Product Catalog

Air-Cooled Series R™ Chillers Model RTAG

100 to 500 Nominal Tons (60 Hz)

Nov 2022

RTAG-PRC001F-EN

Introduction

The new Trane model RTAG chiller is the result of a search for higher reliability, higher energy efficiency, lower sound levels, and smart controls for today's environment.

The RTAG chiller uses the proven design of the Trane helical-rotary compressor, which embraces all of the design features that have made the Trane helical-rotary compressor liquid chillers such a success since 1987.

Trane RTAG chiller offers greatly improved energy efficiency, and improved acoustical performance, due to its advanced design, low-speed, direct-drive compressor, and high efficiency evaporator.

Trane RTAG chiller offers high reliability with Trane helical-rotary compressor, Trane evaporator, smart controls, and copper tube/Al fin heat exchanger, etc.

Trane RTAG chiller offers the industry leading rapid restart option. It enables the chiller to restart optimization quickly after power outages, which is very important for the chiller reliability. From the power supply recovery, the minimum restart time (without UPS) is ~45 seconds for the 1st compressor, and the chiller reloads back up to 80% after 180 seconds.

The major advantages of the RTAG chiller are:
- Higher energy efficiency at full load and part load.
- Higher reliabilities
- Lower sound levels
- Smart controls and user-friendly interface
- Rapid restarts

The model RTAG chiller is an industrial-grade design, built for both the industrial and commercial markets. It is ideal for industrial applications (data center, automotive industry etc.), office buildings, hotels, educational institutions, healthcare/hospitals, retailers, etc.

Sound Levels
- Standard Noise
- Medium Low Noise (compressor or tube sound attenuation)
- Low Noise (compressor + tube sound attenuation)

Efficiency Levels
- High Efficiency (H)
- Extra High Efficiency(X)
- Premium Seasonal Efficiency (P, with AFD)

Unit Application
- Standard Ambient 14-114.8°F(-10 ~ 46°C)
- High Ambient 14-125°F(-10 ~ 52°C)

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Features and Benefits

The Helical-Rotary Compressor

Unequaled-reliability: Direct-drive, low-speed, semi-hermetic compressor for high efficiency and high reliability. The Trane helical-rotary compressor is designed, built, and tested to the same demanding and rugged standards as the Trane centrifugal compressors, the scroll compressors, and Trane helical-rotary compressors used in both air- and water-cooled chillers for more than 32 years.

Years of research and testing: The Trane helical-rotary compressor has amassed thousands of hours of testing, much of it at severe operating conditions beyond normal commercial air-conditioning applications.

Proven track record: The Trane Company is the world's largest manufacturer of large helical rotary compressors used for refrigeration. Over 300,000 compressors worldwide have proven that the Trane helical- rotary compressor has a reliability rate of greater than 99.5% in the first year of operation — unequaled in the industry.

Resistance to liquid slugging: The robust design can ingest amounts of liquid refrigerant that normally would severely damage compressor.

Fewer moving parts: The helical-rotary compressor has only two rotating parts: the male rotor and the female rotor.

Maintenance: Field-serviceable compressor for easy maintenance.

Suction-gas-cooled motor: The motor operates at lower temperatures for longer motor life.

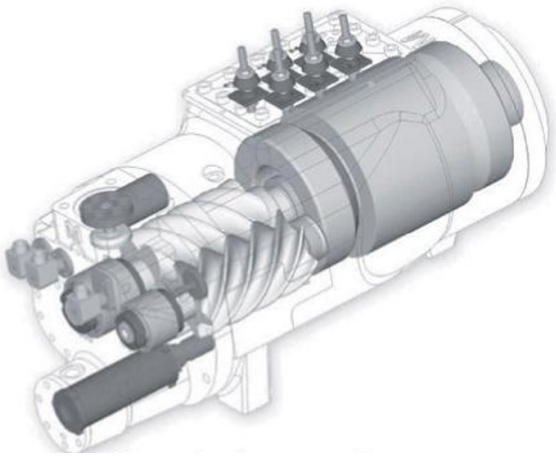


Figure 1 - Cutaway of a compressor

Capacity Control and Load Matching

The combination patented unloading system on Trane helical-rotary compressors uses the variable unloading valve for the majority of the unloading function. This allows the compressor to modulate infinitely, to exactly match building load and to maintain chilled-water supply temperatures within ± 0.3°C[±0.5°F] of the set point. Helical- rotary chillers that rely on stepped capacity control must run at a capacity equal to or greater than the load, and typically can only maintain water temperature to around ± 1°C [±2°F]. Much of this excess capacity is lost because overcooling goes toward removing building latent heat, causing the building to be dried beyond normal comfort requirements.

On RTAG P version, the combination of the variable unloading valve plus the adaptive frequency drive and EC fan allows the unit to accurately match building loads and achieve excellent efficiency at full and part loads.

Close Spacing Installation

The RTAG chiller has the tightest recommended side clearance in the industry, 1.2 meter, but that is not all. In situations where equipment must be installed with less clearance than recommended, which frequently occurs in retrofit applications, restricted airflow is common. Conventional chillers may not work at all. However, the RTAG chiller with the Adaptive ControlTM microprocessor and EC fan will make as much chilled water as possible given the actual installed conditions, stay online during any unforeseen abnormal conditions, and optimize its performance. Consult your sales engineer for more detail.

Factory Testing Means Trouble-Free Start-up

All RTAG chillers are given a complete functional test at the factory. This computer-based test program completely checks the sensors, wiring, electrical components, microprocessor function, communication capability, expansion valve performance, and fans. In addition, each compressor is run-tested to verify capacity and efficiency. Where applicable, each unit is factory preset to the customer's design conditions. An example would be the leaving-liquid temperature set point. The result of this test program is that the chiller arrives at the job site fully tested and ready for operation

Factory-Installed and Tested Controls and Options Speed Installation

All RTAG chiller options, including low ambient control, ambient temperature sensor, low ambient lockout, communication interface controls are factory installed and tested. Some manufacturers send accessories in pieces to be field installed. With Trane, the customer saves on installation expense and has assurance that ALL chiller controls and options have been tested and will function as expected.

CHIL Evaporator

Trane developed an evaporator specially designed for air-cooled chillers. CHIL evaporator optimizes the flow of refrigerant to get an excellent heat exchange with water in every operating condition and minimize the quantity of refrigerant used.

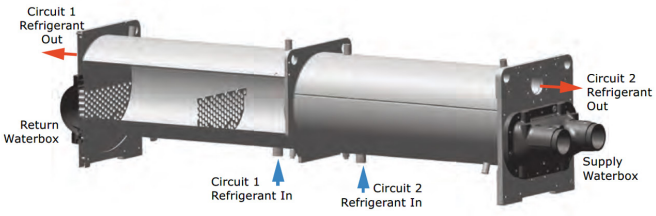


Figure 2 - CHIL Evaporator

Fans

RTAG chillers use EC fans (P series with AFD series) in order to reduce power consumption at full load and at part load. EC fans allow a significant reduction of sound level and a better operation of the chiller at low ambient conditions

Figure 3 - EC Fan

Condenser Coils

Air-cooled condenser coils have aluminum fins mechanically bonded to internally finned seamless copper tubing. The condenser coil has an integral subcooling circuit.

Superior Control with Symbio800™ Chiller Controls

The Adaptive ControlTM microprocessor system enhances the RTAG chiller by providing the very latest chiller control technology. With the Adaptive Control microprocessor, unnecessary service calls and unhappy tenants are avoided. The unit does not nuisance-trip or unnecessarily shut down. Only when the Tracer chiller controls have exhausted all possible corrective actions and the unit is still violating an operating limit, will the chiller shut down. Controls on other equipment typically shut down the chiller, usually just when it is needed the most.

For Example:
A typical five-year-old chiller with dirty coils might trip out on high- pressure cutout on a 38°C[100°F] day in August. A hot day is just when comfort cooling is needed the most. In contrast, the RTAG chiller with an Adaptive Control microprocessor will stage fans on, modulate the electronic expansion valve, and modulate the slide valve as it approaches a high-pressure cutout, thereby keeping the chiller on line when you need it the most, on high ambient temperatures.

Options

Application options

Standard ambient
The standard ambient allows start and operation when the unit works with ambient temperatures down to -10°C (14°F). High side of ambient range remains at 46°C (115°F).

High ambient
The high ambient option adds unit controls, oil coolers and oversized electrical components to allow start and operation up to ambient temperatures of 52°C (125°F) operation. Low side of ambient range remains at -10°C (14°F).

Sound level options

Low noise
Low noise option of Sound Treatment use sound wrap to reduce the compressor, suction and discharge line, oil separator noise.
Low noise with night noise setback is implemented with both sound wrap and variable speed fan, reduce fan speed to achieve even lower noise level in night time (can set between 0-24hrs).

Medium low noise
Medium low noise option of Sound Treatment use sound wrap depends on compressor configuration: M2, N5, N6 use tube sound wrap, N6E2 or N6E use compressor sound box. this option is only for unit nominal tonnage >230.

Control options

BACnet™ communications interface
Allows the user to easily interface with BACnet via a single twisted pair wiring to a factory installed and tested communication board.

LonTalk™ (LCI-C) communications interface
Provides the LonMark chiller profile inputs/outputs for use with a generic building automation system via a single twisted pair wiring to a factory installed and tested communication board.

ModBus™ communications interface
Allows the user to easily interface with ModBus via a single twisted pair wiring to a factory installed and tested communication board.

External chilled water setpoint
Symbio800 accepts either a 2-10 VDC or a 4-20mA input signal, to adjust the chilled water setpoint from a remote location.

External current limit setpoint
Symbio800 accepts either a 2-10VDC or a 4-20mA input signal to adjust the current limit setpoint from a remote location.

Refrigerant options

R134a
R1234ze (HFO refrigerant)

Rapid restart

RTAG has a soft configure item “Rapid Restart Enable”. When it is configured as “Enable”, the controller will start and upload the compressors as quickly as possible.

Run test report

Run test report gives the results of the performance test of the unit in the design conditions specified in the order write up with water without glycol.

The data recorded are: cooling capacity, power input, air temperature, water entering temperature, water leaving temperature and water flow.
* Components may differ depending on unit model and size. Contact your local sales office for details.

Other Options

Condenser corrosion pretection
Black fins, copper fins or E-coating fins are available on all size units for corrosion protection. Job site conditions should be matched with the appropriate condenser fin materials to prevent coil corrosion and ensure extended equipment life.

Allowable working pressure of the water box
150Psig and 300Psig options

Relief valves
Dual relief valve plus 3 way valve on low pressure side.

Neoprene isolators
Isolators provide isolation between chiller and structure to help eliminate vibration transmission and have an efficiency of 95% minimum.

Power line connection types
- Terminal block connection
- Circuit breaker
- Mech disconnect switch

Operating map
To choose the unit configuration, refer to operating map figure below: Standard ambient, High ambient.
* Standard ambient units:
-10°C < Air temperature < 46°C.
* High ambient units:
-10°C < Air temperature < 52°C

Application Considerations

Important

Certain application constraints should be considered when sizing, selecting, and installing Trane RTAG chillers. Unit and system reliability is often dependent on properly and completely complying with these considerations. When the application varies from the guidelines presented, it should be reviewed with your local sales engineer.

Unit Sizing

Unit capacities are listed in the performance data section. Intentionally oversizing a unit to ensure adequate capacity is not recommended. Erratic system operation and excessive compressor cycling are often a direct result of an oversized chiller. In addition, an oversized unit is usually more expensive to purchase, install, and operate. If oversizing is desired, consider using two units.

Water Treatment

Dirt, scale, products of corrosion, and other foreign material will adversely affect heat transfer between the water and system components. Foreign matter in the chilled-water system can also increase pressure drop and, consequently, reduce water flow. Proper water treatment must be determined locally, depending on the type of system and local water characteristics. Neither salt nor brackish water is recommended for use in Trane RTAG chillers. Use of either will lead to a shortened chiller life. Trane encourages the employment of a reputable water-treatment specialist, familiar with local water conditions, to assist in this determination and in the establishment of a proper water- treatment program.

Effect of Altitude on Capacity

RTAG chiller capacities given in the performance data tables are for use at sea level. At elevations substantially above sea level, the decreased air density will reduce condenser capacity and, therefore, unit capacity and efficiency.

Ambient Limitations

Trane RTAG chillers are designed for year-round operation over a range of ambient temperatures. The RTAG chiller will operate in ambient temperatures of -10 to 46°C [14 to 115°F]. Selecting the high-ambient option will allow the chiller to operate in ambient temperatures of 52°C [125°F]. For operation outside of these ranges, contact the local sales office.

Water Flow Limits

The minimum water flow rate is 50% of nominal flow rate and nominal flow rates are given in the general data chapter. Evaporator flow rates below the minimum value will result in laminar flow and cause freeze-up problems, scaling, stratification, and poor control.

The maximum evaporator water flow rate is 150% of nominal flow rate. Flow rates exceeding the maximum value may result in excessive tube erosion.

Flow Rates Out of Range

Many process cooling jobs require flow rates that cannot be met with the minimum and maximum published values within the Model RTAG evaporator. A simple piping change can alleviate this problem. For example: a plastic injection molding process requires 5.0 l/s [80 gpm] of 10°C

[50°F] water and returns that water at 15.6°C [60°F]. The selected chiller can operate at these temperatures, but has a minimum flow rate of 7.6 l/s [120 gpm]. The following system can satisfy the process.

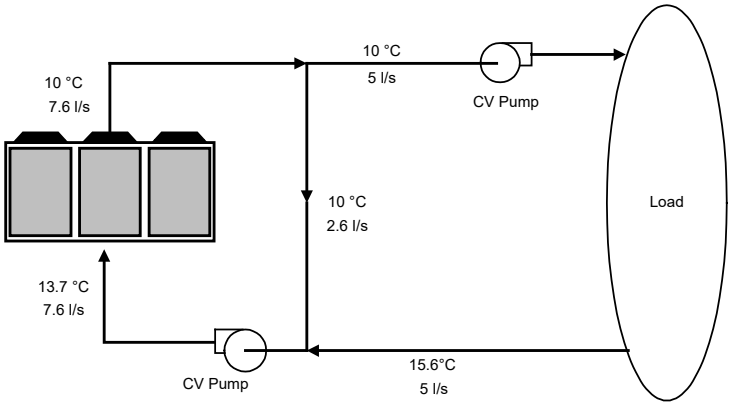


Figure 4 – Flow rate Out of Range

Flow Control

Trane requires the chilled water flow control in conjunction with the RTAG Chiller to be done by the chiller.
This will allow the chiller to protect itself in potentially harmful conditions.

Leaving-Water Temperature Limits

The standard leaving solution temperature range is 4 to 20°C [39 to 68°F]. Since liquid supply temperature set points less than 4°C [39°F] result in suction temperatures at or below the freezing point of water.

Leaving-Water Temperature

Out of Range

Many process cooling jobs require temperature ranges that cannot be met with the minimum and maximum published values. A simple piping change can alleviate this problem. For example: a laboratory load requires 7.6 l/s [120 gpm] of water entering the process at 29.4°C [85°F] and returning at 35°C [95°F]. The accuracy required is higher than the cooling tower can give. The selected chiller has adequate capacity, but has a maximum leaving-chilled-water temperature of 20°C [68°F]. In the example shown, both the chiller and process flow rates are equal. This is not necessary. For example, if the chiller had a higher flow rate, there would be more water bypassing and mixing with warm water.

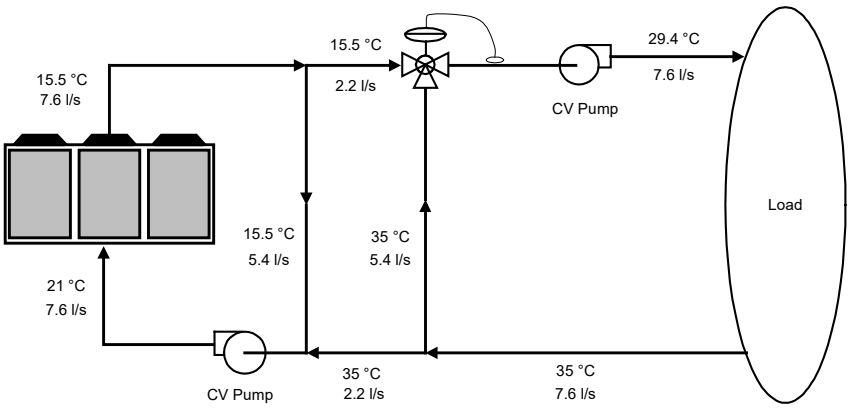


Figure 5 – Temperature Out of Range

Supply-Water Temperature Drop

The performance data for the Trane RTAG chiller is based on a chilled-water temperature drop of 5.6°C [10°F]. Chilled-water temperature drops from 3.3 to 10°C [38 to 50°F] may be used as long as minimum and maximum water temperature, and minimum and maximum flow rates, is not violated. Temperature drops outside this range are beyond the optimum range for control, and may adversely affect the microcomputer's ability to maintain an acceptable supply-water temperature range. When temperature drops are less than 3.3°C [38°F], an evaporator runaround loop may be required.

