WATER-COOLED SCREW CHILLER

YEWS (High Efficiency)

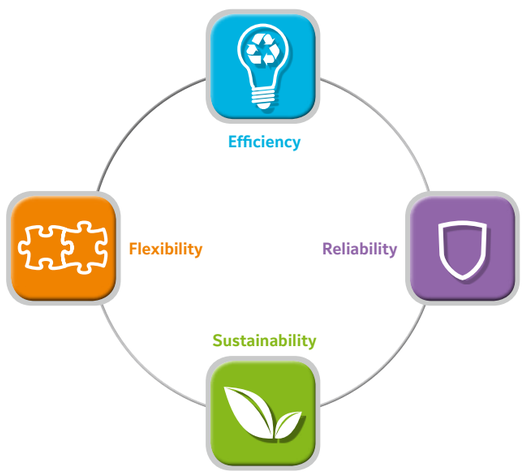
Cooling capacity: 215–415TR

YORK BY JOHNSON CONTROLS

Johnson Controls

In order to meet continuously changing and increasing requirements, Johnson Controls introduces the brand new high efficient HFC-134a water-cooled screw chiller YEWS. Compared to typical water-cooled screw chillers, YEWS high efficiency series can meet customers' efficiency requirements better and continuously reduces the carbon dioxide emission. YEWS operates additionally very reliable and its flexible configuration combined with a compact footprint can meet a large number of application and project requests.

Its semi-hermetic twin-screw compressor ensures high energy efficiency and long service life. The high efficiency hybrid falling film evaporator helps to increase the COP level to an industry leading level. Equipped with advanced smart control logic, the system is capable to monitor key variables and adjusts the chiller operation precisely. The microprocessor can also be connected to any Building Automation System via MODBUS Protocol.



Chiller Features

Efficiency

All YEWS high efficiency models are energy saving products with proven high performance.

- The industry leading design concept combined with latest technology innovations contribute to the high efficient operation of the chiller.
- The patented hybrid falling film evaporator assures excellent heat exchange efficiency.
- The advanced refrigerant and oil system design upgrades the chiller efficiency even further.
- The smart control logic assures efficient operation at each load point.

Flexibility

YEWS high efficiency series is suitable for a large number of applications: not only comfort cooling but also ice thermal storage or industry cooling.

- The special compressor design can meet high delta pressure condition.
- The real time detecting parameter and system protection let the chiller to work stable even under extreme conditions.

Reliability

Johnson Control's long term experience and continuous improvement for compressor and chiller design results in highest product reliability.

- The internal oil system provides adequate protect to the unit's compressor.
- The chiller's smart control software allows smooth loading and operation.

Sustainability

YEWS reduces indirect & direct carbon dioxide emission and advocates sustainable development.

- The high efficiency of the YEWS chiller offers substantial reduction in power consumption and the facility's CO_2 footprint.
- The patented hybrid falling film evaporator operates with less refrigerant charge.

Mechanical Specifications

The YEWS model is completely assembled with all interconnecting refrigerant piping and internal wiring, ready for field installation. The unit is pressure tested, evacuated, and fully factory charged oil in the refrigerant circuit. After assembly, a run test is performed with water flowing through the cooler to ensure that each refrigerant circuit operates correctly. The chiller conforms to GB25131 Safety requirements for water chillers (heat pumps) using the vapor compression cycle.

Compressor

Highly efficient and precisely manufactured direct drive, semi-hermetic oil-injected compressor for highest efficiency. 25%-100% step-less capacity control for highest part-load efficiency. Compressor design working pressure of 2.1MPa.The compressor housing is made of cast iron and provides optimal space for two ground-finishing screw rotors. The rotors are manufactured from forged steel with very small clearance but no direct contact. The design ensures that the rotors keep in the right positioned, reduces wear, prevents leak and prolongs life span. The unique oil separation system design assures a constant supply of oil to the bearings at all times. An automatic control valve ensures the compressor starts at the minimum motor load and an internal discharge check valve prevents a rotor backspin upon shutdown.

Compressor Motor Protection-The microprocessor motor protection provides over current protection to ensure that the motor is not damaged due to voltage, excess refrigerant or other problems that could cause excessive motor current.

The microprocessor also provides low motor current protection when it senses a motor current of less than 10% FLA. A motor protector module provides over heat protection.

