERFACES (Optional)

As technology become smarter and more intelligent. The Vision2020i offer BMS interfacing to provide important data and control from control room. Therefore, end user can easily control their needs. The Vision2020i comes with Modbus RTU protocol (RS485 communication) as a standard on J25 BMS2 port. The Modbus protocol is the most widely-used protocol in BMS system. Its character being very simple to implement in all development packages and featuring limited use of the system's hardware & software resources. Below are the available communication interface features of the DB5+ controller:

### 1) Ethernet/BACnet TCPIP Card



The Ethernet/BACnet TCPIP Card offer protocol option of:

- 1.1 Modbus TCPIP. The Modbus protocol is the most widely-used protocol in BMS system. Its character being very simple to implement in all development packages and featuring limited use of the system's hardware & software resources.
- 1.2 BACnet IP. The protocol used of IP communication. The protocol based on the standards defined by US association ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). Implementation of the standards is verified at BTL laboratories (BACnet Testing Laboratories) operated by the BACnet association.
- 1.3 SNMP (Simple Network Management Protocol). The protocol for IP networks defined by the Internet Architecture Board (IAB), in order to define commands used to exchange information between different devices over the network.

### 2) BACnet MS/TP Card



The BACnet MS/TP Card is the BACnet protocol used of RS485 communication. The protocol based on the standards defined by US association ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). Implementation of the standards is verified at BTL laboratories (BACnet Testing Laboratories) operated by the BACnet association.

# DB-AIRE II MONITORING/ CONTROL

---

## 3) LONWORKS Card



The LONWORKS Card is the protocol that was Created by Echelon Corp. The LONWORKS is a leading networking solution for building automation. The communication is based on the FTT10 electrical standard.

## 4) Modbus RTU Card



The Modbus RTU (RS485 communication) Card is a second Modbus RTU protocol available to select.

# DB-AIRE II DESIGN FEATURES

## FRAME AND CABINET

The cabinet comprises an anodized aluminium frame of epoxy powder coated black color paint with nylon corners and removable steel sheet panels. All panels shall be externally installed onto the cabinet by using special stopper system without using screws. The stopper system shall also facilitate the removable of panels for additional ease of field installation, service and maintenance on the system. All panels and access doors shall be fabricated from sturdy heavy gauge of 1.0mm steel sheets with epoxy powder coated oven baked black color paint to provide a durable finish. All panels shall be of 25mm (1 inch) thick single skin and lined with minimum 80kg/m<sup>3</sup> density thermal and acoustical closed cell Polyethylene (PE) foam insulation with fire resistant of Class O (BS 476 Part 6, 7). The system shall be designed for front access only with hinged and lock type full height doors.



## COOLING COIL

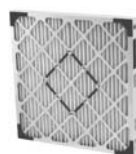
Computer selected coil design, using interwoven coil surface increases unit efficiency at low loads. Air is drawn through the coil at low velocity providing effective surface exposure with minimum turbulence. This provides greater efficiency in the cooling and dehumidification process.

## FAN SECTION

Blowers shall be belt driven double-inlet-double-width (DIDW), statically and dynamically balanced with multiple forward curved blades mounted on a solid steel keyed shaft. Heavy-duty V-belt fan drive (sized for 200% safety factor) with cast iron pulleys keyed and secured to the blower shaft shall be provided.



## FILTERS



The system shall be provided with 2 inches (50mm) deep (for model 02-05) or 4 inches (100mm) deep (for model 07-26) extended surface pleated disposable type filters rated for MERV 7 efficiency to ASHRAE 52.2 standard. Filters shall be withdrawable from the front of the unit.

## ELECTRICAL REHEAT

The three stage stainless steel finned tubular reheat coils provide ample capacity to maintain room dry bulb conditions during a system call for dehumidification. Three equal stages give a more accurate controlled response to the requirements of the computer room. The heating elements are protected by thermal safety switches. The three stages of reheat create a noticeable lowering of energy use.

## HOT GAS REHEAT (OPTIONAL)

The unit shall incorporate a hot gas reheat coil located downstream of the evaporator coil with modulating valve which is completely integrated to the unit's microprocessor control. For units with two refrigerant circuits, each circuit shall operate independently with its own modulating valve.

## HUMIDIFICATION (OPTIONAL)

The disposable cartridge electric steam generator humidifier provides humidification down stream of the cooling coil. The humidifier is designed to allow all units at any voltage to produce full rated steam output at an optimum low water level.

## ELECTRONIC EXPANSION VALVE (EEV) (OPTIONAL)

The refrigerant circuit(s) shall be provided with an Electronic Expansion Valve (EEV) for evaporator in lieu of standard Thermal Expansion Valve (TXV) to allow an efficient modulation control of refrigeration and consistent energy saving performances.

## DB-AIRE II HUMID INTERFACE

The DB-Aire II Humid interface allows the control of humidifiers directly from the DB-Aire II microprocessor controller.

## COMPRESSORIZED SYSTEMS

The refrigeration system uses highly efficient and quiet scroll compressors. The scroll compressor has a high EER, low sound power level and is highly reliable. The high efficiency is due to the controlled orbit with floating seals and advanced scroll geometry design. There is no contact of the mechanical parts in the scroll design which eliminates mechanical wear and tear. The motor is 100% cooled by suction gas. A check valve is located directly above the fixed scroll discharge port. This prevents the compressor from running backwards after the power has been switched off (i.e. no rattling and no shut-down noise). The motor is fitted with a thermostat which protects the compressor if a malfunction occurs. The refrigeration circuit includes built in compressor overload protection, filter drier, sight glass, adjustable expansion valve, low pressure override timer, manual reset high pressure control, short-cycle timer and rotalock service valves.



## AIR COOLED SYSTEMS

A wide range of sizes of remote mounted air cooled condensers are available from DB-Aire II in vertical discharge.

Condensers are manufactured by DB-Aire II and include circuits sized to match the heat rejection of the corresponding compressors. The industrial duty design includes galvanised corrosion resistant housings, high efficiency aluminium finned (optional copper fins available), copper tube coils; coated fan guards, energy efficient thermally protected motors; and integral factory wired and tested control panel.



Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA (R410A)

## AIR COOLED DX SYSTEM @ 35°C (95°F) AMBIENT TEMPERATURE - WITH OR WITHOUT HOT GAS REHEAT

MODEL		DBAD/U 02 DBRD/U 02	DBAD/U 03 DBRD/U 03	DBAD/U 04 DBRD/U 04	DBAD/U 05 DBRD/U 05	DBAD/U 07 DBRD/U 07	DBAD/U 09 DBRD/U 09
Return Air 75F/62.5F/50% RH (24C/17C/50% RH)	Total Cooling Capacity MBH (kW)	29.7 (8.7)	37.9 (11.1)	49.4 (14.5)	54.9 (16.1)	85.0 (24.9)	106.1 (31.1)
	Sensible Cooling Capacity MBH (kW)	27.6 (8.1)	32.4 (9.5)	39.2 (11.5)	45.0 (13.2)	71.3 (20.9)	91.4 (26.8)
	Sensible Heat Ratio (SHR)	0.93	0.85	0.79	0.82	0.84	0.86
Return Air 72F/60F/50% RH (22C/16C/50% RH)	Total Cooling Capacity MBH (kW)	28.7 (8.4)	36.5 (10.7)	48.1 (14.1)	53.6 (15.7)	82.2 (24.1)	102.0 (29.9)
	Sensible Cooling Capacity MBH (kW)	27.3 (8.0)	32.1 (9.4)	38.9 (11.4)	44.4 (13.0)	69.9 (20.5)	89.4 (26.2)
	Sensible Heat Ratio (SHR)	0.95	0.88	0.81	0.83	0.85	0.88
Return Air 75F/52F Dew Point (24C/11C Dew Point) at Class 1 AHRI 1360 rating condition	Total Cooling Capacity MBH (kW)	28.7 (8.4)	36.9 (10.8)	48.8 (14.3)	54.3 (15.9)	83.3 (24.4)	103.0 (30.2)
	Sensible Cooling Capacity MBH (kW)	25.9 (7.6)	30.7 (9.0)	37.2 (10.9)	43.0 (12.6)	67.6 (19.8)	86.0 (25.2)
COMPRESSOR	Number of Compressor(s)	1	1	1	1	1	1
	Total Power Input (50Hz) kW	2.1	2.8	4.4	4.8	6.9	9.3
	Total Power Input (60Hz) kW	2.2	2.8	4.5	5.1	6.9	8.7
	Hot Gas; Liquid Lines, 50Hz In	1/2 ; 3/8	1/2 ; 3/8	1/2 ; 3/8	1/2 ; 3/8	7/8 ; 5/8	7/8 ; 5/8
	Hot Gas; Liquid Lines, 60Hz In	1/2 ; 3/8	1/2 ; 3/8	1/2 ; 3/8	1/2 ; 3/8	1/2 ; 3/8	7/8 ; 5/8
FAN & MOTOR (INDOOR)	Fan Size	10/8	10/8	10/8	10/8	15/15	15/15
	Air Volume CFM (m³/h)	1,500 (2,548)	1,500 (2,548)	2,000 (3,398)	2,500 (4,247)	4,000 (6,796)	5,000 (8,495)
	External Static Pressure (ESP) in H <sub>2</sub> O (Pa)	0.3 (75)	0.3 (75)	0.3 (75)	0.3 (75)	0.5 (125)	0.5 (125)
	Motor (Standard Single Coil) Hp (kW)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	2.0 (1.5)	2.0 (1.5)	3.0 (2.2)
COIL (DX)	Face Area ft² (m²)	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	12.2 (1.1)	12.2 (1.1)
	Face Velocity FPM (m/s)	270 (1.4)	270 (1.4)	360 (1.8)	450 (2.3)	327 (1.7)	409 (2.1)
	Condensate Drain O.D In	7/8	7/8	7/8	7/8	7/8	7/8
FILTERS (ASHRAE 52.2 MERV 7)	20" x 20" x 2" Qty	2	2	2	2	N/A	N/A
	20" x 20" x 4" Qty	N/A	N/A	N/A	N/A	4	4
	20" x 25" x 4" Qty	N/A	N/A	N/A	N/A	N/A	N/A
REHEAT (Electric)	3-Stages (rated at 415V) MBH (kW)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	41.0 (12.0)	41.0 (12.0)
STEAM HUMIDIFIER (OPTIONAL)	Capacity (max.) lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)
	Power Input (max.) kW	6.0	6.0	6.0	6.0	6.0	6.0
SOUND PRESSURE LEVEL (at 2m distance, free field, downflow)	dBA	56	56	57	57	62	63

## PHYSICAL DATA

Height	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
Width	W	mm (inch)	749 (29.5)	749 (29.5)	749 (29.5)	749 (29.5)	1464 (57.6)	1464 (57.6)
Depth	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
Weight	DBAD/U	kg (lbs)	251 (552)	259 (570)	260 (572)	272 (598)	420 (924)	450 (990)
	DBRD/U	kg (lbs)	265 (583)	273 (601)	274 (603)	286 (629)	442 (972)	472 (1038)

Notes: 1.) Add 457mm (18inch) to height of unit for Discharge Plenum (optional) – Upflow Models only

2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)-Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only





Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA (R410A)

## AIR COOLED DX SYSTEM @ 35°C (95°F) AMBIENT TEMPERATURE - WITH OR WITHOUT HOT GAS REHEAT

MODEL			DBAD/U 11 DBRD/U 11	DBAD/U 13 DBRD/U 13	DBAD/U 14 DBRD/U 14	DBAD/U 16 DBRD/U 16	DBAD/U 19 DBRD/U 19	DBAD/U 22 DBRD/U 22	DBAD/U 26 DBRD/U 26	
Return Air 75F/62.5F/50% RH (24C/17C/50% RH)	Total Cooling Capacity	MBH (kW)	120.4 (35.3)	140.9 (41.3)	169.2 (49.6)	183.2 (53.7)	198.6 (58.2)	233.7 (68.5)	274.0 (80.3)	
	Sensible Cooling Capacity	MBH (kW)	103.4 (30.3)	116.7 (34.2)	142.3 (41.7)	159.3 (46.7)	179.1 (52.5)	195.9 (57.4)	231.3 (67.8)	
	Sensible Heat Ratio (SHR)		0.86	0.83	0.84	0.87	0.90	0.84	0.84	
Return Air 72F/60F/50% RH (22C/16C/50% RH)	Total Cooling Capacity	MBH (kW)	116.4 (34.1)	137.2 (40.2)	163.8 (48.0)	177.8 (52.1)	191.1 (56.0)	226.6 (66.4)	265.5 (77.8)	
	Sensible Cooling Capacity	MBH (kW)	101.3 (29.7)	115.0 (33.7)	139.2 (40.8)	156.3 (45.8)	173.7 (50.9)	192.1 (56.3)	226.9 (66.5)	
	Sensible Heat Ratio (SHR)		0.87	0.84	0.85	0.88	0.91	0.85	0.85	
Return Air 75F/52F Dew Point (24C/11C Dew Point) at Class 1 AHRI 1360 rating condition	Total Cooling Capacity	MBH (kW)	117.0 (34.3)	138.9 (40.7)	166.2 (48.7)	179.8 (52.7)	192.8 (56.5)	228.6 (67.0)	268.2 (78.6)	
	Sensible Cooling Capacity	MBH (kW)	97.2 (28.5)	110.9 (32.5)	134.8 (39.5)	150.5 (44.1)	167.9 (49.2)	184.6 (54.1)	218.7 (64.1)	
COMPRESSOR	Number of Compressor(s)		1	1	2	2	2	2	2	
	Total Power Input (50Hz)	kW	10.5	11.6	13.9	16.2	18.6	20.5	24.0	
	Total Power Input (60Hz)	kW	11.4	12.1	13.6	17.1	21.0	22.1	24.9	
	Hot Gas; Liquid Lines, 50Hz	In	7/8 ; 5/8	7/8 ; 5/8	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	
	Hot Gas; Liquid Lines, 60Hz	In	7/8 ; 5/8	7/8 ; 5/8	1/2(2) ; 3/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	7/8(2) ; 5/8(2)	
FAN & MOTOR (INDOOR)	Fan Size		15/15	15/15	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	
	Air Volume	CFM (m <sup>3</sup> /h)	6,000 (10,194)	6,500 (11,043)	8,000 (13,592)	10,000 (16,989)	11,000 (18,688)	11,000 (18,688)	13,000 (22,086)	
	External Static Pressure (ESP)	in H <sub>2</sub> O (Pa)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	
	Motor (Standard Single Coil)	Hp (kW)	4.0** (3.0)	5.5** (4.0)	4.0** (3.0)	5.5** (4.0)	7.5 (5.5)	7.5 (5.5)	10.0 (7.5)	
COIL (DX)	Face Area	ft <sup>2</sup> (m <sup>2</sup> )	12.2 (1.1)	12.2 (1.1)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	
	Face Velocity	FPM (m/s)	491 (2.5)	532 (2.7)	335 (1.7)	419 (2.1)	461 (2.3)	461 (2.3)	544 (2.8)	
	Condensate Drain O.D	In	7/8	7/8	7/8	7/8	7/8	7/8	7/8	
FILTERS (ASHRAE 52.2 MERV 7)	20" x 20" x 2"	Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	20" x 20" x 4"	Qty	4	4	6	6	6	6	6	
	20" x 25" x 4"	Qty	N/A	N/A	2	2	2	2	2	
REHEAT (Electric)	3-Stages (rated at 415V)	MBH (kW)	41.0 (12.0)	41.0 (12.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	
STEAM HUMIDIFIER (OPTIONAL)	Capacity (max.)	lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)	
	Power Input (max.)	kW	6.0	6.0	11.3	11.3	11.3	11.3	11.3	
SOUND PRESSURE LEVEL (at 2m distance, free field, downflow)			dBA	66	70	65	65	66	69	73

