CITEC

G-VOLUTION

PRECISION · EFFICIENCY · CREATIVITY

- Factory
- Sales & Technical Support Offices
- Distribution Networks

Australia
Bangladesh
Brunei
China
India
Indonesia
Japan
Laos
Macau
Myanmar
Pakistan
Philipines
Sri Lanka
United Arab Emirates
Vietnam

CITEC

We at CITEC, are committed to deliver innovative products and services that are revolutionizing advances the precision cooling needs. From design and manufacturing to product and after sales support services, we constantly build upon our proven innovation of precision, efficiency and creativity to deliver a full range of consultancy for customized business needs or an array of designs and models to a myriad of clienteles.

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PRECISION
AIR CONDITIONER SPECIALIST

Established in Malaysia since 1996, CITEC International has constantly reinvented itself to evolve into one of the leading manufacturers for precision air conditioning products.

As experts in the field of precision air conditioning, CITEC thrives on Research and Development (R&D) to deliver innovative products that are of exceptional standards with best performance, reliability and efficiency. We create real value and business differentiation by taking an integrated approach covering all aspects of our customers' businesses.

Today, CITEC has established a wide network of distributors to provide excellent product support and long-term services to various industries across Asia Oceanic and Pacific regions.

CERTIFICATIONS

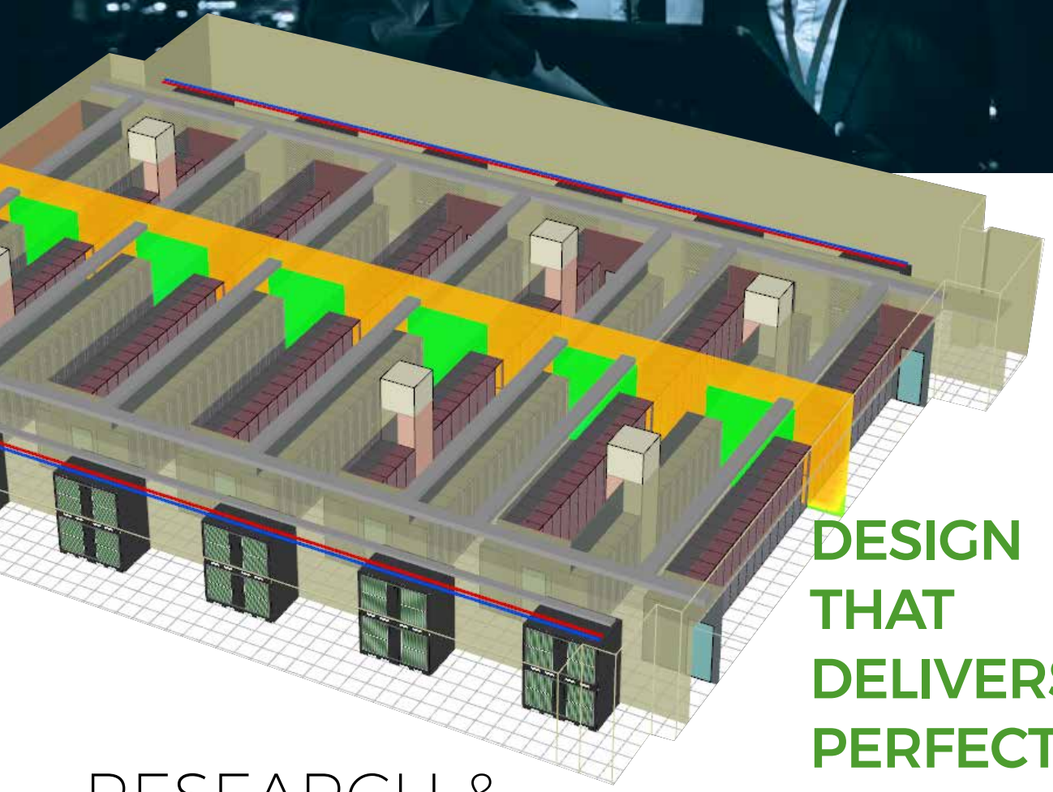
China Quality Certification

ISO Certification

CCC Certification

CE Certification

A full detailed list of certifications and licensing can be found on our webpage:
www.citecinternational.com



DESIGN THAT DELIVERS PERFECTION

RESEARCH & DEVELOPMENT

At CITEC, research and development are at the heart of our business. Innovation is at our core and we continuously strive to deliver design excellence to meet and exceed – customers' expectations.

CITEC products are engineered to achieve optimum reliability, efficiency and ease of installation and maintenance driven by the needs of our customers. Products are designed using sophisticated 3D CAD system and Computational Fluid Dynamics (CFD) analysis to ensure optimum air flow with maximum efficiency.

Thus, best performance products with the highest efficiency are guaranteed.

Our products undergo extensive and stringent tests following ASHRAE standards in our well-equipped testing laboratory facilities accredited with Class A certification by the national authorities.

G-VOLUTION

GROUNDBREAKING TECHNOLOGY

G-VOLUTION

Engineered to run seamlessly in critical mission environment. Ability to deliver constant cooling through efficient and intelligent controls. Precise temperature and humidity control all year round is guaranteed. Designed to provide flexibility on limited or large installation space. G-Volution series is designed with a wide range of options to suit every requirement for reliable and precise condition control.

Typical applications include:

CITEC's G-VOLUTION SERIES

CITEC G-Volution series offer a wide range of system and capacities to suit various applications.

ES

ES Range offers a direct expansion system which can also be fitted with DC Inverter Compressors. It will be able to regulate the capacity based on actual cooling demand from 30% to 100%. It can control the supply of air temperature precisely within a tight operating tolerance resulting in a reduction of the unit energy consumption with higher efficiency during part load operation.

EC **ECL**

Chilled Water series comes with exclusively two different range; EC and ECL to suit various requirements and applications.

The EC range is designed to fit in large coils with a maximum heat exchange surface. It has a low coil face velocity thus reducing air friction loss, therefore ensuring the units operate at the highest efficiency.

The ECL range comes standard with an underfloor EC fan as standard and is designed to deliver maximum performance with minimum footprint. Cooling coils are designed and arranged to achieve maximum heat transfer surface area within limited cabinet space. ECL range is best suited for data centers with elevated floorings.

Electronic Pressure Independent Valve (EPIV) can be fitted into the EC & ECL range as options that will incorporate a flow meter and a 2-way control valve. The actuator has a powerful algorithm that modulates the control valve to maintain and measure the water flow rate regardless of variations in system differential pressure.