Short Water Loops

The proper location of the temperature control sensor is in the supply (outlet) water connection or pipe. This location allows the building to act as a buffer and assures a slowly-changing return-water temperature. If there is not a sufficient volume of water in the system to provide an adequate buffer, temperature control can be lost, resulting in erratic system operation and excessive compressor cycling. A short water loop has the same effect as attempting to control using the building return water. Typically, a two-minute water loop is sufficient to prevent a short water loop. Therefore, as a guideline, ensure that the volume of water in the evaporator loop equals or exceeds two times the evaporator flow rate per minute. For a rapidly changing load profile, the amount of volume should be increased. To prevent the effect of a short water loop, the following item should be given careful consideration: a storage tank or larger header pipe to increase the volume of water in the system and, therefore, reduce the rate of change of the return water temperature.

Application Types

- Comfort cooling
- Industrial process cooling
- Low-temperature process cooling

Model Number Descriptions

RTAG	225	E	C	A	0	X	0	A	L	W	S	F	F	N	L	1	S	B	X	X	X	E	M	0	X	G	R	Y	0	C	1	A	N	I	X	N
1~4	5~7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

Digit 1-4 - Unit Model
RTAG = Air Cooled Series chiller

Digit 5-7 - Unit Nominal Tons
100 = 100 Nominal Tons
125 = 125 Nominal Tons
145 = 145 Nominal Tons
155 = 155 Nominal Tons
170 = 170 Nominal Tons
190 = 190 Nominal Tons
205 = 205 Nominal Tons
225 = 225 Nominal Tons
230 = 230 Nominal Tons
255 = 255 Nominal Tons
285 = 285 Nominal Tons
310 = 310 Nominal Tons
340 = 340 Nominal Tons
375 = 375 Nominal Tons
400 = 400 Nominal Tons
410 = 410 Nominal Tons
440 = 440 Nominal Tons
460 = 460 Nominal Tons
500 = 500 Nominal Tons

Digit 08 - Unit Voltage
E = 380V/60Hz/3Ph
F = 460V/60Hz/3Ph
G = 400V/60Hz/3Ph

Digit 09 - Manufacturing Location
C = Taicang, China

Digit 10,11 - Design Sequence
A0 = Factory Assigned

Digit 12 - Unit Type
H = High Efficiency
X = Extra Efficiency
P = Premium Seasonal Efficiency

Digit 13 - Safety Agency Listing
0 = No Safety Agency Listing

Digit 14 - Pressure Vessel Code
A = ASME Pressure Vessel Code

Digit 15 - Sound Treatment
S = Standard
X = Medium Low Noise (compressor or tube sound attenuation)
L = Low Noise(compressor + tube sound wrap)
M = Low Noise+night noise set back

Digit 16 - Unit Application
N = Standard Ambient 14 -114.8°F (-10 ~ 46°C)
H = High Ambient 14-125°F(-10 ~ 52°C)

Digit 17 - Relief Valve Option
S = Single Relief Valve
D = Dual Relief Valve With 3 Way Valve

Digit 18 - Flow Switch
X = No Flow Switch
F = Field Installed Flow Switch

Digit 19 - Water Connection
F = Flange

Digit 20 - Evaporator Application
N = Comfort Cooling (above 4°C)
P = Process Cooling (4~ -10°C)

Digit 21 - Evaporator Water Pressure
L = 150psi
H = 300psi

Digit 22 - Evaporator Configurations
1 = 1 Pass Evaporator
2 = 2 Pass Evaporator

Digit 23 - Thermal Insulation
S = Standard Thermal Insulation

Digit 24 - Condenser Options
T = Copper tube/Al Fin Coil
B = Copper tube/Al Fin Coil, with black coated
C = Copper tube/Copper Fin Coil
E = E-Coated Tube Fin (Complete Coat Epoxy Coated Fins)

Digit 25 - Heat Recovery
X = No Heat Recovery

Digit 26 - Pump Package
X = Pump Signal On/Off

Digit 27 - Free Cooling
X = None

Digit 28 - Unit Operator Interface Language

E = English

Digit 29 - Remote Communications Options
X = None
B = BACnet Interface
M = Modbus Interface
L = Lontalk Interface

Digit 30 - Easy Remote Controller
0 = Without

Digit 31 - External Set Points & Capacity Outputs
X = None
S = Rapid restart – No UPS
A = External Set Points & Capacity Outputs
B = Rapid Restart, No UPS;External Set Points & Capacity Outputs

Digit 32 - Refrigerant Charge
F = Full Charge(R134a)
N = Nitrogen (R134a)
P = 12kg Charge (R134a)
G = Full Charge(R1234ze(E))
O = Nitrogen (R1234ze(E))
Q = 12kg Charge (R1234ze(E))

Digit 33 - Factory Tests
R = Standard Functional Test
P = Non-witnessed Performance Test,With Report
W = Customer-witnessed Performance Test,With Report

Digit 34 - Compressor Motor Starter Type
V = VFD
Y = Wye-delta Closed Transition

Digit 35 - Harmonic Filter
0 = None

Digit 36 - Power Line Connection Type
T = Terminal Block Connection
C = Circuit Breaker
D = Mech Disconnect Switch

Digit 37 - Incoming Power Line
1 = Single Point Power Connection
2 = Dual Point Power Connection

Digit 38 - Control Output Accessories Options
A = Alarm Relay Outputs

Digit 39 - Appearance Options
N = No Appearance Options

Digit 40 - Unit Isolation Installation Accessory
X = None
I = Neoprene Isolators

Digit 41- High Static Pressure
X = None

Digit 42 -Free Cooling Glycol Charge
N = None Glycol Charge in Factory

General Data

General Data - 60Hz - High Efficiency (fixed speed fan) - R134a

Model			100	125	145	155	170	190	205	225
Refrigerant			R134a							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		YDEL							
	Circuits no.		1	2	2	2	2	2	2	2
	Min load		30%	15%	15%	15%	15%	15%	15%	15%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	228	291	334	361	390	428	459	512
	Rating WPD	psid	4.6	4.3	5.7	5	4.3	5.2	4.6	4.7
	tube size	inch	4	5	5	5	6	6	6	6
Condenser	Fan type		Axial flow							
	Quantity		6	8	8	8	8	10	10	12
	power	kW/per	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Fan speed	RPM	840	840	840	840	840	840	840	840
	Single fan airflow	CFM	8,828	8,828	8,828	8,828	8,828	8,828	8,828	8,828
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	263	317	366	396	426	475	518	573
	Control panel 2	A	-	-	-	-	-	-	-	-
Start-up Current 1	Control panel 1	A	443	406	455	511	541	655	698	703
	Control panel 2	A	-	-	-	-	-	-	-	-
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	250	301	348	376	405	451	492	544
	Control panel 2	A	-	-	-	-	-	-	-	-
Start-up Current 2	Control panel 1	A	421	386	432	485	514	622	663	668
	Control panel 2	A	-	-	-	-	-	-	-	-
Refrigerant charge	ckt 1	kg	94	80	76	76	76	81	82	94
		lb	207	176	168	168	168	179	181	207
	ckt 2	kg	-1	62	76	76	76	81	82	94
		lb	-	137	168	168	168	179	181	207
Oil charge	ckt 1	L	8	6	6	7	8	8	8	8
		gal	2.1	1.6	1.6	1.8	2.1	2.1	2.1	2.1
	ckt 2	L	-1	6	6	6	8	8	8	8
		gal	-	1.6	1.6	1.6	2.1	2.1	2.1	2.1
Dimension	Length	inch	151	198	198	198	198	244	244	291
		mm	3,840	5,020	5,020	5,020	5,020	6,200	6,200	7,380
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	6,184	8,426	9,105	9,202	9,570	10,360	10,578	11,804
		kg	2,805	3,822	4,130	4,174	4,341	4,699	4,798	5,354
	Operation weight	lb	6,526	8,920	9,621	9,747	10,146	10,959	11,211	12,066
		kg	2,960	4,046	4,364	4,421	4,602	4,971	5,085	5,473
Weight - Copper Fin	Shipping weight	lb	6,885	9,687	10,692	10,789	11,158	11,936	12,154	13,695
		kg	3,123	4,394	4,850	4,894	5,061	5,414	5,513	6,212

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

General Data - 60Hz - High Efficiency (fixed speed fan) - R134a

Model			255	285	310	340	375	400	440	500
Refrigerant			R134a							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		YDEL							
	Circuits		2	2	2	2	2	2	2	2
	Min load		10%	10%	10%	10%	7.5%	7.5%	7.5%	7.5%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	593	678	725	797	883	944	1057	1154
	Rating WPD	psid	5.5	5.7	5.2	6.2	5.9	5.6	4.6	5.5
	tube size	inch	6	6	6	6	8	8	8	8
Condenser	Fan type		Axial flow							
	Quantity		14	14	16	16	18	18	20	20
	power	kW/per	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Fan speed	RPM	840	860	860	860	860	860	860	860
	Single fan airflow	CFM	8,828	11,478	11,478	11,478	11,478	11,478	11,478	11,478
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	429	489	541	591	489	532	586	662
	Control panel 2	A	217	270	270	319	489	532	586	662
Start-up Current 1	Control panel 1	A	544	669	721	721	669	712	717	792
	Control panel 2	A	333	450	450	450	669	712	717	792
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	408	465	514	561	465	505	557	629
	Control panel 2	A	206	257	257	303	465	505	557	629
Start-up Current 2	Control panel 1	A	517	636	685	685	636	676	681	752
	Control panel 2	A	316	428	428	428	636	676	681	752
Power type 3			460V/60Hz/3Ph							
Max RLA 3	Control panel 1	A								547
	Control panel 2	A								547
Start-up Current 3	Control panel 1	A								654
	Control panel 2	A								654
Refrigerant Charge	ckt 1	kg	140	140	158	162	148	148	171	184
		lb	309	309	348	357	326	326	377	406
	ckt 2	kg	69	69	70	70	148	148	171	184
		lb	152	152	154	154	326	326	377	406
Oil Charge	ckt 1	L	16	16	16	16	16	16	16	16
		gal	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	lb	8	8	8	8	16	16	16	16
		gal	2.1	2.1	2.1	2.1	4.2	4.2	4.2	4.2
Dimension	Length	inch	354	354	399	399	445	445	465	465
		mm	8,995	8,995	10,130	10,130	11,310	11,310	11,810	11,810
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	97.6	97.6	97.6	97.6	97.6	97.6	97.6
		mm	2,501	2,480	2,480	2,480	2,480	2,480	2,480	2,480
Weight - Non Copper Fin	Shipping Weight	lb	15,699	16,184	17,699	17,734	20,309	20,640	22,481	22,481
		kg	7,121	7,341	8,028	8,044	9,212	9,362	10,197	10,197
	Operation Weight	lb	15,933	16,449	18,001	18,036	20,642	21,008	22,935	22,935
		kg	7,227	7,461	8,165	8,181	9,363	9,529	10,403	10,403
Weight - Copper Fin	Shipping Weight	lb	17,904	18,389	20,219	20,254	23,144	23,475	26,447	26,447
		kg	8,121	8,341	9,171	9,187	10,498	10,648	11,996	11,996
	Operation Weight	lb	18,137	18,653	20,521	20,556	23,477	23,843	26,901	26,901
		kg	8,227	8,461	9,308	9,324	10,649	10,815	12,202	12,202

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph and 460V/60Hz/3Ph. 460V/60Hz/3Ph is only for 500 ton.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

General Data - 60Hz - Extra Efficiency (fixed speed fan) - R134a

Model			100	125	145	155	170	190	205	225	255
Refrigerant			R134a								
Compressor	Type		Horizontal semienclosed screw compressor								
	Starter		YDEL								
	Circuits		1	2	2	2	2	2	2	2	2
	Min load		30%	15%	15%	15%	15%	15%	15%	15%	10%
Evaporator	Type		Shell & Tube (CHIL)								
	Rating flow	gpm	236	302	347	374	407	441	475	527	608
	Rating WPD	psid	4.9	4	5.2	5.4	4.7	5.5	4.2	4.2	5.7
	tube size	inch	4	5	5	5	6	6	6	6	6
Condenser	Fan type		Axial flow								
	Quantity		6	10	10	10	10	12	12	14	16
	power	kW/per	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Fan speed	RPM	840	840	840	840	840	840	840	840	840
	Single fan airflow	CFM	8,828	8,828	8,828	8,828	8,828	8,828	8,828	8,828	8,828
Power type 1			380V/60Hz/3Ph								
Max RLA 1	Control panel 1	A	263	322	371	401	431	480	523	578	434
	Control panel 2	A	-	-	-	-	-	-	-	-	217
Start-up Current 1	Control panel 1	A	443	412	461	517	547	660	703	709	549
	Control panel 2	A	-	-	-	-	-	-	-	-	333
Power type 2			400V/60Hz/3Ph								
Max RLA 2	Control panel 1	A	250	306	352	381	409	456	497	549	412
	Control panel 2	A	-	-	-	-	-	-	-	-	206
Start-up Current 2	Control panel 1	A	421	391	438	491	520	627	668	674	522
	Control panel 2	A	-	-	-	-	-	-	-	-	316
Refrigerant charge	ckt 1	kg	100	89	85	85	85	90	91	99	156
		lb	220	196	187	187	187	198	201	218	344
	ckt 2	kg	-1	71	85	85	85	90	91	99	69
		lb	-	157	187	187	187	198	201	218	152
Oil charge	ckt 1	L	8	6	6	7	8	8	8	8	16
		gal	2.1	1.6	1.6	1.8	2.1	2.1	2.1	2.1	4.2
	ckt 2	L	-1	6	6	7	8	8	8	8	8
		gal	-	1.6	1.6	1.8	2.1	2.1	2.1	2.1	2.1
Dimension	Length	inch	151	244	248	248	248	291	291	339	399
		mm	3,840	6,200	6,300	6,300	6,300	7,380	7,380	8,600	10,130
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	6,415	9,405	10,161	10,245	10,613	11,114	11,354	13,076	16,965
		kg	2,910	4,266	4,609	4,647	4,814	5,041	5,150	5,931	7,695
	Operation weight	lb	6,766	9,954	10,732	10,829	11,228	11,753	12,050	13,364	17,198
		kg	3,069	4,515	4,868	4,912	5,093	5,331	5,466	6,062	7,801
Weight - Copper Fin	Shipping weight	lb	7,361	10,981	12,145	12,229	12,597	13,005	13,245	15,280	19,484
		kg	3,339	4,981	5,509	5,547	5,714	5,899	6,008	6,931	8,838
	Operation weight	lb	7,712	11,530	12,716	12,813	13,212	13,644	13,942	15,569	19,718
		kg	3,498	5,230	5,768	5,812	5,993	6,189	6,324	7,062	8,944

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

General Data - 60Hz - Extra Efficiency (fixed speed fan) - R134a

Model			285	310	340	375	400	410	440	500
Refrigerant			R134a							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		YDEL							
	Circuits		2	2	2	2	2	2	2	2
	Min load		10%	10%	10%	7.5%	7.5%	7.5%	7.5%	7.5%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	700	735	822	899	976	1000	1088	1180
	Rating WPD	psid	6	5.3	6.6	5.1	5.1	5.3	4.9	5.8
	tube size	inch	6	6	6	8	8	8	8	8
Condenser	Fan type		Axial flow							
	Quantity		18	18	20	20	20	24	24	24
	power	kW/per	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Fan speed	RPM	860	860	860	860	860	860	860	860
	Single fan airflow	CFM	11,478	11,478	11,478	11,478	11,478	11,478	11,478	11,478
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	503	546	605	494	537	546	595	671
	Control panel 2	A	274	274	324	494	537	546	595	671
Start-up Current 1	Control panel 1	A	683	726	735	674	717	726	726	801
	Control panel 2	A	455	455	455	674	717	726	726	801
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	478	519	575	469	510	519	565	637
	Control panel 2	A	260	260	308	469	510	519	565	637
Start-up Current 2	Control panel 1	A	649	690	698	640	681	690	690	761
	Control panel 2	A	432	432	432	640	681	690	690	761
Refrigerant charge	ckt 1	kg	165	166	186	167	167	174	190	202
		lb	364	366	410	368	368	384	419	445
	ckt 2	kg	77	78	78	167	167	174	190	202
		lb	170	172	172	368	368	384	419	445
Oil charge	ckt 1	L	16	16	16	16	16	16	16	16
		gal	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	L	8	8	8	16	16	16	16	16
		gal	2.1	2.1	2.1	4.2	4.2	4.2	4.2	4.2
Dimension	Length	inch	445	445	465	465	465	585	585	585
		mm	11,310	11,310	11,810	11,810	11,810	14,850	14,850	14,850
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	97.6	97.6	97.6	97.6	97.6	97.6	97.6	97.6
		mm	2,480	2,480	2,480	2,480	2,480	2,480	2,480	2,480
Weight - Non Copper Fin	Shipping weight	lb	18,250	18,439	19,121	22,007	22,291	23,808	24,943	24,943
		kg	8,278	8,364	8,673	9,982	10,111	10,799	11,314	11,314
	Operation weight	lb	18,514	18,742	19,423	22,375	22,694	24,211	25,397	25,397
		kg	8,398	8,501	8,810	10,149	10,294	10,982	11,520	11,520
Weight - Copper Fin	Shipping weight	lb	21,085	21,275	22,271	25,973	26,257	27,589	29,703	29,703
		kg	9,564	9,650	10,102	11,781	11,910	12,514	13,473	13,473
	Operation weight	lb	21,350	21,577	22,573	26,341	26,661	27,992	30,157	30,157
		kg	9,684	9,787	10,239	11,948	12,093	12,697	13,679	13,679

