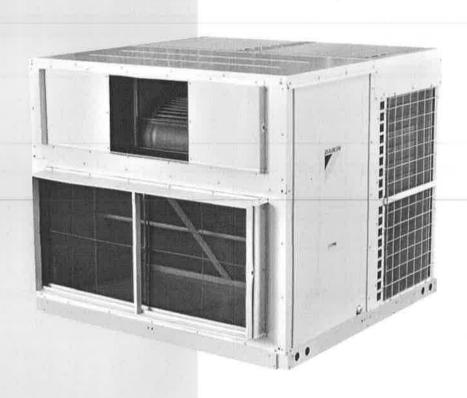


# TECHNICAL MANUAL

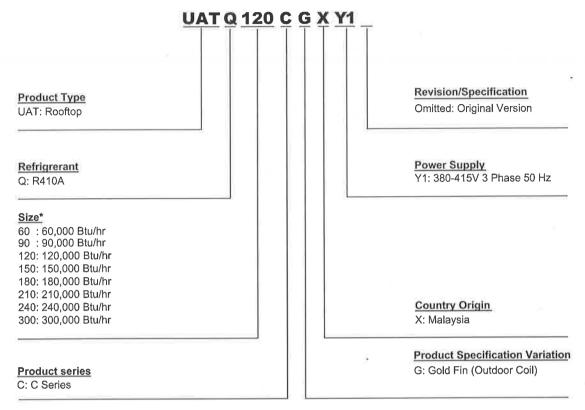
Package Air Conditioner Rooftop

**UATQ-C Series** 

— Cooling only [50Hz] —



# **Nomenclature**



#### Remark:

<sup>\*:</sup> Capacity value under Nomenclature is an indication.

Please refer to Engineering and Physical Data for exact capacity value.

# **Product Line-up**

					Cla	ssifica	tion			
		Control Module	Controller	0 0 0	rnase Protector	Evaporator Fin	Condenser Fin	Refrigerant Control	Air Filter	Air Discharge
	Model		BRC51C61	PP 1.03	PSV 2.0	Hydrophilic Gold Coated	Hydrophilic Gold Coated	Thermostatic Expansion Valve (TXV)	Saranet	Horizontal & Not Convertible
	UATQ60CGXY1	X	Х		Х	Х	Х	Х	Х	Х
	UATQ90CGXY1	Х	Х		Х	Х	X	Х	Х	Х
Ž	UATQ120CGXY1	Х	Х	Х		Х	Х	Х	X	X
0 0	UATQ150CGXY1	X	Х	Х		X	Х	Х	X	X
	UATQ180CGXY1	Х	Х	Х		Х	X	X	Х	X
COOLING ONLY	UATQ210CGXY1	Х	Х	Х		X	Х	Х	X	Х
	UATQ240CGXY1	Х	Х	Х		X	Х	Х	Х	X
	UATQ300CGXY1	X	Х	X		Х	X	X	Х	X

# **Features**

#### **Key Features**

#### **High Energy Efficiency**

In line with the market trend of moving towards high energy efficiency products, the UATQ-C series is designed with high efficiency scroll compressors, optimized heat exchangers and high-performing fans with the target of high EER.

Model	UATQ60C	UATQ90C 12.49	
Nominal EER @ 35°C (Btu/hr/W)	13.51		
Nominal EER @ 46°C (Btu/hr/W)	9.15	8.95	

Model	UATQ120C	UATQ150C	
Nominal EER @ 35°C (Btu/hr/W)	12.86		
Nominal EER @ 46°C (Btu/hr/W)	9.08	8.92	

Model	UATQ180C	UATQ210C	
Nominal EER @ 35°C (Btu/hr/W)	12.28	12.60	
Nominal EER @ 46°C (Btu/hr/W)	9.00	9.25	

Model	UATQ240C	UATQ300C	
Nominal EER @ 35°C (Btu/hr/W)	12.50	12.40	
Nominal EER @ 46°C (Btu/hr/W)	9.12	8.85	

Note:

Efficiency at 35°C is in compliance with the ESTIDAMA minimum requirement of 11.60 Btu/hr/W.

Efficiency at 46°C is in compliance with the ESMA minimum requirement of 8.10 Btu/hr/W, 7.90 Btu/hr/W and 7.50 Btu/hr/W (according to rated capacity).