\*\* 5Hp (3.7 kW) for unit with ETL listed

### PHYSICAL DATA

Height	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
Width	W	mm (inch)	1464 (57.6)	1464 (57.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)
Depth	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
Weight	DBAD/U	kg (lbs)	460 (1,012)	474 (1,043)	735 (1,617)	754 (1,659)	802 (1,764)	823 (1,811)	835 (1,837)
	DBRD/U	kg (lbs)	482 (1,060)	496 (1,091)	776 (1,707)	795 (1,659)	843 (1,765)	864 (1,901)	876 (1,927)

Notes: 1.) Add 457mm (18inch) to height of unit for Discharge Plenum (optional) – Upflow Models only

2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)-Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only



Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA (R407C)

## AIR COOLED DX SYSTEM @ 35°C (95°F) AMBIENT TEMPERATURE - WITH OR WITHOUT HOT GAS REHEAT

Model		DBAD/U 02 DBRD/U 02	DBAD/U 03 DBRD/U 03	DBAD/U 04 DBRD/U 04	DBAD/U 05 DBRD/U 05	DBAD/U 07 DBRD/U 07	DBAD/U 09 DBRD/U 09
Return Air 75°F/62.5°F/50% RH (24°C/17°C/50% RH)	Total Cooling Capacity MBH (kW)	29.7 (8.7)	36.5 (10.7)	47.1 (13.8)	52.9 (15.5)	77.8 (22.8)	104.1 (30.5)
	Sensible Cooling Capacity MBH (kW)	27.0 (7.9)	31.4 (9.2)	38.9 (11.4)	43.7 (12.8)	66.9 (19.6)	87.4 (25.6)
	Sensible Heat Ratio (SHR)	0.91	0.86	0.83	0.83	0.86	0.84
Return Air 72°F/60°F/50% RH (22°C/16°C/50% RH)	Total Cooling Capacity MBH (kW)	28.7 (8.4)	35.5 (10.4)	45.7 (13.4)	51.2 (15.0)	75.4 (22.1)	101.0 (29.6)
	Sensible Cooling Capacity MBH (kW)	26.6 (7.8)	31.1 (9.1)	38.2 (11.2)	43.0 (12.6)	65.5 (19.2)	85.6 (25.1)
	Sensible Heat Ratio (SHR)	0.93	0.88	0.84	0.84	0.87	0.85
Return Air 75F/52F Dew Point (24C/11C Dew Point) at Class 1 AHRI 1360 rating condition	Total Cooling Capacity MBH (kW)	29.0 (8.5)	36.2 (10.6)	46.4 (13.6)	51.9 (15.2)	76.4 (22.4)	102.0 (29.9)
	Sensible Cooling Capacity MBH (kW)	25.6 (7.5)	30.0 (8.8)	36.9 (10.8)	41.6 (12.2)	63.5 (18.6)	82.6 (24.2)
Compressor	Number of Compressor(s)	1	1	1	1	1	1
	Total Power Input (50Hz) kW	3.4	3.4	4.7	5.2	6.5	10.2
	Total Power Input (60Hz) kW	1.9	2.4	4.4	5.4	6.6	11.2
	Hot Gas; Liquid Lines, 50Hz Inch	5/8 ; 1/2	5/8 ; 1/2	5/8 ; 1/2	5/8 ; 1/2	7/8 ; 1/2	7/8 ; 5/8
	Hot Gas; Liquid Lines, 60Hz Inch	5/8 ; 1/2	5/8 ; 1/2	5/8 ; 1/2	5/8 ; 1/2	7/8 ; 1/2	7/8 ; 1/2
Fan & Motor (Indoor)	Fan Size	10/8	10/8	10/8	10/8	15/15	15/15
	Air Volume CFM (m <sup>3</sup> /h)	1,500 (2,548)	1,500 (2,548)	2,000 (3,398)	2,500 (4,247)	4,000 (6,796)	5,000 (8,495)
	External Static Pressure (ESP) in H <sub>2</sub> O (Pa)	0.3 (75)	0.3 (75)	0.3 (75)	0.3 (75)	0.5 (125)	0.5 (125)
	Motor (Standard Single Coil) Hp (kW)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	2.0 (1.5)	2.0 (1.5)	3.0 (2.2)
Coil (DX)	Face Area ft <sup>2</sup> (m <sup>2</sup> )	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	12.2 (1.1)	12.2 (1.1)
	Face Velocity FPM (m/s)	270 (1.4)	270 (1.4)	360 (1.8)	450 (2.3)	327 (1.7)	409 (2.1)
	Condensate Drain O.D Inch	7/8	7/8	7/8	7/8	7/8	7/8
Filters (ASHRAE 52.2 MERV 7)	20" x 20" x 2" Qty	2	2	2	2	N/A	N/A
	20" x 20" x 4" Qty	N/A	N/A	N/A	N/A	4	4
	20" x 25" x 4" Qty	N/A	N/A	N/A	N/A	N/A	N/A
Reheat (Electric) N/A for DBRD/U Models	3-Stages (rated at 415V) MBH (kW)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	41.0 (12.0)	41.0 (12.0)
Steam Humidifier (Optional)	Capacity (max.) lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)
	Power Input (max.) kW	6.0	6.0	6.0	6.0	6.0	6.0
Sound Pressure Level (at 2m distance, free field, downflow)	dBA	56	56	57	57	62	63

## PHYSICAL DATA

Height	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
Width	W	mm (inch)	749 (29.5)	749 (29.5)	749 (29.5)	749 (29.5)	1464 (57.6)	1464 (57.6)
Depth	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
Weight	DBAD/U	kg (lbs)	251 (552)	259 (570)	260 (572)	272 (598)	420 (924)	450 (990)
	DBRD/U	kg (lbs)	265 (583)	273 (601)	274 (603)	286 (629)	442 (972)	472 (1038)

Notes: 1.) Add 457mm (18inch) to height of unit for Discharge Plenum (optional) – Upflow Models only

2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)-Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only



Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA (R407C)

## AIR COOLED DX SYSTEM @ 35°C (95°F) AMBIENT TEMPERATURE - WITH OR WITHOUT HOT GAS REHEAT

Model		DBAD/U 11 DBRD/U 11	DBAD/U 13 DBRD/U 13	DBAD/U 14 DBRD/U 14	DBAD/U 16 DBRD/U 16	DBAD/U 19 DBRD/U 19	DBAD/U 22 DBRD/U 22	DBAD/U 26 DBRD/U 26
Return Air 75°F/62.5°F/50% RH (24°C/17°C/50% RH)	Total Cooling Capacity MBH (kW)	120.1 (35.2)	140.9 (41.3)	160.0 (46.9)	184.9 (54.2)	206.1 (60.4)	230.7 (67.6)	269.6 (79.0)
	Sensible Cooling Capacity MBH (kW)	101.7 (29.8)	115.7 (33.9)	132.4 (38.8)	157.6 (46.2)	178.1 (52.2)	190.1 (55.7)	225.2 (66.0)
	Sensible Heat Ratio (SHR)	0.85	0.82	0.83	0.85	0.86	0.82	0.84
Return Air 72°F/60°F/50% RH (22°C/16°C/50% RH)	Total Cooling Capacity MBH (kW)	116.0 (34.0)	137.2 (40.2)	155.3 (45.5)	179.5 (52.6)	200.0 (58.6)	224.2 (65.7)	262.4 (76.9)
	Sensible Cooling Capacity MBH (kW)	99.3 (29.1)	114.3 (33.5)	130.3 (38.2)	154.6 (45.3)	174.7 (51.2)	187.0 (54.8)	221.4 (64.9)
	Sensible Heat Ratio (SHR)	0.86	0.83	0.84	0.86	0.87	0.83	0.84
Return Air 75F/52F Dew Point (24C/11C Dew Point) at Class 1 AHRI 1360 rating condition	Total Cooling Capacity MBH (kW)	117.7 (34.5)	138.2 (40.5)	156.6 (45.9)	182.2 (53.4)	201.3 (59.0)	226.6 (66.4)	265.5 (77.8)
	Sensible Cooling Capacity MBH (kW)	96.2 (28.2)	109.9 (32.2)	125.2 (36.7)	149.5 (43.8)	167.5 (49.1)	180.2 (52.8)	213.3 (62.5)
Compressor	Number of Compressor(s)	1	1	2	2	2	2	2
	Total Power Input (50Hz) kW	11.1	12.7	14.7	17.1	20.3	21.8	26.1
	Total Power Input (60Hz) kW	12.3	13.0	16.3	17.9	22.2	24.2	26.9
	Hot Gas; Liquid Lines, 50Hz Inch	7/8; 5/8	7/8; 5/8	7/8(2); 1/2(2)	7/8(2); 1/2(2)	7/8(2); 5/8(2)	7/8(2); 5/8(2)	7/8(2); 5/8(2)
	Hot Gas; Liquid Lines, 60Hz Inch	7/8; 5/8	7/8; 5/8	7/8(2); 1/2(2)	7/8(2); 1/2(2)	7/8(2); 1/2(2)	7/8(2); 5/8(2)	7/8(2); 5/8(2)
Fan & Motor (Indoor)	Fan Size	15/15	15/15	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)
	Air Volume CFM (m <sup>3</sup> /h)	6,000 (10,194)	6,500 (11,043)	8,000 (13,592)	10,000 (16,989)	11,000 (18,688)	11,000 (18,688)	13,000 (22,086)
	External Static Pressure (ESP) in H <sub>2</sub> O (Pa)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)
	Motor (Standard Single Coil) Hp (kW)	4.0** (3.0)	5.5** (4.0)	4.0** (3.0)	5.5** (4.0)	7.5 (5.5)	7.5 (5.5)	10.0 (7.5)
Coil (DX)	Face Area ft <sup>2</sup> (m <sup>2</sup> )	12.2 (1.1)	12.2 (1.1)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)
	Face Velocity FPM (m/s)	491 (2.5)	532 (2.7)	335 (1.7)	419 (2.1)	461 (2.3)	461 (2.3)	544 (2.8)
	Condensate Drain O.D. Inch	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Filters (ASHRAE 52.2 MERV 7)	20" x 20" x 2" Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	20" x 20" x 4" Qty	4	4	6	6	6	6	6
	20" x 25" x 4" Qty	N/A	N/A	2	2	2	2	2
Reheat (Electric) N/A for DBRD/U Models	3-Stages (rated at 415V) MBH (kW)	41.0 (12.0)	41.0 (12.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)
Steam Humidifier (Optional)	Capacity (max.) lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)
	Power Input (max.) kW	6.0	6.0	11.3	11.3	11.3	11.3	11.3
Sound Pressure Level (at 2m distance, free field, downflow)	dBA	66	70	65	65	66	69	73

\*\* 5Hp (3.7 kW) for unit with ETL listed

### PHYSICAL DATA

Height	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
Width	W	mm (inch)	1464 (57.6)	1464 (57.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)
Depth	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
Weight	DBAD/U	kg (lbs)	460 (1,012)	474 (1,043)	735 (1,617)	754 (1,659)	802 (1,764)	823 (1,811)
	DBRD/U	kg (lbs)	482 (1,060)	496 (1,091)	776 (1,707)	795 (1,659)	843 (1,765)	864 (1,901)

Notes: 1.) Add 457mm (18inch) to height of unit for Discharge Plenum (optional) – Upflow Models only

2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)-Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only



Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA

## CHILLED WATER SYSTEM @ WATER SUPPLY/ RETURN 7°C/ 12°C (44.6°F/ 53.6°F)

Model			DBCD/U 02	DBCD/U 03	DBCD/U 04	DBCD/U 05	DBCD/U 07	DBCD/U 09
<b>Return Air</b> 75°F/62.5°F/50% RH (24°C/17°C/50% RH)	Total Cooling Capacity	MBH (kW)	33.8 (9.9)	46.4 (13.6)	59.4 (17.4)	69.3 (20.3)	107.8 (31.6)	136.8 (40.1)
	Sensible Cooling Capacity	MBH (kW)	29.0 (8.5)	36.2 (10.6)	47.1 (13.8)	56.3 (16.5)	88.0 (25.8)	111.2 (32.6)
	Sensible Heat Ratio (SHR)		0.86	0.78	0.79	0.81	0.82	0.81
	Water Flow Rate	GPM (m <sup>3</sup> /hr)	7.3 (1.7)	9.9 (2.2)	13.2 (3.0)	15.6 (3.5)	23.8 (5.4)	29.7 (6.7)
	Water Pressure Drop	PSI (kPa)	2.3 (15.8)	5.5 (38.0)	2.1 (14.3)	2.7 (18.8)	2.7 (18.8)	10.1 (69.6)
<b>Return Air</b> 72°F/60°F/50% RH (22°C/16°C/50% RH)	Total Cooling Capacity	MBH (kW)	28.3 (8.3)	35.5 (10.4)	47.1 (13.8)	56.6 (16.6)	87.4 (25.6)	108.8 (31.9)
	Sensible Cooling Capacity	MBH (kW)	27.6 (8.1)	31.4 (9.2)	42.0 (12.3)	51.5 (15.1)	80.2 (23.5)	99.3 (29.1)
	Sensible Heat Ratio (SHR)		0.98	0.88	0.89	0.91	0.92	0.91
	Water Flow Rate	GPM (m <sup>3</sup> /hr)	6.0 (1.4)	8.0 (1.8)	10.7 (2.4)	12.7 (2.9)	19.3 (4.4)	24.2 (5.5)
	Water Pressure Drop	PSI (kPa)	1.6 (11.1)	3.9 (26.6)	1.4 (9.9)	1.9 (13.2)	1.9 (13.2)	7.1 (49.0)
<b>Fan &amp; Motor (Indoor)</b>	Fan Size		10/8	10/8	10/8	10/8	15/15	15/15
	Air Volume	CFM (m <sup>3</sup> /h)	1,500 (2,548)	1,500 (2,548)	2,000 (3,398)	2,500 (4,247)	4,000 (6,796)	5,000 (8,495)
	External Static Pressure (ESP)	in H <sub>2</sub> O (Pa)	0.3 (75)	0.3 (75)	0.3 (75)	0.3 (75)	0.5 (125)	0.5 (125)
	Motor	Hp (kW)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	2.0 (1.5)	2.0 (1.5)	3.0 (2.2)
<b>Coil (Chilled Water)</b>	Face Area	ft <sup>2</sup> (m <sup>2</sup> )	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	5.6 (0.5)	12.2 (1.1)	12.2 (1.1)
	Face Velocity	FPM (m/s)	270 (1.4)	270 (1.4)	360 (1.8)	450 (2.3)	327 (1.7)	409 (2.1)
	Condensate Drain O.D	Inch	7/8	7/8	7/8	7/8	7/8	7/8
<b>Chilled Water Control</b>	3-Way Modulating Valve, Size	DN, mm	25	25	25	25	25	25
		Kv, m <sup>3</sup> /h	10	10	10	10	10	10
<b>Filters (ASHRAE 52.2 MERV 7)</b>	20" x 20" x 2"	Qty	2	2	2	2	N/A	N/A
	20" x 20" x 4"	Qty	N/A	N/A	N/A	N/A	4	4
	20" x 25" x 4"	Qty	N/A	N/A	N/A	N/A	N/A	N/A
<b>Reheat (Electric)</b>	3-Stages (rated at 415V)	MBH (kW)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	20.5 (6.0)	41.0 (12.0)	41.0 (12.0)
<b>Steam Humidifier (Optional)</b>	Capacity (max.)	lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)	17 (8.0)
	Power Input (max.)	kW	6.0	6.0	6.0	6.0	6.0	6.0
<b>Sound Pressure Level (at 2m distance, free field, downflow)</b>		dBA	48	50	52	55	52	53