Unique dual coil series, the EH range is designed to provide the highest level of redundancy. There are two types of dual coil system; dual chilled water system or a combination of direct expansion and chilled water system. The EH range complies with various applications preventing downtime whilst safeguarding the operations of your data center. Should a fault be detected in the primary system, the unit operating condition will be closely monitored while performing the switch from primary to the secondary system with CITEC powerful Genius 5+ controller.

CITEC EH Range ‘C Version’ is designed with two sets of chilled water coil within a single cabinet, connected to two independent; primary and secondary sources. During maintenance for the primary source or should a fault be detected, the unit shall changeover to the secondary source for continuous operation.

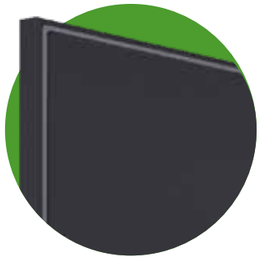
CITEC EH Range ‘A/W’ version consists of a dual system; the DX system and the CW system within a single cabinet. Systems will operate utilising low cost chilled water as a primary source. The DX system will take-over should a fault with the chilled water be detected or during chiller shut down for maintenance. In buildings with centralized chilled water supply during office hours, chilled water can be utilized as a primary source and switched to the DX system as a secondary source after office hours.

DESIGN FEATURE

INNOVATIVE MODULAR DESIGN COMPLIES WITH TECHNOLOGY

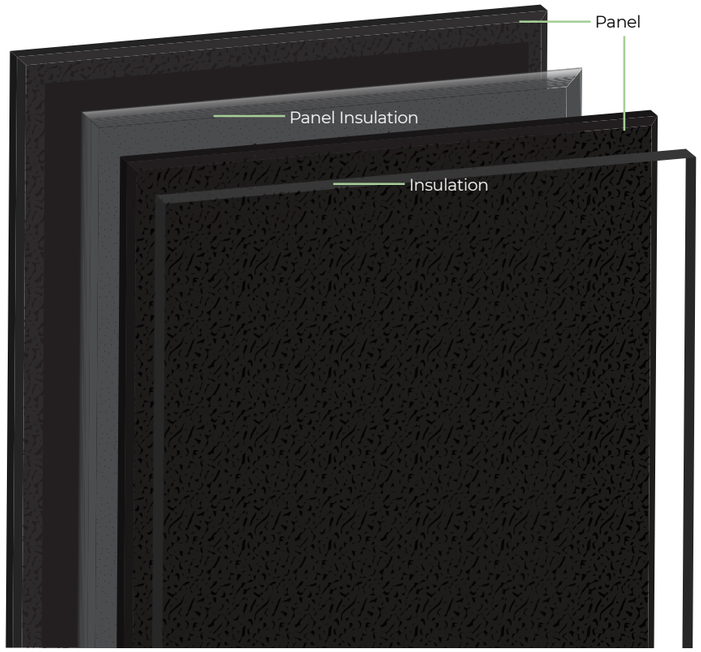
The modular concept offers flexibility in combining two smaller size units due to limited corridor space. It also allows a combination of additional unit onto an existing installed unit to meet higher cooling requirements for future facility expansion.

Modular combination concept on products dynamically allows precise air control to meet every need.



DOUBLE SKIN ACCESS PANEL

The G-Volution series is equipped with a robust solid and rigid double skin insulated panel as standard. The double skin insulated panel with lining provides excellent sound isolation and prevent air leakages during unit operation.



FULL FRONT ACCESS

Built-in components can be easily accessible from the front which significantly improves the maintainability and serviceability of the unit.

ELECTRONIC EXPANSION VALVE

The innovative Electronic Expansion Valve (EEV) provides highly efficient control of refrigerant flow based on real-time feedback. The EEV can provide fast, stable and precise control even under low-load condition. The presence of the temperature and pressure probe allow real time monitoring of suction temperature and pressure as well as the superheat of the system.

ADVANCE COOLING WITH UNDERFLOOR EC FAN

An underfloor version of the EC fan is available for downflow models. Studies have shown that the placement of underfloor EC fans contribute to a 10% to 15% improvement in performance and is recommended for users who would like to utilize the full capacity of the EC fan. These fans are pre-wired and pre-packaged into the Precision Air Conditioning unit prior to delivery for instant installation.

With the innovation of CITEC, underfloor EC fan is mounted to the base of unit and lowered down to under-raised floor during site installation, promoting:

- Better air flow distribution
- Reduction of fan power inputs
- Convenience of service and maintenance
- Cost saving on installation and equipment

DIRECT DRIVE EC FAN SYSTEM

The Electronically Commutated (EC) fan motor combination offers a number of advantages over traditional belt-driven forward curved centrifugal blower, such as:

- Higher efficiency compared to forward curved fans
- Reduced losses due to the absence of pulley and belt usage in the standard belt-driven fan
- 15-30% more energy savings
- Variable speed control
- Maintenance-free, higher reliability
- Soft start feature, where the fan slowly ramps up to the desired speed

INTELLIGENT & PRECISE CONTROLS³

CONTROLLER & DISPLAY

CITEC Genius 5+ controller delivers intelligent and precise control for critical mission environment, achieving optimum performance and efficiency.

Advance technology-based CITEC Genius 5+ controller acts as the brain of the precision cooling system, delivers optimum performance according to varying load conditions resulting in big savings of operating costs.

Genius 5+ Controller

CITEC Genius 5+ controller provides intelligent and advanced control for precision cooling application. The controller supports a wide range of cooling control strategies for mission critical facilities including auto-sequencing, supply air control and containment system. Energy-saving features such as EC fan control, compressor and EEV optimization and intelligent humidity control are built-in to the standard control program.