#### Wide Operating Range

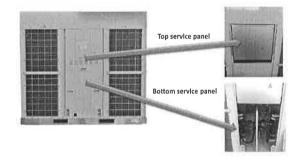
The UATQ-C series rooftops are specifically designed to deliver top performance in both standard and high ambient temperature conditions. Each unit is capable of operating continuously at an outdoor ambient of up to 52°C.

#### Lightweight and compact

The lightweight and compact design of UATQ-C series allows for ease of transportation and installation.

#### **Separate Service Panels**

The unit is designed with two separate service panels for easy electrical box servicing.



#### **Independent Refrigerant Circuit**

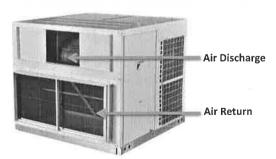
Each unit is designed with two independent refrigerant circuits, each controlled separately for maximum part load efficiency and durability.

\* Applicable for UATQ120C and above.

This also allows the unit to run at part load when lower cooling capacity is required.

#### Air Discharge and Air Return

The UATQ-C series is available in Horizontal Air Discharge only, designed with Air discharge on the top and return air on the bottom for easy duct design.



#### Component Features

#### Compressor

High efficiency, low noise, and hermetically sealed SCROLL compressors are used in the UATQ-C series to give a better performance.

All compressors are equipped with an internal overload protection. Crankcase heaters are installed as standard in each compressor.

#### **Evaporator Coil**

Evaporator coils are manufactured from seamless inner grooved copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer.

All coils are tested against leaks by Nitrogen holding at 609psig and highly precise Helium leak test at 235psig.

Hydrophilic Gold Fin coating evaporator coil is offered as standard, which could give good effects to efficient drainage of condensate water as well as heat transfer performance, and gives superior corrosion protection even in the harshest environment especially in coastal area. (1000 hours Salt Spray tested)

#### **Evaporator Fan**

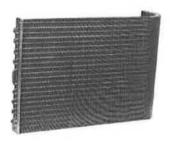
The unit is designed with belt driven evaporator motor, allows for change of pulley on site to accommodate different static pressure and air flow requirement. This flexibility allows for wider application and offers the possibility to reach the best working conditions considering the unit's characteristics. The fan motor is IP55 rated protection index with class B insulation class.

#### **Condenser Coil**

Condenser coils are manufactured from seamless inner grooved copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All coils are tested against leaks by Nitrogen holding at 609psig and highly precise Helium leak test at 235psig.

ALL standard coils are up to 3 rows / 14-16 FPI, 3/8" (9.52mm) O.D. tubes.

Hydrophilic Gold Fin coating condenser coil is offered as standard, which gives superior corrosion protection even in the harshest environment especially in coastal area. (960 hours Salt Spray tested)



#### Condenser Fan/Motor

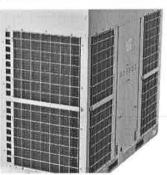
Fans are of propeller type, direct driven by weatherproof electrical induction motors. Condenser fan motors are rated IP55 protection index with class F insulation class and is designed with dust proof bearing to ensure the reliability of the motor and smooth operation all year round.

#### Casing/Structure

The unit casing used in UATQ-C series is made of zinc coated galvanized steel sheets. It is further coated with an electrostatic powder coat, oven-baked for a tough and lasting weather resistant finish. Zinc plated screws are used to further reduce the possibility of unit rusting.

#### Coil Guard

The condenser coil is protected by coil guard to prevent accidental damage during transportation, handling and installation.



#### Refrigerant Circuit

The UATQ-C series is designed with the ability to operate at partial load depending on the requirement of the application.

\* Applicable for UATQ120C and above.

Each refrigerant circuit has an independent **Thermal Expansion Valve (TXV)**, **Filter Drier** and **High / Low Pressure Switch.** 

Additional valves are provided for site installation of Pressure Gauge and Low Ambient Kit.



#### Filter

Saranet pre-filter is available as standard in the unit to prevent foreign particles entry into the unit.

A 2" filter rail is installed in the unit to accommodate additional site installed filter.

