TOPAIRE
AIR CONDITIONER

Eco-friendly
R410A

WATER COOLED PACKAGED UNITS

Double Skin Evaporator units

Cooling Capacity : 88 to 1120 MBH

Innovation Beyond Comfort

Eco-friendly R410A

Introduction

The Topaire Water-Cooled Packaged Unit incorporates advanced air conditioning technology and utilizes the eco-friendly R410A refrigerant to deliver superior energy efficiency. Engineered for flexibility and built for dependable, intelligent performance, this unit ensures safe and consistent operation across a broad spectrum of applications. Ideal for industrial facilities, commercial centers, office buildings, educational campuses, and exhibition halls, Topaire offers reliable cooling solutions tailored to meet the dynamic needs of modern environments.

Energy Efficiency

Utilizing water for heat rejection, these water-cooled package units has much higher energy efficiency (up to 40%) compared to traditional air- cooled units and even more so if compared against air-cooled split units as there are no losses due to piping distances between the indoor and outdoor. The distance between the cooling tower and the water-cooled units is only limited by the size of the pump and this allows for great flexibility in positioning and placement of the units. Water is a better heat transfer medium than air and thus the unit is capable of generating more cooling capacity with lower power consumption compared to air-cooled systems.

Water Cooled Condenser

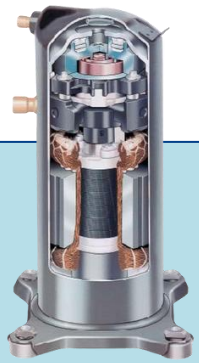
Smaller models are provided with cost effective tube in tube condensers while larger models comes with shell and tube condensers. The shell & tube heat exchangers incorporates multiple high efficiency 5/8'' OD finned copper tubes with increased surface area from the external fins for superior heat transfer. The shell & tube condensers has removable head which allows for tube cleaning. The condensers are factory leak and pressure tested to 650 Psig on the refrigerant side 300 Psig waterside. As an option, the smaller models may also be fitted with shell & tube condensers. The shell & tube heat exchangers may also be fitted with fusible plug or pressure relief valve as option. Water connections for the condensers are female BSP by default.

Eco-friendly R410A Refrigerant

Entire series uses R410A refrigerant which has zero ODP (ozone depleting potential) and low GWP (global warming potential) compared to other refrigerants like R22 & R407C.

Flexible drive package

All models comes with pulley & belt-driven blower and motor drive which can changed to suit the external static pressure requirements of individual sites allowing flexibility in use. The standard blower is a DIDW forward curved centrifugal fan with IE2 motor. For higher ESP requirements, the motor can be upsized.



Independent Refrigerant Circuits

All units come with high efficiency hermetic scroll compressors which are low noise and reliable, each with its own independent refrigerant circuit. For units with multiple compressors, in the unlikely event of compressor breakdown, other compressors can continue to operate uninterrupted.

BMS Ready

Our controller board comes with RS485 interface which allows connection and communication to the Building Management System (BMS) via standard Modbus protocol. This allows for intelligent monitoring and management of multiple units installed in a site.

Eco-friendly R410A

Superior Flow Control

Our units come equipped with TXV instead of a capillary tube for better refrigerant flow control & wider operation range.

Safety Features

A set of low and high pressure switch is installed for each compressor to protect against abnormal conditions. Each compressor and the blower motor also has overcurrent protection. Additionally a phase loss and over & under voltage protection for the entire unit is included. User may also connect the controller to an external water flow switch to stop the unit in event of insufficient water flow and also check for external signal to stop unit in event of water pump overload.

Balanced Running Time

Our controller will track the accumulated running hours of each compressor and automatically prioritize running the compressor with lower accumulated operating time to balanced out running hours of all compressors leading to improved service life.

Easy Installation

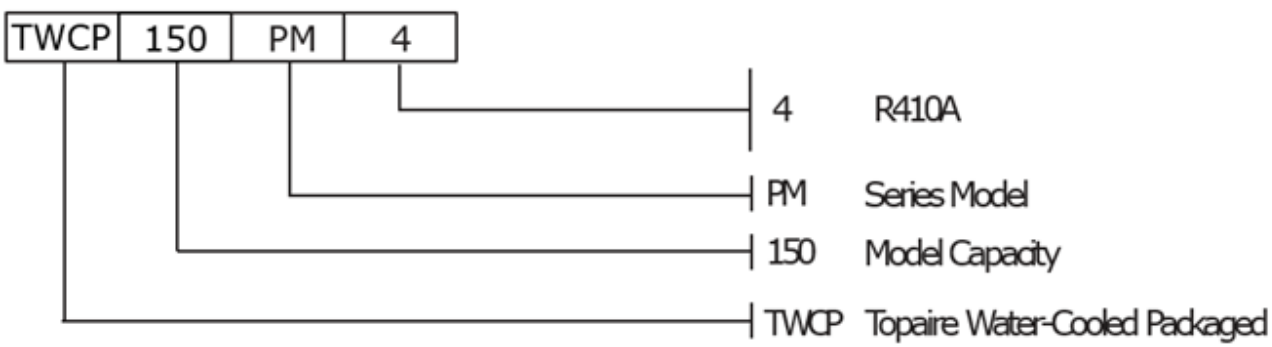
All units come pre-charged with appropriate refrigerant and installer need only connect condenser water piping, ductwork and power supply to the unit. No brazing work required at site.