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

General Data - 60Hz - Presium Seasonal Efficiency - R134a

Model			100	125	145	155	170	190	205	225
Refrigerant			R134a							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		VFD							
	Circuits		1	2	2	2	2	2	2	2
	Min load		36%	18%	18%	18%	18%	18%	18%	18%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	232	299	346	369	396	432	469	511
	Rating WPD	psid	4.7	3.9	5.2	5.2	4.5	5.3	4.1	4.7
	tube size	inch	4	5	5	5	6	6	6	6
Condenser	Fan type		Axial flow							
	Quantity		6	10	10	10	10	12	12	12
	power	kW/per	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Fan speed	RPM	910/200	910/200	910/200	910/200	910/200	910/200	910/200	910/200
	Single fan airflow	CFM	10,036	10,036	10,036	10,036	10,036	10,036	10,036	10,036
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	269	326	377	413	449	496	535	534
	Control panel 2	A	-	-	-	-	-	-	-	-
Start-up Current 1	Control panel 1	A	269	326	377	413	449	496	535	534
	Control panel 2	A	-	-	-	-	-	-	-	-
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	256	310	358	392	427	471	508	507
	Control panel 2	A	-	-	-	-	-	-	-	-
Start-up Current 2	Control panel 1	A	256	310	358	392	427	471	508	507
	Control panel 2	A	-	-	-	-	-	-	-	-
Power type 3			460V/60Hz/3Ph							
Max RLA 3	Control panel 1	A								441
	Control panel 2	A								-
Start-up Current 3	Control panel 1	A								441
	Control panel 2	A								-
Refrigerant charge	ckt 1	kg	100	89	85	85	85	90	91	98
		lb	220	196	187	187	187	198	201	216
	ckt 2	kg	-1	71	85	85	85	90	91	98
		lb	-	157	187	187	187	198	201	216
Oil charge	ckt 1	L	8	6	6	7	8	8	8	8
		gal	2.1	1.6	1.6	1.8	2.1	2.1	2.1	2.1
	ckt 2	L	-1	6	6	7	8	8	8	8
		gal	-	1.6	1.6	1.8	2.1	2.1	2.1	2.1
Dimension	Length	inch	156	249	249	249	249	296	296	296
		mm	3,970	6,330	6,330	6,330	6,330	7,510	7,510	7,510
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	7,033	10,243	10,999	11,083	11,451	11,951	12,192	12,641
		kg	3,190	4,646	4,989	5,027	5,194	5,421	5,530	5,734
	Operation weight	lb	7,388	10,792	11,570	11,667	12,066	12,591	12,888	12,904
		kg	3,351	4,895	5,248	5,292	5,473	5,711	5,846	5,853
Weight - Copper Fin	Shipping weight	lb	7,979	11,819	12,983	13,067	13,435	13,843	14,083	14,533
		kg	3,619	5,361	5,889	5,927	6,094	6,279	6,388	6,592
	Operation weight	lb	8,333	12,368	13,554	13,651	14,050	14,482	14,780	14,795
		kg	3,780	5,610	6,148	6,192	6,373	6,569	6,704	6,711

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph and 460V/60Hz/3Ph. 460V/60Hz/3Ph are only for 225 to 460 ton.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

3. 460P model is 2 section design, and be shipped separately by Trane factory.

General Data - 60Hz - Premium Seasonal Efficiency - R134a

Model			230	285	310	340	375	400	440	460
Refrigerant			R134a							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		VFD							
	Circuits		2	2	2	2	2	2	2	4
	Min load		18%	12%	12%	12%	9%	9%	9%	9%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	524	664	735	764	864	926	1012	1048
	Rating WPD	psid	4.2	5.4	5.3	5.7	5.7	5.4	4.3	4.2
	tube size	inch	6	6	6	6	8	8	8	6
Condenser	Fan type		Axial flow							
	Quantity		14	14	16	16	18	18	20	28
	power	kW/per	1.5	1.65						1.5
	Fan speed	RPM	910/200	970 / 200						910/200
	Single fan airflow	CFM	10,036	11,772						10,036
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	542	497	540	540	497	531	536	542
	Control panel 2	A	-	269	269	269	497	531	536	542
Start-up Current 1	Control panel 1	A	542	678	721	721	678	712	717	542
	Control panel 2	A	-	269	269	269	678	712	717	542
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	515	472	513	513	472	504	509	515
	Control panel 2	A	-	256	256	256	472	504	509	515
Start-up Current 2	Control panel 1	A	515	644	685	685	644	676	681	515
	Control panel 2	A	-	256	256	256	644	676	681	515
Power type 3			460V/60Hz/3Ph							
Max RLA 3	Control panel 1	A	447	410	446	446	410	438	442	447
	Control panel 2	A	-	222	222	222	410	438	442	447
Start-up Current 3	Control panel 1	A	447	560	596	596	560	588	592	447
	Control panel 2	A	-	222	222	222	560	588	592	447
Refrigerant charge	ckt 1	kg	104	140	158	170	148	148	179	208
		lb	229	309	348	375	326	326	395	459
	ckt 2	kg	104	69	75	75	148	148	179	208
		lb	229	152	165	165	326	326	395	459
Oil charge	ckt 1	L	8	16	16	16	16	16	16	16
		gal	2.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	L	8	8	8	8	16	16	16	16
		gal	2.1	2.1	2.1	2.1	4.2	4.2	4.2	4.2
Dimension	Length	inch	343	362	408	408	455	455	465	685
		mm	8,700	9,200	10,350	10,350	11,560	11,560	11,810	17,410
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	97.6	97.6	97.6	97.6	97.6	97.6	98.5
		mm	2,501	2,480	2,480	2,480	2,480	2,480	2,480	2,501
Weight - Non Copper Fin	Shipping weight	lb	14,134	16,956	18,470	18,506	21,081	21,411	22,921	28,268
		kg	6,411	7,691	8,378	8,394	9,562	9,712	10,397	12,822
	Operation weight	lb	14,423	17,220	18,772	18,808	21,414	21,779	23,376	28,845
		kg	6,542	7,811	8,515	8,531	9,713	9,879	10,603	13,084
Weight - Copper Fin	Shipping weight	lb	16,338	19,160	20,990	21,026	23,916	24,246	26,888	32,679
		kg	7,411	8,691	9,521	9,537	10,848	10,998	12,196	14,823
	Operation weight	lb	16,627	19,425	21,292	21,328	24,249	24,615	27,342	33,257
		kg	7,542	8,811	9,658	9,674	10,999	11,165	12,402	15,085

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph and 460V/60Hz/3Ph.

2. Single power connection: model 100 to 230; Dual power connection : model 255 to 500.

3. 460P model is 2 section design, and be shipped separately by Trane factory.

General Data - 60Hz - High Efficiency (fixed speed fan) - R1234ze

Model			125	145	155	170	190	205	225
Refrigerant			R1234ze						
Compressor	Type		Horizontal semienclosed screw compressor						
	Starter		YDEL						
	Circuits		2	2	2	2	2	2	2
	Min load		15%	15%	15%	15%	15%	15%	15%
Evaporator	Type		Shell & Tube (CHIL)						
	Rating flow	gpm	223	256	277	301	330	355	394
	Rating WPD	psid	2.5	3.4	3	2.6	3.1	2.8	2.8
	tube size	inch	5	5	5	6	6	6	6
Condenser	Fan type		Axial flow						
	Quantity		8	8	8	8	10	10	12
	power	kW/per	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Fan speed	RPM	840	840	840	840	840	840	840
	Single fan airflow	CFM	8,828	8,828	8,828	8,828	8,828	8,828	8,828
Power type 1			380V/60Hz/3Ph						
Max RLA 1	Control panel 1	A	317	366	396	426	475	518	573
	Control panel 2	A	-	-	-	-	-	-	-
Start-up Current 1	Control panel 1	A	406	455	511	541	655	698	703
	Control panel 2	A	-	-	-	-	-	-	-
Power type 2			400V/60Hz/3Ph						
Max RLA 2	Control panel 1	A	301	348	376	405	451	492	544
	Control panel 2	A	-	-	-	-	-	-	-
Start-up Current 2	Control panel 1	A	386	432	485	514	622	663	668
	Control panel 2	A	-	-	-	-	-	-	-
Refrigerant charge	ckt 1	kg	75	70	70	70	76	78	89
		lb	165	154	154	154	168	172	196
	ckt 2	kg	57	70	70	70	76	78	89
		lb	126	154	154	154	168	172	196
Oil charge	ckt 1	L	6	6	7	8	8	8	8
		gal	1.6	1.6	1.8	2.1	2.1	2.1	2.1
	ckt 2	L	6	6	6	8	8	8	8
		gal	1.6	1.6	1.6	2.1	2.1	2.1	2.1
Dimension	Length	inch	198	198	198	198	244	244	291
		mm	5,020	5,020	5,020	5,020	6,200	6,200	7,380
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	8,426	9,105	9,202	9,570	10,360	10,578	11,804
		kg	3,822	4,130	4,174	4,341	4,699	4,798	5,354
	Operation weight	lb	8,920	9,621	9,747	10,146	10,959	11,211	12,066
		kg	4,046	4,364	4,421	4,602	4,971	5,085	5,473
Weight - Copper Fin	Shipping weight	lb	9,687	10,692	10,789	11,158	11,936	12,154	13,695
		kg	4,394	4,850	4,894	5,061	5,414	5,513	6,212
	Operation weight	lb	10,181	11,208	11,334	11,733	12,535	12,787	13,957
		kg	4,618	5,084	5,141	5,322	5,686	5,800	6,331

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

General Data - 60Hz - High Efficiency (fixed speed fan) - R1234ze

Model			255	285	310	340	375	400	440
Refrigerant			R1234ze						
Compressor	Type		Horizontal semienclosed screw compressor						
	Starter		YDEL						
	Circuits		2	2	2	2	2	2	2
	Min load		10%	10%	10%	10%	7.5%	7.5%	7.5%
Evaporator	Type		Shell & Tube (CHIL)						
	Rating flow	gpm	460	524	557	611	688	734	811
	Rating WPD	psid	3.2	3.3	3	3.5	3.5	3.3	2.8
	tube size	inch	6	6	6	6	8	8	8
Condenser	Fan type		Axial flow						
	Quantity		14	14	16	16	18	18	20
	power	kW/per	1.0	2.0	2.0	2.0	2.0	2.0	2.0
	Fan speed	RPM	840	860	860	860	860	860	860
	Single fan airflow	CFM	8,828	11,478	11,478	11,478	11,478	11,478	11,478
Power type 1			380V/60Hz/3Ph						
Max RLA 1	Control panel 1	A	429	489	541	591	489	532	586
	Control panel 2	A	217	270	270	319	489	532	586
Start-up Current 1	Control panel 1	A	544	669	721	721	669	712	717
	Control panel 2	A	333	450	450	450	669	712	717
Power type 1			400V/60Hz/3Ph						
Max RLA 2	Control panel 1	A	408	465	514	561	465	505	557
	Control panel 2	A	206	257	257	303	465	505	557
Start-up Current 2	Control panel 1	A	517	636	685	685	636	676	681
	Control panel 2	A	316	428	428	428	636	676	681
Refrigerant charge	ckt 1	kg	132	132	148	153	140	140	162
		lb	291	291	326	337	309	309	357
	ckt 2	kg	65	65	66	66	140	140	162
		lb	143	143	146	146	309	309	357
Oil charge	ckt 1	L	16	16	16	16	16	16	16
		gal	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	lb	8	8	8	8	16	16	16
		gal	2.1	2.1	2.1	2.1	4.2	4.2	4.2
Dimension	Length	inch	354	354	399	399	445	445	465
		mm	8,995	8,995	10,130	10,130	11,310	11,310	11,810
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	97.6	97.6	97.6	97.6	97.6	97.6
		mm	2,501	2,480	2,480	2,480	2,480	2,480	2,480
Weight - Non Copper Fin	Shipping weight	lb	15,699	16,184	17,699	17,734	20,309	20,640	22,481
		kg	7,121	7,341	8,028	8,044	9,212	9,362	10,197
	Operation weight	lb	15,933	16,449	18,001	18,036	20,642	21,008	22,935
		kg	7,227	7,461	8,165	8,181	9,363	9,529	10,403
Weight - Copper Fin	Shipping weight	lb	17,904	18,389	20,219	20,254	23,144	23,475	26,447
		kg	8,121	8,341	9,171	9,187	10,498	10,648	11,996
	Operation weight	lb	18,137	18,653	20,521	20,556	23,477	23,843	26,901
		kg	8,227	8,461	9,308	9,324	10,649	10,815	12,202

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

General Data - 60Hz - Extra Efficiency (fixed speed fan) - R1234ze

Model			125	145	155	170	190	205	225	255
Refrigerant			R1234ze							
Compressor	Type		Horizontal semienclosed screw compressor							
	Starter		YDEL							
	Circuits		2	2	2	2	2	2	2	2
	Min load		15%	15%	15%	15%	15%	15%	15%	10%
Evaporator	Type		Shell & Tube (CHIL)							
	Rating flow	gpm	227	261	284	309	336	362	400	468
	Rating WPD	psid	2.2	3	3.1	2.7	3.2	2.4	2.4	3.3
	tube size	inch	5	5	5	6	6	6	6	6
Condenser	Fan type		Axial flow							
	Quantity		10	10	10	10	12	12	14	16
	power	kW/per	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Fan speed	RPM	840	840	840	840	840	840	840	840
	Single fan airflow	CFM	8,828	8,828	8,828	8,828	8,828	8,828	8,828	8,828
Power type 1			380V/60Hz/3Ph							
Max RLA 1	Control panel 1	A	322	371	401	431	480	523	578	434
	Control panel 2	A	-	-	-	-	-	-	-	217
Start-up Current 1	Control panel 1	A	412	461	517	547	660	703	709	549
	Control panel 2	A	-	-	-	-	-	-	-	333
Power type 2			400V/60Hz/3Ph							
Max RLA 2	Control panel 1	A	306	352	381	409	456	497	549	412
	Control panel 2	A	-	-	-	-	-	-	-	206
Start-up Current 2	Control panel 1	A	391	438	491	520	627	668	674	522
	Control panel 2	A	-	-	-	-	-	-	-	316
Refrigerant charge	ckt 1	kg	85	78	78	78	85	87	93	147
		lb	187	172	172	172	187	192	205	324
	ckt 2	kg	68	78	78	78	85	87	93	65
		lb	150	172	172	172	187	192	205	143
Oil charge	ckt 1	L	6	6	7	8	8	8	8	16
		gal	1.6	1.6	1.8	2.1	2.1	2.1	2.1	4.2
	ckt 2	L	6	6	7	8	8	8	8	8
		gal	1.6	1.6	1.8	2.1	2.1	2.1	2.1	2.1
Dimension	Length	inch	244	248	248	248	291	291	339	399
		mm	6,200	6,300	6,300	6,300	7,380	7,380	8,600	10,130
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	9,405	10,161	10,245	10,613	11,114	11,354	13,076	16,965
		kg	4,266	4,609	4,647	4,814	5,041	5,150	5,931	7,695
	Operation weight	lb	9,954	10,732	10,829	11,228	11,753	12,050	13,364	17,198
		kg	4,515	4,868	4,912	5,093	5,331	5,466	6,062	7,801
Weight - Copper Fin	Shipping weight	lb	10,981	12,145	12,229	12,597	13,005	13,245	15,280	19,484
		kg	4,981	5,509	5,547	5,714	5,899	6,008	6,931	8,838
	Operation weight	lb	11,530	12,716	12,813	13,212	13,644	13,942	15,569	19,718
		kg	5,230	5,768	5,812	5,993	6,189	6,324	7,062	8,944