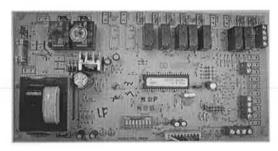
#### **Phase Sequential Protection**

The Phase Sequential Protector is a three phase line monitor module that protects the unit components against phase loss, phase reversal and phase unbalance. It is designed to protect compressors from reverse rotation. The onboard LED indicators indicates the ON and FAULT status.

#### **Microprocessor Based Control**

The control system consists of a microprocessor controller and a user interface remote controller. The controller offers the following features:

- Built in anti recycle timer to prevent compressor short cycling
- Sequential control of compressor, condenser motor and evaporator motor
- Intelligent control to ensure balance usage of compressor in the system
- Auto random restart and memory backup of last setting in case of interrupted power supply
- Energy saving function
- Sensor fault indication



#### Wired Control Panel

The control panel is protected by a panel cover to prevent nuisance changes by unauthorized personnel.

With the remote wired controller connected, the following features can be performed:

- · Temperature setting
- 7 days programmable timer
- Error indication on the remote controller for easy troubleshooting

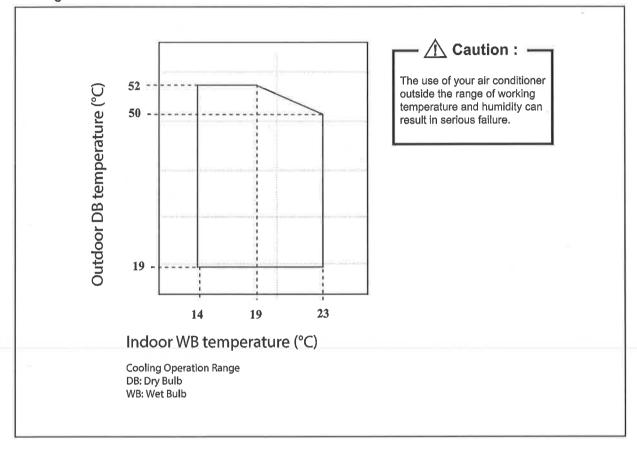


# **Application Information**

# **Operating Range**

Ensure the operating temperature is in allowance range as stated in diagram below.

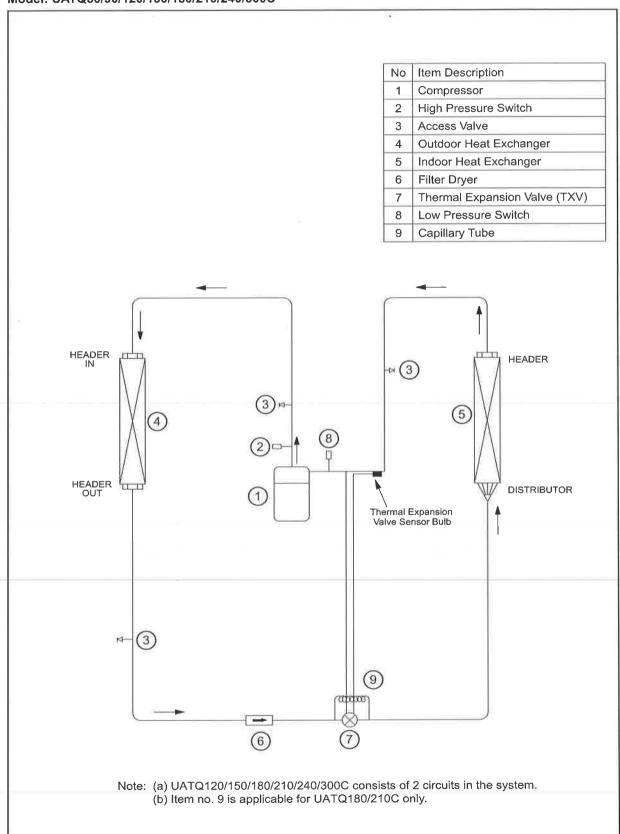
#### Cooling



## **Refrigerant Circuit Diagrams**

**Cooling Only** 

Model: UATQ60/90/120/150/180/210/240/300C



## Installation Guideline

#### Safety Precautions

This manual provides the procedures of installation to ensure a safe and good standard of operation for the air conditioner unit.

Special adjustment may be necessary to suit local requirements.