## PHYSICAL DATA

Parameter	Symbol	Unit	Model 02	Model 03	Model 04	Model 05	Model 07	Model 09
Height	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
Width	W	mm (inch)	749 (29.5)	749 (29.5)	749 (29.5)	749 (29.5)	1464 (57.6)	1464 (57.6)
Depth	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
Weight		kg (lbs)	205 (451)	212 (466)	219 (482)	229 (504)	365 (803)	374 (823)

Note: 1.) Add 457mm (18 inch) to height of unit for Discharge Plenum (optional) – Upflow Models only  
 2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)- Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only



Product that perform...By people who care

# PERFORMANCE AND TECHNICAL DATA

## CHILLED WATER SYSTEM @ WATER SUPPLY/ RETURN 7°C/ 12°C (44.6°F/ 53.6°F)

Model			DBCD/U 11	DBCD/U 13	DBCD/U 14	DBCD/U 16	DBCD/U 19	DBCD/U 22	DBCD/U 26
<b>Return Air</b> 75°F/62.5°F/50% RH (24°C/17°C/50% RH)	Total Cooling Capacity	MBH (kW)	136.8 (40.1)	186.0 (54.5)	202.7 (59.4)	235.1 (68.9)	270.9 (79.4)	332.3 (97.4)	372.3 (109.1)
	Sensible Cooling Capacity	MBH (kW)	133.8 (39.2)	149.1 (43.7)	168.9 (49.5)	200.3 (58.7)	227.2 (66.6)	262.4 (76.9)	298.6 (87.5)
	Sensible Heat Ratio (SHR)		0.98	0.80	0.83	0.85	0.84	0.79	0.80
	Water Flow Rate	GPM (m <sup>3</sup> /hr)	37.2 (8.4)	41.2 (9.4)	47.1 (10.7)	55.1 (12.5)	64.4 (14.6)	73.2 (16.6)	82.7 (18.8)
	Water Pressure Drop	PSI (kPa)	4.1 (28.4)	8.4 (57.7)	2.3 (15.5)	3.0 (20.6)	2.7 (18.5)	6.5 (45.1)	8.1 (55.6)
<b>Return Air</b> 72°F/60°F/50% RH (22°C/16°C/50% RH)	Total Cooling Capacity	MBH (kW)	134.8 (39.5)	148.4 (43.5)	173.0 (50.7)	206.4 (60.5)	235.4 (69.0)	259.3 (76.0)	296.9 (87.0)
	Sensible Cooling Capacity	MBH (kW)	134.8 (39.5)	148.4 (43.5)	173.0 (50.7)	206.4 (60.5)	235.4 (69.0)	259.3 (76.0)	296.9 (87.0)
	Sensible Heat Ratio (SHR)		0.91	0.90	0.93	0.95	0.94	0.89	0.90
	Water Flow Rate	GPM (m <sup>3</sup> /hr)	30.3 (6.9)	33.6 (7.6)	38.3 (8.7)	45.1 (10.2)	52.6 (11.9)	59.5 (13.5)	67.4 (15.3)
	Water Pressure Drop	PSI (kPa)	2.9 (19.7)	5.9 (40.7)	1.6 (11.1)	2.1 (14.3)	1.9 (12.9)	4.6 (31.7)	5.7 (39.2)
<b>Fan &amp; Motor (Indoor)</b>	Fan Size		15/15	15/15	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)	15/15 (Twin)
	Air Volume	CFM (m <sup>3</sup> /h)	6,000 (10,194)	6,500 (11,043)	8,000 (13,592)	10,000 (16,989)	11,000 (18,688)	11,000 (18,688)	13,000 (22,086)
	External Static Pressure (ESP)	in H <sub>2</sub> O (Pa)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)	0.5 (125)
	Motor	Hp (kW)	4.0** (3.0)	5.5** (4.0)	4.0** (3.0)	5.5** (4.0)	7.5 (5.5)	7.5 (5.5)	10.0 (7.5)
<b>Coil (Chilled Water)</b>	Face Area	ft <sup>2</sup> (m <sup>2</sup> )	12.2 (1.1)	12.2 (1.1)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)	23.9 (2.2)
	Face Velocity	FPM (m/s)	491 (2.5)	532 (2.7)	335 (1.7)	419 (2.1)	461 (2.3)	461 (2.3)	544 (2.8)
	Condensate Drain O.D	Inch	7/8	7/8	7/8	7/8	7/8	7/8	7/8
<b>Chilled Water Control</b>	3-Way Modulating Valve, Size	DN, mm	40	40	40	40	40	50	50
		Kv, m <sup>3</sup> /h	16	16	16	16	16	25	25
<b>Filters (ASHRAE 52.2 MERV 7)</b>	20" x 20" x 2"	Qty	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	20" x 20" x 4"	Qty	4	4	6	6	6	6	6
	20" x 25" x 4"	Qty	N/A	N/A	2	2	2	2	2
<b>Reheat (Electric)</b>	3-Stages (rated at 415V)	MBH (kW)	41.0 (12.0)	41.0 (12.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)	61.4 (18.0)
<b>Steam Humidifier (Optional)</b>	Capacity (max.)	lbs/hr (kg/hr)	17 (8.0)	17 (8.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)	33 (15.0)
	Power Input (max.)	kW	6.0	6.0	11.3	11.3	11.3	11.3	11.3
<b>Sound Pressure Level (at 2m distance, free field, downflow)</b>		dBA	57	58	52	58	59	60	64

\*\* 5Hp (3.7 kW) for unit with ETL listed

## PHYSICAL DATA

<b>Height</b>	H	mm (inch)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)	1944 (76.5)
<b>Width</b>	W	mm (inch)	1464 (57.6)	1464 (57.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)	2554 (100.6)
<b>Depth</b>	D	mm (inch)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)	874 (34.4)
<b>Weight</b>		kg (lbs)	398 (876)	410 (902)	602 (1,324)	615 (1,353)	665 (1,463)	678 (1,492)	688 (1,514)

Note: 1.) Add 457mm (18 inch) to height of unit for Discharge Plenum (optional) – Upflow Models only  
 2.) Add 32kg (71lbs)- Model 02 to 05; 51kg(112 lbs)- Model 07 to 13; 80kg(176 lbs)- Model 14 to 26 to weight of unit for Discharge Plenum (optional)- Upflow Model only



Product that perform...By people who care

# DUAL COILS OPTION

## AIR COOLED DX & CHILLED WATER SYSTEMS

This system is a combination of the both Direct Expansion (DX) and Chilled Water (CW) system with 2 cooling coil. Cooling capacity and other parameters for DX and CW System are as per stated on respective tables; except for the following.

Model		DBDD/U 02	DBDD/U 03	DBDD/U 04	DBDD/U 05	DBDD/U 07	DBDD/U 09
Fan Motor (Indoor)	hp (kW)	1.0 (0.75)	1.0 (0.75)	1.5 (1.1)	2.0 (1.5)	2.0 (1.5)	4.0** (3.0)
Sound Pressure Level (at 2m distance, free field, downflow)	dBA	56	56	57	57	62	63
Weight	kg (lbs)	270 (594)	284 (625)	292 (642)	304 (669)	467 (1,027)	497 (1,093)

Model		DBDD/U 11	DBDD/U 13	DBDD/U 14	DBDD/U 16	DBDD/U 19	DBDD/U 22	DBDD/U 26
Fan Motor (Indoor)	hp (kW)	5.5** (4.0)	5.5** (4.0)	4.0** (3.0)	7.5 (5.5)	7.5 (5.5)	10.0 (7.5)	N/A
Sound Pressure Level (at 2m distance, free field, downflow)	dBA	66	70	65	65	66	69	
Weight	kg (lbs)	523 (1,151)	537 (1,181)	823 (1,811)	842 (1,852)	909 (2,000)	941 (2,070)	

Notes: 1.) Add 457mm (18inch) to height of unit for Discharge Plenum (optional) – Upflow Models only

2.) Add 32kg (71 lbs)- Model 02 to 05; 51kg(112 lbs)-Model 07 to 13; 80kg(176 lbs)- Model 14 to 22 to weight of unit for Discharge Plenum (optional)- Upflow Model only

\*\* 5Hp (3.7 kW) for unit with ETL listed

## CONDENSER SELECTION

Selections are to be based on standard airflow rate and return air temperature of 24°C / 17°C (75°F / 62.5°F) or lesser at sea level.

Model	DX-System	DBAD/U 02	DBAD/U 03	DBAD/U 04	DBAD/U 05	DBAD/U 07	DBAD/U 09
	Dual Coils System	DBDD/U 02	DBDD/U 03	DBDD/U 04	DBDD/U 05	DBDD/U 07	DBDD/U 09
	DX-System with Hot Gas Reheat	DBRD/U 02	DBRD/U 03	DBRD/U 04	DBRD/U 05	DBRD/U 07	DBRD/U 09
Total Heat Rejection (Nominal)	MBH (kW)	46 (14)	51 (15)	60 (18)	73 (21)	101 (30)	151 (44)
35°C (95°F) Ambient	-	DBRC04	DBRC04	DBRC04	DBRC06	DBRC08	DBRC10
37.8°C (100°F) Ambient	-	DBRC04	DBRC04	DBRC06	DBRC06	DBRC08	DBRC13
40.6°C (105°F) Ambient	-	DBRC04	DBRC06	DBRC06	DBRC08	DBRC11	DBRC17
43°C (110°F) Ambient	See Note 1	DBRC06	DBRC06	DBRC08	DBRC11	DBRC17	DBRC20
46°C (115°F) Ambient	See Note 1	DBRC08	DBRC11	DBRC17	DBRC17	DBRC26	DBRC34
49°C (120°F) Ambient	See Note 2	DBRC11	DBRC11	DBRC17	DBRC20	DBRC26	DBRC34
52°C (125°F) Ambient	See Note 3	DBRC13	DBRC13	DBRC20	DBRC26	DBRC30	DBRC40

Model	DX-System	DBAD/U 11	DBAD/U 13	DBAD/U 14	DBAD/U 16	DBAD/U 19	DBAD/U 22	DBAD/U 26
	Dual Coils System	DBDD/U 11	DBDD/U 13	DBDD/U 14	DBDD/U 16	DBDD/U 19	DBDD/U 22	N/A
	DX-System with Hot Gas Reheat	DBRD/U 11	DBRD/U 13	DBRD/U 14	DBRD/U 16	DBRD/U 19	DBRD/U 22	DBRD/U 26
Total Heat Rejection (Nominal)	MBH (kW)	171 (50)	193 (57)	220 (64)	262 (77)	293 (86)	332 (97)	388 (114)
35°C (95°F) Ambient	-	DBRC13	DBRC17	DBRC17	DBRC20	DBRC20	DBRC26	DBRC30
37.8°C (100°F) Ambient	-	DBRC17	DBRC17	DBRC20	DBRC26	DBRC26	DBRC30	DBRC30
40.6°C (105°F) Ambient	-	DBRC20	DBRC26	DBRC26	DBRC26	DBRC34	DBRC34	DBRC34
43°C (110°F) Ambient	See Note 1	DBRC26	DBRC30	DBRC34	DBRC40	DBRC44	DBRC44	DBRC44
46°C (115°F) Ambient	See Note 1	DBRC40	DBRC44	DBRC44	DBRC30 x 2	DBRC30 x 2	DBRC40 x 2	DBRC40 x 2
49°C (120°F) Ambient	See Note 2	DBRC40	DBRC44	DBRC44	DBRC30 x 2	DBRC34 x 2	DBRC40 x 2	DBRC44 x 2
52°C (125°F) Ambient	See Note 3	DBRC44	DBRC44	DBRC26 x 2	DBRC30 x 2	DBRC34 x 2	DBRC44 x 2	DBRC44 x 2

Notes: 1.) Multiply Total Compressor Power Input by 1.05

2.) Multiply Cooling Capacity by 0.9. Multiply Total Compressor Power Input by 1.1

3.) Multiply Cooling Capacity by 0.9. Multiply Total Compressor Power Input by 1.2



# ELECTRICAL DATA (R410A)

## AIR COOLED DX & CHILLED WATER SYSTEMS

### 1.) STANDARD - COOLING & ELECTRIC HEATERS

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBAD/U 02			DBAD/U 03			DBAD/U 04			DBAD/U 05			DBAD/U 07			DBAD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	13.9	14.9	20	15.2	16.5	20	18.9	21.2	30	20.4	22.6	30	33.5	36.9	50	37.6	41.8	60
208V-230V/ 3Ph/ 60Hz	30.5	33.0	45	35.6	39.4	60	33.5	36.8	60	38.1	41.9	60	59.5	64.5	90	67.4	73.8	100
460V/ 3Ph/ 60Hz	15.5	17.1	25	15.8	17.5	25	15.7	17.3	23	18.2	20.2	20	28.9	31.7	45	32.6	36.1	50
380V-400V/ 3Ph/ 60Hz	16.9	18.4	25	18.7	20.6	30	22	24.6	35	33.1	36.4	50	41.3	45.8	70	41.3	45.8	70

Model	DBAD/U 11			DBAD/U 13			DBAD/U 14			DBAD/U 16			DBAD/U 19			DBAD/U 22			DBAD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	42.1	47	60	47.6	53.4	80	58.2	61.7	80	64.5	68.5	90	68.6	72.8	90	74.2	79.1	90	85.1	90.9	110
208V-230V/ 3Ph/ 60Hz	83.0	94.5	125	86.0	95.8	150	103.7	108.7	125	114.5	120.9	150	129.5	137.0	166.8	140.7	149.6	200	155.9	165.9	225
460V/ 3Ph/ 60Hz	38.3	42.6	60	40.6	45.5	70	50.9	53.7	70	56.1	59.5	70	65.3	69.5	80	65.7	70	90	74.1	79.1	100
380V-400V/ 3Ph/ 60Hz	45.8	51.4	80	47.9	54	80	58.2	64.4	80	70.6	75	100	75.8	80.9	100	82.4	88	110	86.6	92.7	125

Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBCD/U 02			DBCD/U 03			DBCD/U 04			DBCD/U 05			DBCD/U 07			DBCD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	10.3	10.7	15	10.3	10.7	15	10.4	10.8	15	11.5	12.2	15	20.1	20.8	25	21.1	22.1	30
208V-230V/ 3Ph/ 60Hz	20.5	24.7	25	20.5	24.7	25	20.5	24.7	25	22.9	27.1	30	39.5	47.8	50	41.7	50.0	50
460V/ 3Ph/ 60Hz	9.1	11.0	15	9.1	11.0	15	9.2	11.1	15	10.3	12.2	15	17.8	21.6	25	18.8	22.6	25
380V-400V/ 3Ph/ 60Hz	10.0	12.1	16	10.0	12.1	16	10.0	12.1	16	11.6	13.7	16	19.7	23.7	25	20.9	24.9	30