Capacity Control-The compressor slide valve modulates the capacity from 100% to 25% of full load for one compressor units and 100% to 12.5% for two compressor units. The slide valve will be adjusted according to the system's load requirement.

Refrigerant System

Liquid line components include a manual shut-off valve, refrigerant recovery valve, moisture sight glass and orifice plate. Suction lines are covered with close-cell insulation. The orifice of the refrigerant system automatically adjusts to the continuously changing pressure condition and meters refrigerant flow to the evaporator accordingly.

The condenser shell is capable of storing the entire system refrigerant charge during serve, when the unit is equipped with the optional condenser isolation valve.

The unit is furthermore equipped with a suction strainer to prevent any particles enter the compressor along with the suction gas.

Oil System-The high efficient oil separation system provides adequate protect to the unit's compressor. It is equipped with an oil heater in oil sump to avoid a refrigerant and oil mix when the chiller is not operating. During the chiller operation, the system operation pressure automatically transfers the oil in the oil sump back to the compressor. Anoil filter is equipped to each compressor to prevent any particles entering the compressor.

Heat Exchanger

Condenser-The refrigerant circuit water-cooler condenser is a cleanable shell and tube with seamless external finned 19mm OD copper tubes rolled into tube plates. The design working pressure on the water side is 1MPa. The factory offers by standard groove type water pipe connections. Alternatively HG20615 flange type connections can be offered. The refrigerant side has a safety valve with trip pressure of 2.07MPa. The condenser can be manufactured and tested according to ASME or China National Standard GB151.

Evaporator-The evaporator utilizes a hybrid falling film design. It contains a balance of flooded and falling film technology to optimize efficiency, minimize refrigerant charge, and maintain reliable control. A specifically designed spray distributor provides uniform distribution of refrigerant over the entire length to yield optimum heat transfer. The hybrid falling film evaporator design has suction baffles around the sides and above the falling film section to prevent liquid refrigerant carryover into the compressor. A sight glass of 40mm diameter is on the shell side for refrigerant level observation. The design working pressure is 2.1MPa for shell, 1.0MPa for tube side. The refrigerant side has a safety valve with trip pressure of 2.07MPa. The refrigerant side is manufactured and tested according to China National Standard GB151.
The evaporator shell is covered with 19mm closed-cell insulation. The factory offers by standard groove type water pipe connections. Alternatively HG20615 flange type connections can be offered. During the installation the contractor should furnish the insulation layer.

Compact Water Box-A removable Compact Water Box is fabricated from steel pipe with 1.0MPa design working pressure. Steel diaphragms are welded inside the water box per the number of the flow pass. The factory offers by standard groove type water pipe connections. Alternatively HG20615 flange type connections can be offered. 20mm vent and drain pipes are provided on each evaporator and condenser water box.

Codes & Standards

YEWS meets the requirements according to:

- AHRI 550/590 and 551/591
- China Refrigeration and Air Conditioning Association
- GB25131-Safety requirements for water chillers (heat pumps) using the vapor compression cycle
- GB150 Pressure vessel
- GB151 Tubular heat exchangers
- GB/T18430.1-Water chilling (heat pump) packages using the vapor compression cycle – part 1: Water chilling (heat pump) packages for industrial &commercial and similar application

AHRI Certification Program-The performance of YORK YEWS has been certified to the Air Conditioning, Heating and Refrigerant Institute (AHRI) as complying with the certification sections of the latest issue of AHRI Standards 550/590 and 551/591. Under this Certification Program, chillers are regularly tested in strict compliance with this Standard. This provides an independent, third party verification of chiller performance.