Optional Accessories

- Air Discharge Plenum
- Shell & Tube Heat Exchanger (for models TWCP400 or smaller)
- Fusible Plug or Pressure Relief Valve for Shell & Tube condensers
- Upsized Motor for higher ESP
- Copper Fin or Special Coating for Evaporator
- Coil High & Low Pressure Gauges
- Electric Heater with Overheat Protection

Nomenclature

Water-Cooled Packaged Air-Conditioner



General Data for Water Cooled Packaged (R410a)

MODELS			100	120	160	200
Capacity		kW	25.8	34.0	41.0	50.7
		Btu/hr	88,000	116,000	140,000	173,000
Casing Material	Material		Galvanized Steel			
	Finishing		Epoxy Polyester Powder Coating			
	Insulation		Polyurethane Foam			
Dimension	Height	mm	1693	1931	1852	2069
	Width	mm	575	625	625	732
	Depth	mm	1200	1200	1470	1470
EVAPORATOR						
Type			Corrugated aluminium fin with copper tubes (Inner Groove)			
Tube Diameter		mm(in)	9.52 (3/8")			
Row			3	3	3	4
Fin Per Inch			14	13	14	12
Face Area		sq.m	0.51	0.71	0.78	0.91
EVAPORATOR BLOWER AND MOTOR						
Motor Type / Drive			Belt Drive			
Blower Material			Galvanized Steel			
No. of Blower			1	1	1	1
Air Flow		CFM	2,650	3,650	4,120	4,800
		CMH	4,500	6,200	7,000	8,150
External Static Pressure		inwg	0.4	0.4	0.5	0.5
		Pa	100	100	125	125
Motor Type			Squirrel Cage Induction			
Motor Power Supply		V/PH/HZ	380-415 / 3 / 50			
Motor Rated Output		Hp	1.5	2	3	3
		kW	1.1	1.5	2.2	2.2
Starter Type			Direct On Line			
Air Filter Type			Washable R15, GI frame			
CONDENSER						
Type			Tube & Tube Condenser			
Water Flow Rate		CMH	5.57	7.33	8.82	10.94
Pressure Drop		kPa	17.8	17.5	14.5	16.9
Water inlet/ outlet Connection			1.5"	1.5"	2"	2"
COMPRESSOR						
Type			Scroll Hermetic			
No of Compressor			1	1	1	1
Power Supply		V/PH/HZ	380-415 / 3 / 50			
Rated Current		Amp	18.6	24.4	27	34
Rated Power		kW	10.1	13.1	14.4	18.6
Protection Device			Phase Protector, Overload Protector, and Auto Reset High/Low Pressure Switch			
Capacity Control			On/Off			
Starter Type			Direct On Line			
REFRIGERANT						
Type			R410A			
Charged Amount		kg	3.6	4.8	5.8	7.9
Control Type			Thermostatic Expansion Valve (TXV)			
Drain Pipe Connection			1"	1"	1"	1"

Note:

1. Nominal cooling capacities are based on the following conditions: indoor DB 27degC, WB 19.5degC, and condenser water temperature (In/Out) 30/35degC.
2. Motor size stated is for Std ESP. For higher ESP, please consult Topaire.
3. Dimensions stated does not include outlet flange connection, filter section & drain piping at the side of the unit.
4. Manufacturer reserved right to change without prior notice to due constant design improvements

General Data for Water Cooled Packaged (R410a)