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

General Data - 60Hz - Extra Efficiency (fixed speed fan) - R1234ze

Model			285	310	340	375	400	410	440
Refrigerant			R1234ze						
Compressor	Type		Horizontal semienclosed screw compressor						
	Starter		YDEL						
	Circuits		2	2	2	2	2	2	2
	Min load		10%	10%	10%	7.5%	7.5%	7.5%	7.5%
Evaporator	Type		Shell & Tube (CHIL)						
	Rating flow	gpm	534	562	623	690	751	763	826
	Rating WPD	psid	3.4	3	3.7	3	3.0	3.1	2.9
	tube size	inch	6	6	6	8	8	8	8
Condenser	Fan type		Axial flow						
	Quantity		18	18	20	20	20	24	24
	power	kW/per	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Fan speed	RPM	860	860	860	860	860	860	860
	Single fan airflow	CFM	11,478	11,478	11,478	11,478	11,478	11,478	11,478
Power type 1			380V/60Hz/3Ph						
Max RLA 1	Control panel 1	A	503	546	605	494	537	546	595
	Control panel 2	A	274	274	324	494	537	546	595
Start-up Current 1	Control panel 1	A	683	726	735	674	717	726	726
	Control panel 2	A	455	455	455	674	717	726	726
Power type 2			400V/60Hz/3Ph						
Max RLA 2	Control panel 1	A	478	519	575	469	510	519	565
	Control panel 2	A	260	260	308	469	510	519	565
Start-up Current 2	Control panel 1	A	649	690	698	640	681	690	690
	Control panel 2	A	432	432	432	640	681	690	690
Refrigerant charge	ckt 1	kg	156	156	176	157	157	164	180
		lb	344	344	388	346	346	362	397
	ckt 2	kg	73	74	74	157	157	164	180
		lb	161	163	163	346	346	362	397
Oil charge	ckt 1	L	16	16	16	16	16	16	16
		gal	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	L	8	8	8	16	16	16	16
		gal	2.1	2.1	2.1	4.2	4.2	4.2	4.2
Dimension	Length	inch	445	445	465	465	465	585	585
		mm	11,310	11,310	11,810	11,810	11,810	14,850	14,850
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	97.6	97.6	97.6	97.6	97.6	97.6	97.6
		mm	2,480	2,480	2,480	2,480	2,480	2,480	2,480
Weight - Non Copper Fin	Shipping weight	lb	18,250	18,439	19,121	22,007	22,291	23,808	24,943
		kg	8,278	8,364	8,673	9,982	10,111	10,799	11,314
	Operation weight	lb	18,514	18,742	19,423	22,375	22,694	24,211	25,397
		kg	8,398	8,501	8,810	10,149	10,294	10,982	11,520
Weight - Copper Fin	Shipping weight	lb	21,085	21,275	22,271	25,973	26,257	27,589	29,703
		kg	9,564	9,650	10,102	11,781	11,910	12,514	13,473
	Operation weight	lb	21,350	21,577	22,573	26,341	26,661	27,992	30,157
		kg	9,684	9,787	10,239	11,948	12,093	12,697	13,679

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

General Data - 60Hz - Presium Seasonal Efficiency - R1234ze

Model			145	155	170	190	205	225	230
Refrigerant			R1234ze						
Compressor	Type		Horizontal semienclosed screw compressor						
	Starter		VFD						
	Circuits		2	2	2	2	2	2	2
	Min load		18%	18%	18%	18%	18%	18%	18%
Evaporator	Type		Shell & Tube (CHIL)						
	Rating flow	gpm	258	279	302	331	360	397	398
	Rating WPD	psid	2.9	3	2.6	3.1	2.4	2.8	2.4
	tube size	inch	5	5	6	6	6	6	6
Condenser	Fan type		Axial flow						
	Quantity		10	10	10	12	12	12	14
	power	kW/per	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Fan speed	RPM	910/200	910/200	910/200	910/200	910/200	910/200	910/200
	Single fan airflow	CFM	10,036	10,036	10,036	10,036	10,036	10,036	10,036
Power type 1			380V/60Hz/3Ph						
Max RLA 1	Control panel 1	A	377	413	449	496	535	534	542
	Control panel 2	A	-	-	-	-	-	-	-
Start-up Current 1	Control panel 1	A	377	413	449	496	535	534	542
	Control panel 2	A	-	-	-	-	-	-	-
Power type 2			400V/60Hz/3Ph						
Max RLA 2	Control panel 1	A	358	392	427	471	508	507	515
	Control panel 2	A	-	-	-	-	-	-	-
Start-up Current 2	Control panel 1	A	358	392	427	471	508	507	515
	Control panel 2	A	-	-	-	-	-	-	-
Power type 3			460V/60Hz/3Ph						
Max RLA 3	Control panel 1	A						441	447
	Control panel 2	A						-	-
Start-up Current 3	Control panel 1	A						441	447
	Control panel 2	A						-	-
Refrigerant charge	ckt 1	kg	78	78	78	85	87	93	98
		lb	172	172	172	187	192	205	216
	ckt 2	kg	78	78	78	85	87	93	98
		lb	172	172	172	187	192	205	216
Oil charge	ckt 1	L	6	7	8	8	8	8	8
		gal	1.6	1.8	2.1	2.1	2.1	2.1	2.1
	ckt 2	L	6	7	8	8	8	8	8
		gal	1.6	1.8	2.1	2.1	2.1	2.1	2.1
Dimension	Length	inch	249	249	249	296	296	296	343
		mm	6,330	6,330	6,330	7,510	7,510	7,510	8,700
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5
		mm	2,501	2,501	2,501	2,501	2,501	2,501	2,501
Weight - Non Copper Fin	Shipping weight	lb	10,999	11,083	11,451	11,951	12,192	12,641	14,134
		kg	4,989	5,027	5,194	5,421	5,530	5,734	6,411
	Operation weight	lb	11,570	11,667	12,066	12,591	12,888	12,904	14,423
		kg	5,248	5,292	5,473	5,711	5,846	5,853	6,542
Weight - Copper Fin	Shipping weight	lb	12,983	13,067	13,435	13,843	14,083	14,533	16,338
		kg	5,889	5,927	6,094	6,279	6,388	6,592	7,411
	Operation weight	lb	13,554	13,651	14,050	14,482	14,780	14,795	16,627
		kg	6,148	6,192	6,373	6,569	6,704	6,711	7,542

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph and 460V/60Hz/3Ph. 460V/60Hz/3Ph are only for 225 to 460 ton.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

3. 460P model is 2 sections design, and be shipped separately by Trane factroy.

General Data - 60Hz - Premium Seasonal Efficiency - R1234ze

Model			285	310	340	375	400	440	460
Refrigerant			R1234ze						
Compressor	Type		Horizontal semienclosed screw compressor						
	Starter		VFD						
	Circuits		2	2	2	2	2	2	4
	Min load		12%	12%	12%	9%	9%	9%	9%
Evaporator	Type		Shell & Tube (CHIL)						
	Rating flow	gpm	516	573	591	677	733	788	796
	Rating WPD	psid	3.2	3.1	3.3	3.4	3.3	2.6	2.4
	tube size	inch	6	6	6	8	8	8	6
Condenser	Fan type		Axial flow						
	Quantity		14	16	16	18	18	20	28
	power	kW/per	1.65						1.5
	Fan speed	RPM	970 / 200						910/200
	Single fan airflow	CFM	11,772						10,036
Power type 1			380V/60Hz/3Ph						
Max RLA 1	Control panel 1	A	497	540	540	497	531	536	542
	Control panel 2	A	269	269	269	497	531	536	542
Start-up Current 1	Control panel 1	A	678	721	721	678	712	717	542
	Control panel 2	A	269	269	269	678	712	717	542
Power type 2			400V/60Hz/3Ph						
Max RLA 2	Control panel 1	A	472	513	513	472	504	509	515
	Control panel 2	A	256	256	256	472	504	509	515
Start-up Current 2	Control panel 1	A	644	685	685	644	676	681	515
	Control panel 2	A	256	256	256	644	676	681	515
Power type 3			460V/60Hz/3Ph						
Max RLA 3	Control panel 1	A	410	446	446	410	438	442	447
	Control panel 2	A	222	222	222	410	438	442	447
Start-up Current 3	Control panel 1	A	560	596	596	560	588	592	447
	Control panel 2	A	222	222	222	560	588	592	447
Refrigerant charge	ckt 1	kg	132	149	162	140	140	170	196
		lb	291	328	357	309	309	375	432
	ckt 2	kg	65	71	71	140	140	170	196
		lb	143	157	157	309	309	375	432
Oil charge	ckt 1	L	16	16	16	16	16	16	16
		gal	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	L	8	8	8	16	16	16	16
		gal	2.1	2.1	2.1	4.2	4.2	4.2	4.2
Dimension	Length	inch	362	408	408	455	455	465	685
		mm	9,200	10,350	10,350	11,560	11,560	11,810	17,410
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4
		mm	2,245	2,245	2,245	2,245	2,245	2,245	2,245
	Height	inch	97.6	97.6	97.6	97.6	97.6	97.6	98.5
		mm	2,480	2,480	2,480	2,480	2,480	2,480	2,501
Weight - Non Copper Fin	Shipping weight	lb	16,956	18,470	18,506	21,081	21,411	22,921	28,268
		kg	7,691	8,378	8,394	9,562	9,712	10,397	12,822
	Operation weight	lb	17,220	18,772	18,808	21,414	21,779	23,376	28,845
		kg	7,811	8,515	8,531	9,713	9,879	10,603	13,084
Weight - Copper Fin	Shipping weight	lb	19,160	20,990	21,026	23,916	24,246	26,888	32,679
		kg	8,691	9,521	9,537	10,848	10,998	12,196	14,823
	Operation weight	lb	19,425	21,292	21,328	24,249	24,615	27,342	33,257
		kg	8,811	9,658	9,674	10,999	11,165	12,402	15,085

Note:

1. Unit voltage options : 380V/60Hz/3Ph, 400V/60Hz/3Ph and 460V/60Hz/3Ph.

2. Single power connection: model 125 to 230; Dual power connection : model 255 to 460.

3. 460P model is 2 sections design, and be shipped separately by Trane factroy.

Controls System

Tracer Symbio800 Controller

Today's RTAG chillers offer predictive controls that anticipate and compensate for load changes.

Feedforward Adaptive Control

Feedforward is an open-loop, predictive control strategy designed to anticipate and compensate for load changes. It uses evaporator entering-water temperature as an indication of load change. This allows the controller to respond faster and maintain stable leaving-water temperatures.

Soft Loading

The chiller controller uses soft loading except during manual operation. Large adjustments due to load or setpoint changes are made gradually, preventing the compressor from cycling unnecessarily. It does this by internally filtering the setpoints to avoid reaching the differential-to-stop or the demand limit. Soft loading applies to the leaving chilled-water temperature and demand limit setpoints.

Adaptive Controls

There are many objectives that the controller must meet, but it cannot satisfy more than one objective at a time. Typically, the controllers primary objective is to maintain the evaporator leaving water temperature. Whenever the controller senses that it can no longer meet its primary objective without triggering a protective shutdown, it focuses on the most critical secondary objective. When the secondary objective is no longer critical, the controller reverts to its primary objective.

AdaptiSpeed Control

The speed control is now optimized mathematically and controlled simultaneously. The increased performance of the Symbio800 Controller allows the chiller to operate longer at higher efficiency, and with greater stability.

Variable-Primary Flow (VPF)

Chilled-water systems that vary the water flow through chiller evaporators have caught the attention of engineers, contractors, building owners, and operators. Varying the water flow reduces the energy consumed by pumps, while having limited effect on the chiller energy consumption. This strategy can be a significant source of energy savings, depending on the application.

TD7 Operator Interface

The standard TD7 display provided with the Trane Symbio800 controller features a 7" LCD touch-screen, allowing access to all operational inputs and outputs. This is an advanced interface that allows the user to access any important information concerning setpoints, active temperatures, modes, electrical data, pressure, and diagnostics.

Display Features Include:

- Factory-mounted above the control panel door
- UV Resistant touchscreen
- -40°C to 70°C Operating temperature

Display Features Include:

- Factory-mounted above the control panel door
- UV Resistant touchscreen
- -40°C to 70°C Operating temperature
- IP56 rated
- CE marking
- Emissions: EN55011(Class B)
- Immunity: EN61000(Industrial)
- 7” diagonal
- 800x480 pixels
- TFT LCD @ 600 nits brightness
- 16 bit color graphic display
- Display features:
- Alarms
- Reports
- Chiller settings
- Display settings
- Graphing
- Support 15 languages

Figure 6 - TD7 operator interface

Tracer TU Interface

Tracer® TU (non-Trane personnel, contact your local Trane office for software) adds a level of sophistication that improves service technician effectiveness and minimizes chiller downtime. The portable PC-based service-tool software, Tracer® TU, supports service and maintenance tasks.

Tracer® TU serves as a common interface to all Trane® chillers, and will customize itself based on the properties of the chiller with which it is communicating. Thus, the service technician learns only one service interface.

The panel bus is easy to troubleshoot using LED sensor verification. Only the defective device is replaced. Tracer® TU can communicate with individual devices or groups of devices.

All chiller status, machine configuration settings, customizable limits, and up to 100 active or historic diagnostics are displayed through the service-tool software interface.

LEDs and their respective Tracer® TU indicators visually confirm the availability of each connected sensor, relay, and actuator.

Tracer® TU is designed to run on a customer’s laptop, connected to the Tracer® TD7 control panel with a USB cable. Your laptop must meet the following hardware and software requirements:

- 1 GB RAM (minimum)
- 1024 x 768 screen resolution
- CD-ROM drive
- Ethernet 10/100 LAN card
- An available USB 2.0 port
- Microsoft® Windows® XP Professional operation system with Service Pack 3 (SP3) or Windows 7 Enterprise or Professional operating system (32-bit or 64-bit)
- Microsoft® .NET Framework 4.0 or later

Note: *Tracer® TU is designed and validated for this minimum laptop configuration. Any variation from this configuration may have different results. Therefore, support for Tracer® TU is limited to only those laptops with the configuration previously specified.*

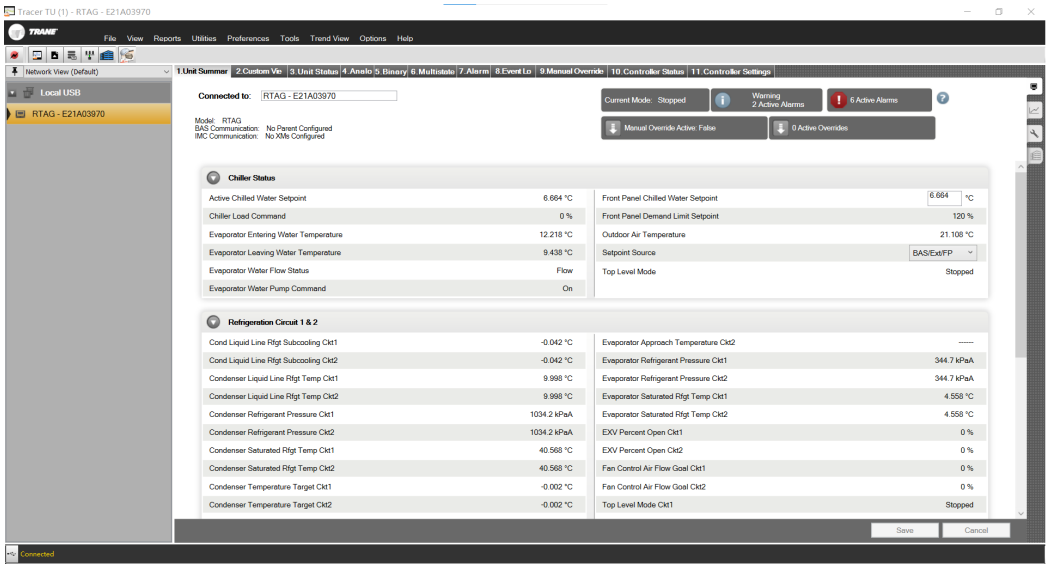


Figure 7 – Tracer TU interface

System Integration

Stand-Alone Controls

Single chillers installed in applications without a building management system are simple to install and control: only a remote auto/stop for scheduling is required for unit operation. Signals from the chilled - water pump contactor auxiliary, or a flow switch, are wired to the chilled-water flow interlock. Signals from a time clock or some other remote device are wired to the external auto/stop input.