Model	DBCD/U 11			DBCD/U 13			DBCD/U 14			DBCD/U 16			DBCD/U 19			DBCD/U 22			DBCD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	23.5	25.1	35	23.5	25.1	35	32.2	33.7	40	32.2	33.7	40	35.0	37.2	50	35.0	37.2	50	37.8	40.7	50
208V-230V/ 3Ph/ 60Hz	47.0	55.3	60	47.0	55.3	60	63.7	76.2	80	63.7	76.2	80	69.9	82.4	100	69.9	82.4	100	76.1	88.6	110
460V/ 3Ph/ 60Hz	21.2	25.0	30	21.2	25.0	30	28.7	34.3	40	28.7	34.3	40	31.5	37.1	45	31.5	37.1	45	34.3	39.9	50
380V-400V/ 3Ph/ 60Hz	22.6	26.6	30	24.5	28.5	32	30.6	36.7	40	32.5	38.6	40	35.2	41.3	50	35.2	41.3	50	38.9	45.0	50

### 2.) STANDARD WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/ 17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBAD/U 02			DBAD/U 03			DBAD/U 04			DBAD/U 05			DBAD/U 07			DBAD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	22.6	23.6	25	23.9	25.2	30	27.6	29.8	35	29.1	31.3	40	42.2	45.6	60	46.3	50.4	70
208V-230V/ 3Ph/ 60Hz	39.2	41.7	50	44.3	48.0	60	42.2	45.4	70	46.8	50.6	80	68.2	73.2	110	76.1	82.5	125
460V/ 3Ph/ 60Hz	23.0	24.6	30	23.3	25.0	30	23.2	24.8	30	25.7	27.7	35	36.4	39.2	50	40.1	43.6	60
380V-400V/ 3Ph/ 60Hz	25.5	27.0	35	27.3	29.3	40	27.7	29.8	40	30.6	33.2	45	41.8	45.0	60	50.0	54.4	70

Model	DBAD/U 11			DBAD/U 13			DBAD/U 14			DBAD/U 16			DBAD/U 19			DBAD/U 22			DBAD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	50.8	55.6	70	56.3	62	80	74.5	77.9	90	80.8	84.8	100	84.9	89.1	110	90.5	95.4	110	101.4	107.2	125
208V-230V/ 3Ph/ 60Hz	91.7	100.7	150	94.7	104.4	150	119.9	124.9	175	130.7	137.1	175	145.7	153.2	200	156.9	165.8	225	172.1	182.1	250
460V/ 3Ph/ 60Hz	45.8	50.1	70	48.1	53.0	70	65.0	67.8	80	70.2	73.6	90	79.4	83.6	100	79.8	84.1	100	88.2	93.2	110
380V-400V/ 3Ph/ 60Hz	54.5	60.1	80	56.6	62.7	90	74.4	77.7	90	86.8	91.3	110	92.0	97.1	125	98.6	104.2	125	102.8	108.9	125

Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBCD/U 02			DBCD/U 03			DBCD/U 04			DBCD/U 05			DBCD/U 07			DBCD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	18.9	19.3	20	18.9	19.3	20	19.0	19.4	20	20.1	20.8	25	28.8	29.5	35	29.8	30.7	35
208V-230V/ 3Ph/ 60Hz	37.0	41.2	50	37.0	41.2	50	37.0	41.2	50	39.4	43.6	50	56.0	64.3	70	58.2	66.5	70
460V/ 3Ph/ 60Hz	16.6	18.5	20	16.6	18.5	20	16.7	18.6	20	17.8	19.7	25	25.3	29.1	30	26.3	30.1	35
380V-400V/ 3Ph/ 60Hz	18.7	20.7	25	18.7	20.7	25	18.7	20.7	25	20.3	22.3	25	28.4	32.4	40	29.6	33.6	40

Model	DBCD/U 11			DBCD/U 13			DBCD/U 14			DBCD/U 16			DBCD/U 19			DBCD/U 22			DBCD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	32.2	33.7	40	32.2	33.7	40	48.4	50.0	60	48.4	50.0	60	51.2	53.5	60	51.2	53.5	60	54.0	57.0	70
208V-230V/ 3Ph/ 60Hz	63.5	71.8	80	63.5	71.8	80	94.9	107.4	125	94.9	107.4	125	101.1	113.6	125	101.1	113.6	125	107.3	119.8	150
460V/ 3Ph/ 60Hz	28.7	32.5	40	28.7	32.5	40	42.8	48.4	50	42.8	48.4	50	45.6	51.2	60	45.6	51.2	60	48.4	54.0	60
380V-400V/ 3Ph/ 60Hz	31.3	35.3	40	33.2	37.2	40	46.9	52.9	60	48.8	54.8	60	51.5	57.5	63	51.5	57.5	63	55.2	61.2	70

Note : RLA - Rated Load Amps

MCA - Minimum Circuit Amps

MFS - Maximum Fuse Size

# ELECTRICAL DATA (R410A)

## AIR COOLED DUAL COILS (DX + CW) & DX WITH HOT GAS REHEAT SYSTEMS

### 1.) STANDARD - COOLING & ELECTRIC HEATERS

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBDD/U 02				DBDD/U 03				DBDD/U 04				DBDD/U 05				DBDD/U 07				DBDD/U 09			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	13.9	10.0	16.0	20	15.2	10.0	17.3	20	19.7	10.8	21.8	30	20.4	11.6	22.5	30	33.5	19.7	37.5	50	39.3	22.6	43.5	60
208V-230V/ 3Ph/ 60Hz	31.3	21.3	35.5	50	36.4	21.3	40.6	50	34.3	21.3	38.5	50	38.1	22.9	42.3	60	59.5	39.5	67.8	90	72.7	47.0	79.1	110
460V/ 3Ph/ 60Hz	15.9	9.6	17.8	25	16.2	9.6	18.1	25	16.1	9.6	18.0	25	18.2	10.3	20.1	30	28.9	17.8	32.7	45	35.0	21.2	38.5	50
380V-400V 3Ph/ 60Hz	16.9	10.8	18.4	25	18.7	10.8	20.6	30	19.1	10.8	21.1	30	22.0	11.5	24.6	35	33.1	20.1	36.4	50	41.3	23.5	45.8	70

Model	DBDD/U 11				DBDD/U 13				DBDD/U 14				DBDD/U 16				DBDD/U 19				DBDD/U 22			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	44.0	24.5	48.9	70	47.6	24.5	53.4	80	58.2	30.6	64.3	80	67.2	35.2	73.3	90	68.6	35.2	74.7	90	77.9	38.9	84.0	100
208V-230V/ 3Ph/ 60Hz	83.0	47.0	92.0	125	86.0	47.0	95.8	150	103.7	63.7	116.2	150	120.7	69.9	133.2	150	129.5	69.9	142.0	175	147.7	76.9	160.2	200
460V/ 3Ph/ 60Hz	38.3	21.2	42.6	60	40.6	21.2	45.5	70	50.9	28.7	56.5	65	58.9	31.5	64.5	80	65.3	31.5	70.9	80	68.5	34.3	74.1	90
380V-400V 3Ph/ 60Hz	45.8	23.5	51.4	80	47.9	23.5	54.0	80	58.2	32.2	61.4	80	70.6	35.0	75.0	100	75.8	35.0	80.9	100	82.4	37.8	88.0	110

### 2.) STANDARD WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBDD/U 02				DBDD/U 03				DBDD/U 04				DBDD/U 05				DBDD/U 07				DBDD/U 09			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	22.6	18.7	24.6	25	23.9	18.7	25.9	30	28.4	19.5	30.4	40	29.1	20.3	31.1	40	42.2	28.4	46.2	60	48.0	31.3	52.1	70
208V-230V/ 3Ph/ 60Hz	47.8	37.8	52.0	70	52.9	37.8	57.1	70	50.8	37.8	55.0	70	54.6	39.4	58.8	80	76.0	56.0	84.3	110	89.2	63.5	95.6	125
460V/ 3Ph/ 60Hz	23.4	17.1	25.3	30	23.7	17.1	25.6	30	23.6	17.1	25.5	30	25.7	17.8	27.6	35	36.4	25.3	40.2	50	42.5	28.7	46.0	60
380V-400V 3Ph/ 60Hz	25.5	19.4	27.0	35	27.3	19.4	29.3	40	27.7	19.4	29.8	40	30.6	20.1	33.2	45	41.8	28.8	45.0	60	50.0	32.2	54.4	70

Model	DBDD/U 11				DBDD/U 13				DBDD/U 14				DBDD/U 16				DBDD/U 19				DBDD/U 22			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	52.7	33.2	57.5	70	56.3	33.2	62.0	90	74.5	46.9	80.5	90	83.5	51.5	89.5	100	84.9	51.5	90.9	110	94.2	55.2	100.2	110
208V-230V/ 3Ph/ 60Hz	99.5	63.5	108.5	150	102.5	63.5	112.3	150	134.9	94.9	147.4	175	151.9	101.1	164.4	200	160.7	101.1	173.2	200	178.9	108.1	191.4	250
460V/ 3Ph/ 60Hz	45.8	28.7	50.1	70	48.1	28.7	53.0	70	65.0	42.8	70.6	80	73.0	45.6	78.6	90	79.4	45.6	85.0	100	82.6	48.4	88.2	100
380V-400V 3Ph/ 60Hz	54.5	32.2	60.1	80	56.6	32.2	62.7	90	74.4	48.4	77.7	90	86.8	51.2	91.3	110	92.0	51.2	97.1	125	98.6	54.0	104.2	125

### 3.) COOLING & HOT GAS REHEAT

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBRD/U 02			DBRD/U 03			DBRD/U 04			DBRD/U 05			DBRD/U 07			DBRD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	5.9	6.9	15	7.2	8.5	15	10.9	13.1	20	12.4	14.6	25	17.4	20.9	35	21.5	25.7	40
208V-230V/ 3Ph/ 60Hz	13.8	16.3	25	18.9	22.7	40	16.8	20.1	35	21.4	25.2	45	26.2	31.2	60	34.1	40.5	70
460V/ 3Ph/ 60Hz	8.0	9.6	15	8.3	10.0	15	8.2	9.8	15	10.7	12.7	20	13.9	16.7	30	17.6	21.1	35
380V-400V/ 3Ph/ 60Hz	7.7	9.2	15	9.5	11.5	20	10.0	12.1	20	12.5	14.9	25	15.8	19.1	35	21.6	26.1	45

Model	DBRD/U 11			DBRD/U 13			DBRD/U 14			DBRD/U 16			DBRD/U 19			DBRD/U 22			DBRD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	26.0	30.9	50	31.5	37.3	60	34.1	37.6	50	40.4	44.4	60	44.5	48.7	65	50.1	55.0	70	61.0	66.8	90
208V-230V/ 3Ph/ 60Hz	49.7	58.7	100	52.7	62.5	110	53.7	58.7	90	64.5	70.9	100	79.5	87.0	125	90.7	99.6	150	105.9	115.9	175
460V/ 3Ph/ 60Hz	23.3	27.6	45	25.6	30.5	50	28.4	31.2	40	33.6	37.0	50	42.8	47.0	60	43.2	47.5	60	51.6	56.6	80
380V-400V/ 3Ph/ 60Hz	28.8	34.5	60	30.6	36.7	60	32.2	35.5	50	41.8	46.3	70	49.8	54.9	80	54.2	59.9	80	60.6	66.7	90

### 4.) COOLING & HOT GAS REHEAT WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBRD/U 02			DBRD/U 03			DBRD/U 04			DBRD/U 05			DBRD/U 07			DBRD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	14.6	16.7	20	15.9	18.0	20	19.6	21.7	30	21.1	23.2	30	26.1	29.5	45	30.2	34.3	50
208V-230V/ 3Ph/ 60Hz	30.3	32.8	40	35.4	39.2	50	33.3	36.6	50	37.9	41.7	60	42.7	47.7	70	50.6	57.0	90
460V/ 3Ph/ 60Hz	15.5	17.1	25	15.8	17.5	25	15.7	17.3	25	18.2	20.2	30	21.4	24.2	35	25.1	28.6	40
380V-400V/ 3Ph/ 60Hz	16.4	17.9	25	18.2	20.1	30	18.7	20.7	30	21.2	23.6	35	24.5	27.7	40	30.3	34.7	50

Model	DBRD/U 11			DBRD/U 13			DBRD/U 14			DBRD/U 16			DBRD/U 19			DBRD/U 22			DBRD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	34.7	39.5	60	40.2	45.9	70	50.3	54.4	70	56.6	60.6	80	60.7	64.9	80	66.3	71.2	90	77.2	83.0	110
208V-230V/ 3Ph/ 60Hz	66.2	75.2	110	69.2	79.0	125	84.9	89.9	110	95.7	102.1	125	110.7	118.2	150	121.9	130.8	175	137.1	147.1	200
460V/ 3Ph/ 60Hz	30.8	35.1	50	33.1	38.0	60	42.5	45.3	60	47.7	51.1	60	56.9	61.1	80	57.3	61.6	80	65.7	70.7	90
380V-400V/ 3Ph/ 60Hz	37.5	43.1	70	39.3	45.4	70	48.4	51.7	70	58.0	62.5	80	66.0	71.1	90	70.4	76.1	100	76.8	82.9	110

Note : RLA - Rated Load Amps

MCA - Minimum Circuit Amps

MFS - Maximum Fuse Size



# ELECTRICAL DATA (R407C)

## AIR COOLED DX & CHILLED WATER SYSTEMS

### 1.) STANDARD - COOLING & ELECTRIC HEATERS

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBAD/U 02			DBAD/U 03			DBAD/U 04			DBAD/U 05			DBAD/U 07			DBAD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	15.0	17.0	20	16.2	18.2	20	17.7	19.7	25	20.1	22.1	32	33.7	37.7	50	39.8	44.5	63
460V/ 3Ph/ 60Hz	14.1	15.4	20	14.8	16.2	20	15.3	16.9	20	17.5	19.3	25	28.3	30.8	45	36.4	40.8	60
380V-400V/ 3Ph/ 60Hz	16.5	17.9	25	17.6	19.3	30	18.5	20.4	30	21.1	23.5	35	33.6	37	50	43.3	48.3	70

Model	DBAD/U 11			DBAD/U 13			DBAD/U 14			DBAD/U 16			DBAD/U 19			DBAD/U 22			DBAD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	44.3	49.7	63	53.3	60.5	75	59.2	65.3	75	67.1	73.2	100	73.0	79.1	100	78.6	84.7	100	96.5	103.7	125
460V/ 3Ph/ 60Hz	38.9	43.6	60	41.9	46.8	70	52.9	56.1	70	58.1	61.6	80	66.8	71.2	90	69.0	73.6	90	74.4	79.4	100
380V-400V/ 3Ph/ 60Hz	45.5	48.3	70	48.6	54.9	80	63.2	67.1	80	69.0	73.2	90	74.6	79.5	100	81.8	87.3	110	88	94.3	125

Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBCD/U 02			DBCD/U 03			DBCD/U 04			DBCD/U 05			DBCD/U 07			DBCD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	10.3	10.7	15	10.3	10.7	15	10.4	10.8	15	11.5	12.2	15	20.1	20.8	25	21.1	22.1	30
208V-230V/ 3Ph/ 60Hz	20.5	24.7	25	20.5	24.7	25	20.5	24.7	25	22.9	27.1	30	39.5	47.8	50	41.7	50.0	50
460V/ 3Ph/ 60Hz	9.1	11.0	15	9.1	11.0	15	9.2	11.1	15	10.3	12.2	15	17.8	21.6	25	18.8	22.6	25
380V-400V/ 3Ph/ 60Hz	10.0	12.1	16	10.0	12.1	16	10.0	12.1	16	11.6	13.7	16	19.7	23.7	25	20.9	24.9	30

Model	DBCD/U 11			DBCD/U 13			DBCD/U 14			DBCD/U 16			DBCD/U 19			DBCD/U 22			DBCD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	23.5	25.1	35	23.5	25.1	35	32.2	33.7	40	32.2	33.7	40	35.0	37.2	50	35.0	37.2	50	37.8	40.7	50
208V-230V/ 3Ph/ 60Hz	47.0	55.3	60	47.0	55.3	60	63.7	76.2	80	63.7	76.2	80	69.9	82.4	100	69.9	82.4	100	76.1	88.6	110
460V/ 3Ph/ 60Hz	21.2	25.0	30	21.2	25.0	30	28.7	34.3	40	28.7	34.3	40	31.5	37.1	45	31.5	37.1	45	34.3	39.9	50
380V-400V/ 3Ph/ 60Hz	22.6	26.6	30	24.5	28.5	32	30.6	36.7	40	32.5	38.6	40	35.2	41.3	50	35.2	41.3	50	38.9	45.0	50

### 2.) STANDARD WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/ 17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBAD/U 02			DBAD/U 03			DBAD/U 04			DBAD/U 05			DBAD/U 07			DBAD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	23.7	25.7	32	24.8	26.8	32	26.4	28.4	32	28.7	30.7	40	42.4	46.4	50	48.5	53.2	63
460V/ 3Ph/ 60Hz	21.6	22.9	30	22.3	23.7	30	22.8	24.4	30	25.0	26.8	35	35.8	38.3	50	43.9	48.3	60
380V-400V/ 3Ph/ 60Hz	25.1	26.5	35	26.2	27.9	35	27.1	29.0	40	29.7	32.1	45	42.3	45.7	60	52.0	56.9	80

Model	DBAD/U 11			DBAD/U 13			DBAD/U 14			DBAD/U 16			DBAD/U 19			DBAD/U 22			DBAD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	53.0	58.4	75	62.0	69.2	80	75.5	81.5	100	83.4	89.4	100	89.3	95.3	100	94.9	100.9	125	112.8	120.0	150
460V/ 3Ph/ 60Hz	46.4	51.1	70	49.4	54.3	70	67.0	70.2	80	72.2	75.7	90	80.9	85.3	100	83.1	87.7	100	88.5	93.5	110
380V-400V/ 3Ph/ 60Hz	54.2	59.7	80	57.3	63.6	90	79.4	83.3	100	85.2	89.5	110	90.8	95.8	125	98.0	103.5	125	104.2	110.5	125

Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/50 %RH)

Model	DBCD/U 02			DBCD/U 03			DBCD/U 04			DBCD/U 05			DBCD/U 07			DBCD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	18.9	19.3	20	18.9	19.3	20	19.0	19.4	20	20.1	20.8	25	28.8	29.5	35	29.8	30.7	35
208V-230V/ 3Ph/ 60Hz	37.0	41.2	50	37.0	41.2	50	37.0	41.2	50	39.4	43.6	50	56.0	64.3	70	58.2	66.5	70
460V/ 3Ph/ 60Hz	16.6	18.5	20	16.6	18.5	20	16.7	18.6	20	17.8	19.7	25	25.3	29.1	30	26.3	30.1	35
380V-400V/ 3Ph/ 60Hz	18.7	20.7	25	18.7	20.7	25	18.7	20.7	25	20.3	22.3	25	28.4	32.4	40	29.6	33.6	40

Model	DBCD/U 11			DBCD/U 13			DBCD/U 14			DBCD/U 16			DBCD/U 19			DBCD/U 22			DBCD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	32.2	33.7	40	32.2	33.7	40	48.4	50.0	60	48.4	50.0	60	51.2	53.5	60	51.2	53.5	60	54.0	57.0	70
208V-230V/ 3Ph/ 60Hz	63.5	71.8	80	63.5	71.8	80	94.9	107.4	125	94.9	107.4	125	101.1	113.6	125	101.1	113.6	125	107.3	119.8	150
460V/ 3Ph/ 60Hz	28.7	32.5	40	28.7	32.5	40	42.8	48.4	50	42.8	48.4	50	45.6	51.2	60	45.6	51.2	60	48.4	54.0	60
380V-400V/ 3Ph/ 60Hz	31.3	35.3	40	33.2	37.2	40	46.9	52.9	60	48.8	54.8	60	51.5	57.5	63	51.5	57.5	63	55.2	61.2	70

Note : RLA - Rated Load Amps

MCA - Minimum Circuit Amps

MFS - Maximum Fuse Size

# ELECTRICAL DATA (R407C)

## AIR COOLED DUAL COILS (DX + CW) & DX WITH HOT GAS REHEAT SYSTEMS

### 1.) STANDARD - COOLING & ELECTRIC HEATERS

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBDD/U 02				DBDD/U 03				DBDD/U 04				DBDD/U 05				DBDD/U 07				DBDD/U 09			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	15.0	10.0	17	20	16.2	10.0	18.2	20	18.5	10.8	20.5	25	20.1	11.6	22.1	30	33.7	19.7	37.7	40	41.5	22.6	46.2	60
460V/ 3Ph/ 60Hz	14.8	9.8	16.7	25	15.5	9.8	17.4	25	16.0	9.8	17.9	25	17.5	10.4	19.4	30	28.3	17.9	32.0	45	37.6	20.2	42.0	60
380V/ 3Ph/ 60Hz	16.5	10.8	17.9	25	17.6	10.8	19.3	30	18.5	10.8	20.4	30	21.1	11.5	23.5	35	33.6	20.1	37.0	50	43.3	23.5	48.3	70

Model	DBDD/U 11				DBDD/U 13				DBDD/U 14				DBDD/U 16				DBDD/U 19				DBDD/U 22			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	46.2	24.5	51.6	63	53.3	24.5	60.5	75	59.2	30.6	65.3	75	69.8	35.2	75.9	100	73.0	35.2	79.1	100	82.3	38.9	88.4	100
460V/ 3Ph/ 60Hz	41.1	22.4	45.8	60	41.9	22.4	46.8	70	52.9	27.7	58.5	70	60.2	32.0	65.8	80	66.8	32.0	72.4	90	71.4	34.4	77.0	90
380V-400V/ 3Ph/ 60Hz	43.3	23.5	48.3	70	48.6	23.5	54.9	80	63.2	32.2	67.1	80	69.0	35.0	73.2	90	74.6	35.0	79.5	100	81.8	37.8	87.3	110

### 2.) STANDARD WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBDD/U 02				DBDD/U 03				DBDD/U 04				DBDD/U 05				DBDD/U 07				DBDD/U 09			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	23.7	18.7	25.7	32	24.8	18.7	26.8	32	27.2	19.5	29.2	32	28.7	20.3	30.7	40	42.4	28.4	46.4	50	50.2	31.3	54.9	63
460V/ 3Ph/ 60Hz	22.3	17.3	24.2	30	23.0	17.3	24.9	30	23.5	17.3	25.4	30	25.0	17.9	26.9	35	35.8	25.4	39.5	50	45.1	27.7	49.5	60
380V-400V/ 3Ph/ 60Hz	25.1	19.4	26.5	35	26.2	19.4	27.9	35	27.1	19.4	29.0	40	29.7	20.1	32.1	45	42.3	28.8	45.7	60	52.0	32.2	56.9	80

Model	DBDD/U 11				DBDD/U 13				DBDD/U 14				DBDD/U 16				DBDD/U 19				DBDD/U 22			
	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS	RLA (DX)	RLA (CHW)	MCA	MFS
380V-415V/ 3Ph/ 50Hz	54.9	33.2	60.3	75	62.0	33.2	69.2	80	75.5	46.9	81.5	100	86.1	51.5	92.1	100	89.3	51.5	95.3	100	98.6	55.2	104.6	125
460V/ 3Ph/ 60Hz	48.6	29.9	53.3	70	49.4	29.9	54.3	80	67.0	41.8	72.6	80	74.3	46.1	79.9	90	80.9	46.1	86.5	100	85.5	48.5	91.1	110
380V-400V/ 3Ph/ 60Hz	52.0	32.2	56.9	80	57.3	32.2	63.6	90	79.4	48.4	83.3	100	85.2	51.2	89.5	110	90.8	51.2	95.8	125	98.0	54.0	103.5	125

### 3.) COOLING & HOT GAS REHEAT

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBRD/U 02			DBRD/U 03			DBRD/U 04			DBRD/U 05			DBRD/U 07			DBRD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	6.9	8.2	16	8.1	9.6	16	9.7	11.6	20	12.0	14.1	20	17.6	21.1	32	23.7	28.4	40
460V/ 3Ph/ 60Hz	6.6	7.9	15	7.3	8.7	15	7.8	9.4	15	10.0	11.8	20	13.3	15.8	30	21.4	25.8	40
380V-400V/ 3Ph/ 60Hz	7.3	8.7	15	8.4	10.1	20	9.4	11.3	20	12.4	14.8	25	16.3	19.7	35	23.6	28.6	50

Model	DBRD/U 11			DBRD/U 13			DBRD/U 14			DBRD/U 16			DBRD/U 19			DBRD/U 22			DBRD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	28.2	33.6	50	37.2	44.4	63	35.1	38.7	50	43.0	47.3	63	48.9	53.6	63	54.5	59.9	75	72.4	79.6	100
460V/ 3Ph/ 60Hz	23.9	28.6	45	26.9	31.8	50	30.4	33.6	50	35.6	39.1	50	44.3	48.7	60	46.5	51.1	70	51.9	56.9	80
380V-400V/ 3Ph/ 60Hz	26.0	31.0	50	31.3	37.6	70	37.2	41.1	60	40.2	44.5	60	48.6	53.6	80	53.0	58.5	80	62.0	68.3	100

### 4.) COOLING & HOT GAS REHEAT WITH OPTIONAL HUMIDIFIER

At 35°C (95°F) ambient; Return Air at 24°C/17°C/50 %RH (75°F/62.5°F/ 50 %RH)

Model	DBRD/U 02			DBRD/U 03			DBRD/U 04			DBRD/U 05			DBRD/U 07			DBRD/U 09		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	15.6	17.8	25	16.8	18.9	25	18.3	20.5	25	20.7	22.8	32	26.3	29.8	40	32.4	37.1	50
460V/ 3Ph/ 60Hz	14.1	15.4	25	14.8	16.2	25	15.3	16.9	25	17.5	19.3	30	20.8	23.3	35	28.9	33.3	50
380V-400V/ 3Ph/ 60Hz	16.0	17.4	25	17.1	18.8	25	18.1	20.0	30	21.1	23.5	35	25.0	28.3	45	32.3	37.2	60

Model	DBRD/U 11			DBRD/U 13			DBRD/U 14			DBRD/U 16			DBRD/U 19			DBRD/U 22			DBRD/U 26		
	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS	RLA	MCA	MFS
380V-415V/ 3Ph/ 50Hz	36.9	42.3	63	45.9	53.1	80	51.3	55.4	63	59.2	63.6	80	65.1	69.9	80	70.7	76.2	100	88.6	95.8	125
460V/ 3Ph/ 60Hz	31.4	36.1	50	34.4	39.3	60	44.5	47.7	60	49.7	53.2	70	58.4	62.8	80	60.6	65.2	80	66.0	71.0	90
380V-400V/ 3Ph/ 60Hz	34.7	39.6	60	40.0	46.2	80	53.4	57.3	80	56.4	60.7	80	64.8	69.8	90	69.2	74.7	100	78.2	84.5	110

Note : RLA - Rated Load Amps

MCA - Minimum Circuit Amps

MFS - Maximum Fuse Size

# DIMENSIONAL DATA

## AIR COOLED DX & CHILLED WATER SYSTEMS

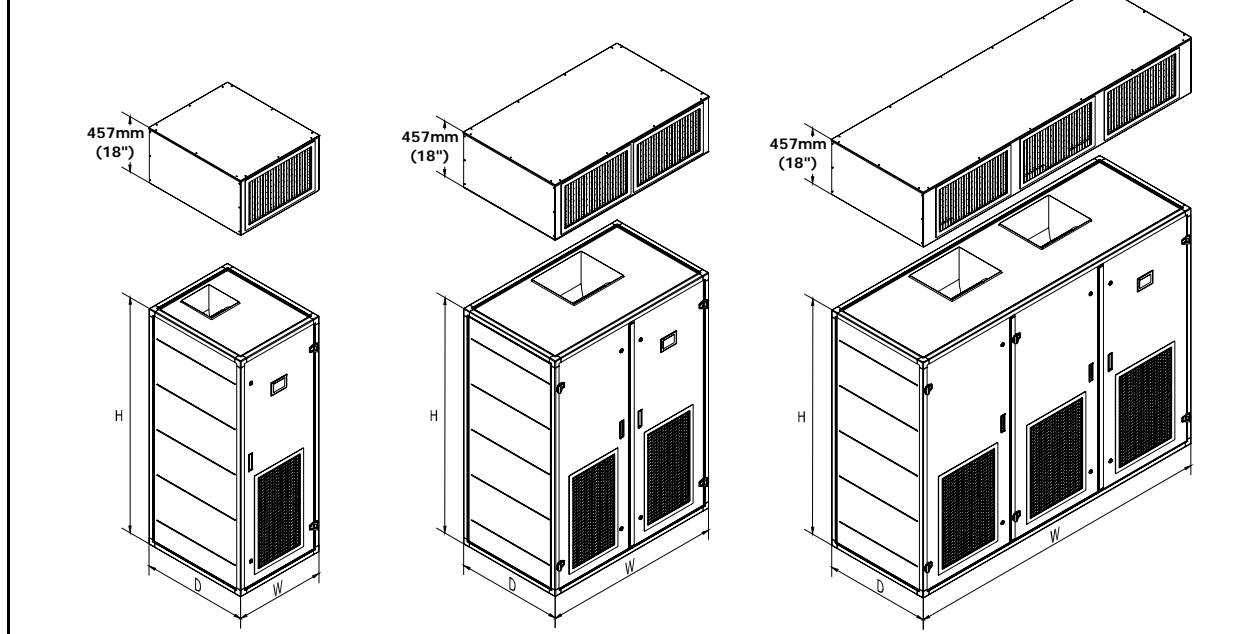
UP FLOW (Optional Discharge Plenum)		Model	DX System		DBAU 02	DBAU 03	DBAU 04	DBAU 05	DBAU 07	DBAU 09	DBAU 11	DBAU 13	DBAU 14	DBAU 16	DBAU 19	DBAU 22	DBAU 26
			CW System		DBCUC 02	DBCUC 03	DBCUC 04	DBCUC 05	DBCUC 07	DBCUC 09	DBCUC 11	DBCUC 13	DBCUC 14	DBCUC 16	DBCUC 19	DBCUC 22	DBCUC 26
			Dual Coils System		DBDU 02	DBDU 03	DBDU 04	DBDU 05	DBDU 07	DBDU 09	DBDU 11	DBDU 13	DBDU 14	DBDU 16	DBDU 19	DBDU 22	-
			DX-System with Hot Gas Reheat		DBRU 02	DBRU 03	DBRU 04	DBRU 05	DBRU 07	DBRU 09	DBRU 11	DBRU 13	DBRU 14	DBRU 16	DBRU 19	DBRU 22	DBRU 26
Height	H	mm	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	(inch)		(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)
Width	W	mm	749	749	749	749	1464	1464	1464	1464	2554	2554	2554	2554	2554	2554	2554
	(inch)		(29.5)	(29.5)	(29.5)	(29.5)	(57.6)	(57.6)	(57.6)	(57.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)
Depth	D	mm	874	874	874	874	874	874	874	874	874	874	874	874	874	874	874
	(inch)		(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)

Note: DB-Aire II 02-05 unit with VFD option: Provide 20" [508mm] side clearance for air filter removal.