MODELS			220	260	300	350	400	420
Capacity		kW	58.6	71.8	80.9	96.1	109.6	120.2
		Btu/hr	200,000	245,000	276,000	328,000	374,000	410,000
Casing Material	Material		Galvanized Steel					
	Finishing		Epoxy Polyester Powder Coating					
	Insulation		Polyurethane Foam					
Dimension	Height	mm	2033	2033	2033	2035	2035	2075
	Width	mm	1050	1050	1050	1100	1100	1200
	Depth	mm	1645	1645	1645	2050	2050	2050
EVAPORATOR								
Type			Corrugated aluminium fin with copper tubes (Inner Groove)					
Tube Diameter		mm(in)	9.52 (3/8")					
Row			3	3	3	3	3	3
Fin Per Inch			14	14	14	14	14	14
Face Area		sq.m	1.28	1.42	1.56	2.01	2.19	2.38
EVAPORATOR BLOWER AND MOTOR								
Motor Type / Drive			Belt Drive					
Blower Material			Galvanized Steel					
No. of Blower			Twin	Twin	Twin	Twin	Twin	Twin
Air Flow		CFM	6,620	7,070	8,100	10,300	11,630	12,370
		CMH	11,250	12,000	13,750	17,500	19,750	21,000
External Static Pressure		inwg	0.6	0.6	0.8	1.0	1.0	1.2
		Pa	150	150	200	250	250	300
Motor Type			Squirrel Cage Induction					
Motor Power Supply		V/PH/HZ	380-415 / 3 / 50					
Motor Rated Output		Hp	4	4	5.5	7.5	7.5	10
		kW	3	3	4	5.5	5.5	7.5
Starter Type			Direct On Line					
Air Filter Type			Washable R15, GI frame					
CONDENSER								
Type			Tube & Tube Condenser					Shell & Tube
Water Flow Rate		CMH	12.58	15.48	17.45	20.71	23.62	25.88
Pressure Drop		kPa	20.6	18.4	15.1	17.2	17.8	35.7
Water inlet/ outlet Connection			2"	2"	2.5"	2.5"	2.5"	2.5"
COMPRESSOR								
Type			Scroll Hermetic					
No of Compressor			2	2	2	2	2	3
Power Supply		V/PH/HZ	380-415 / 3 / 50					
Rated Current		Amp	18.6 x 2	24.4 x 2	27 x 2	27 x 1, 34 x 1	34 x 2	27 x 3
Rated Power		kW	10.1 x 2	13.1 x 2	14.4 x 2	14.4 x 1, 18.6 x 1	18.6 x 2	14.4 x 3
Protection Device			Phase Protector, Overload Protector, and Auto Reset High/Low Pressure Switch					
Capacity Control			On/Off					
Starter Type			Direct On Line					
REFRIGERANT								
Type			R410A					
Charged Amount		kg	8.2	9.7	11.2	13.6	14.7	17.8
Control Type			Thermostatic Expansion Valve (TXV)					
Drain Pipe Connection			1"	1"	1"	1"	1"	1"

Note:

1. Nominal cooling capacities are based on the following conditions: indoor DB 27degC, WB 19.5degC, and condenser water temperature (In/Out) 30/35degC.
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General Data for Water Cooled Packaged (R410a)

MODELS			460	510	560	600	650	700
Capacity		kW	133.1	145.1	159.1	166.2	186.7	198.7
		Btu/hr	454,000	495,000	543,000	567,000	637,000	678,000
Casing Material	Material		Galvanized Steel					
	Finishing		Epoxy Polyester Powder Coating					
	Insulation		Polyurethane Foam					
Dimension	Height	mm	2,128	2,128	2,128	2,122	2,122	2,122
	Width	mm	1,302	1,302	1,302	1,354	1,354	1,354
	Depth	mm	2,300	2,300	2,300	2,728	2,728	2,728
EVAPORATOR								
Type			Corrugated aluminium fin with copper tubes (Inner Groove)					
Tube Diameter		mm(in)	9.52 (3/8")					
Row			3	3	3	3	3	3
Fin Per Inch			14	14	14	14	14	14
Face Area		Sq.m	2.5	2.71	3.12	3.17	3.66	3.66
EVAPORATOR BLOWER AND MOTOR								
Motor Type / Drive			Belt Drive					
Blower Material			Galvanized Steel					
No.of Blower			Twin	Twin	Twin	Twin	Twin	Twin
Air Flow		CFM	13,550	14,140	14,725	16,200	17,670	19,440
		CMH	23,000	24,000	25,000	27,500	30,000	33,000
External Static Pressure		inwg	1.2	1.2	1.4	1.4	1.4	1.4
		Pa	300	300	350	350	350	350
Motor Type			Squirrel Cage Induction					
Motor Power Supply		V/PH/HZ	380-415 / 3 / 50					
Motor Rated Output		Hp	10	10	15	15	15	15
		kW	7.5	7.5	11	11	11	11
Starter Type			Direct On Line					
Air Filter Type			Washable R15,GI Frame					
CONDENSER								
Type			Shell & Tube Condenser					
Water Flow Rate		CMH	28.64	31.24	34.27	35.80	40.19	42.80
Pressure Drop		kPa	18	20.5	25	26.7	36	30.2
Water inlet/outlet Connection			3"	3"	3"	3"	3"	3"
COMPRESSOR								
Type			Scroll Hermetic					
No of Compressor			3	3	3	4	4	4
Power Supply		V/PH/HZ	380 - 415 / 3 / 50					
Rated Current		Amp	27 x 2 , 34 x 1	27 x 1 , 34 x 2	34 x 3	27 x 4	27 x 2 , 34 x 2	27 x 1 , 34 x 3
Rated Power		kW	14.4 x 2 , 18.6 x 1	14.4 x 1 , 18.6 x 2	18.6 x 3	14.4 x 4	14.4 x 2 , 18.6 x 2	14.4 x 1 , 18.6 x 3
Protection Device			Phase Protector,Overload Protector,and Auto Reset High/Low Pressure Switch					
Capacity Control			On/Off					
Starter Type			Direct On Line					
REFRIGERANT								
Type			R410A					
Charged Amount		kg	24.4	26.7	29.4	30	31	32
Control Type			Thermostatic Expansion Valve (TXV)					
Drain Pipe Connection			1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"