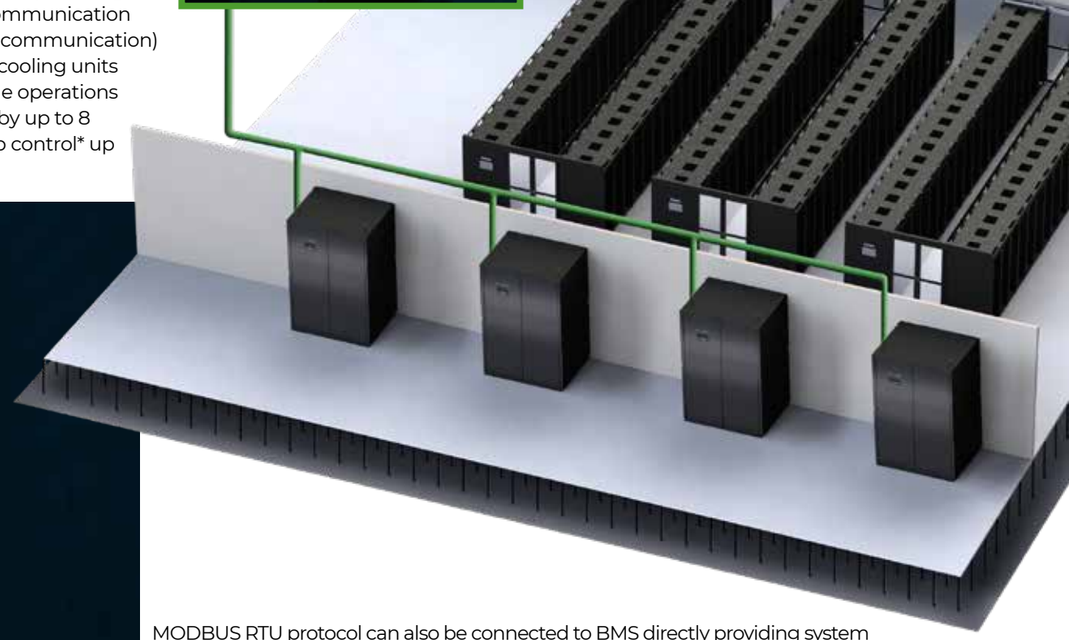
SOLUTION FOR A PRECISE & EFFICIENT AIR COOLING POWER LIES WITHIN THE INTELLIGENT CONTROLS & DISPLAYS

Touch screen display provides informative and user-friendly interface for easy navigation. The display can show graphical information via animated icons and also capable of plotting trend graphs for temperature and humidity.

CONNECTIVITY

CITEC Genius 5+ controller offers various common connectivity protocol used in Data Centers for complete system monitoring and management.

CITEC controller comes with a built-in communication port for pLAN and MODBUS RTU as standard, providing an symmetric communication (master/slave communication) between the cooling units to manage the operations of duty standby up to 8 units or group control* up to 16 units.



MODBUS RTU protocol can also be connected to BMS directly providing system monitoring and management. With an optional BMS card, CITEC controller will be able to connect to other communication protocol as illustrated below:

Controller	PCO5+		
Gateway	-	pCOWEB	pCONET
Protocol			
MODBUS RTU	●		
MODBUS TCP / IP		●	
BACNET MS / TP			●
BACNET / IP		●	
BACNET ETHERNET		●	
SNMP		●	
HTTP		●	
FTP		●	
SMTP		●	

* Group control require separate control module – Gsys Visor

CITEC GSYS-VISOR

Integration of CITEC cooling system into a smart control system, all linked to a main control module to achieve the highest efficient cooling system.

CITEC Gsys – Visor Management & Control System offer advanced and precise thermal management control where all cooling units work as a team to achieve precise and uniform temperature distribution in the room with the changing loads of IT facilities, preventing hotspots and conflict in operation across multiple cooling units within the data center, optimizing cooling performance with improved PUE.

- Equipped with large 7” colour interface
- Full fledge touch screen control panel
- Deployment of actual site layout on screen interface
- At-a-glance reporting on performance metrics and room environment

PRODUCT OVERVIEW

01 Electrical & Control

The high and low voltage cables are segregated with each component being protected by individual MCB. AC3 components such as fan motors and compressors are protected by manual motor starters. All cablings are colour coded and numbered for ease of reference.

Electrical & Control Options

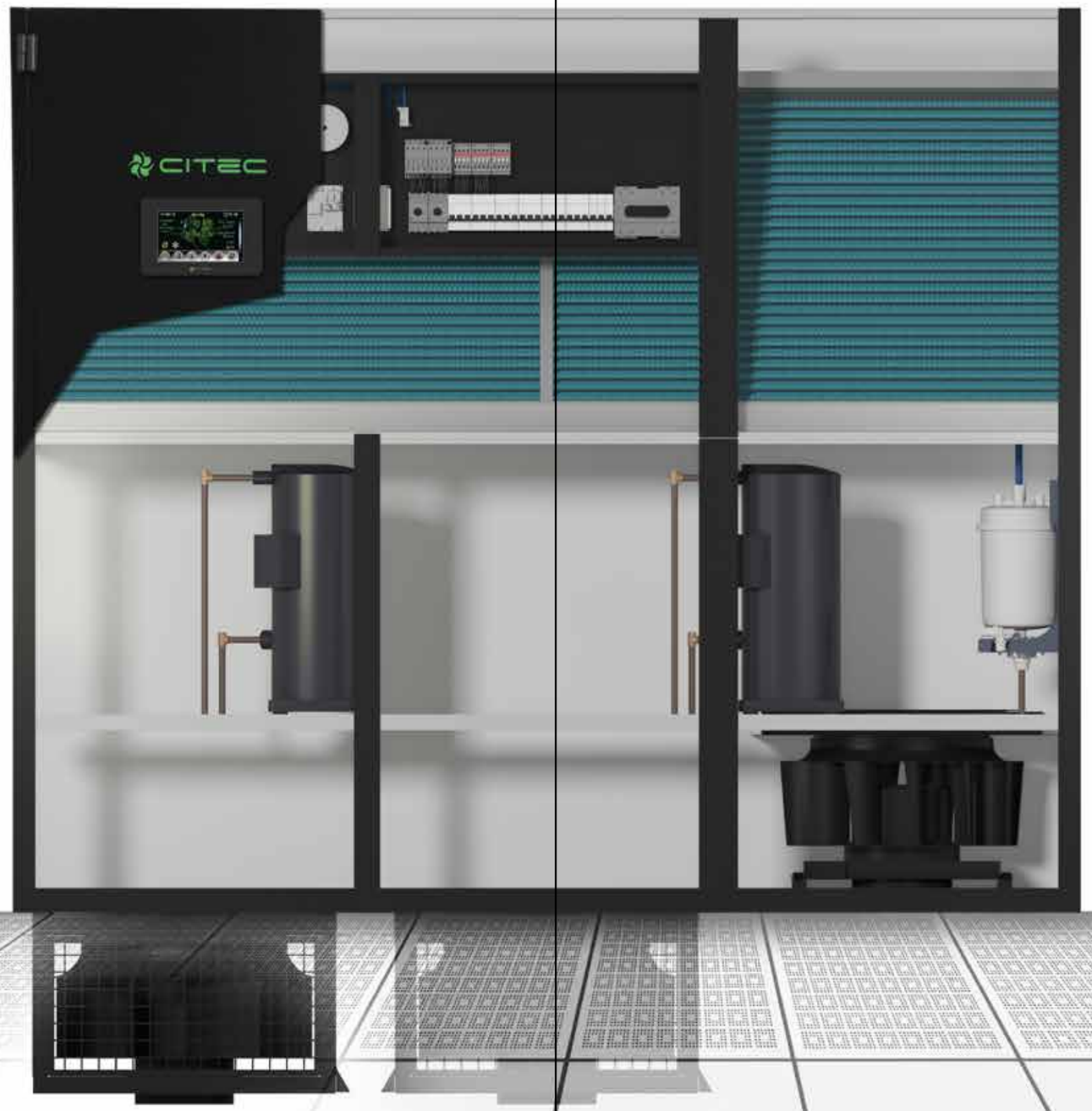
- Supply air control
- Hot standby control
- Differential pressure control
- Fire alarm relay
- Built-in Automatic Transfer Switch (ATS)
- Built-in mini UPS for controller
- Colour touch screen display interface
- Phase monitoring relay
- Undervoltage relay
- Alarm buzzer
- E-stop button
- 3 stage heater*
- Thyristor heating