- Auto/Stop - A job-site provided contact closure turns the unit on and off.
- External Interlock - A job-site provided contact opening wired to this input turns the unit off and requires a manual reset of the unit microcomputer. This closure is typically triggered by a job-site provided system such as a fire alarm.

Hardwire Points

Microcomputer controls allow simple interface with other control systems, such as time clocks, building automation systems via hardwire points. This means you have the flexibility to meet job requirements while not having to learn a complicated control system. Remote devices are wired from the control panel to provide auxiliary control to a building automation system. Inputs and outputs can be communicated via a typical 4–20 mA electrical signal, an equivalent 2–10 V dc signal, or by utilizing contact closures. This setup has the same features as a stand-alone water chiller, with the possibility of having additional optional features:

- Ice making control.
- External chilled water setpoint, external demand limit setpoint
- Chilled water temperature reset.
- Programmable relays - available outputs are: alarm latching, alarm-auto reset, general alarm-warning, chiller limit mode, compressor running, and Tracer control.

BACnet Interface

Tracer® TD7 control can be configured for BACnet® communications at the factory or in the field. This enables the chiller controller to communicate on a BACnet MS/TP network. Chiller setpoints, operating modes, alarms, and status can be monitored and controlled through BACnet. Tracer TD7 controls conforms to the BACnet B-ASC profile as defined by ASHRAE 135-2004.

Lon Talk Communications Interface (LCI-C)

The optional Lon Talk® Communications Interface for Chillers (LCI-C) is available factory or field installed. It is an integrated communication board that enables the chiller controller to communicate over a LonTalk network. The LCI-C is capable of controlling and monitoring chiller setpoints, operating modes, alarms, and status. The Trane LCI-C provides additional points beyond the standard LONMARK® defined chiller profile to extend interoperability and support a broader range of system applications. These added points are referred to as open extensions. The LCI-C is certified to the LONMARK Chiller Controller Functional Profile 8040 version 1.0, and follows LonTalk FTT-10A free topology communications.

Modbus Interface

Tracer® TD7 control can be configured for Modbus communications at the factory or in the field. This enables the chiller controller to communicate as a slave device on a Modbus network. Chiller setpoints, operating modes, alarms, and status can be monitored and controlled by a Modbus master device.

Tracer Summit

The chiller plant control capabilities of the Trane Tracer Summit™ building automation system are unequaled in the industry. Trane's depth of experience in chillers and controls makes us a well-qualified choice for automation of chiller plants using air-cooled RTAG chillers. Our chiller plant automation software is fully pre-engineered and tested.

Required features:

- LonTalk/Tracer Summit Interface (selectable option with chiller)
- Building Control Unit (external device required)
- Sequences starting of chillers to optimize the overall chiller plant energy efficiency
- Individual chillers operate as base, peak, or swing based on capacity and efficiency
- Automatically rotates individual chiller operation to equalize runtime and wear between chillers
- Evaluates and selects the lowest energy consumption alternative from an overall system perspective
- Regulatory Compliance Documentation
- Gathers information and generates the reports mandated in ASHRAE Guideline 3.
- Easy Operation and Maintenance
- Remote monitoring and control
- Displays both current operation conditions and scheduled automated control actions
- Concise reports assist in planning for preventative maintenance and verifying performance
- Alarm notification and diagnostic messages aid in quick and accurate troubleshooting.

Tracer SC

The Tracer SC™ system controller acts as the central coordinator for all individual equipment devices on a Tracer building automation system. The Tracer SC scans all unit controllers to update information and coordinate building control, including building subsystems such as VAV and chiller water systems. With this system option, the full breadth of Trane's HVAC and controls experience are applied to offer solutions to many facility issues. The LAN allows building operators to manage these varied components as one system from any personal computer with web access. The benefits of this system are:

- Improved usability with automatic data collection, enhanced data logging, easier to create graphics, simpler navigation, pre-programmed scheduling, reporting, and alarm logs.
- Flexible technology allows for system sizes from 30-120 unit controllers with any combination of LonTalk® or BACnet® unit controllers.
- LEED certification through site commissioning report, energy data collection measurement, optimizing energy performance, and maintaining indoor air quality.

Energy savings programs include: fan pressure optimization, ventilation reset, and chiller plant control (adds and subtracts chillers to meet cooling loads).

Building Automation and Chiller Plant Control

The Symbio800 controller can communicate with Trane Tracer® Summit, Tracer® SC and Tracer® ES building automation systems, which include pre-engineered and flexible control for chiller plants. These building automation systems can control the operation of the complete installation: chillers, pumps, isolating valves, air handlers, and terminal units.
Trane can undertake full responsibility for optimized automation and energy management for the entire chiller plant.

The main functions are:
- **Chiller sequencing:** equalizes the number of running hours of the chillers. Different control strategies are available depending on the configuration of the installation.
- **Control of the auxiliaries:** includes input/output modules to control the operation of the various auxiliary equipment (water pumps, valves, etc.).
- **Time-of-day scheduling:** allows the end user to define the occupancy period, for example: time of the day, holiday periods and exception schedules.
- **Optimization of the installation start/stop time:** based on the programmed schedule of occupancy and the historical temperature records. Tracer Summit and Tracer SC calculate the optimal start/stop time of the installation to get the best compromise between energy savings and comfort of the occupants.
- **Soft loading:** the soft loading function minimizes the number of chillers that are operated to satisfy a large chilled-water-loop pull down, thus preventing an overshoot of the actual capacity required. Unnecessary starts are avoided and the peak current demand is lowered.
- **Communication capabilities:** local, through a PC workstation keyboard. Tracer Summit and Tracer SC can be programmed to send messages to other local or remote workstations and or a pager in the following cases:
- Analog parameter exceeding a programmed value
- Maintenance warning
- Component failure alarm
- Critical alarm messages. In this latter case, the message is displayed until the operator acknowledges the receipt of the information. From the remote station it is also possible to access and modify the chiller plants control parameters.

Remote communication through a modem: as an option, a modem can be connected to communicate the plant operation parameters through voice grade phone lines. A remote terminal is a PC workstation equipped with a modem and software to display the remote plant parameters.

Integrated Comfort System (ICS)

The onboard Tracer chiller controller is designed to be able to communicate with a wide range of building automation systems. In order to take full advantage of chiller's capabilities, incorporate your chiller into a Tracer Summit or Tracer® SC building automation system.

But the benefits do not stop at the chiller plant. At Trane, we realize that all the energy used in your cooling system is important. That is why we worked closely with other equipment manufacturers to predict the energy required by the entire system. We used this information to create patented control logic for optimizing HVAC system efficiency.

The building owners challenge is to tie components and applications expertise into a single reliable system that provides maximum comfort, control, and efficiency. Trane® Integrated Comfort systems (ICS) are a concept that combines system components, controls, and engineering applications expertise into a single, logical, and efficient system. These advanced controls are fully commissioned and available on every piece of Trane equipment, from the largest chiller to the smallest VAV box. As a manufacturer, only Trane offers this universe of equipment, controls, and factory installation and verification.

Electrical Data

Electrical data - High Efficiency at all ambient operation

			Motor Data						
			Compressor (Each)				Fan (Each)		
Unit Size	Rated Voltage	Unit Power Conns	Qty	RLA Comp1A, Comp1B/ Comp2A,Comp2B	XLRA Comp1A,Comp1B/ Comp2A, Comp2B	YLRA Comp1A,Comp1B/ Comp2A, Comp2B	Qty Ckt1/Ckt2	kW	FLA
100	380/60/3	1	1	203	1306	424	6	1	2.8
100	400/60/3	1	1	192	1240	402	6	1	2.8
125	380/60/3	1	2	142/101	801/566	260/177	5/3	1	2.8
125	400/60/3	1	2	134/95	760/537	247/168	5/3	1	2.8
145	380/60/3	1	2	142/142	801/801	260/260	4/4	1	2.8
145	400/60/3	1	2	134/134	760/760	247/247	4/4	1	2.8
155	380/60/3	1	2	167/142	973/801	316/260	4/4	1	2.8
155	400/60/3	1	2	158/134	924/760	300/247	4/4	1	2.8
170	380/60/3	1	2	167/167	973/973	316/316	4/4	1	2.8
170	400/60/3	1	2	158/158	924/924	300/300	4/4	1	2.8
190	380/60/3	1	2	203/167	1306/973	424/316	5/5	1	2.8
190	400/60/3	1	2	192/158	1240/924	402/300	5/5	1	2.8
205	380/60/3	1	2	203/203	1306/1306	424/424	5/5	1	2.8
205	400/60/3	1	2	192/192	1240/1240	402/402	5/5	1	2.8
225	380/60/3	1	2	244/203	1306/1306	424/424	6/6	1	2.8
225	400/60/3	1	2	231/192	1240/1240	402/402	6/6	1	2.8
255	380/60/3	2	3	167,167/167	973,973/973	316,316/316	9/5	1	2.8
255	400/60/3	2	3	158,158/158	924,924/924	300,300/300	9/5	1	2.8
285	380/60/3	2	3	167,203/203	973,1306/1306	316,424/424	9/5	2	4.7
285	400/60/3	2	3	158,192/192	924,1240/1240	300,402/402	9/5	2	4.7
310	380/60/3	2	3	203,203/203	1306,1306/1306	424,424/424	11/5	2	4.7
310	400/60/3	2	3	192,192/192	1240,1240/1240	402,402/402	11/5	2	4.7
340	380/60/3	2	3	244,203/244	1306,1306/1306	424,424/424	11/5	2	4.7
340	400/60/3	2	3	231,192/231	1240,1240/1240	402,402/402	11/5	2	4.7
375	380/60/3	2	4	167,203/167,203	973,1306/973,1306	316,424/316,424	9/9	2	4.7
375	400/60/3	2	4	158,192/158,192	924,1240/924,1240	300,402/300,402	9/9	2	4.7
400	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	9/9	2	4.7
400	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	9/9	2	4.7
440	380/60/3	2	4	244,203/244,203	1306,1306/1306,1306	424,424/424,424	10/10	2	4.7
440	400/60/3	2	4	231,192/231,192	1240,1240/1240,1240	402,402/402,402	10/10	2	4.7
500	380/60/3	2	4	255,255/255,255	1306,1306/1306,1306	424,424/424,424	10/10	2	4.7
500	400/60/3	2	4	243,243/243,243	1240,1240/1240,1240	402,402/402,402	10/10	2	4.7
500	460/60/3	2	4	211,211/211,211	1065,1065/1065,1065	346,346/346,346	10/10	2	4.7

Note:

1. RLA-Rated load amps.

2. XLRA-Locked rotor amps are based on full winding starts.

3. YLRA-Locked rotor amps in Wye configuration.

4. Customer need to provide an isolated power 230V/60Hz/1Ph to heat the Evaporator. For single circuit chiller, there are three heaters and heaters total power is 1200W; For dual circuit chiller, there are four heaters and heaters total power is 1600W.

Electrical data – Extra Efficiency at all ambient operation

				Motor Data					
				Compressor (Each)			Fan (Each)		
Unit Size	Rated Voltage	Unit Power Conns	Qty	RLA Comp1A, Comp1B/ Comp2A,Comp2B	XLRA Comp1A,Comp1B/ Comp2A, Comp2B	YLRA Comp1A,Comp1B/ Comp2A, Comp2B	Qty Ckt1/Ckt2	kW	FLA
100	380/60/3	1	1	203	1306	424	6	1	2.8
100	400/60/3	1	1	192	1240	402	6	1	2.8
125	380/60/3	1	2	142/101	801/566	260/177	6/4	1	2.8
125	400/60/3	1	2	134/95	760/537	247/168	6/4	1	2.8
145	380/60/3	1	2	142/142	801/801	260/260	5/5	1	2.8
145	400/60/3	1	2	134/134	760/760	247/247	5/5	1	2.8
155	380/60/3	1	2	167/142	973/801	316/260	5/5	1	2.8
155	400/60/3	1	2	158/134	924/760	300/247	5/5	1	2.8
170	380/60/3	1	2	167/167	973/973	316/316	5/5	1	2.8
170	400/60/3	1	2	158/158	924/924	300/300	5/5	1	2.8
190	380/60/3	1	2	203/167	1306/973	424/316	6/6	1	2.8
190	400/60/3	1	2	192/158	1240/924	402/300	6/6	1	2.8
205	380/60/3	1	2	203/203	1306/1306	424/424	6/6	1	2.8
205	400/60/3	1	2	192/192	1240/1240	402/402	6/6	1	2.8
225	380/60/3	1	2	244/203	1306/1306	424/424	7/7	1	2.8
225	400/60/3	1	2	231/192	1240/1240	402/402	7/7	1	2.8
255	380/60/3	2	3	167,167/167	973,973/973	316,316/316	11/5	1	2.8
255	400/60/3	2	3	158,158/158	924,924/924	300,300/300	11/5	1	2.8
285	380/60/3	2	3	167,203/203	973,1306/1306	316,424/424	12/6	2	4.7
285	400/60/3	2	3	158,192/192	924,1240/1240	300,402/402	12/6	2	4.7
310	380/60/3	2	3	203,203/203	1306,1306/1306	424,424/424	12/6	2	4.7
310	400/60/3	2	3	192,192/192	1240,1240/1240	402,402/402	12/6	2	4.7
340	380/60/3	2	3	244,203/244	1306,1306/1306	424,424/424	14/6	2	4.7
340	400/60/3	2	3	231,192/231	1240,1240/1240	402,402/402	14/6	2	4.7
375	380/60/3	2	4	167,203/167,203	973,1306/973,1306	316,424/316,424	10/10	2	4.7
375	400/60/3	2	4	158,192/158,192	924,1240/924,1240	300,402/300,402	10/10	2	4.7
400	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	10/10	2	4.7
400	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	10/10	2	4.7
410	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	12/12	2	4.7
410	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	12/12	2	4.7
440	380/60/3	2	4	244,203/244,203	1306,1306/1306,1306	424,424/424,424	12/12	2	4.7
440	400/60/3	2	4	231,192/231,192	1240,1240/1240,1240	402,402/402,402	12/12	2	4.7
500	380/60/3	2	4	255,255/255,255	1306,1306/1306,1306	424,424/424,424	12/12	2	4.7
500	400/60/3	2	4	243,243/243,243	1240,1240/1240,1240	402,402/402,402	12/12	2	4.7

Note:

1. RLA-Rated load amps.

2. XLRA-Locked rotor amps are based on full winding starts.

3. YLRA-Locked rotor amps in Wye configuration.

4. Customer need to provide an isolated power 230V/60Hz/1Ph to heat the Evaporator. For single circuit chiller, there are three heaters and heaters total power is 1200W; For dual circuit chiller, there are four heaters and heaters total power is 1600W.