Electronics

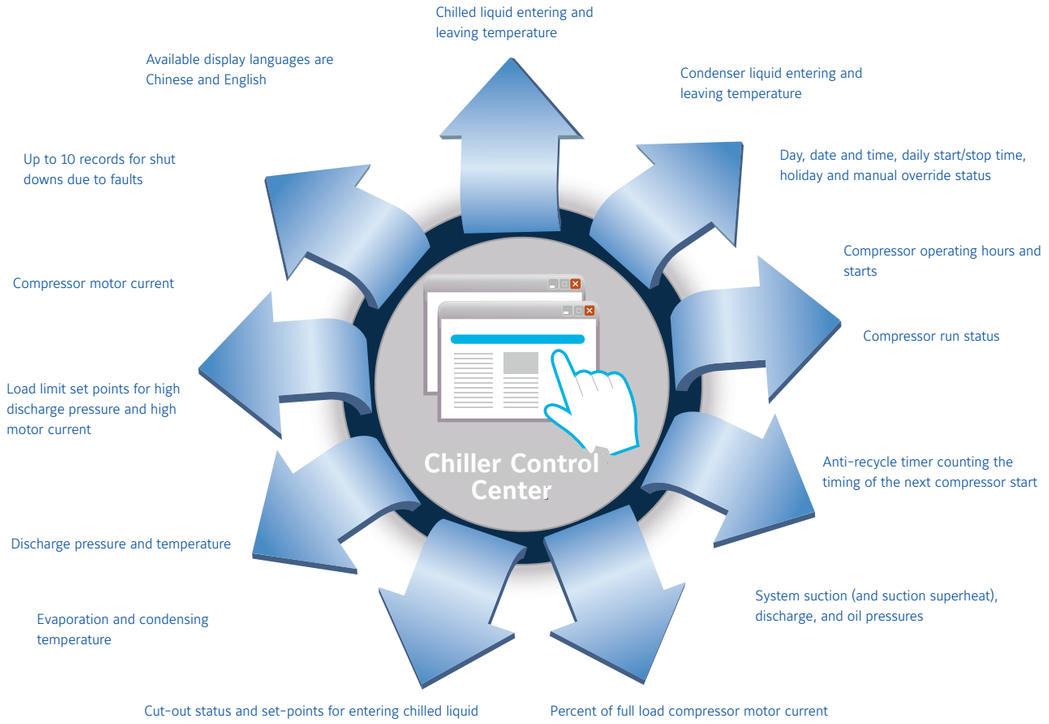
Starter and Control Panel-The unit comes equipped with unit mounted wye-delta starter and control panel. All wiring is completed and tested by the factory but does not include any field installation.

The painted galvanized steel panel enclosure is designed and meets the need of IP22 protection. The control panel is divided into a power section and a control section. Power and control sections have separated hinged, latched and gasket sealed doors. The power panel is a single power connection. Each power compartment contains compressor starting contractors, control circuit serving compressor capacity control, compressor contractor coils and compressor motor overloads. The compressor motor overloads contain current transformers as an input to the microprocessor. Compressor power supply protection modular protects high input voltage, low input voltage, phase reversal and lack of phase. The control section contains key pad , HMI and microprocessor board.

Microprocessor and display-The user can program and modify set points as well as general using the keypad. Additional changes such as cut-outs for low suction pressure, high discharge pressure, high oil temperature or high discharge pressure unloading set points and compressor motor current percent limit require a password.

Through standard RS485 interface, the microprocessor can be connected to any Building Management System via MODBUS Protocol.

The microprocessor system is allowed to monitor and control many key variables and can display the following items at its 120 character and 8-line big LCD display in metric unit (℃ and kPa):



Chiller Standard configuration

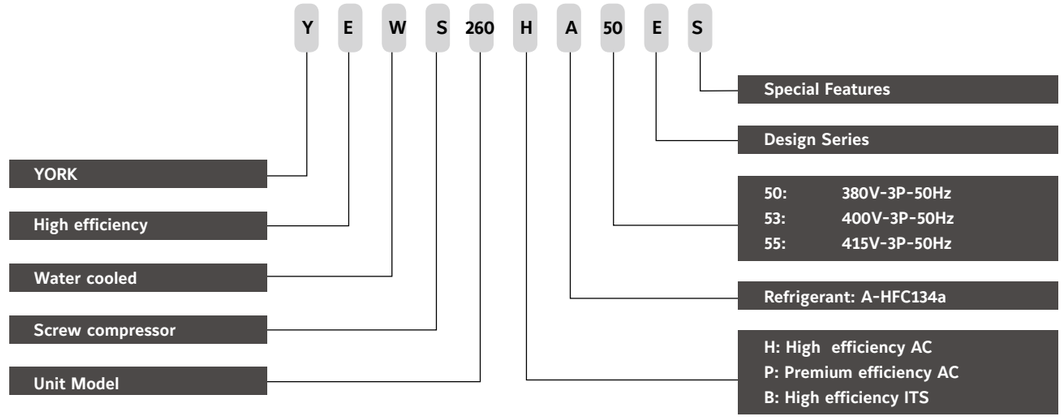
Chiller Insulation-The unit comes factory fitted with a 19mm thick flexible closed-cell plastic anti-sweat insulation attached to the evaporator shell, tube sheets, suction connection, and (if necessary) to the auxiliary tubing. The 19m thick insulation can prevent sweating in environments with relative humidity up to 75% and dry bulb temperatures ranging from 10 to 32℃ .