03 Fan Configuration

Centrifugal fan with belt driven AC motor (Standard)

EC fan (Optional)

Underfloor EC fan (Optional)



02 Standard & Inverter Compressors

- Standard compressor (R407C - standard, R410A -optional)
- DC Inverter R410A compressor

04 Mechanical System

Direct Expansion system are fitted with electronic expansion valve (EEV), stainless steel condensate drain pan and hydrophilic coated coil, filter drier, front access sight glass and service valve.

Chilled Water system are fitted with 2-way valve, hydrophilic coated coil and stainless steel condensate drain pan.

Mechanical Options

- Built-in water detection kit
- High efficiency filters (F5,F6,F7)
- Front horizontal discharge plenum for upflow models
- Serviceable humidifier with electrode boiler type
- Oil separator*
- Liquid solenoid valve*
- Fan speed controller*
- Crankcase heater*
- Hot gas bypass
- 3-way valve
- Screwed water connection
- Electronic Pressure Independent Valve (EPIV)
- Water In & Out temperature sensor

*Standard for Inverter models.

Note:
This diagram drawing is for illustration purpose only.

TECHNICAL
SPECIFICATION

ES RANGE

G-VOLUTION

Direct Expansion System (DX) with Standard Compressor

UNIT MODEL (ESD/ESU xxx A/W)		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Gross Total Capacity	kW	9.83	14.72	18.17	20.23	25.70	31.90	35.07	41.64	44.60	49.66	61.86	69.18	82.06	89.38	99.52
Gross Sensible Capacity	kW	9.83	12.72	18.17	20.23	23.11	28.17	29.59	41.64	43.21	45.37	61.86	66.48	72.06	86.06	90.42
S.H.R.		1.00	0.86	1.00	1.00	0.90	0.88	0.84	1.00	0.97	0.91	1.00	0.96	0.88	0.96	0.91

GENERAL DATA		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Nominal Air Flow	m3/s	1.00	1.00	1.84	1.84	1.84	2.24	2.24	3.70	3.70	3.70	5.30	5.30	5.30	7.20	7.20
No. of Fan(s)		1	1	1	1	1	1	1	2	2	2	2	2	2	3	3
No. of Compressor(s)		1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
No. of Refrigerant Circuit(s)		1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Sound Level	dBA	52	52	61	61	61	62	62	64	64	64	66	66	66	67	67

CONDENSER		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Nominal Air Cooled Model	HEC	194	234	234	234	314	374	434	574	574	574	2x374	2x374	2x574	2x574	2x574
Nominal Water Cooled Model		WA20	WA30	WB40	WB40	WB60	WB60	WB80	WB80	WB80	WC60	2xWB60	2xWB60	2xWB80	2xWB80	2xWC60
Nominal Water Flow Rate	l/s	0.56	0.87	1.04	1.16	1.49	1.85	2.06	2.36	2.53	2.89	3.52	3.93	4.75	5.06	5.80
Waterside Pressure Drop of Condenser	kPa	36.8	42.8	14.1	17.5	15.9	24.5	21.7	28.3	32.6	57.1	22.1	27.6	28.8	32.7	57.3

ELECTRIC RE-HEATER		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Nominal Heater Capacity	kW	6	6	6	6	6	6	6	12	12	12	12	12	12	12	12
No. of Heater Step(s)		1	1	1	1	1	1	1	2	2	2	2	2	2	2	2

ELECTRODE HUMIDIFIER		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Nominal Humidifier Capacity	kg/hr	5	5	5	5	5	5	5	5	5	5	5	5	5	8	8

UNIT DIMENSION & WEIGHT		**8***	**12***	**15**	**20**	**25**	**30****	**35****	**40**	**45**	**50**	**60**	**70**	**80**	**90**	**100**
Length	mm	648	648	800	800	800	885	885	1315	1315	1315	1815	1815	1815	2500	2500
Depth	mm	654	654	891	891	891	891	891	891	891	891	891	891	891	891	891
Height	mm	1940	1940	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
Gross Weight - “A” Version	kg	165	195	275	275	300	310	310	445	450	450	610	610	617	790	790
- “W” Version	kg	173	204	286	287	314	324	326	461	466	466	638	638	645	822	822
Min. Service Allowance	mm	600	600	725	725	725	725	725	725	725	725	725	725	725	800	800

Notes:

1. Cooling capacity is based on 24°C, 45%RH, R407C refrigerant, 45°C condensing temperature, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. Nominal air cooled condenser sizing is suggestion only based on 35°C ambient & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
4. Nominal water cooled condenser sizing is suggestion only based on water in/out 30/35°C & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
5. Water cooled condenser to be installed externally, please consult factory if required to be installed internally.
6. For underfloor EC fan option, raise floor height must be >400mm. *Option not available for model 8 and 12.
7. **For model 30 & 35, only EC fan version is available.