DB-AIRE II 02-05 tons

DB-AIRE II 07-13 tons

DB-AIRE II 14-26 tons



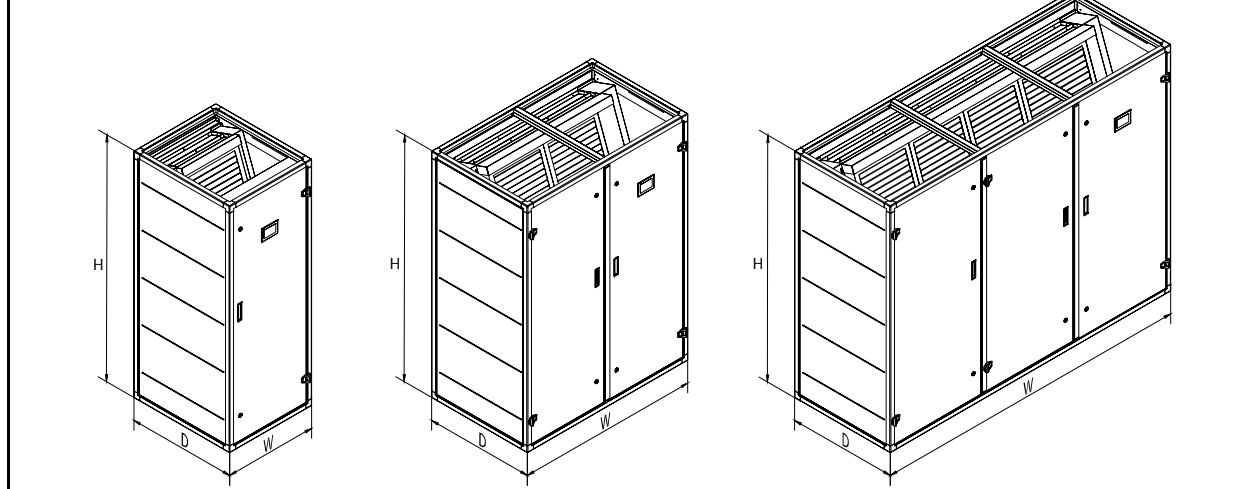
DOWN FLOW		Model	DX System		DBAD 02	DBAD 03	DBAD 04	DBAD 05	DBAD 07	DBAD 09	DBAD 11	DBAD 13	DBAD 14	DBAD 16	DBAD 19	DBAD 22	DBAD 26
			CW System		DBCDC 02	DBCDC 03	DBCDC 04	DBCDC 05	DBCDC 07	DBCDC 09	DBCDC 11	DBCDC 13	DBCDC 14	DBCDC 16	DBCDC 19	DBCDC 22	DBCDC 26
			Dual Coils System		DBDD 02	DBDD 03	DBDD 04	DBDD 05	DBDD 07	DBDD 09	DBDD 11	DBDD 13	DBDD 14	DBDD 16	DBDD 19	DBDD 22	-
			DX-System with Hot Gas Reheat		DBRD 02	DBRD 03	DBRD 04	DBRD 05	DBRD 07	DBRD 09	DBRD 11	DBRD 13	DBRD 14	DBRD 16	DBRD 19	DBRD 22	DBRD 26
Height	H	mm	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	(inch)		(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)	(76.5)
Width	W	mm	749	749	749	749	1464	1464	1464	1464	2554	2554	2554	2554	2554	2554	2554
	(inch)		(29.5)	(29.5)	(29.5)	(29.5)	(57.6)	(57.6)	(57.6)	(57.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)	(100.6)
Depth	D	mm	874	874	874	874	874	874	874	874	874	874	874	874	874	874	874
	(inch)		(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)	(34.4)

Note: DB-Aire II 02-05 unit with VFD option: Provide 20" [508mm] side clearance for air filter removal.

DB-AIRE II 02-05 tons

DB-AIRE II 07-13 tons

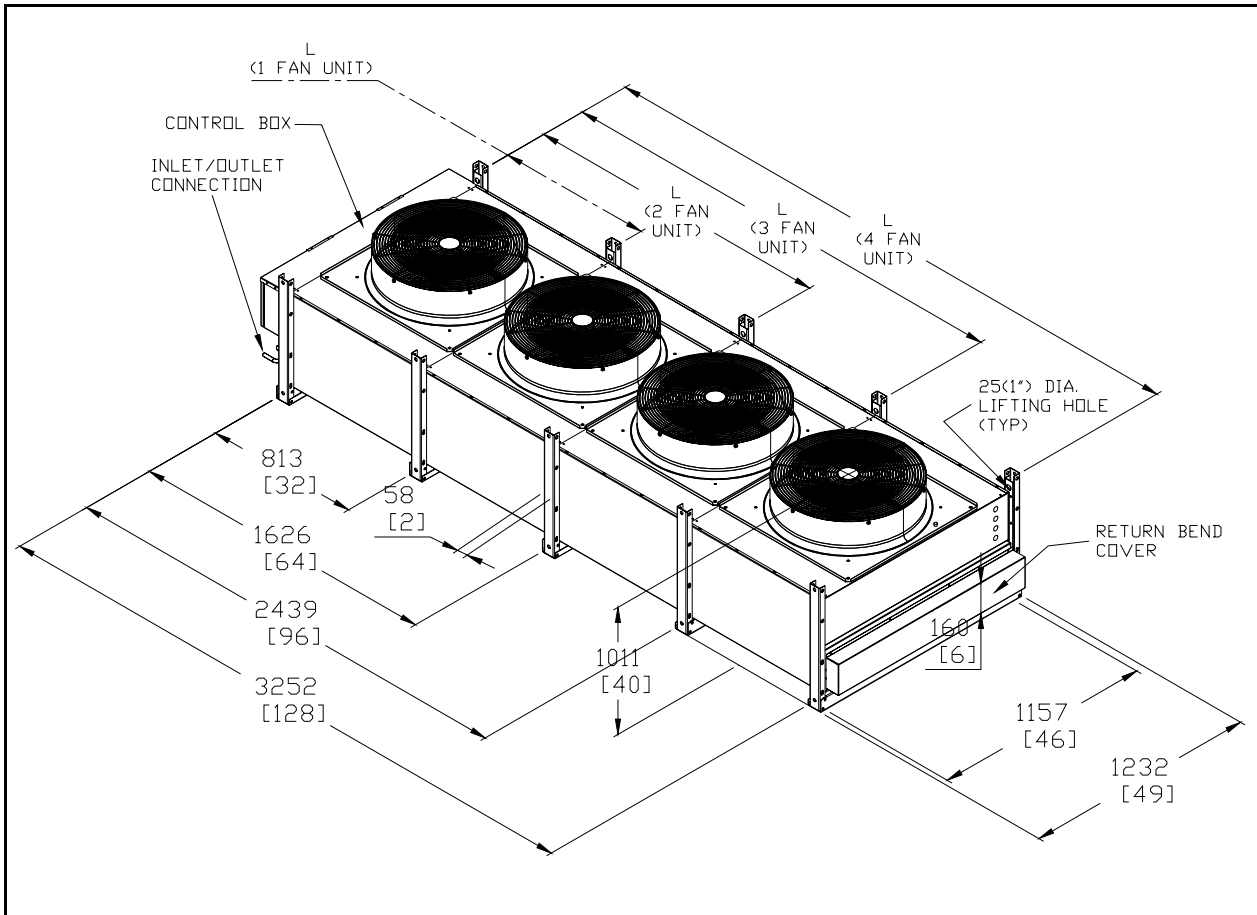
DB-AIRE II 14-26 tons



Note: DBDD/U26 Dual Coils option not available.

# REMOTE AIR-COOLED CONDENSERS

## TECHNICAL DATA

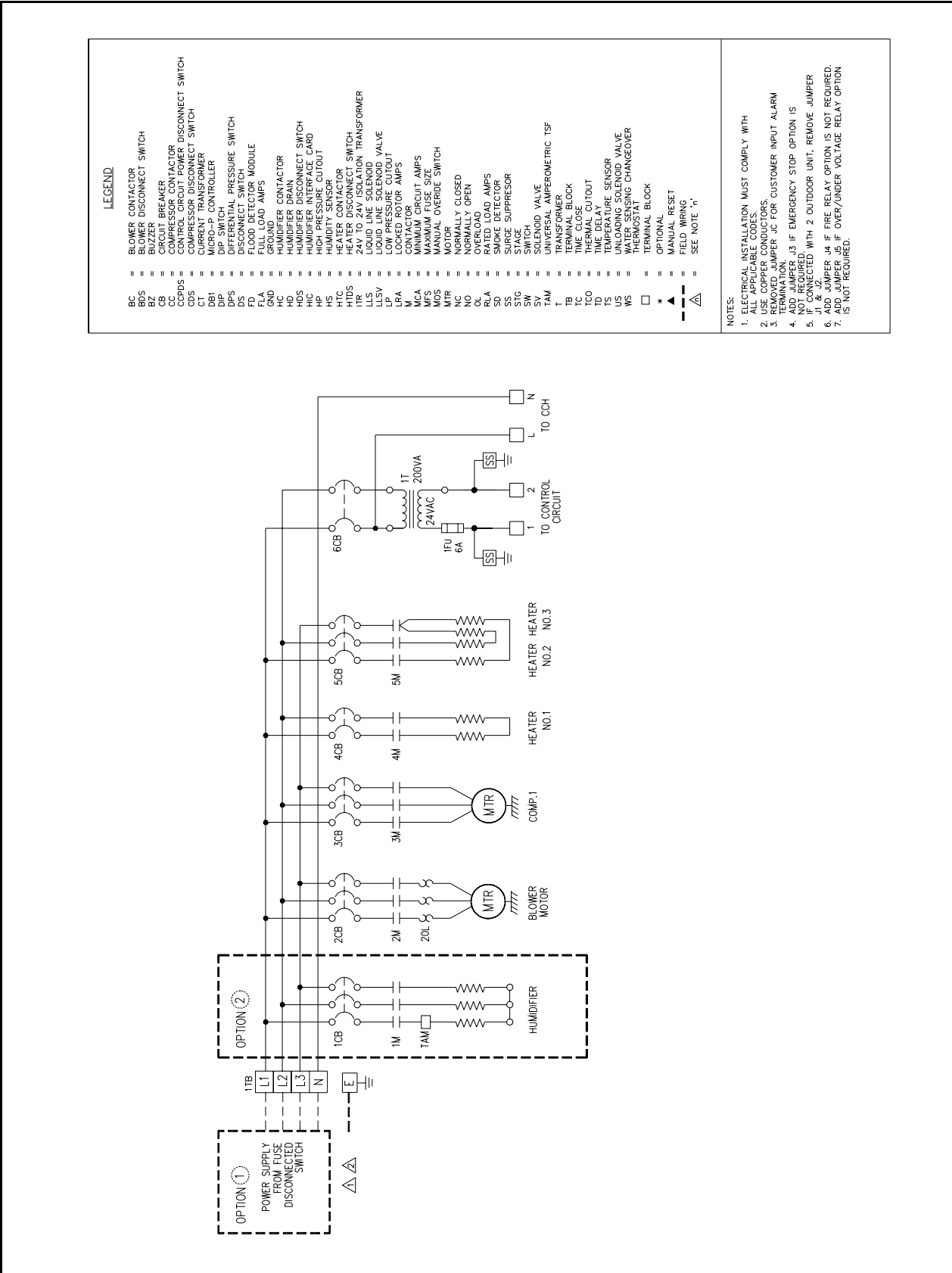


Model	Physical Data				Electrical Data																				
	Length 'L' mm (inch)	Fans		Approx. Weight kg (lbs)	Motor		RPM				Motor MCA				Motor MFS				Motor FLA						
		Qty	Total L/S (CFM)		Qty	Power Input kW		50Hz		60Hz		380V to 415V		460V		208V to 230V		380V to 400V		380V to 415V		208V to 230V		380V to 400V	
						50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz				
DBRC 04	870 (34¼)	1	3210 (6800)	100 (220)	1	0.8	1.0	925	1110	2.1	2.0	3.6	2.0	6.0	6.0	10.0	6.0	1.7	1.6	2.9	1.6				
DBRC 06	870 (34¼)	1	3210 (6800)	111 (244)	1	0.8	1.0	925	1110	2.1	2.0	3.6	2.0	6.0	6.0	10.0	6.0	1.7	1.6	2.9	1.6				
DBRC 08	870 (34¼)	1	3210 (6800)	122 (268)	1	0.8	1.0	925	1110	2.1	2.0	3.6	2.0	6.0	6.0	10.0	6.0	1.7	1.6	2.9	1.6				
DBRC 10	870 (34¼)	1	3210 (6800)	134 (295)	1	0.8	1.0	925	1110	2.1	2.0	3.6	2.0	6.0	6.0	10.0	6.0	1.7	1.6	2.9	1.6				
DBRC 11	870 (34¼)	1	3210 (6800)	180 (400)	1	0.8	1.0	925	1110	2.1	2.0	3.6	2.0	6.0	6.0	10.0	6.0	1.7	1.6	2.9	1.6				
DBRC 13	1683 (66¼)	2	6420 (13600)	190 (420)	2	0.8	1.0	925	1110	3.8	3.6	6.5	3.6	10.0	10.0	10.0	10.0	3.4	3.2	5.8	3.2				
DBRC 17	1683 (66¼)	2	6420 (13600)	204 (450)	2	0.8	1.0	925	1110	3.8	3.6	6.5	3.6	10.0	10.0	10.0	10.0	3.4	3.2	5.8	3.2				
DBRC 20	1683 (66¼)	2	6420 (13600)	265 (583)	2	0.8	1.0	925	1110	3.8	3.6	6.5	3.6	10.0	10.0	10.0	10.0	3.4	3.2	5.8	3.2				
DBRC 26	2500 (98¼)	3	9630 (20400)	288 (634)	3	0.8	1.0	925	1110	5.5	5.2	9.4	5.2	10.0	10.0	15.0	10.0	5.1	4.8	8.7	4.8				
DBRC 30	2500 (98¼)	3	9630 (20400)	320 (700)	3	0.8	1.0	925	1110	5.5	5.2	9.4	5.2	10.0	10.0	15.0	10.0	5.1	4.8	8.7	4.8				
DBRC 34	2500 (98¼)	3	9630 (20400)	355 (780)	3	0.8	1.0	925	1110	5.5	5.2	9.4	5.2	10.0	10.0	15.0	10.0	5.1	4.8	8.7	4.8				
DBRC 40	3308 (130¼)	4	12838 (27200)	380 (835)	4	0.8	1.0	925	1110	7.2	6.8	12.3	6.8	10.0	15.0	20.0	15.0	6.8	6.4	11.6	6.4				
DBRC 44	3308 (130¼)	4	12838 (27200)	410 (900)	4	0.8	1.0	925	1110	7.2	6.8	12.3	6.8	10.0	15.0	20.0	15.0	6.8	6.4	11.6	6.4				