Flow switch-The design working pressure of paddle type flow switch is 1.03MPa (Gauge). It is suitable for chilled liquid and condenser liquidpipes. The power supply of flow switch is 125 V.A.C., 1 Phase, 50 Hz.

Painting-The chiller surface is painted with anticorrosion and durable caribbean blue epoxy primer and propionic acid one-component top coat.

Shipping-Production covers are provided for the control center and controller on the unit. Plastic caps or fabricscover plate are provided for all water pipe connectors.

Nomenclature



Options

25mm Spring Isolators

The unit comes by standard with four lose 19mm thick anti-vibration neoprene pads, for field installation. When the unit is installed on the floor, Spring Isolators are recommended to replace the standard neoprene pads. 4 level adjustable Spring Isolators with non-slip mat will be delivered lose and can be conveniently mounted under the tube sheet.

Marine Waterbox

The Marine Water box option makes it easy to clean the copper pipes of the heat exchanger without disconnecting the water pipes. Marine Water boxes are available for both condenser and evaporator. The factory offers by standard groove type water pipe connections. Alternatively HG20615 flange type connections can be offered.

Left/Right Pipe connection

Left or Right Pipe connection is the perfect option for small machine room or retrofit projects. It allows to choose the pipe connection either from the right or from the left side.

Compressor Sound Attenuator

This option provides higher comfort to the user by lowering the sound emission of the chiller.

Thicker Evaporator Insulation (38mm)

The 38mm thicker insulation is an option in case of relative humidity up to 90% and dry bulb temperatures ranging from 10 to 32℃ . It is especially suitable for ITS, low temperature or high humidity areas and helps to avoid the sweat on thesurface of the unit.

Refrigerant isolation valve and refrigerant storage

The condenser shell will be capable of storing the entire system refrigerant charge during servicing if the unit is equipped with the optional isolation valve.

Technical Data

High Efficiency Chiller Performance Data

Model	Cooling capaciy		Input Power kW	COP	FLA	Full load Consultation Index kW/TR	Evaporator				Condenser			
	TR	kW					Pass	Flow Rate l/s	Piping Dimension mm	Water Pressure Drop kPa	Pass	Flow Rate l/s	Piping Dimension mm	Water Pressure Drop kPa
YEWS215PA50E	211	741	122.8	6.0	209	0.58	2	31.8	150	32	2	39.8	150	49
YEWS260HA50E	256	901	158.3	5.7	133/133	0.62	2	38.7	150	68	2	48.4	150	74
YEWS300HA50E	294	1036	179.0	5.8	170/133	0.61	2	44.5	150	71	2	55.6	200	77
YEWS340HA50E	337	1186	203.9	5.8	174/174	0.61	2	50.9	150	66	2	63.7	200	70
YEWS375HA50E	372	1308	225.0	5.8	209/174	0.61	2	56.2	200	69	2	70.2	200	77
YEWS415HA50E	411	1447	245.6	5.9	209/209	0.60	2	62.2	200	50	2	77.7	200	75

Remark: 1. Chilled liquid leaving temperature 44F, Flow rate 2.4GPM/ton fouling factor 0.0001hr ft² °F / Btu.
2. Condenser liquid entering leaving temprature 85F, Flow rate 3GPM/ton, fouling factor 0.00025hr ft² °F / Btu.
3. The above data are based on Johnson Control's selection software: AECworks 4.1. Please refer to the latest version of the computer selection for specific projects.