Electrical data – PSE at all ambient operation

				Motor Data					
				Compressor (Each)			Fan (Each)		
Unit Size	Rated Voltage	Unit Power Conns	Qty	RLA Comp1A, Comp1B/ Comp2A,Comp2B	XLRA Comp1A,Comp1B/ Comp2A, Comp2B	YLRA Comp1A,Comp1B/ Comp2A, Comp2B	Qty Ckt1/Ckt2	kW	FLA
100	380/60/3	1	1	203	1306	424	6	1.5	3.8
100	400/60/3	1	1	192	1240	402	6	1.5	3.8
125	380/60/3	1	2	140/98	973/747	316/229	6/4	1.5	3.8
125	400/60/3	1	2	133/93	924/709	300/217	6/4	1.5	3.8
145	380/60/3	1	2	140/140	973/973	316/316	5/5	1.5	3.8
145	400/60/3	1	2	133/133	924/924	300/300	5/5	1.5	3.8
155	380/60/3	1	2	170/140	1306/973	424/316	5/5	1.5	3.8
155	400/60/3	1	2	161/133	1240/924	402/300	5/5	1.5	3.8
170	380/60/3	1	2	170/170	1306/1306	424/424	5/5	1.5	3.8
170	400/60/3	1	2	161/161	1240/1240	402/402	5/5	1.5	3.8
190	380/60/3	1	2	203/170	1306/1306	424/424	6/6	1.5	3.8
190	400/60/3	1	2	192/161	1240/1240	402/402	6/6	1.5	3.8
205	380/60/3	1	2	203/203	1306/1306	424/424	6/6	1.5	3.8
205	400/60/3	1	2	192/192	1240/1240	402/402	6/6	1.5	3.8
225	380/60/3	1	2	203/203	1306/1306	424/424	6/6	1.5	3.8
225	400/60/3	1	2	192/192	1240/1240	402/402	6/6	1.5	3.8
225	460/60/3	1	2	192/192	1065/1065	346/346	6/6	1.5	3.8
230	380/60/3	1	2	203/203	1306/1306	424/424	7/7	1.5	3.8
230	400/60/3	1	2	192/192	1240/1240	402/402	7/7	1.5	3.8
230	460/60/3	1	2	192/192	1065/1065	346/346	7/7	1.5	3.8
285	380/60/3	2	3	170,203/203	1306,1306/1306	424,424/424	9/5	1.65	4.7
285	400/60/3	2	3	161,192/192	1240,1240/1240	402,402/402	9/5	1.65	4.7
285	460/60/3	2	3	161,168/192	1065,1065/1065	346,346/346	9/5	1.65	4.7
310	380/60/3	2	3	203,203/203	1306,1306/1306	424,424/424	11/5	1.65	4.7
310	400/60/3	2	3	192,192/192	1240,1240/1240	402,402/402	11/5	1.65	4.7
310	460/60/3	2	3	192,168/192	1065,1065/1065	346,346/346	11/5	1.65	4.7
340	380/60/3	2	3	203,203/203	1306,1306/1306	424,424/424	11/5	1.65	4.7
340	400/60/3	2	3	192,192/192	1240,1240/1240	402,402/402	11/5	1.65	4.7
340	460/60/3	2	3	192,168/192	1065,1065/1065	346,346/346	11/5	1.65	4.7
375	380/60/3	2	4	170,203/170,203	1306,1306/1306,1306	424,424/424,424	9/9	1.65	4.7
375	400/60/3	2	4	161,192/161,192	1240,1240/1240,1240	402,402/402,402	9/9	1.65	4.7
375	460/60/3	2	4	161,168/161,168	1065,1065/1065,1065	346,346/346,346	9/9	1.65	4.7
400	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	9/9	1.65	4.7
400	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	9/9	1.65	4.7
400	460/60/3	2	4	192,168/192,168	1065,1065/1065,1065	346,346/346,346	9/9	1.65	4.7
440	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	10/10	1.65	4.7
440	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	10/10	1.65	4.7
440	460/60/3	2	4	192,168/192,168	1065,1065/1065,1065	346,346/346,346	10/10	1.65	4.7
460	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	14/14	1.65	4.7
460	400/60/3	2	4	192,192/192,192	1240,1240/1240,1240	402,402/402,402	14/14	1.65	4.7
460	460/60/3	2	4	192,192/192,192	1065,1065/1065,1065	346,346/346,346	14/14	1.65	4.7

Note:

1. RLA-Rated load amps.

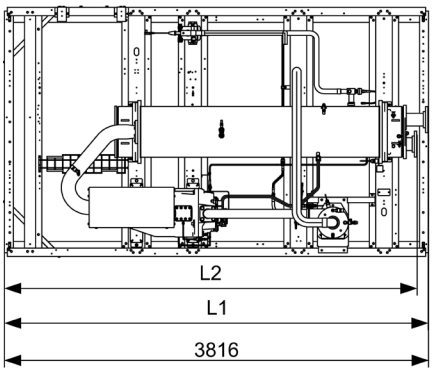
2. XLRA-Locked rotor amps are based on full winding starts.

3. YLRA-Locked rotor amps in Wye configuration.

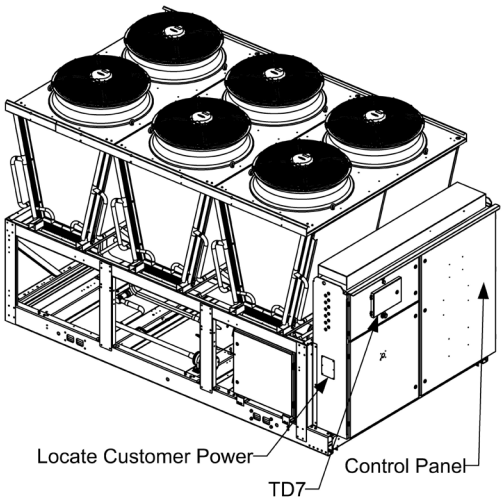
4. Customer need to provide an isolated power 230V/60Hz/1Ph to heat the Evaporator. For single circuit chiller, there are three heaters and heaters total power is 1200W; For dual circuit chiller, there are four heaters and heaters total power is 1600W.

Dimensional Data

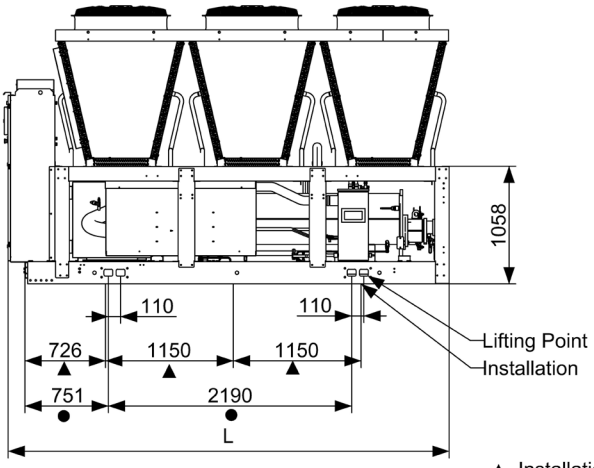
RTAG 100H/X/P



Top View(With fan /coil removed)

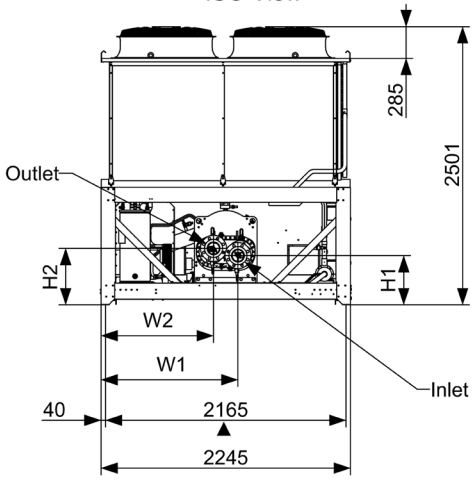


ISO View



Side View

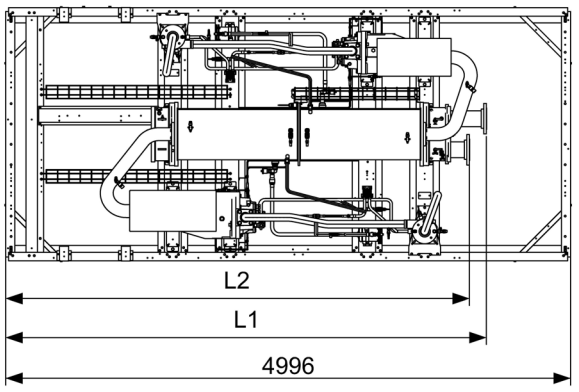
▲ Installation Point
● Lifting Point



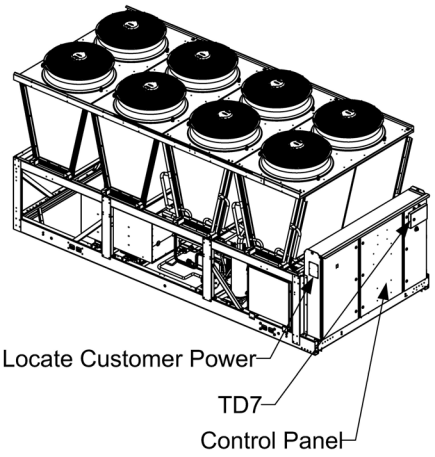
Back View

	Water box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 100 H	150PSI	468	478	1252	992	3619	3619	4"	3840	---
	300PSI	443	508	1233	1013	3813	3713	4"	3840	---
RTAG 100 X RTAG 100 P	150PSI	468	478	1252	992	3619	3619	4"	3840	3970
	300PSI	443	508	1233	1013	3813	3713	4"	3840	3970

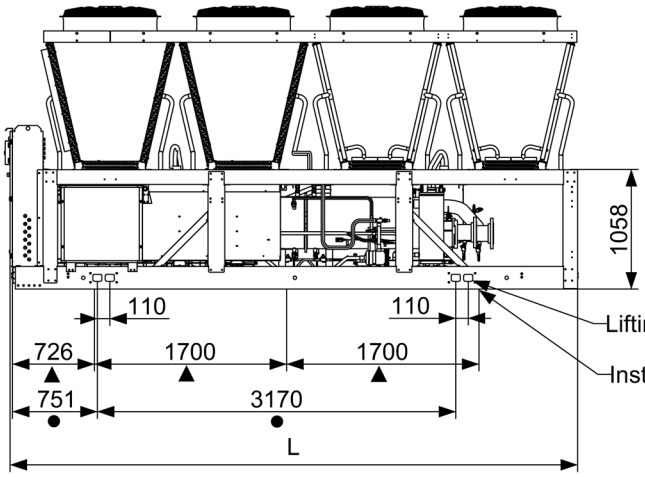
RTAG 125H/145H/155H/170H



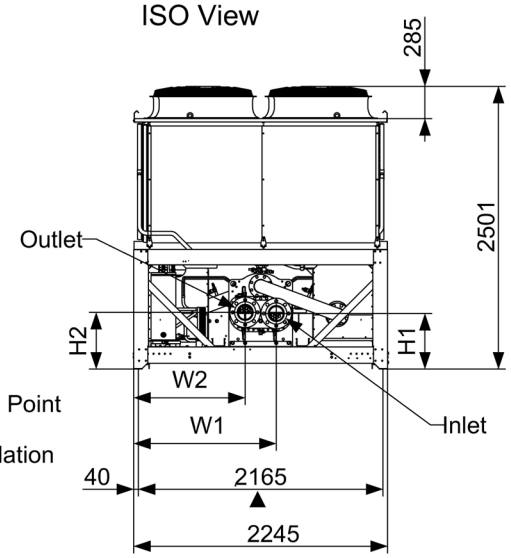
Top View(With fan /coil removed)



ISO View



Side View

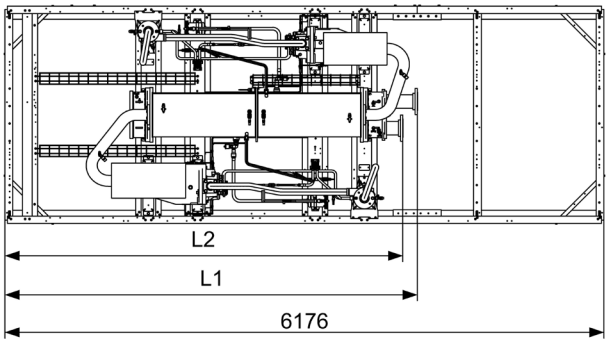


Back View

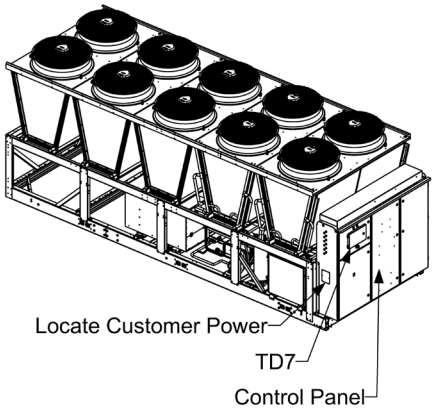
▲ Installation Point
● Lifting Point

	Water box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
RTAG 125 H RTAG 145H RTAG 155H	150PSI	492	500	1260	985	3905	3905	5"	5020
	300PSI	492	500	1260	985	4249	4099	5"	5020
RTAG 170 H	150PSI	450	465	1275	970	3938	3938	5"	5020
	300PSI	450	465	1275	970	4250	4100	5"	5020

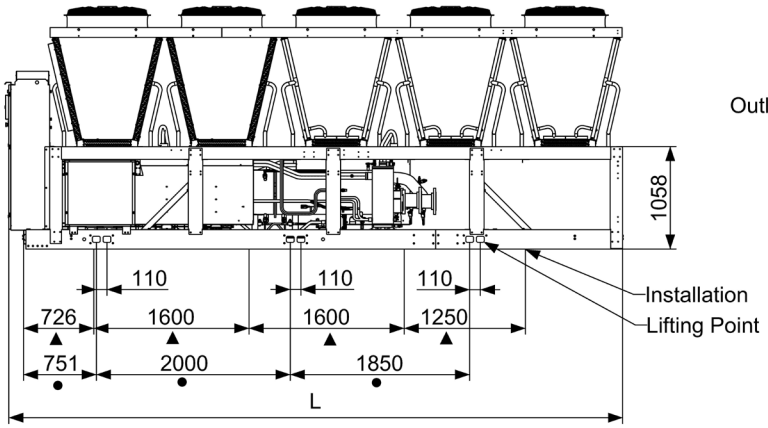
RTAG 190H/205H,125X/145X/155X/170X,125P/145P/155P/170P



Top View(With fan /coil removed)

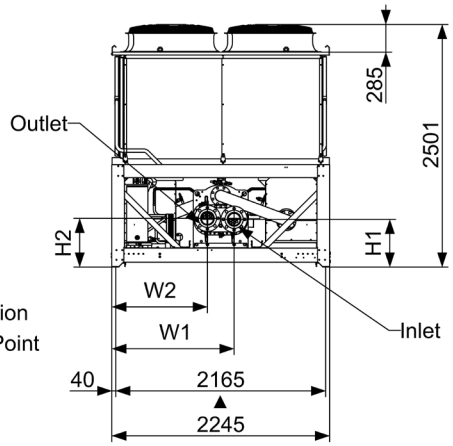


ISO View



Side View

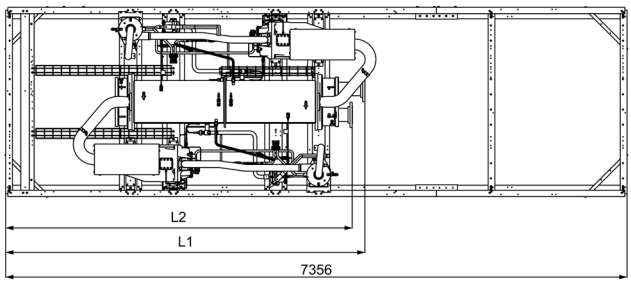
▲ Installation Point
● Lifting Point



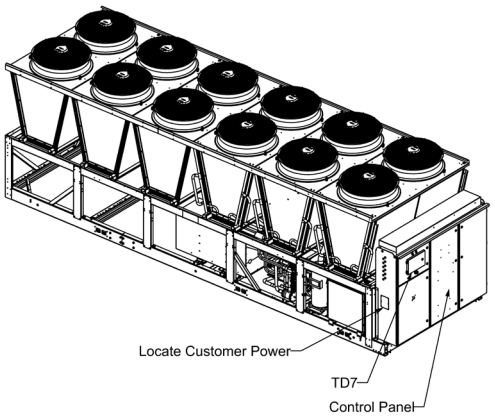
Back View

	Water box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 125 X RTAG 125 P	150PSI	492	500	1260	985	3905	3905	5"	6200	6330
	300PSI	492	500	1260	985	4249	4099	5"	6200	6330
RTAG 145 X RTAG 145 P	150PSI	492	500	1260	985	3905	3905	5"	6200	6330
	300PSI	492	500	1260	985	4249	4099	5"	6200	6330
RTAG 155 X RTAG 155 P	150PSI	492	500	1260	985	3905	3905	5"	6200	6330
	300PSI	492	500	1260	985	4249	4099	5"	6200	6330
RTAG 170 X RTAG 170 P	150PSI	450	465	1275	970	3938	3938	6"	6200	6330
	300PSI	450	465	1275	970	4250	4100	6"	6200	6330
RTAG 190 H	150PSI	450	465	1275	970	3938	3938	6"	6200	---
	300PSI	450	465	1275	970	4250	4100	6"	6200	---
RTAG 205 H	150PSI	450	465	1275	970	3938	3938	6"	6200	---
	300PSI	450	465	1275	970	4250	4100	6"	6200	---

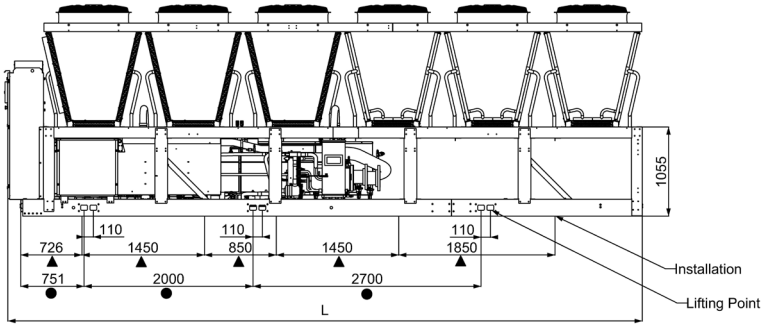
RTAG 225H,190X/205X,190P/205P/225P



Top View(With fan /coil removed)