Before using your air conditioner, please read this instruction manual carefully and keep it for future reference. This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

#### SAFETY PRECAUTIONS

# **MARNING**

- Installation and maintenance should be performed by qualified persons who are familiar with local code and regulation, and experienced with this type of appliance.
- All field wiring must be installed in accordance with the national wiring regulation.
- Ensure that the rated voltage of the unit corresponds to that of the name plate before commencing wiring work according to the wiring diagram.
- The unit must be GROUNDED to prevent possible hazard due to insulation failure.
- All electrical wiring must not touch the refrigerant piping, or any moving parts of the fan motors.
- Confirm that the unit has been switched OFF before installing or servicing the unit.
- Disconnect from the main power supply before servicing the air conditioner unit.
- DO NOT pull out the power cord when the power is ON. This may cause serious electrical shocks which may result in fire hazards.
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1m from TVs and radios, to prevent distorted pictures and static. {Depending on the type and source of the electrical waves, static may be heard even when more than 1m away}.

#### **IMPORTANT**

#### **ENGLISH**

# Important information regarding the refrigerant

This product contains fluorinated greenhouse gases. Do not vent gases into the atmosphere.

Refrigerant type: R410A GWP (1) value: 2087.5

(1) GWP = global warming potential

The refrigerant quantity is indicated on the unit name plate. Periodical inspections for refrigerant leaks may be required depending on European or local legislation. Please contact your local dealer for more information.

# **↑ CAUTION**

Please take note of the following important points when installing.

 Do not install the unit where leakage of flammable gas may occur.



If gas leaks and accumulates around the unit, it may cause fire ignition.

Ensure that drainage piping is connected properly.



If the drainage piping is not connected properly, it may cause water leakage which will dampen the furniture.

• Do not overcharge the unit.



This unit is factory pre-charged.

Overcharge will cause over-current or damage to the compressor.

 Ensure that the unit's panel is closed after service or installation.



Unsecured panels will cause the unit to operate noisily.

- Sharp edges and coil surfaces are potential locations which may cause injury hazards. Avoid from being in contact with these places.
- Before turning off the power supply, set the remote controller's ON/OFF switch to the "OFF" position to prevent the nuisance tripping of the unit. If this is not done, the unit's fans will start turning automatically when power resumes, posing a hazard to service personnel or the user.
- Do not operate any heating apparatus too close to the air conditioner unit.
- Don't use joined and twisted wires for incoming power supply.
- The equipment is not intended for use in a potentially explosive atmosphere.
- Used only NITROGEN for air tight test.
- Strictly do not charge OXYGEN or ACETYLENE into the unit for any purpose.

#### NOTICE

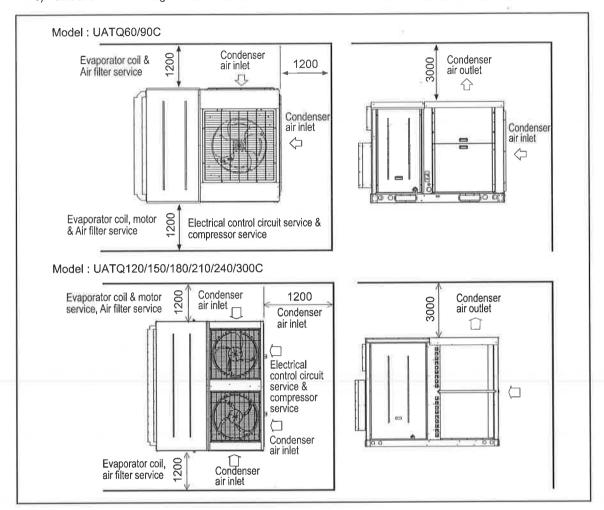
#### **Disposal Requirement**

Dismantling of the unit, treatment of the refrigerant, oil and other parts must be done in accordance with the applicable legislation.

#### 1) Installation Clearances

Refer diagram below for the space required around the unit. Note that:

- a) All dimensions shown are in mm.
- b) All space values shown are minimum clearance required for the unit.
- c) Unit shown in the diagram is UATQ210/240C. Other models shall follow the same clearance.