High Efficiency ITS Dual Duty Performance Data

Model		Cooling capaciy		Input Power kW	COP	FLA A	Full load Consultation Index kW/TR	Evaporator				Condenser			
	Condition	TR	kW					Pass	Flow Rate l/s	Piping Dimension mm	Water Pressure Drop kPa	Pass	Flow Rate l/s	Piping Dimension mm	Water Pressure Drop kPa
YEWS215BA50E	AC	205	721	123.2	5.85	210	0.60	2	37.2	150	31	2	40.4	150	51
	ITS	129	454	101.4	4.47	173	0.79				32				
YEWS260BA50E	AC	255	897	163.8	5.47	138/138	0.64	2	46.3	150	90	2	50.7	150	79
	ITS	161	567	150.4	3.77	127/127	0.93				104				
YEWS300BA50E	AC	295	1037	181.0	5.73	172/133	0.61	2	53.5	150	99	2	58.3	200	83
	ITS	179	629	159.7	3.94	152/117	0.89				97				
YEWS340BA50E	AC	338	1189	205.8	5.78	175/175	0.61	2	61.3	150	97	2	66.7	200	75
	ITS	205	721	181.0	3.98	154/154	0.88				101				
YEWS375BA50E	AC	373	1311	228.1	5.75	212/174	0.61	2	67.7	200	119	2	73.6	200	84
	ITS	226	795	200.8	3.96	187/153	0.89				116				
YEWS415BA50E	AC	413	1451	247.9	5.85	211/211	0.60	2	74.9	200	73	2	81.3	200	81
	ITS	250	880	218.3	4.03	186/186	0.87				77				

Remark: 1. Air conditioning: 7/12 ℃ , 30/35℃ ; Ice making: Chilled liquid leaving temperature -5.6℃ , Condenser liquid entering temperature 30℃ .
2. evaporator fouling factor factor 0.018[m²·℃ /kW], condenser fouling factor factor 0.044[m²·℃ /kW].
3. The above data are based on 25% ethylene glycol as evaporator liquid.
4. The above data are based on Johnson Controls' selection software: AECworks 4.1. Please refer to the latest version of the computer selection for specific projects.

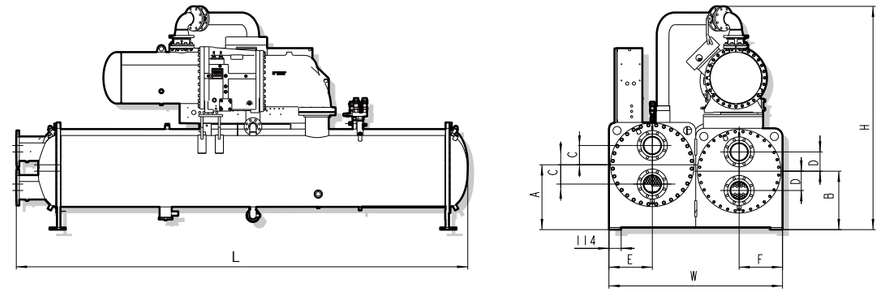
Physical Data

Model	Refrigerant circuit No	Refrigerant Charge (Kg)	Lubrication oil Charge (L)	Compressors Qty	Unit Capacity Control %	Water Volume per Evaporator L	Water volume per condenser L	Weight	
								Shipping Weight kg	Operating Weight kg
YEWS215	1	220	33	1	25~100	530	520	5700	6750
YEWS260	1	200	50	2	12.5~100	390	480	6130	7000
YEWS300	1	260	55	2	12.5~100	440	530	6480	7450
YEWS340	1	270	60	2	12.5~100	470	560	6750	7780
YEWS375	1	290	63	2	12.5~100	550	650	7510	8710
YEWS415	1	300	66	2	12.5~100	710	690	8060	9460

Electric Data

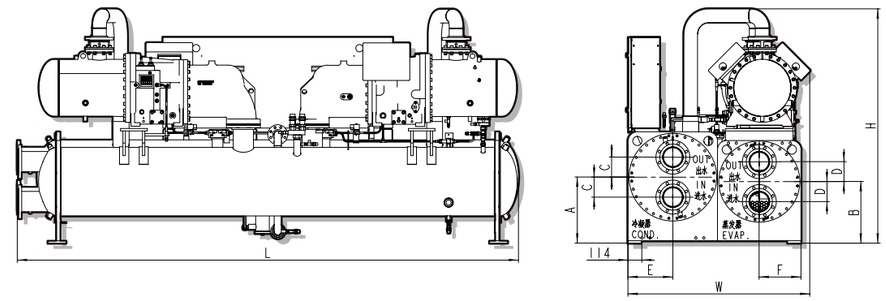
Model	380V-3PH-50Hz			400V-3PH-50Hz			415V-3PH-50Hz		
	Inrush Current	Locked Rotor Current	Max.Load Current	Inrush Current	Locked Rotor Current	Max.Load Current	Inrush Current	Locked Rotor Current	Max.Load Current
	A	A	A	A	A	A	A	A	A
YEWS215	710	2129	328	716	2147	311	727	2180	303
YEWS260	571	1315/1315	208/208	577	1349/1349	198/198	600	1424/1424	195/195
YEWS300	626	1480/1315	228/208	624	1493/1349	216/198	629	1514/1424	210/195
YEWS340	667	1480/1480	228/228	663	1493/1493	216/216	666	1514/1514	210/210
YEWS375	885	2129/1480	328/228	882	2147/1493	311/216	888	2180/1514	303/210
YEWS415	920	2129/2129	328/328	915	2147/2147	311/311	921	2180/2180	303/303