ES RANGE

G-VOLUTION
Direct Expansion System (DX) with DC Inverter Compressor

UNIT MODEL (ESD/ESU xx A/W)		20	25	30	35	40	45	60	70	80	90
Gross Total Capacity	kW	21.06	25.03	30.34	34.92	41.17	46.36	59.70	72.64	79.98	92.81
Gross Sensible Capacity	kW	21.06	22.82	27.49	29.52	41.17	43.95	59.70	65.74	68.97	87.52
S.H.R.		1.00	0.91	0.91	0.85	1.00	0.95	1.00	0.91	0.86	0.94
GENERAL DATA		**20**	**25**	**30**	**35**	**40**	**45**	**60**	**70**	**80**	**90**
Nominal Air Flow	m3/s	1.84	1.84	2.24	2.24	3.70	3.70	5.30	5.30	5.30	7.20
No. of Fan(s)		1	1	1	1	2	2	2	2	2	3
No. of Compressor(s)		1	1	1	1	1	1	2	2	2	2
No. of Refrigerant Circuit(s)		1	1	1	1	1	1	2	2	2	2
Sound Level	dBA	62	62	63	63	64	64	66	66	66	67
CONDENSER		**20**	**25**	**30**	**35**	**40**	**45**	**60**	**70**	**80**	**90**
Nominal Air Cooled Model	HEC	234	314	374	434	574	574	2x374	2x434	2x574	2x574
Nominal Water Cooled Model		WB40	WB60	WB60	WB80	WB80	WB80	2xWB60	2xWB80	2xWB80	2xWB80
Condenser Water Flow Rate	l/s	1.22	1.50	1.81	2.12	2.40	2.70	3.49	4.31	4.72	5.41
Waterside Pressure Drop of Condenser	kPa	19.6	16.0	23.3	23.0	29.5	37.3	21.7	23.7	28.5	37.3
ELECTRIC RE-HEATER		**20**	**25**	**30**	**35**	**40**	**45**	**60**	**70**	**80**	**90**
Nominal Heater Capacity	kW	6	6	6	6	12	12	12	12	12	12
No. of Heater Step(s)		1	1	1	1	2	2	2	2	2	2
ELECTRODE HUMIDIFIER		**20**	**25**	**30**	**35**	**40**	**45**	**60**	**70**	**80**	**90**
Nominal Humidifier Capacity	kg/hr	5	5	5	5	5	5	5	5	5	8
UNIT DIMENSION & WEIGHT		**20**	**25**	**30**	**35**	**40**	**45**	**60**	**70**	**80**	**90**
Length	mm	800	800	885	885	1315	1315	1815	1815	1815	2500
Depth	mm	891	891	891	891	891	891	891	891	891	891
Height	mm	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
Gross Weight - "A" Version	kg	265	265	275	280	415	430	545	545	570	725
- "W" Version	kg	277	279	289	296	431	446	573	573	602	757
Min. Service Allowance	mm	725	725	725	725	725	725	725	725	725	800

Notes:
1. Cooling capacity is based on 24°C, 45%RH, R407C refrigerant, 45°C condensing temperature, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. Nominal air cooled condenser sizing is suggestion only based on 35°C ambient & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
4. Nominal water cooled condenser sizing is suggestion only based on water in/out 30/35°C & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
5. Water cooled condenser to be installed externally, please consult factory if required to be installed internally.
6. For underfloor EC fan option, raise floor height must be >400mm.
7. Standard unit comes with fan speed controller, crankcase heater, oil separator & liquid solenoid valve.

EC RANGE

G-VOLUTION
Chilled Water System (CW)

UNIT MODEL (ECD/ECU xxx)		8***	12***	25*	30**	50*	60	70	80	95	110	125	135	150
Downflow														
Gross Total Capacity	kW	9.67	12.39	24.07	30.27	51.01	64.31	74.71	83.63	100.27	113.93	123.42	131.51	155.54
Gross Sensible Capacity	kW	9.42	11.65	22.31	27.58	46.08	57.00	66.77	73.76	87.09	99.01	106.18	115.05	133.88
S.H.R.		0.98	0.94	0.93	0.91	0.90	0.89	0.89	0.88	0.87	0.87	0.86	0.88	0.86
Upflow														
Gross Total Capacity	kW	9.67	12.39	24.07	30.27	51.01	61.16	71.20	79.58	95.93	108.20	117.73	127.41	151.06
Gross Sensible Capacity	kW	9.42	11.65	22.31	27.58	46.08	54.22	63.76	70.39	83.55	94.22	101.33	111.52	130.11
S.H.R.		0.98	0.94	0.93	0.91	0.90	0.89	0.90	0.88	0.87	0.87	0.86	0.88	0.86
GENERAL DATA		**8*** **	**12*** **	**25***	**30** **	**50***	**60**	**70**	**80**	**95**	**110**	**125**	**135**	**150**
Nominal Air Flow (Downflow)	m3/s	1.00	1.00	1.84	2.24	3.70	4.40	5.20	5.20	6.00	7.00	7.00	7.60	8.60
Nominal Air Flow (Upflow)	m3/s	1.00	1.00	1.84	2.24	3.70	4.20	5.00	5.00	5.80	6.70	6.70	7.40	8.40
No. of Fan(s)		1	1	1	1	2	2	2	2	2	3	3	3	3
Sound Level	dBA	52	52	61	62	64	67	67	67	68	68	68	68	68
CHILLED WATER COIL		**8*** **	**12*** **	**25***	**30** **	**50***	**60**	**70**	**80**	**95**	**110**	**125**	**135**	**150**
Downflow														
Nominal Water Flow	l/s	0.46	0.59	1.15	1.45	2.44	3.07	3.57	4.00	4.79	5.44	5.90	6.28	7.43
Water Pressure Drop	kPa	27.4	44.6	34.6	56.6	67.7	107.9	69.2	70.9	107.6	145.4	90.6	60.6	87.2
Upflow														
Nominal Water Flow	l/s	0.46	0.59	1.15	1.45	2.44	2.92	3.40	3.80	4.58	5.17	5.63	6.09	7.22
Water Pressure Drop	kPa	27.4	44.6	34.6	56.6	67.7	104.0	65.8	65.9	101.2	135.0	89.5	59.8	86.5
ELECTRIC RE-HEATER		**8*** **	**12*** **	**25***	**30** **	**50***	**60**	**70**	**80**	**95**	**110**	**125**	**135**	**150**
Nominal Heater Capacity	kW	6	6	6	6	12	12	12	12	12	12	12	12	12
No. of Heater Step(s)		1	1	1	1	2	2	2	2	2	2	2	2	2
ELECTRODE HUMIDIFIER		**8*** **	**12*** **	**25***	**30** **	**50***	**60**	**70**	**80**	**95**	**110**	**125**	**135**	**150**
Nominal Humidifier Capacity	kg/hr	5	5	5	5	5	5	5	5	8	8	8	8	8
UNIT DIMENSION & WEIGHT		**8*** **	**12*** **	**25***	**30** **	**50***	**60**	**70**	**80**	**95**	**110**	**125**	**135**	**150**
Length	mm	648	648	800	885	1315	1550	1800	1800	2065	2300	2300	2550	2815
Depth	mm	654	654	891	891	891	891	891	891	891	891	891	891	891
Height	mm	1940	1940	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985	1985
Gross Weight	kg	139	165	245	260	355	405	485	505	535	570	595	635	710
Min. Service Allowance	mm	600	600	725	725	725	725	725	725	725	725	725	725	725

Notes:
1. Cooling capacity is based on 24°C, 45%RH, Chilled Water in/out based on 7/12°C, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is measured at 1m in free field conditions.
3. For underfloor EC fan option, raise floor height must be >400mm.
4. For upflow version, only EC fan is available (*except model 25 & 50).
5. ** For downflow version, only EC fan is available.
6. ***For model 8 & 12, only direct driven/EC fan is available.