Note:

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General Data for Water Cooled Packaged (R410a)

MODELS			750	800	850	900	1000	1120
Capacity		kW	211.0	226.8	242.1	257.0	280.2	321.2
		Btu/hr	720,000	774,000	826,000	877,000	956,000	1,096,000
Casing Material	Material		Galvanized Steel					
	Finishing		Epoxy Polyester Powder Coating					
	Insulation		Polyurethane Foam					
Dimension	Height	mm	2,122	2,275	2,275	2,275	2,445	2,445
	Width	mm	1,354	1,500	1,500	1,500	1,652	1,652
	Depth	mm	2,728	3,200	3,200	3,200	3,362	3,362
EVAPORATOR								
Type			Corrugated aluminium fin with copper tubes (Inner Groove)					
Tube Diameter		mm(in)	9.52 (3/8")					
Row			4	4	4	4	4	4
Fin Per Inch			12	12	14	14	14	14
Face Area		Sq.m	3.66	4.38	4.38	4.93	5.27	5.86
EVAPORATOR BLOWER AND MOTOR								
Motor Type / Drive			Belt Drive					
Blower Material			Galvanized Steel					
No.of Blower			Twin	2	2	2	2	2
Air Flow		CFM	19,440	21,560	22,970	24,740	27,200	30,630
		CMH	33,000	36,600	39,000	42,000	46,200	52,000
External Static Pressure		inwg	1.4	1.4	1.4	1.4	1.4	1.8
		Pa	350	350	350	350	350	450
Motor Type			Squirrel Cage Induction					
Motor Power Supply		V/PH/HZ	380-415 / 3 / 50					
Motor Rated Output		Hp	20	2 x 10	2 x 10	2 x 10	2 x 10	2 x 15
		kW	15	7.5 x 2	7.5 x 2	7.5 x 2	7.5 x 2	11 x 2
Starter Type			Direct On Line					
Air Filter Type			Washable R15,GI Frame					
CONDENSER								
Type			Shell & Tube Condenser					
Water Flow Rate		CMH	45.41	48.83	52.12	55.35	60.33	69.13
Pressure Drop		kPa	35	43.4	50.2	58.1	23.4	31.1
Water inlet/outlet Connection			3"	3"	3"	3"	4"	4"
COMPRESSOR								
Type			Scroll Hermetic					
No of Compressor			4	3	3	3	3	3
Power Supply		V/PH/HZ	380 - 415 / 3 / 50					
Rated Current		Amp	34 x 4	16.5 x 2 , 35 x 1	16.5 x 1 , 35 x 2	35 x 3	35 x 2, 49 x 1	49 x 3
Rated Power		kW	18.6 x 4	26.3 x 2 , 30.7 x 1	26.3 x 1 , 30.7 x 2	30.7 x 3	30.7 x 2 , 38.6 x 1	38.6 x 3
Protection Device			Phase Protector,Overload Protector,and Auto Reset High/Low Pressure Switch					
Capacity Control			On/Off					
Starter Type			Direct On Line					
REFRIGERANT								
Type			R410A					
Charged Amount		kg	35.7	46.2	58	64	69	74
Control Type			Thermostatic Expansion Valve (TXV)					
Drain Pipe Connection			1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"

Note:

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TOPAIRE
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