YEWS215



Model	L(mm)	W(mm)	H(mm)	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)
YEWS215	4215	1620	2035	605	545	180	180	405	405

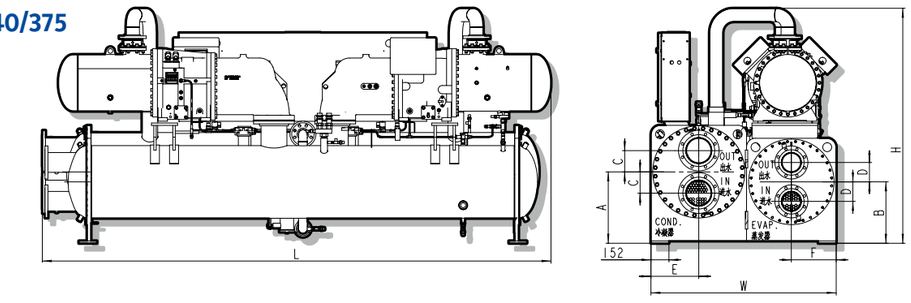
YEWS260



Model	L(mm)	W(mm)	H(mm)	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)
YEWS260	4150	1505	1945	545	508	165	165	370	345

Remark: 1. If refrigerant isolation valve is selected, 50mm will be added to the chiller height "H".
2. If 2.1MPa water box is selected, 35mm will be added to the chiller length "L".

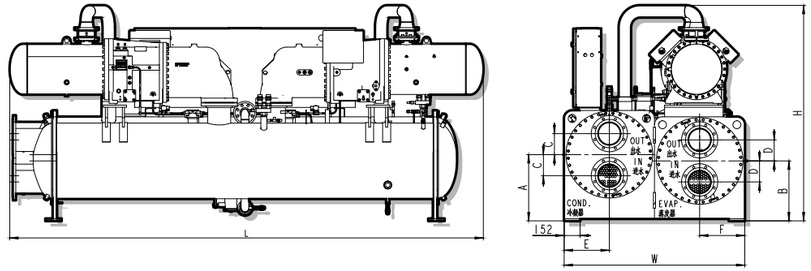
YEWS300/340/375



Model	L (mm)	W (mm)	H (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
YEWS300	4315	1570	2020	605	520	180	165	405	380
YEWS340	4315	1570	1995	605	520	180	165	405	380
YEWS375	4480	1670	2055	630	545	200	180	430	405

Remark: 1. If refrigerant isolation valve is selected, 50mm will be added to the chiller height "H".
2. If 2.1MPa water box is selected, 35mm will be added to the chiller length "L".

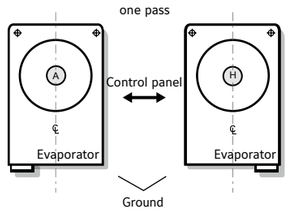
YEWS415



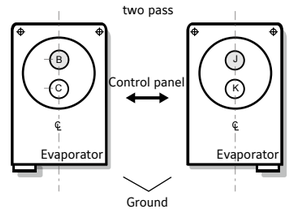
型号	L (mm)	W (mm)	H (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
YEWS415	4510	1720	2055	630	570	200	200	430	430

Remark: 1. If refrigerant isolation valve is selected, 50mm will be added to the chiller height "H".
2. If 2.1MPa water box is selected, 35mm will be added to the chiller length "L".