ECL RANGE

G-VOLUTION
Chilled Water System (CW)

UNIT MODEL (ECL xxx)		70	80	125	140	180	200
Gross Total Capacity	kW	69.20	76.74	127.79	141.71	180.09	200.13
Gross Sensible Capacity	kW	61.05	66.61	112.58	122.97	159.52	174.46
S.H.R.		0.88	0.87	0.88	0.87	0.89	0.87
GENERAL DATA		**70**	**80**	**125**	**140**	**180**	**200**
Nominal Air Flow	m3/s	4.4	4.4	8.2	8.2	11.7	11.7
No. of Fan(s)		1	1	2	2	3	3
Sound Level	dBA	67	67	68	68	70	70
CHILLED WATER COIL		**70**	**80**	**125**	**140**	**180**	**200**
Nominal Water Flow	l/s	3.31	3.67	6.11	6.77	8.60	9.56
Water Pressure Drop	kPa	105.3	68.3	86.3	86.3	111.5	122.3
ELECTRIC RE-HEATER		**70**	**80**	**125**	**140**	**180**	**200**
Nominal Heater Capacity	kW	12	12	12	12	12	12
No. of Heater Steps		2	2	2	2	2	2
ELECTRODE HUMIDIFIER		**70**	**80**	**125**	**140**	**180**	**200**
Nominal Humidifier Capacity	kg/hr	5	5	8	8	8	8
UNIT DIMENSION & WEIGHT		**70**	**80**	**125**	**140**	**180**	**200**
Length	mm	1315	1315	2065	2065	2815	2815
Depth	mm	991	991	991	991	991	991
Height	mm	1985	1985	1985	1985	1985	1985
Gross Weight	kg	385	400	600	630	785	825
Min. Service Allowance	mm	725	725	725	725	725	725

Notes:
1. Cooling capacity is based on 24°C, 45%RH, Chilled Water in/out based on 7/12°C, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. For underfloor EC fan, raise floor height must be >500mm.
4. Only downflow version with EC fan is available.

EH RANGE 'C VERSION'

G-VOLUTION
Dual Coil System (CW+CW)

UNIT MODEL (EHU/EHD xx C)		60	70	85	95
Gross Total Capacity - Downflow/Upflow	kW	60.16 / 58.23	72.79 / 69.34	90.08 / 86.28	96.94 / 91.42
Gross Sensible Capacity - Downflow/Upflow	kW	53.68 / 51.99	65.49 / 62.51	79.77 / 76.55	88.47 / 83.44
S.H.R - Downflow / Upflow		0.89 / 0.89	0.90 / 0.90	0.89 / 0.89	0.91 / 0.91
GENERAL DATA		**60**	**70**	**85**	**95**
Nominal Air Flow - Downflow	m3/s	4.2	5.2	6.2	7.2
Nominal Air Flow - Upflow	m3/s	4.1	5.0	6.0	6.8
No. of Fans		2	2	3	3
Sound Level	dBA	67	67	68	68
CHILLED WATER COIL		**60**	**70**	**85**	**95**
Nominal Water Flow Rate - Downflow / Upflow	l/s	2.87 / 2.78	3.48 / 3.31	4.30 / 4.12	4.63 / 4.37
Waterside Pressure Drop - Downflow / Upflow	kPa	92.1 / 91.6	63.8 / 60.6	104.3 / 100.3	75.4 / 70.0
ELECTRIC RE-HEATER		**60**	**70**	**85**	**95**
Nominal Heater Capacity	kW	12	12	12	12
No. of Heater Steps		2	2	2	2
ELECTRODE HUMIDIFIER		**60**	**70**	**85**	**95**
Nominal Humidifier Capacity	kg/hr	5	5	5	8
UNIT DIMENSION & WEIGHT		**60**	**70**	**85**	**95**
Length	mm	1550	1800	2065	2300
Depth	mm	991	991	991	991
Height	mm	1985	1985	1985	1985
Gross Weight	kg	475	565	610	650
Min. Service Allowance	mm	725	725	725	725

Notes:
1. Cooling capacity is based on 24°C, 45%RH, Chilled Water in/out based on 7/12°C, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. For underfloor EC fan option, raise floor height must be >400mm.
4. Only EC fan is available.

EH RANGE ‘A/W VERSION’