### 2) Cable Size

Model	Power Cable (mm²)	Breaker Capacity (A)	Over Current Protection Switch (A)	Earth Cable (mm²)
UATQ60C	2.5	20	20	2.5
UATQ90C	4	32	32	4
UATQ120C	6	32	32	6
UATQ150C	10	40	40	10
UATQ180C	10	50	50	10
UATQ210C	16	63	63	16
UATQ240C	16	63	63	16
UATQ300C	25	80	80	25

#### Note:

- A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in fixed wiring in accordance with local and national legislation.
- The unit is to be wired directly from an electrical distribution board either by a circuit breaker (preferred) or HRC fuse.
- Fix the power supply to control module. Connect control wiring to control terminal block through the control box's hole.
- Farth wiring must be connected

# **Engineering & Physical Data**

## **Engineering Data - R410A Model**

100	EL				UATQ60C	UATQ90C	UATQ120C	UATQ150C		
COOLING CAPACITY [1] Btu/h kW				62,500	93,400	124,500	154,400			
				18,32	27,37	36.49	45,25			
				Btu/h	61,000	90,000	121,500	150,000		
L KYY				kW	17,88	26,38	35,61	43,96		
ററ	LING CAPACITY	[3]		Btu/h	51,780	77,000	103,300	129,000		
		• •	200	kW	15,18	22,57	30.28	37,81 12.00		
	AL INPUT POWER			kW	4,52	7.20	9.45 17.00	24.10		
	AL RUNNING CUI	RRENT (C	OOLING) [2]	A	8,20	13,50		3.66		
	[1]			W/W	3.96	3.66 THERMAL EXPAN:	3.77	3.00		
			PANSION DEVICE)		9.5	11.5	5.2 + 5.2	8.5 + 8.5		
	RIGERANT CHAF	RGE		kg	9,5		13/50	0,0 + 0,0		
	ER SOURCE			V/Ph/Hz						
EFRIGERANT TYPE  ASING CO				COLOUR	R410A R IVORY WHITE					
15	ING	AID DIC	CHARGE	COLOUR		DUC				
	CONTROL	OPERAT				WIRED C				
	AIR FLOW	OPERAI	ION	l/s / CFM	944 / 2000	1321 / 2800	2077 / 4400	2360 / 5000		
	EXTERNAL STA	TIC DDEC	SELIBE		50-500 / 0,2-2.0	50-500 / 0 2-2 0	50-500 / 0,2-2.0	50-500 / 0.2-2.0		
	(FACTORY SETT		JOINE	Pa / in.wg.	(100 / 0.4)	(100 / 0.4)	(100 / 0.4)	(150 / 0.6)		
	CONDENSATE D	RAIN SIZ	7E	mm/in	V		0/1	-		
		TYPE				CENTRIFUGAL F				
	FAN DRIVE				BELT					
		TYPE				INDUC				
ś			F PROTECTION (IP)			IP	55			
EVAL ORALOR			TION GRADE			1	3			
2	FAN MOTOR	RATED I	NPUT POWER	kW	0.50	1.07	0,93	1.64		
		RATED	RUNNING CURRENT	A	1,30	2.30	2.30	3.70		
		MOTOR	OUTPUT	kW	0.75	1,10	1.50	2.20		
ш		POLES	POLES		4	4	4	4		
	COIL	TUBE	MATERIAL		COPPER					
		TUBE	DIAMETER	mm	9.52					
			MATERIAL			ALUM				
		FIN	FACE AREA	m²	0.71	0.81	0.65 + 0.65	0.65 + 0.65		
			ROW		4	4	3	4		
			TYPE			WASHABLE				
	AIR QUALITY	FILTER	SIZE (L x W x t)	mm	1100 x 500 x 4	1100 x 660 x 4	895 x 685 x 4	895 x 685 x 4		
			QUANTITY	рс	1	1	2	2		
	SOUND PRESSU		EL	dBA	61	62	65	67		
	SOUND POWER			dBA	81	83	83	85		
	UNIT DIMENSIO		HEIGHT X WIDTH X DEPTH	mm	1150 x 1280 x 1520	1350 x 1280 x 1520	1390 x 1965 x 1630	1390 x 1965 x 1630		
	PACKING DIMEN	NSION	HEIGHT X WIDTH X DEPTH	mm	1270 x 1320 x 1710	1410 x 1320 x 1710	1440 x 2020 x 1840	1440 x 2020 x 1840		
	UNIT WEIGHT			kg	350	380	590	650		
	GROSS WEIGHT			kg	370	400	620	680		
	FAN	TYPE					ELLER			
		DRIVE					T DRIVE CTION			
		TYPE	E PROTECTION (IN)							
			F PROTECTION (IP)		IP55					
			TION GRADE	kW	0.45	0.82	0.52 + 0.52	0.80 + 0.80		
í	FAN MOTOR		RUNNING CURRENT	A	2.00	3.50	2.30 + 2.30	3.50 + 3.50		
CONDENSER			OUTPUT	kW	0.36	0.68	0.36 + 0.36	0.58 + 0.58		
į		QUANTI		pc	1	1	2	2		
Ę		POLES		рс	6	6	6+6	6+6		
3		TYPE			J.		ROLL			
		OIL TYP			POE OIL					
		OIL AMO		cm <sup>3</sup>	1656	1774	1656 + 1656	1656 + 1656		
	COMPRESSOR			kW	3.57	5,31	3.74 + 3.74	4.38 + 4.38		
	COM RECOOK		RATED INPUT POWER [2] RATED RUNNING CURRENT [2] LOCKED ROTOR AMP.		6.40	10.10	6.70 + 6.70	9.00 + 9.00		
					64.0	101.0	64.0 + 64.0	100.0 + 100.0		
		QUANTI		A pc	1	1	2	2		
			MATERIAL				PER			
		TUBE	DIAMETER	mm			52			
	COIL		MATERIAL				INIUM	20		
	JUL	FIN FACE AREA		m²	1.72	2.10	1.44 + 1.44	1.44 + 1.44		
			ROW		3	3	2	3		