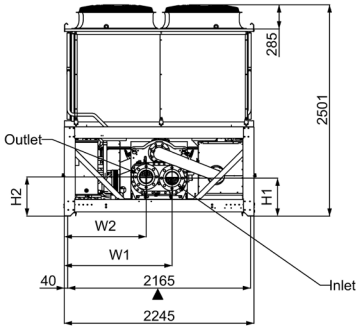


ISO View



Side View

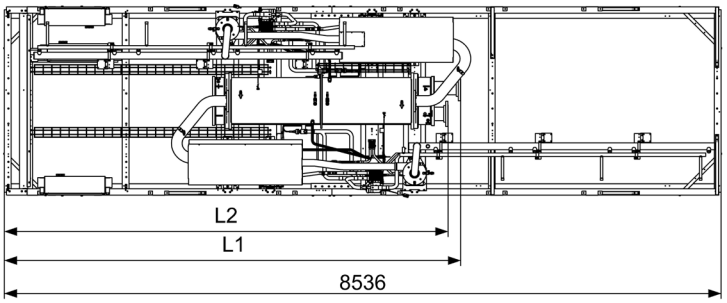
▲ Installation
● Lifting Point



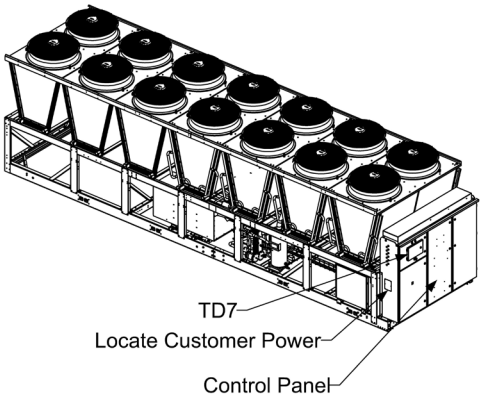
Back View

	Water box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 190 X RTAG 190 P	150PSI	450	465	1275	970	3938	3938	6"	7380	7510
	300PSI	450	465	1275	970	4250	4100	6"	7380	7510
RTAG 205 X RTAG 205 P	150PSI	450	465	1275	970	3938	3938	6"	7380	7510
	300PSI	450	465	1275	970	4250	4100	6"	7380	7510
RTAG 225 H RTAG 225 P	150PSI	450	465	1275	970	3938	3938	6"	7380	7510
	300PSI	450	465	1275	970	4250	4100	6"	7380	7510

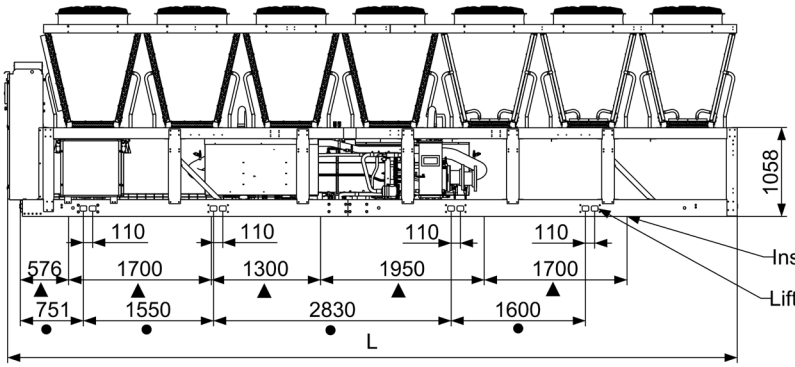
RTAG 225X/230P



Top View
(With fan /coil removed)

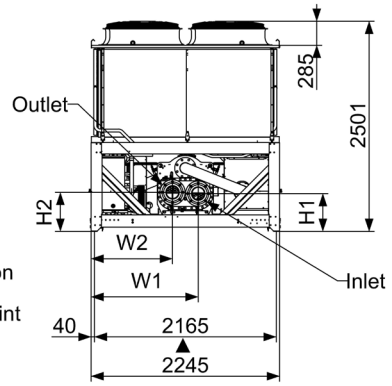


ISO View



Side View

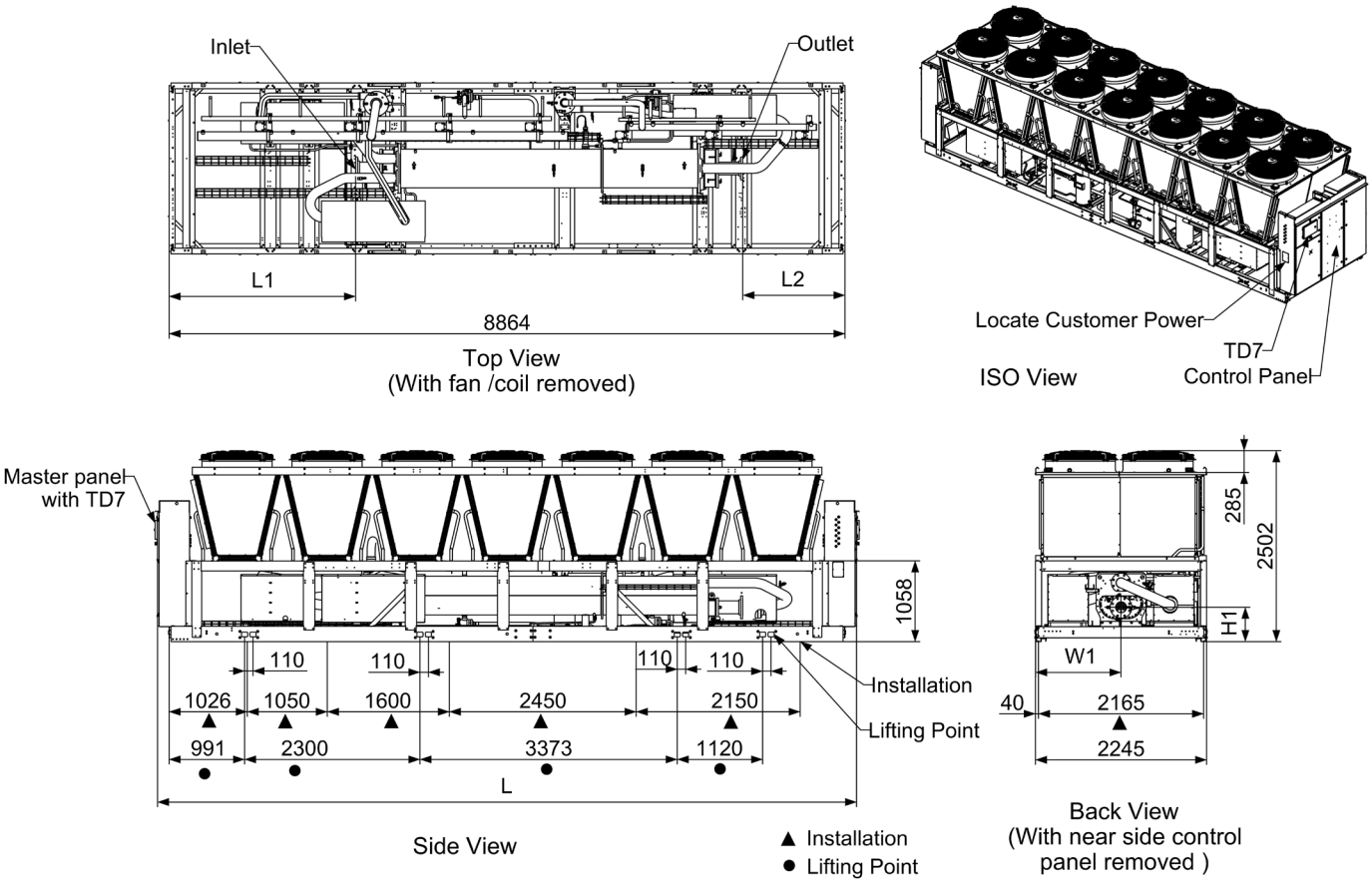
▲ Installation
● Lifting Point



Back View
(With near side control panel removed)

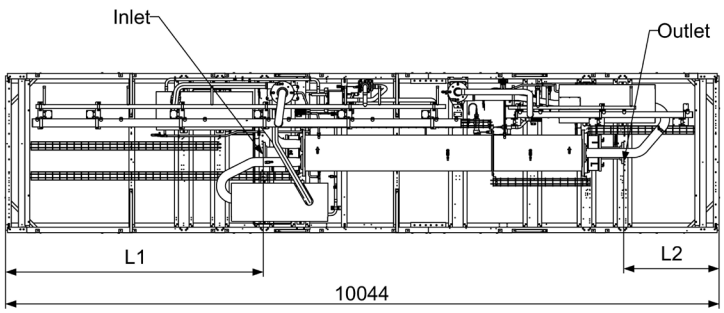
	Water box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
RTAG 225 X RTAG 230 P	150PSI	450	465	1275	970	5118	5118	6"	8600
	300PSI	450	465	1275	970	5430	5280	6"	8730

RTAG 255H/285H,285P

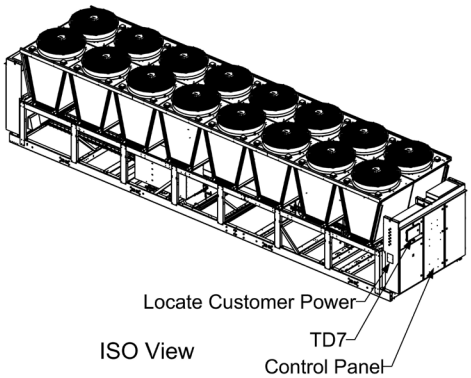


	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 255H	150PSI	450	1120	2698	1593	6"	8995	---
	300PSI	450	1120	2447	1343	6"	8995	---
RTAG 285 H	150PSI	450	1120	2698	1593	6"	8995	---
	300PSI	450	1120	2447	1343	6"	8995	---
RTAG 285 P	150PSI	450	1120	2698	1593	6"	---	9210
	300PSI	450	1120	2447	1343	6"	---	9210

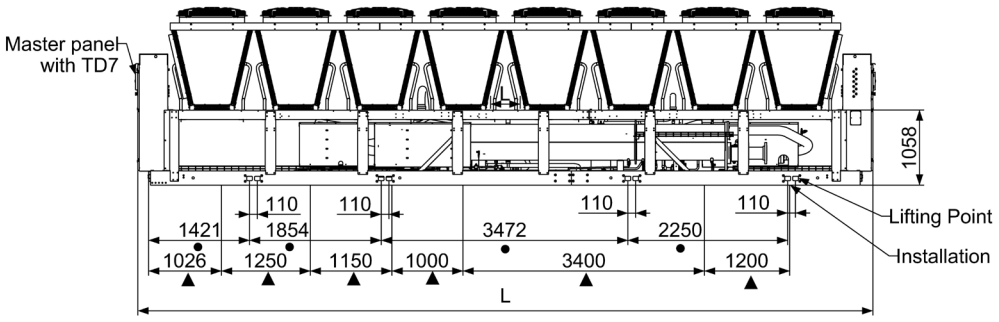
RTAG 255X,310H/340H,310P/340P



Top View
(With fan /coil removed)

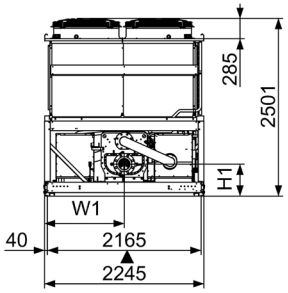


ISO View



Side View

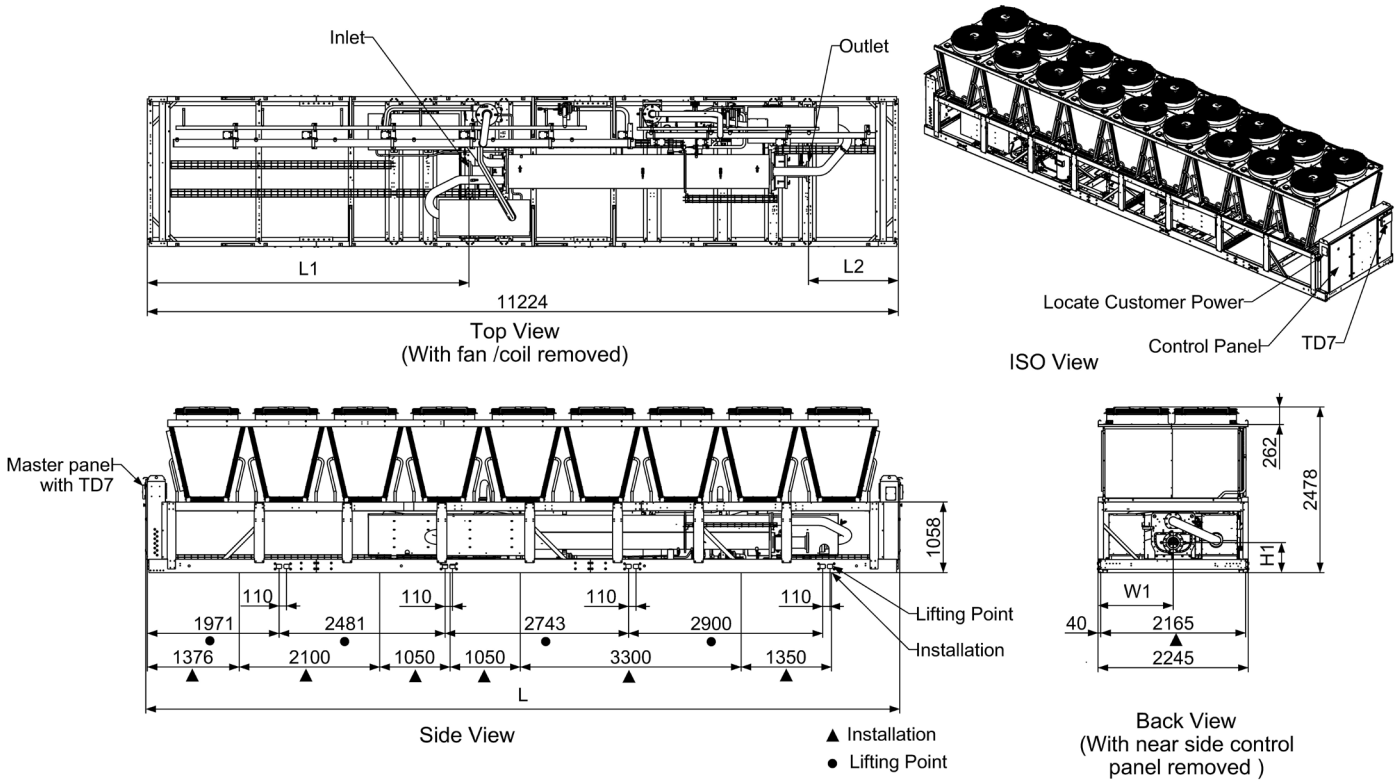
▲ Installation
● Lifting Point



Back View
(With near side control
panel removed)