G-VOLUTION

Dual Coil System (DX+CW) with Standard Compressor

UNIT MODEL (EHU/EHD xx A/W)		60	70	85	95
Direct Expansion Circuit					
Gross Total Capacity - Downflow/Upflow	kW	64.16 / 63.47	75.14 / 74.10	84.24 / 83.16	98.27 / 96.54
Gross Sensible Capacity - Downflow/Upflow	kW	55.92 / 54.72	67.10 / 65.16	77.65 / 75.58	91.72 / 87.73
S.H.R. - Downflow/Upflow		0.87 / 0.86	0.89 / 0.88	0.92 / 0.91	0.93 / 0.91
Chilled Water Circuit					
Gross Total Capacity - Downflow/Upflow	kW	61.77 / 59.80	74.50 / 70.99	91.62 / 87.77	102.09 / 95.37
Gross Sensible Capacity- Downflow/Upflow	kW	54.75 / 53.04	66.63 / 63.62	80.81 / 77.57	92.75 / 86.64
S.H.R. - Downflow/Upflow		0.89 / 0.89	0.89 / 0.90	0.88 / 0.88	0.91 / 0.91
GENERAL DATA		**60**	**70**	**85**	**95**
Nominal Air Flow - Downflow/Upflow	m3/s	4.2 / 4.1	5.2 / 5.0	6.2 / 6.0	7.5 / 7.0
No. of Fans		2	2	3	3
No. of Compressors		2	2	2	2
No. of Refrigerant Circuits		2	2	2	2
Sound Level	dBA	67	67	68	68
CONDENSER		**60**	**70**	**85**	**95**
Nominal Air Cooled Condenser	HEC	2x374	2x434	2x574	2x574
Nominal Water Cooled Model		2xWB60	2xWB80	2xWB80	2xWC50
Nominal Water Flow Rate - Downflow/Upflow	l/s	3.72 / 3.69	4.34 / 4.29	4.84 / 4.80	5.69 / 5.61
Waterside Pressure Drop of Condenser -	kPa	24.7 / 24.3	24.0 / 23.6	29.9 / 29.4	77.2 / 75.2
CHILLED WATER COIL		**60**	**70**	**85**	**95**
Nominal Water Flow Rate - Downflow/Upflow	l/s	2.95 / 2.86	3.56 / 3.39	4.38 / 4.19	4.88 / 4.56
Waterside Pressure Drop - Downflow/Upflow	kPa	99.7 / 99.3	68.5 / 65.2	110.3 / 106.2	84.4 / 77.0
ELECTRIC RE-HEATER		**60**	**70**	**85**	**95**
Nominal Heater Capacity	kW	12	12	12	12
No. of Heater Steps		2	2	2	2
ELECTRODE HUMIDIFIER		**60**	**70**	**85**	**95**
Nominal Humidifier Capacity	kg/hr	5	5	5	8
UNIT DIMENSION & WEIGHT		**60**	**70**	**85**	**95**
Length	mm	2050	2300	2565	2800
Depth	mm	991	991	991	991
Height	mm	1985	1985	1985	1985
Gross Weight - “A” Version	kg	600	670	750	825
- “W” Version	kg	630	705	785	860
Min. Service Allowance	mm	725	725	725	725

Notes:

1. Cooling capacity is based on 24°C, 45%RH, R407C refrigerant, 45°C condensing temperature for DX system, chilled water in/out based on 7/12°C, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. Nominal air cooled condenser sizing is suggestion only based on 35°C ambient & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
4. Nominal water cooled condenser sizing is suggestion only based on water in/out 30/35°C & operating condition. Other sizes may be selected to suit requirement as necessary.
5. For underfloor EC fan option, raise floor height must be >400mm.
6. Only EC fan is available.

EH RANGE ‘A/W VERSION’

G-VOLUTION

Dual Coil System (DX+CW) with DC Inverter Compressor

UNIT MODEL (EHU/EHD xx A/W)		60	70	85
Direct Expansion Circuit				
Gross Total Capacity - Downflow/Upflow	kW	60.92 / 60.31	74.54 / 73.56	88.03 / 86.99
Gross Sensible Capacity - Downflow/Upflow	kW	54.49 / 53.32	66.84 / 64.92	79.29 / 77.25
S.H.R. - Downflow/Upflow		0.89 / 0.88	0.90 / 0.88	0.90 / 0.89
Chilled Water Circuit				
Gross Total Capacity - Downflow/Upflow	kW	61.77 / 59.80	74.50 / 70.99	91.62 / 87.77
Gross Sensible Capacity - Downflow/Upflow	kW	54.75 / 53.04	66.63 / 63.62	80.81 / 77.57
S.H.R. - Downflow/Upflow		0.89 / 0.89	0.89 / 0.90	0.88 / 0.88
GENERAL DATA		**60**	**70**	**85**
Nominal Air Flow - Downflow/Upflow	m3/s	4.2 / 4.1	5.2 / 5.0	6.2 / 6.0
No. of Fans		2	2	3
No. of Compressors		2	2	2
No. of Refrigerant Circuits		2	2	2
Sound Level	dBA	67	67	68
CONDENSER		**60**	**70**	**85**
Nominal Air Cooled Condenser	HEC	2x374	2x434	2x574
Nominal Water Cooled Model		2xWB60	2xWB80	2xWB80
Nominal Water Flow Rate - Downflow/Upflow	l/s	3.62 / 3.60	4.45 / 4.41	5.20 / 5.16
Waterside Pressure Drop of Condenser - Downflow/Upflow	kPa	23.4 / 23.1	25.3 / 24.8	34.5 / 34.0
CHILLED WATER COIL		**60**	**70**	**85**
Nominal Water Flow Rate - Downflow/Upflow	l/s	2.95 / 2.86	3.56 / 3.39	4.38 / 4.19
Waterside Pressure Drop - Downflow/Upflow	kPa	99.7 / 99.3	68.5 / 65.2	110.3 / 106.2
ELECTRIC RE-HEATER		**60**	**70**	**85**
Nominal Heater Capacity	kW	12	12	12
No. of Heater Steps		2	2	2
ELECTRODE HUMIDIFIER		**60**	**70**	**85**
Nominal Humidifier Capacity	kg/hr	5	5	5
UNIT DIMENSION & WEIGHT		**60**	**70**	**85**
Length	mm	2050	2300	2565
Depth	mm	991	991	991
Height	mm	1985	1985	1985
Gross Weight - “A” Version	kg	600	670	750
- “W” Version	kg	630	705	785
Min. Service Allowance	mm	725	725	725

Notes:

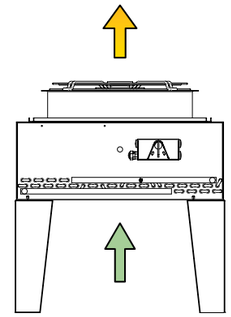
1. Cooling capacity is based on 24°C, 45%RH, R410A refrigerant, 45°C condensing temperature for DX system, chilled water in/out based on 7/12°C, 400V/3ph+N/50Hz power supply, 50Pa ESP.
2. Sound level is for downflow models measured at 1m in free field conditions.
3. Nominal air cooled condenser sizing is suggestion only based on 35°C ambient & nominal operating condition. Other sizes may be selected to suit requirement as necessary.
4. Nominal water cooled condenser sizing is suggestion only based on water in/out 30/35°C & operating condition. Other sizes may be selected to suit requirement as necessary.
5. For underfloor EC fan option, raise floor height must be >400mm.
6. Only EC fan is available.
7. Standard unit comes with fan speed controller, crankcase heater, oil separator & liquid solenoid valve.

HEC AIR COOLED
C O N D E N S E R

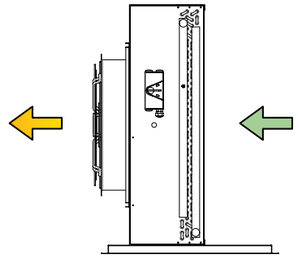
BUILT FOR HIGH PERFORMANCE

CITEC air cooled condenser series comes in a wide range of capacity from 19kW to 90kW. Unit is fitted with high efficient axial fan, enclosed with stainless steel body and weatherproof isolator with IP66 grade.