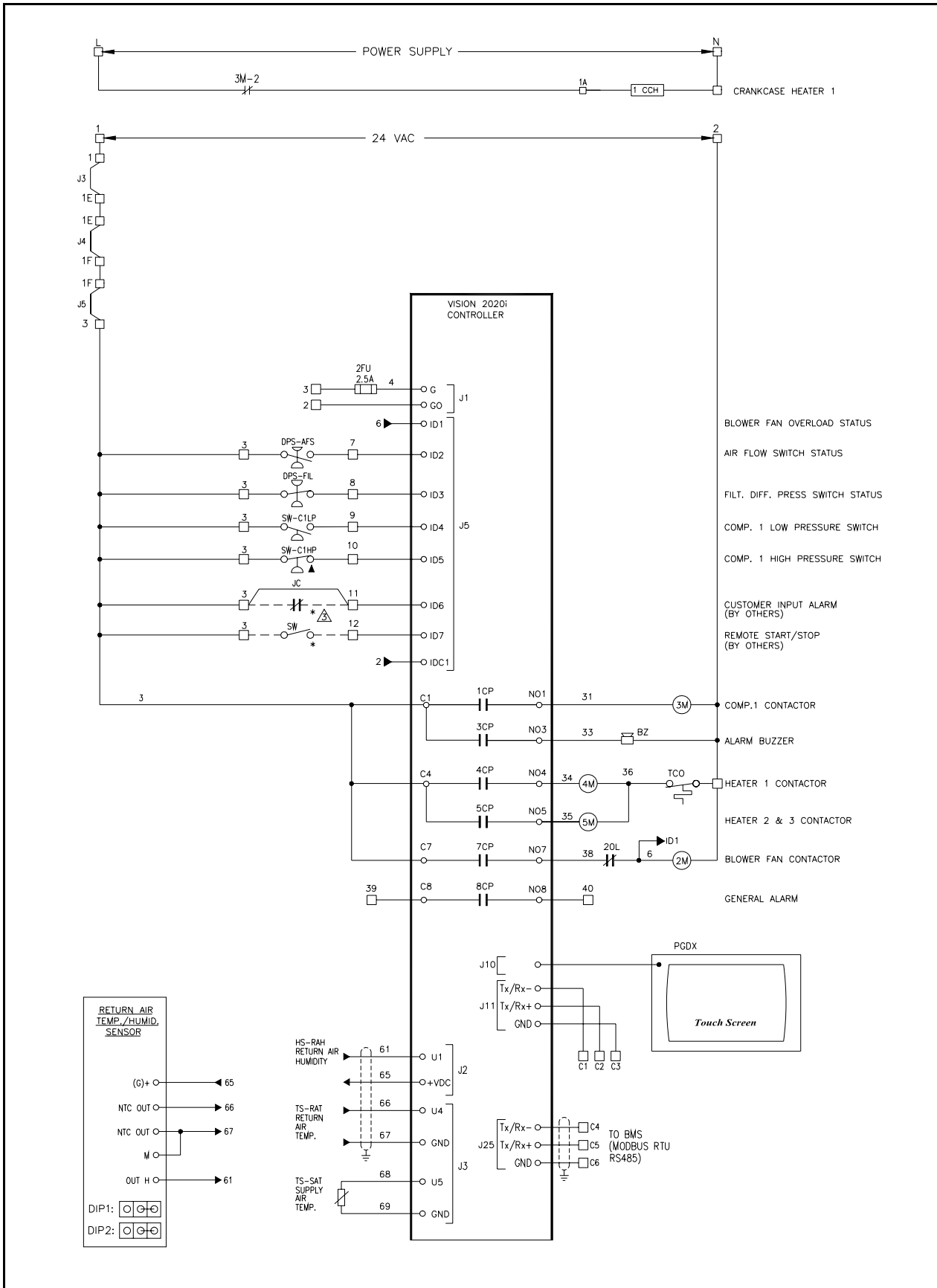
Note: All dimensions are in mm (inches).

# TYPICAL WIRING SCHEMATIC

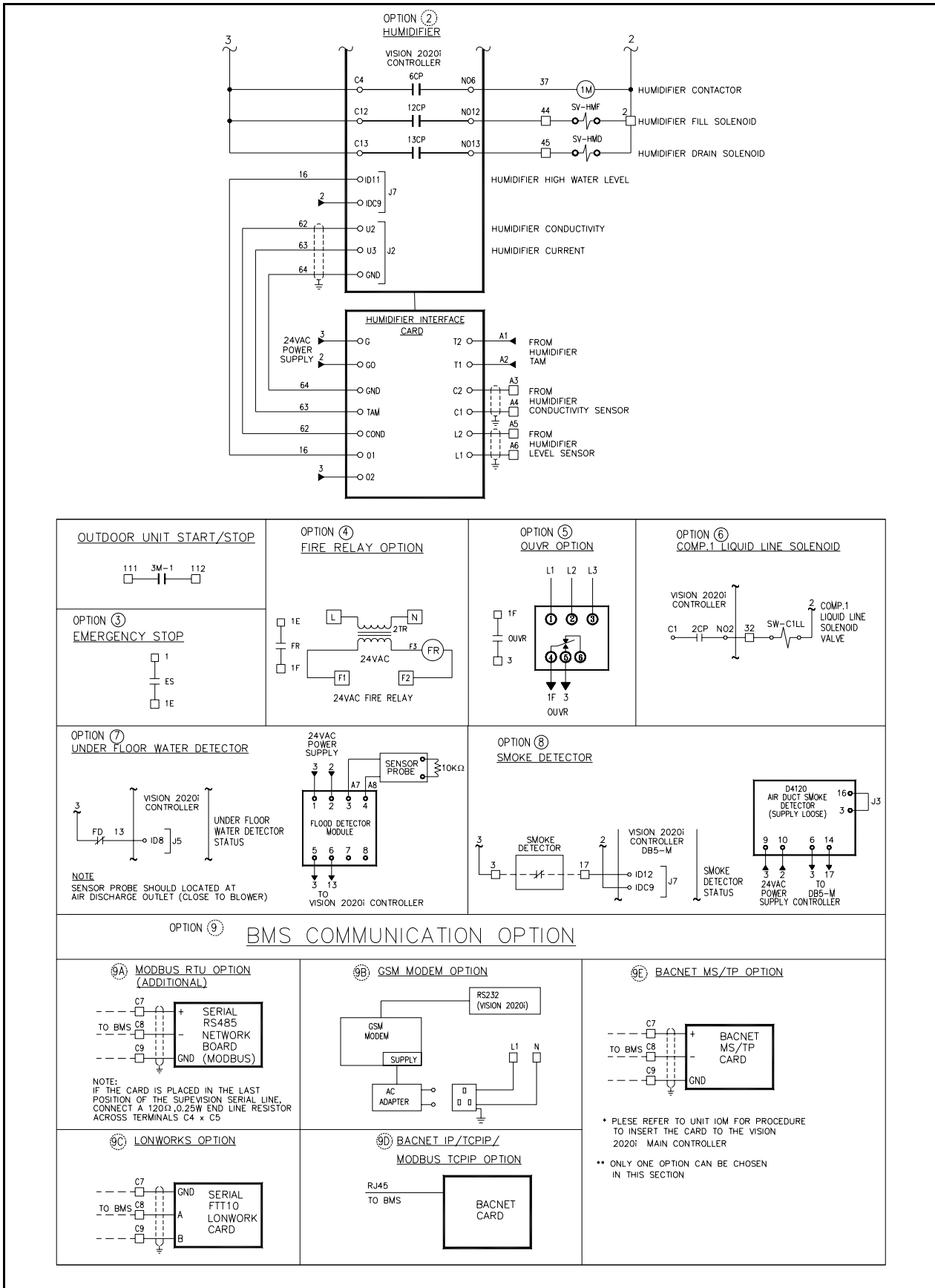
DBAD/U



# TYPICAL WIRING SCHEMATIC

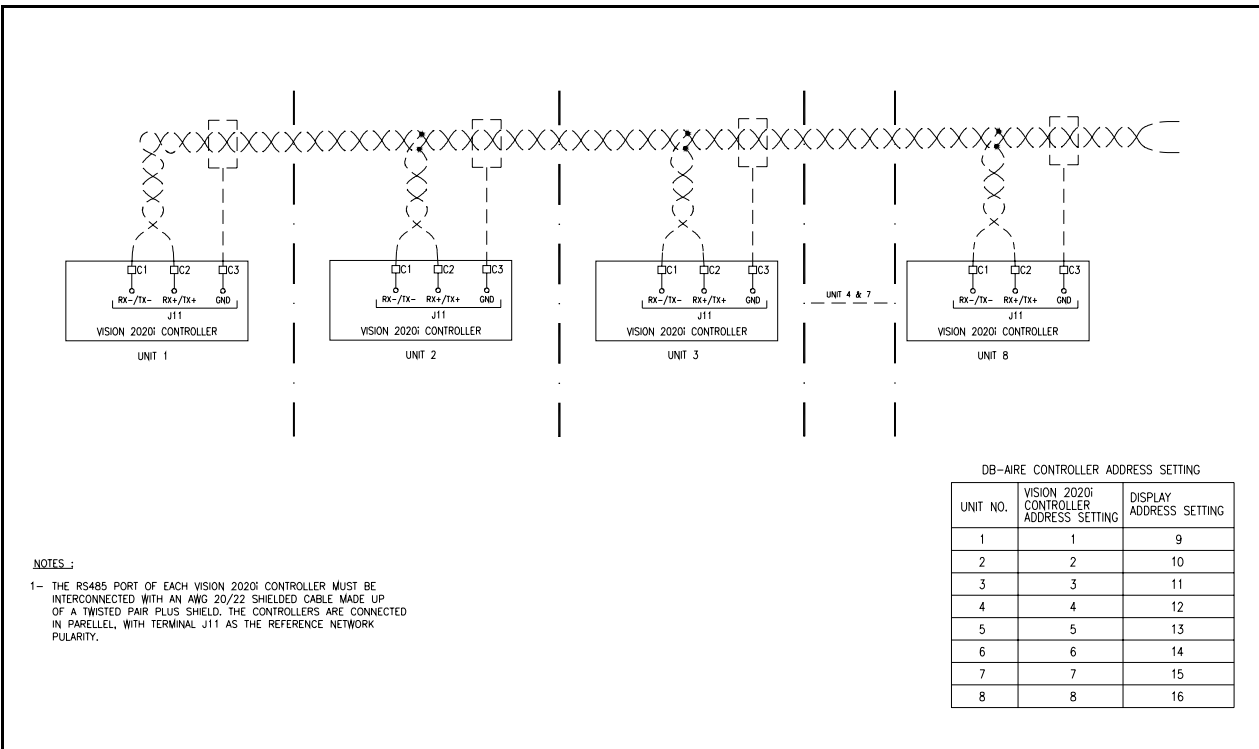


# TYPICAL WIRING SCHEMATIC

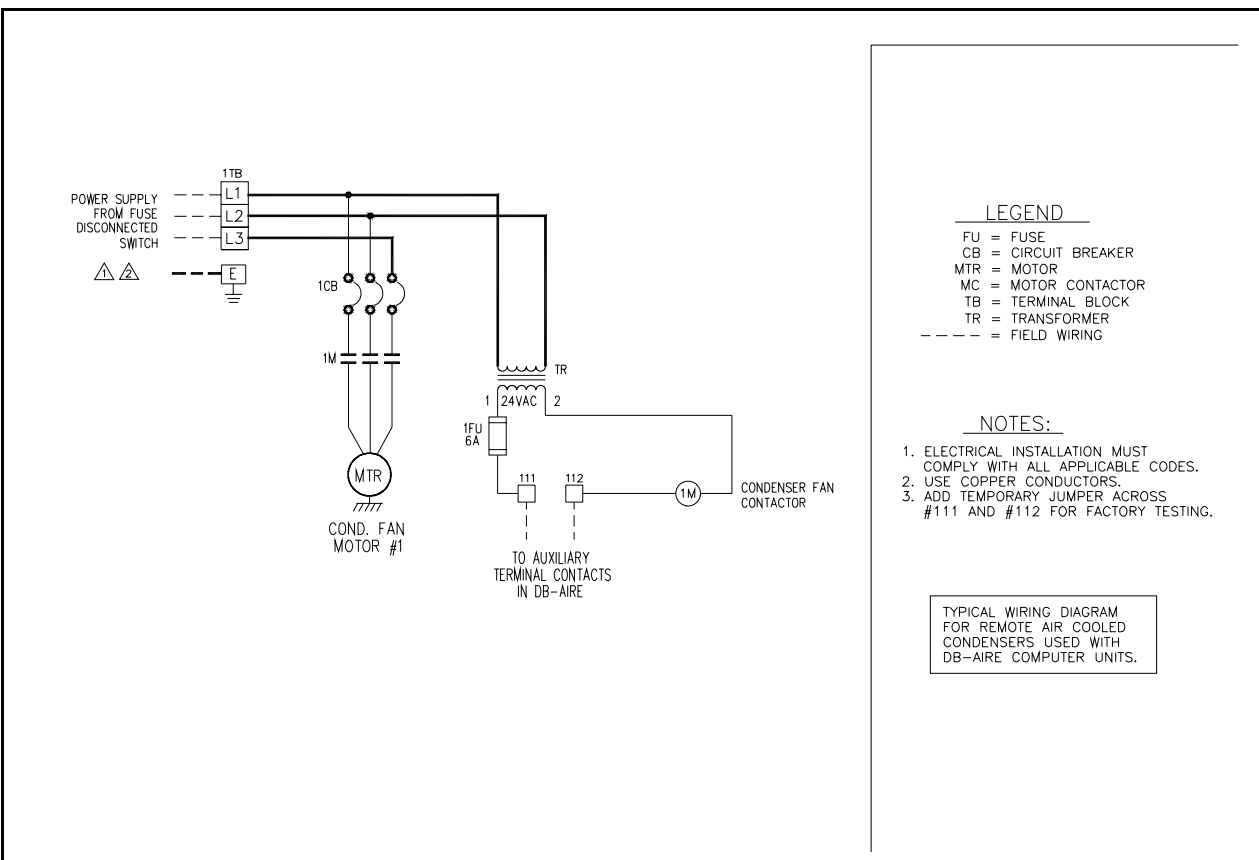


# TYPICAL WIRING SCHEMATIC

## MASTER-SLAVE CONTROL



## DBRC





# GUIDE SPECIFICATIONS

This specification describes requirements for precision air conditioning system. The system shall be designed to maintain precised temperature and humidity conditions for applications such as computer server rooms, telecommunication facilities, clean rooms, laboratories, etc. The precision environmental control system shall be factory assembled, DB-Aire II model vertical floor mounted by Dunham-Bush Industries, Malaysia.