<sup>1)</sup> GROSS COOLING CAPACITY BASED ON 27°C DB / 19°C WB INDOOR AND 35°C DB OUTDOOR
2) NOMINAL COOLING CAPACITY BASED ON 27°C DB / 19°C WB INDOOR AND 35°C DB OUTDOOR
3) NOMINAL COOLING CAPACITY BASED ON 29°C DB / 19°C WB INDOOR AND 46°C DB OUTDOOR
4) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).
5) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE

## **Engineering Data - R410A Model**

MOI	DEL				UATQ180C	UATQ210C	UATQ240C	UATQ300C		
COOLING CARACITY (4) Btu/h				Btu/h	189,000	220,000	248,600	312,200		
COOLING CAPACITY [1] kW			55.39	64,48	72,86	91.50				
Btu/h			181,000	213,000	241,000	304,000				
COOLING CAPACITY [2] kW			53.05	62.43	70,63	89.10				
	NI INO CARACITY	rn1		Btu/h	156,000	184,000	208,000	258,000		
,00	DLING CAPACITY	[3]		kW	45.72	53.90	60.96	75.62		
OT	AL INPUT POWE	R (COOLI	NG) [2]	kW	14.72	16.90	19.29	24.52		
OT	AL RUNNING CU	RRENT (C	OOLING) [2]	Α	27.20	33.90	38.70	46.00		
EF	[1]			W/W	3.60	3,69	3.66	3,63		
EF	RIGERANT CONT	TROL (EX	PANSION DEVICE)		THERMAL EXPANSION VALVE (TXV)					
EF	RIGERANT CHAP	RGE		kg	8.5 + 8.5	12.0 + 12.0	10.8 + 10.8	14.0 + 14.0		
POWER SOURCE V/Ph/Hz			380-415 / 3 / 50							
REFRIGERANT TYPE						R4	10A			
AS	SING		[	COLOUR		IVORY	WHITE			
-	I	AIR DISC	CHARGE				TED			
	CONTROL	OPERAT	ION			WIRED C	ONTROL			
	AIR FLOW			Us / CFM	3304 / 7000	3587 / 7600	3776 / 8000	4248 / 9000		
	EXTERNAL STA	TIC PRES	SURE		50-500 / 0.2-2.0	50-500 / 0.2-2.0	50-500 / 0,2-2,0	50-500 / 0,2-2,0		
	(FACTORY SETT			Pa / in.wg.	(150 / 0.6)	(200 / 0.8)	(200 / 0.8)	(250 / 1.0)		
- ()	CONDENSATE		Œ	mm / in		25.4				
	EAN	TYPE				CENTRIFUGAL F				
	FAN DRIVE				BELT					
		TYPE					CTION			
OR.	l ii		F PROTECTION (IP)				55			
EVAPORATOR	1		TION GRADE				3			
₽.	FAN MOTOR	RATEDI	NPUT POWER	kW	2.39	2.40	2.60	3.48		
2		RATED F	RUNNING CURRENT	A	4.70	4.60	5.50	7.20		
≶	1	MOTOR OUTPUT		kW	3.00	3.00	3.70	3.70		
Ш		POLES			4	4	4	4		
			MATERIAL		COPPER					
	l l	TUBE	DIAMETER	mm	m 9.52					
	COIL	_	MATERIAL	1			INIUM			
		FIN	FACE AREA	m²	0.89 + 0.89	1.14 + 1.14	1.14 + 1.14	1_45 + 1.45		