TECHNICAL SPECIFICATIONS

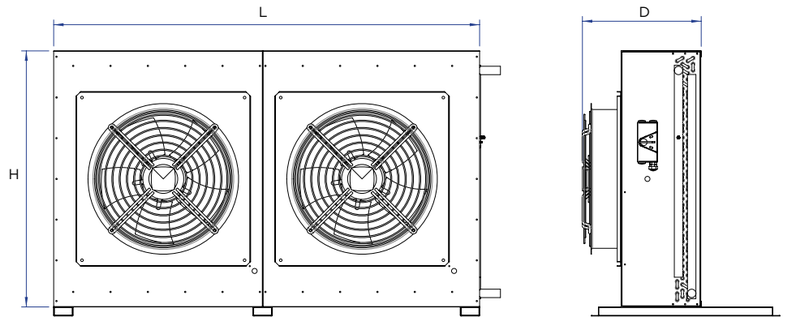


Vertical air discharge



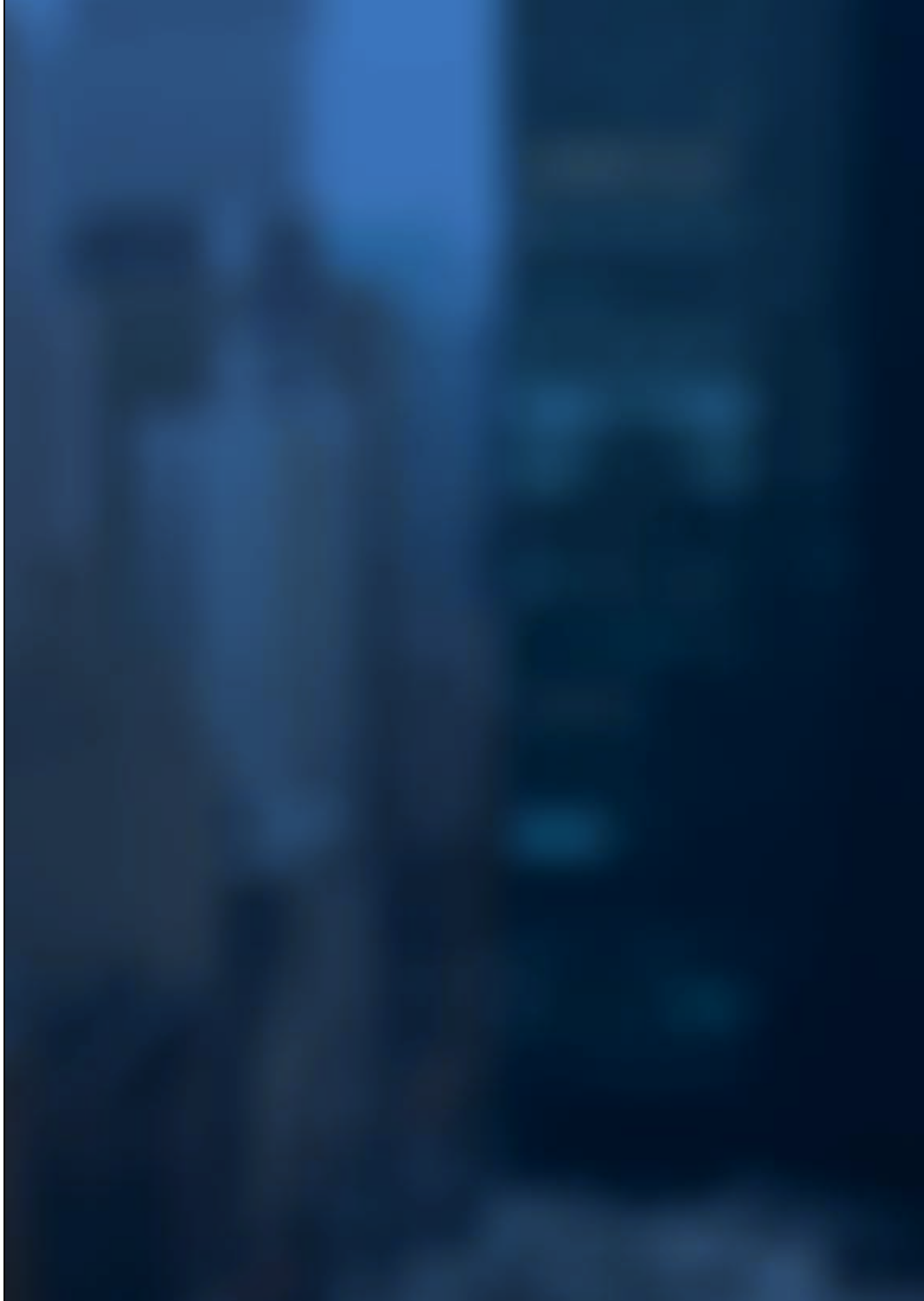
Horizontal air discharge

UNIT MODEL	HEC	194	234	274	314	374	434	574	654	904
Heat Rejection	kW	18.96	22.63	26.64	31.00	37.43	43.04	57.03	65.17	90.46
Air Flow	m3/s	2.33	2.10	2.19	2.24	2.53	2.65	4.50	4.60	6.60
No. of Fan(s)		1	1	1	1	1	1	2	2	3
Sound Level	dBA	56	56	57	59	60	61	62	62	64
DIMENSION & WEIGHT	**HEC**	**194**	**234**	**274**	**314**	**374**	**434**	**574**	**654**	**904**
Length	mm	822	822	862	987	1212	1362	1562	1768	2318
Depth	mm	473	473	473	494	494	524	471	494	494
Height	mm	825	825	926	926	1028	1155	1063	1063	1063
Header Size		7/8”	7/8”	1 1/8”	1 1/8”	1 1/8”	1 3/8”	1 3/8”	1 3/8”	1 3/8”
Gross Weight	kg	56	60	63	75	90	110	125	150	205



Notes:
1. Heat rejection capacity based on 35°C ambient & 15°C delta T.
2. Sound level is measured at 5m, based on free field condition.
3. Above data is for 230V/1ph/50Hz power supply. Models are available at different power supplies.
4. Unit dimensions do not include mounting legs, isolator and piping. Condenser may be placed in vertical or horizontal air discharge orientation.

NOTES



VERSION 1.0 / 2020 / GV / 50

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