Evaporator Water Pipe Connection

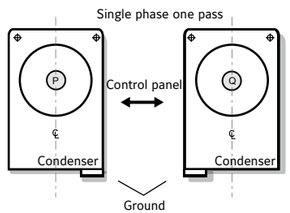


Pipe configuration		
pass	Evaporator	
	Entering water	Leaving water
1	A	H
	H	A

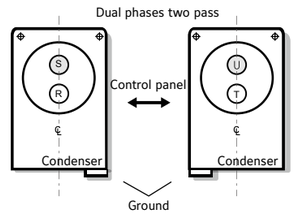


Pipe configuration		
pass	Evaporator	
	Entering water	Leaving water
2	C	B
	K	J

Condenser Water Pipe Connection

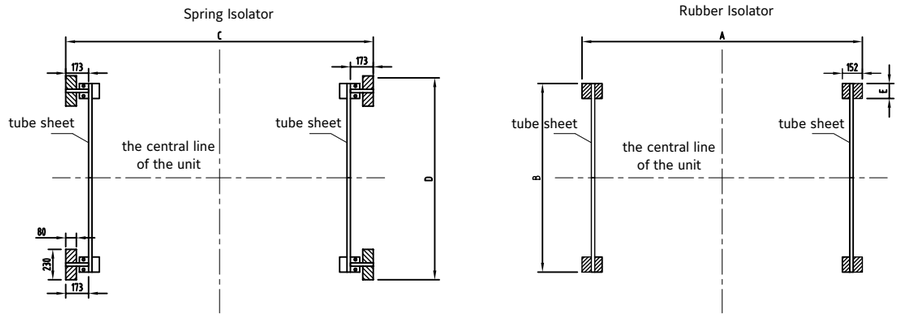


Pipe configuration		
pass	Evaporator	
	Entering water	Leaving water
1	P	Q
	Q	P



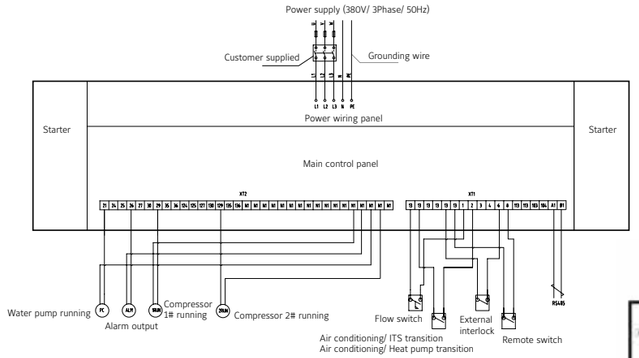
Pipe configuration		
pass	Evaporator	
	Entering water	Leaving water
2	R	S
	T	U

Isolator Floor Layout



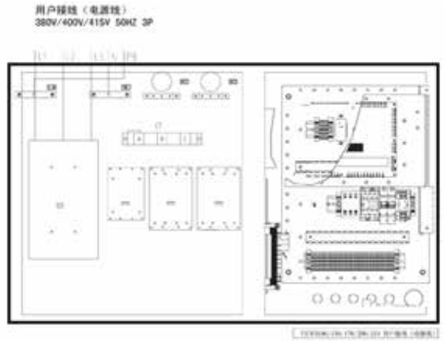
Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
YEWS215	3798	1620	4004	1736	152
YEWS260	3798	1430	4004	1546	114
YEWS300	3798	1570	4004	1686	152
YEWS340	3798	1570	4004	1686	152
YEWS375	3798	1670	4004	1786	152
YEWS415	3798	1720	4004	1836	152

Wiring Diagram（Wye- Delta Starter）



The picture only for: YEWS260、300、340、375、415

YEWS215



Remark:
1. If there is no "external interlock EXT", please jumper connect terminal "6"and"13".
2. The cable selection should conform to the local codes.
3. If the customer's power supply is 3 phase 4 line（L1/L2/PE) ", please jumper connect terminal "N" and "PE" in the electric panel.
4. The contact resistance of flow switch, mode transition switch, external interlock and remote switch should be less than 0.5 ohm.
5. The 485 communication cable from 485 converter to terminal must be of the same type of cable.
6. Use twisted-pair cable with characteristic impedance 120 plus / minus 20% ohm as the bus cable.
7. The length of communication cable should be within 1000 meters.

Johnson Controls is a global diversified technology and industrial leader serving customers in more than 150 countries. Our 168,000 employees create quality products, services and solutions to optimize energy and operational efficiencies of buildings; lead-acid automotive batteries and advanced batteries for hybrid and electric vehicles; and interior systems for automobiles. Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. Through our growth strategies and by increasing market share we are committed to delivering value to shareholders and making our customers successful. In 2013, Corporate Responsibility Magazine recognized Johnson Controls as the #14 company in its annual "100 Best Corporate Citizens" list. For additional information, please visit http://www.johnsoncontrols.com.

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