			ROW		4	4	4	4		
			TYPE				SARANET			
	AIR QUALITY	FILTER	SIZE (L x W x t)	mm	834 x 760 x 4	1040 x 750 x 4	1040 x 750 x 4	1040 x 1050 x 4		
	AIK GOALITI		QUANTITY	pc	2	2	2	2		
	SOUND PRESSU	IDE LEVE		dBA	68	69	70	72		
	SOUND POWER		L	dBA	87	89	89	92		
			HEIGHT X WIDTH X DEPTH		1690 x 1965 x 1905	1650 x 2410 x 2030	1650 x 2410 x 2030	1950 x 2410 x 203		
	UNIT DIMENSIO		HEIGHT X WIDTH X DEPTH	mm	1730 x 2120 x 2020	1740 x 2570 x 2290	1740 x 2570 x 2290	2040 x 2570 x 2296		
		VSION	HEIGHT X WIDTH X DEPTH	mm	840	930	940	1090		
	UNIT WEIGHT	-		kg		930	980	1130		
	GROSS WEIGHT		-	kg	870		ELLER 980	1130		
	FAN	TYPE								
		DRIVE					T DRIVE CTION			
		TYPE								
			F PROTECTION (IP)				55			
			TION GRADE		0.07 . 0.07			1.50 + 1.50		
œ	FAN MOTOR		NPUT POWER	kW	0.87 + 0.87	1.50 + 1.50	1.50 + 1.50			
SE			RUNNING CURRENT	A	3.80 + 3.80	2.70 + 2.70	2.70 + 2.70	2.70 + 2.70		
CONDENSER			OUTPUT	kW	0.68 + 0.68	1.20 + 1.20	1.20 + 1.20	1.20 + 1.20		
9	1	QUANTI	TY	pc	2	2	2	2		
ō		POLES			6+6	6+6	6+6	6+6		
O		TYPE			SCROLL					
		OIL TYP					OIL			
		OIL AMO		cm <sup>3</sup>	1774 + 1774	2514 + 2514	2514 + 2514	3253 + 3253		
	COMPRESSOR		NPUT POWER [2]	kW	5.30 + 5.30	5.75 + 5.75	6.84 + 6.84	9.02 + 9.02		
			RUNNING CURRENT [2]	A	10.10 + 10.10	-11.90 + 11.90	14.10 + 14.10	18.60 + 18.60		
			ROTOR AMP.	Α	101.0 + 101.0	139.0 + 139.0	139.0 + 139.0	140.0 + 140.0		
		QUANTI	TY	рс	2	2	2	2		
			MATERIAL	·		COF	PER			
		TUBE	DIAMETER	mm			52			
						ALUMINIUM				
	COIL		MATERIAL			LILL COLUMN				
	COIL	FIN	MATERIAL FACE AREA	m²	1.64 + 1.64	2.13 + 2.13	2.13 + 2.13	2.59 + 2.59		

<sup>1)</sup> GROSS COOLING CAPACITY BASED ON 27°C DB / 19°C WB INDOOR AND 35°C DB OUTDOOR
2) NOMINAL COOLING CAPACITY BASED ON 27°C DB / 19°C WB INDOOR AND 35°C DB OUTDOOR
3) NOMINAL COOLING CAPACITY BASED ON 29°C DB / 19°C WB INDOOR AND 46°C DB OUTDOOR
4) ALL UNITS ARE BEING TESTED AND COMPLY TO ISO 5151 (NON-DUCTED UNIT) OR ISO 13253 (DUCTED UNIT).
5) ALL SPECIFICATIONS ARE SUBJECTED TO CHANGE BY THE MANUFACTURER WITHOUT PRIOR NOTICE