R410A units shall be ETL listed for North America and Canada regions.

## DESIGN REQUIREMENTS

### (A) Direct Expansion (DX) System

- The unit is designed for the use of R407C  / R410A .
- The system shall have a total cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW and a sensible cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW based on an entering air temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C DB and \_\_\_\_\_ °F / \_\_\_\_\_ °C WB.
- The system shall be designed based on \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature. For low ambient application, the system shall also be designed to operate at \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature.
- The unit shall be supplied with \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (Volt/Phase/Hz) electrical service.
- The unit shall be of Upflow  / Downflow  configured model.

### (B) Chilled Water (CW) System

- The system shall have a total cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW and a sensible cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW based on an entering air temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C DB and \_\_\_\_\_ °F / \_\_\_\_\_ °C WB.
- The system shall be supplied with chilled water with an entering water temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C and leaving water temperature \_\_\_\_\_ °F / \_\_\_\_\_ °C.
- The unit shall be supplied with \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (Volt/Phase/Hz) electrical service.
- The unit shall be of Upflow  / Downflow  configured model.

### (C) Dual Coils (DX + CW) System

- The unit is designed for the use of R407C  / R410A .
- The system shall have a total cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW and a sensible cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW based on an entering air temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C DB and \_\_\_\_\_ °F / \_\_\_\_\_ °C WB.
- The DX system shall be designed based on \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature. For low ambient application, the system shall also be designed to operate at \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature.
- The CW system shall be supplied with chilled water with an entering water temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C and leaving water temperature \_\_\_\_\_ °F / \_\_\_\_\_ °C.
- The unit shall be supplied with \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (Volt/Phase/Hz) electrical service.
- The unit shall be of Upflow  / Downflow  configured model.

### (D) Direct Expansion (DX) System with hot gas reheat

- The unit is designed for the use of R407C  / R410A .
- The system shall have a total cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW and a sensible cooling capacity of \_\_\_\_\_ MBH / \_\_\_\_\_ kW based on an entering air temperature of \_\_\_\_\_ °F / \_\_\_\_\_ °C DB and \_\_\_\_\_ °F / \_\_\_\_\_ °C WB.
- The system shall be designed based on \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature. For low ambient application, the system shall also be designed to operate at \_\_\_\_\_ °F / \_\_\_\_\_ °C DB ambient temperature.
- The unit shall be supplied with \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ (Volt/Phase/Hz) electrical service.
- The unit shall be of Upflow  / Downflow  configured model.

## 1 STANDARD FEATURES (ALL SYSTEMS, INDOOR UNIT)

### 1.1 Cabinet

The cabinet comprises an anodized aluminium frame of epoxy powder coated black color paint with nylon corners and removable steel sheet panels. All panels shall be externally installed onto the cabinet by using special stopper system without using screws. The stopper system shall also facilitate the removable of panels for additional ease of field installation, service and maintenance on the system. All panels and access doors shall be fabricated from sturdy heavy gauge of 1.0mm steel sheets with epoxy powder coated oven baked black color paint to provide a durable finish. All panels shall be of 25mm (1 inch) thick single skin and lined with minimum 80kg/m<sup>3</sup> density thermal and acoustical closed cell Polyethylene (PE) foam insulation with fire resistant of Class O (BS 476 Part 6, 7). The system shall be designed for front access only with hinged and lock type full height doors.

### 1.2 Filters

The system shall be provided with 2 inches (50mm) deep (for model 02-05) or 4 inches (100mm) deep (for model 07-26) extended surface pleated disposable type filters rated for MERV 7 efficiency to ASHRAE 52.2 standard. Filters shall be withdrawable from the front of the unit.

### 1.3 Blower Assembly

Blowers shall be belt driven double-inlet-double-width (DIDW), statically and dynamically balanced with multiple forward curved blades mounted on a solid steel keyed shaft. Heavy-duty V-belt fan drive (sized for 200% safety factor) with cast iron pulleys keyed and secured to the blower shaft shall be provided.

### 1.4 Motor Assembly

Motors shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating. Motors shall be mounted to an adjustable motor frame. Motor pulleys shall be cast iron, keyed and secured to the motor shaft.

### 1.5 Evaporator Air Discharge

#### 1.5.1 Up-Flow (Front Free Return)

The system shall be configured for up-flow pattern with front free evaporator return air and top evaporator air discharge. The system shall be supplied with grilles on the cabinet doors for

# GUIDE SPECIFICATIONS

front return air configuration. Up-flow systems are available with optional Discharge Plenum.

## 1.5.2 Down-Flow (Top Free or Ducted Return)

The system shall be configured for down-flow pattern with top free or ducted evaporator return air and bottom evaporator air discharge through the raised floor.

## 1.6 Electric Reheat or Hot Gas Reheat

### 1.6.1 For Direct Expansion (DX) System, Chilled Water (CW) System and Dual Coils (DX+CW) System only.

The electric reheat shall be factory installed low watt density finned-tubular nickel plated element heater with overheat safety controls. The electric reheat shall be of three equal stages giving a more accurate controlled response to the room requirement.

### 1.6.2 For Direct Expansion (DX) System with Hot Gas Reheat only

The unit shall incorporate a hot gas reheat coil located downstream of the evaporator coil with modulating valve which is completely integrated to the unit's microprocessor control. For units with two refrigerant circuits, each circuit shall operate independently with its own modulating valve.

## 1.7 Electrical Circuits

The system shall be provided with a factory installed electrical enclosure as per local code requirements. Control voltage of the system shall be 24Vac. The fan motor(s), compressor(s), electric heaters, humidifier (if applicable) shall have their own circuit breaker and contactor. The electrical circuit shall have provision for user to cut off control power during fire / emergency shutdown

## 1.8 Control System – Vision 2020i Controller

### 1.8.1 Controller and display

The unit shall be provided with Vision 2020i control system with the following features,

- The control algorithm and parameters shall be stored in flash memory and E<sup>2</sup>PROM of the controller and shall retain even in the event of power failures, without requiring a backup battery
- 4.3" graphical touch terminal with 65k color display
- Built in memory for data logging
- Temperature and humidity controlled
- Configurable by user
- Alarm status/display
- Analog input/output display
- Digital input/output status
- Remote start/stop input
- Digital input for customer input alarm
- General alarm output (dry contact)
- Self-diagnostics
- Security password access with multiple access level for advanced settings
- Unit status display with following information:
  - Current room temperature and temperature setpoint
  - Current room relative humidity and relative humidity setpoint
  - System ON/OFF

- Operating mode (cooling/ heating/ humidifying/ dehumidifying)

### 1.8.2 Alarm Monitoring

When the system is in alarm condition, the system shall activate an audible buzzer and visual alarm message on the terminal display. A digital output (dry contact) shall be closed to indicate the alarm condition. The following alarm conditions shall be monitored by the controller:

- High room temperature
- Low room temperature
- High supply air temperature
- High room humidity
- Low room humidity
- No air flow/loss of air flow
- Filter dirty
- Sensor failure
- Evaporator fan overload alarm
- Customer interlock alarm
- Unit/ Compressor running hours threshold exceeded
- LAN network disconnected alarm
- High/Low refrigerant pressure alarm (DX models)
- Chilled water flow switch alarm (chilled water models)
- Humidity Alarms
- Under floor water detector alarm (optional)
- Smoke detector alarm (optional)

### 1.8.3 Master-Slave Sequencing Control

When more than one unit is present in the system, master-slave or duty-standby control of this group of units shall be done by just connecting controller of each unit in serial and require no additional controller.

### 1.8.4 BMS communications and remote monitoring

ModBus RTU RS485 communication port shall be a standard feature of the controller. On top of that, the following options shall be available for BMS communications and remote monitoring:

- ModBus TCPIP
- BACnet TCPIP / PTP / MSTP
- LONworks
- GSM Modem
- SNMP

## 2 DIRECT EXPANSION (DX) SPLIT SYSTEMS WITH REMOTE OUTDOOR AIR COOLED CONDENSER (DBRC MODELS)

### 2.1 Scroll Compressor

Compressor shall be mounted on the base via vibration isolators. Compressor shall be charged with polyolester oil and designed for use with R410A/ R407C refrigerant.

These compressors shall able to operate for outdoor ambient as high as 125°F (with bigger Condensing unit) and as low as 66°F. Lower than that, it shall be supported with the using of Low Ambient Kit.

### 2.2 Refrigeration Circuits

The refrigeration system shall be of the direct expansion type with one (Model 02-13) or two (Model 14-26) hermetic scroll compressors complete with rotalock connections. All refrigeration circuit shall be

# GUIDE SPECIFICATIONS

---

pre-piped with copper tubing and include expansion valve with external equalizer, filter dryer, sight glass, refrigerant service valves, pressure fittings of manual reset high pressure control/auto reset low pressure safety cutouts and charging/access ports in each circuit.

## 2.3 Evaporator Coil

The evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of seamless copper tube, mechanically bonded to hydrophilic aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system and the refrigeration system shall be sealed prior to shipment. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

## 2.4 Remote Outdoor Air Cooled Condenser (DBRC Models)

The remote condenser shall be constructed from sturdy heavy gauge steel sheets with epoxy powder coated oven baked, factory standard beige color to provide a durable finish.

The remote condenser shall include direct driven propeller fans, condenser coil, fan guard, thermally protected rated IP55 motors, integral factory wired and tested control panel. The condenser coil shall be quality construction of seamless copper tube, mechanically bonded to aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) for R410A system, 450psig (31 bar) for R407C system and the refrigeration system shall be sealed prior to shipment. The evaporator and condenser sections shall ship with a dry-nitrogen holding charge ready for field refrigerant charging.

## 3 CHILLED WATER (CW) SYSTEMS

### 3.1 Chilled Water Coil

The evaporator coil shall be of draw through air design for uniform air distribution. The chilled water coil shall be quality construction of seamless copper tube, mechanically bonded to hydrophilic aluminium fins with galvanized coil plates. The coil shall be factory leak and pressure tested to 450psig (31 bar) and sealed prior to shipment. Copper pipe for brazed connection shall be provided as standard. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

### 3.2 Chilled Water Control

The water circuit shall include 3-way forged brass valve and modulating actuators. The microprocessor positions the valve in response to room condition. Cooling capacity shall be controlled by bypassing chilled water around the coil.

## 4 OPTIONS

### 4.1 Stainless Steel Drain Pan

A stainless steel condensate drain pan shall be provided for the evaporator/chilled water coil in lieu of standard galvanized and painted drain pan.

### 4.2 Discharge Plenum (Up-flow Units only)

A discharge plenum box shall be provided for field installation on the top of the up-flow unit. The plenum box shall be 18 inches (457mm) high, insulated and painted to match the color of the indoor unit. The plenum box shall be fitted with double deflection grilles for room discharge of conditioned air.

### 4.3 Steam Generating Humidifier

Humidifier shall be factory installed inside the unit. The humidification system shall be an electrode cylinder type, complete with fill valve, drain valve, adjustable humidity output and automatic flush cycle activated on demand from the microprocessor control system.

### 4.4 Hot Gas Bypass (DX Systems only)

The refrigerant circuit(s) shall be provided with a hot gas bypass system for evaporator freeze-protection and capacity modulation during low load conditions.

### 4.5 Liquid Line Solenoid Valve (DX Systems only)

A factory fitted liquid line solenoid valve shall be provided for each refrigeration circuit as an option.

### 4.6 Double Skin Panels

All panels shall be provided with galvanized internal skin.

### 4.7 Hydrophilic or Copper Fin for Condenser Coil (DBRC)

Condenser coils shall be provided with hydrophilic or copper fins in lieu of aluminium.

### 4.8 Black Color Epoxy Powder Coating for Remote Condenser (DBRC)

The remote condenser DBRC shall be epoxy powder coated oven baked black color paint in lieu of standard beige color.

### 4.9 Under Floor Water Detector

A remote water leak detector shall be factory provided for field installation. When water leak is detected, cooling mode of the unit is off.

### 4.10 Smoke Detector

A smoke detector shall be supplied loose for remote mounting. The unit shall shut down when smoke alarm is triggered.

### 4.11 Variable Frequency Drive (VFD) for Evaporator Blower Motor

A variable frequency drive (VFD) for blower motor shall be factory installed to vary the blower motor speed based on room's requirement.

### 4.12 BMS communication cards

BMS communication card shall be factory installed to enable high level interfacing with BMS system. ModBus, BACnet, LONworks, SNMP communication protocols shall be available as option.

### 4.13 Electronic Expansion Valve (EEV) for Evaporator Coil

The refrigerant circuit(s) shall be provided with an Electronic Expansion Valve (EEV) for evaporator in lieu of standard Thermal Expansion Valve (TXV) to allow an efficient modulation control of refrigeration and consistent energy saving performances.

### 4.14 Low Ambient Kit

Fan cycling for better performance during low ambient.



#### Malaysia

Lot 5755-6,  
Kidamai Industrial Park,  
Bukit Angkat,  
43000 Kajang,  
Selangor, Malaysia

Tel: +603-8924 9000  
Fax: +603-8739 5020

#### China

No. 1 Dunham-Bush Road,  
Laishan District,  
Yantai,  
Shandong Province,  
China 264003

Tel: +86-535-739 7888  
Fax: +86-535-739 7999

#### United Kingdom

8 Downley Road,  
Havant,  
Hampshire,  
England PO9 2JD

Tel : +44-23-9247 7700  
Fax: +44-23-9245 0396

#### United States of America

1800 SE 38th Avenue,  
Homestead,  
Florida 33035  
United States of America

Tel: +1(786)-800 9999  
Fax: +1(786)-527 3539

#### United Arab Emirates

Office # 2606,  
Fortune Executive Towers,  
Cluster T1, Jumeirah Lake Tower  
Dubai, UAE

Tel: +971-4-443 9207  
Fax: +971-4-443 9208

#### South Africa

No. 57 Sovereign Drive  
Route 21 Corporate Park  
Irene, Pretoria  
South Africa

Tel: +27-12-345 4202  
Fax: +27-12-345 4203

#### India

Unit no : 804 , 8th Floor  
Spaze Platinum Towers,  
Sector-47, Sohna Road,  
Gurgaon-122018, India

Tel: +91-124-414 4430

#### Indonesia

The Boulevard Office,  
3F2 Jl. Fachrudin No.5,  
Kp. Bali, Tanah Abang  
Jakarta Pusat - 10250, Indonesia

Tel: +62-21-2123 1392

#### Thailand

48/39 Soi Praditmanutham 19  
Praditmanutham Road,  
Lat Pharo, Bangkok 10230  
Thailand

Tel: +66-0-2610 3749  
Fax: +66-0-2610 3601

#### Singapore

2 Kallang Pudding Road  
#07-07 Mactech Building  
Singapore 349307

Tel: +65-6842 2012  
Fax: +65-6842 2013

#### Vietnam

10th Floor, Nam A Bank Tower,  
201-203 Cach Mang Thang 8 Street,  
District 3, Ho Chi Minh City,  
Vietnam

Tel: +84-8-6290 3108  
Fax: +84-8-6290 3109

**DUNHAM-BUSH®**

info@dunham-bush.com  
www.dunham-bush.com



Products that perform...By people who care

Manufacturer reserves the right to change specifications without prior notice.

M-S-0705D-0721