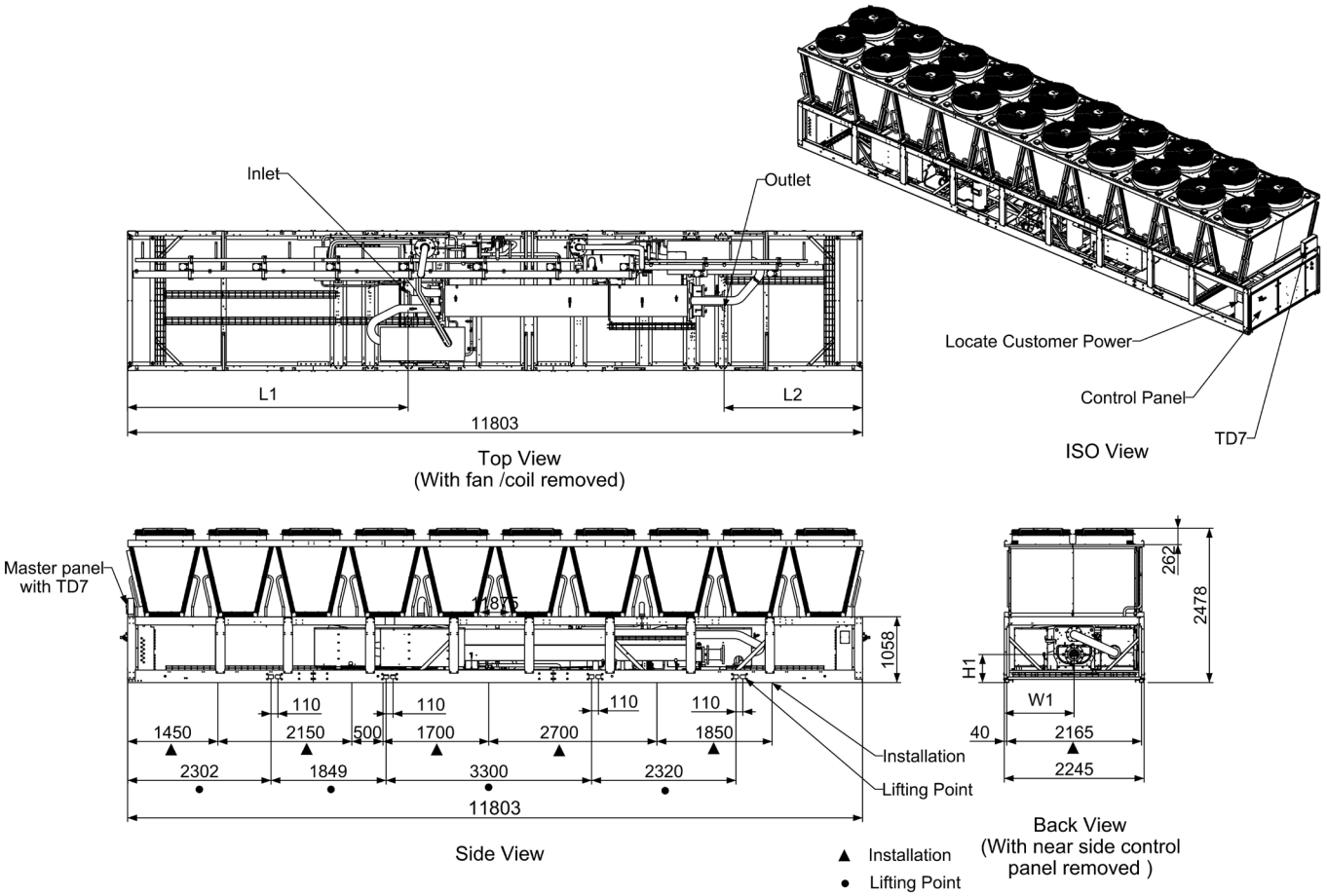
	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 255 X	150PSI	450	1120	3877	1593	6"	10130	---
	300PSI	450	1120	3627	1343	6"	10130	---
RTAG 310 H RTAG 310 P	150PSI	450	1120	3877	1593	6"	10130	10390
	300PSI	450	1120	3627	1343	6"	10130	10390
RTAG 340 H RTAG 340 P	150PSI	450	1120	3877	1593	6"	10130	10390
	300PSI	450	1120	3627	1343	6"	10130	10390

RTAG 285X/310X



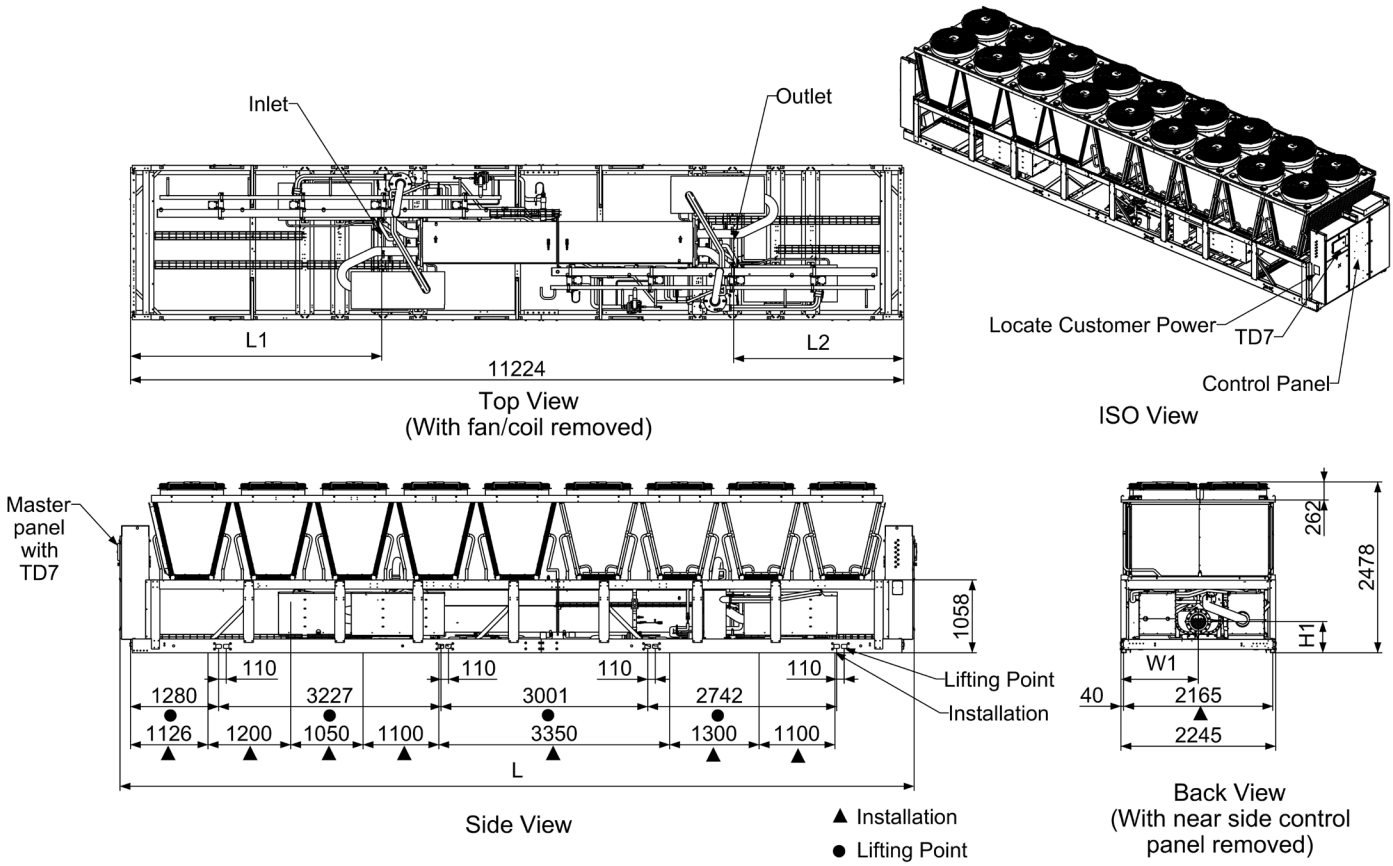
	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
RTAG 285 X RTAG 310 X	150PSI	450	1120	5058	1593	6"	11310
	300PSI	450	1120	4807	1343	6"	11310

RTAG 340X



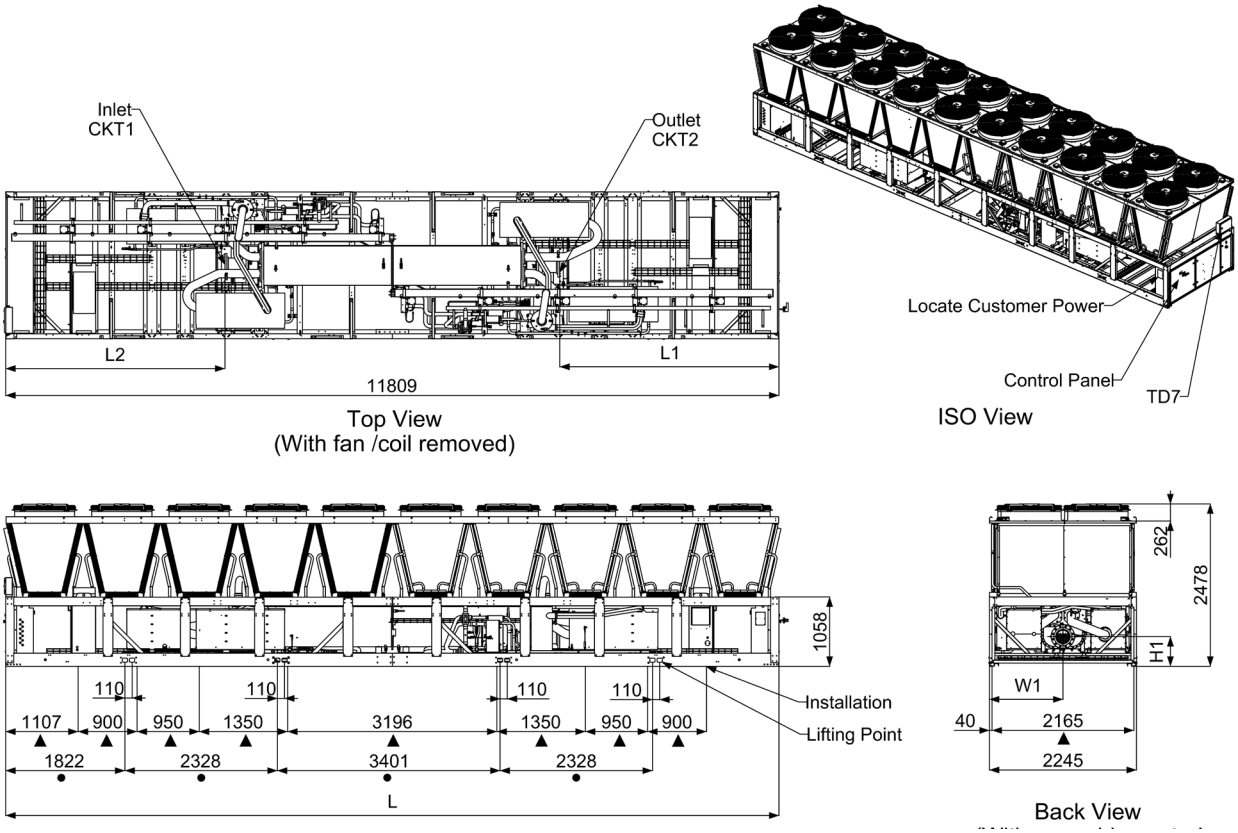
	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe
RTAG 340 X	150PSI	450	1120	4758	2473	6"
	300PSI	450	1120	4508	2222	6"

RTAG 375H/400H,375P/400P



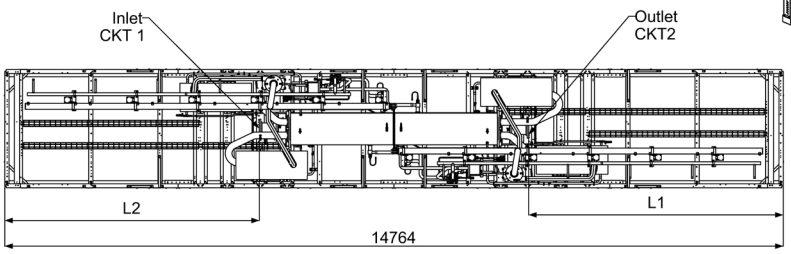
	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 375 H RTAG 375 P	150PSI	453	1120	3882	2703	8"	11310	11560
	300PSI	453	1120	3647	2469	8"	11310	11560
RTAG 400 H RTAG 400 P	150PSI	453	1120	3882	2703	8"	11310	11560
	300PSI	453	1120	3647	2469	8"	11310	11560

RTAG 375X/400X,440H,440P,500H

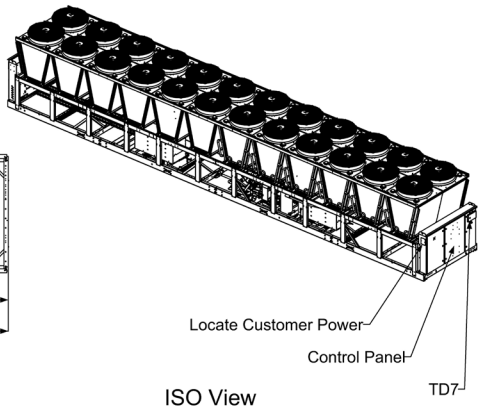


	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (High and Extra eff) (mm)	L (Premium seasonal eff) (mm)
RTAG 375 X	150PSI	453	1120	3582	3582	8"	11810	---
	300PSI	453	1120	3348	3348	8"	11810	---
RTAG 400 X	150PSI	453	1120	3582	3582	8"	11810	---
	300PSI	453	1120	3348	3348	8"	11810	---
RTAG 440 H RTAG 440 P	150PSI	453	1120	3582	3582	8"	11810	11810
	300PSI	453	1120	3348	3348	8"	11810	11810
RTAG 500 H	150PSI	453	1120	3582	3582	8"	11810	---
	300PSI	453	1120	3348	3348	8"	11810	---

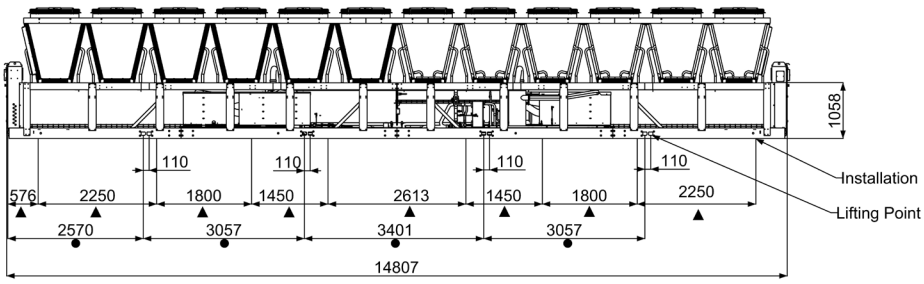
RTAG 410X/440X/500X



Top View
(With fan /coil removed)

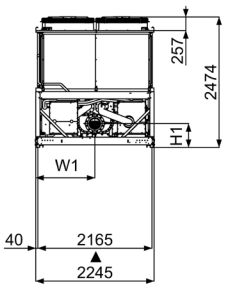


ISO View



Side View

▲ Installation
● Lifting Point



Back View
(With control panel removedl)

	Water box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe
RTAG 410 X	150PSI	453	1120	5062	5062	8"
	300PSI	453	1120	4828	4828	8"
RTAG 440 X	150PSI	453	1120	5062	5062	8"
	300PSI	453	1120	4828	4828	8"
RTAG 500 X	150PSI	453	1120	5062	5062	8"
	300PSI	453	1120	4828	4828	8"

Mechanical Specifications

General

Chilled water production will be made by a factory assembled and tested, air-cooled liquid chiller, Trane type RTAG H/X/P. Chiller will have one or two refrigerant circuits with one or two compressors per circuit.

Documentation including installation-operation maintenance manual, user guide, wiring diagram and submittal is placed in the control panel.

Compressors and Motors

The helical-rotary compressor is semi-hermetic, direct drive, 3000 rpm, differential refrigerant pressure oil circulation system without oil pump, and with oil heater.

On Trane RTAG P Capacity control is done through the VFD to optimize performances at partial load allowing reduction of capacity down to 36% or 18% or 12% or 9% (one or two refrigerant circuits, each circuit has one or two compressors) of the maximum value.

On Trane RTAG H and X capacity control will be made through a slide valve allowing reduction of capacity down to 30 or 15% or 10% or 7.5% (one or two refrigerant circuits, each circuit has one or two compressors) of the maximum value. Compressor will start always unloaded.

Motor is suction gas cooled, hermetically sealed, two poles, squirrel cage induction type, with four pressure lubricated rolling elements, bearing groups shall support the rotating assembly. Motor bearings will be designed for the whole life of the chiller.

Oil Management

The chiller is equipped with an oil management system without oil pump that ensures proper oil circulation throughout the unit. The key components of the system include an oil separator, oil filter with particles retention capacity of at least 5µm.

An oil heater is installed to avoid startup with low oil temperature.

An optional oil cooler is installed when the unit is used for high condensing temperature or unit with compressor VFD or economizer.

Unit-Mounted Wye-Delta Starter (RTAG H and X)

The compressor starters shall be Star-Delta configuration closed transition, factory-mounted and fully pre-wired to the compressor motor and control panel. Starter will reduce by 33% the inrush current.

Adaptive Frequency Drive (AFD) mounted on RTAG P

Compressors of RTAG P shall be equipped with an adaptive frequency drive, factory mounted, tested and wired. Frequency converter will drive the chiller start and ramp up, and the partial load operation.

AFD enclosure is IP54 as standard, with integrated air cooling system, consisting of a fan below the VFD frame.

Evaporator

The evaporator is a tube-in-shell heat exchanger design with internally and externally finned copper tubes roller expanded into the tube sheet. If select the option of "ASME Pressure Vessel Code" , the evaporator is designed, tested and stamped in accordance with ASME for a refrigerant side working pressure of 200 psig. The evaporator is designed for a water side working pressure of 150/300 psig. Water connections are flange. Each shell includes a vent, a drain and fittings for temperature control sensors and is insulated with 3/4 inch equal insulation (K=0.26). Evaporator heaters with thermostat are provided to help protect the evaporator from freezing at ambient temperatures down to -20°F (-29°C). Factory installed flow switch is installed on a pipe stub in the evaporator inlet.

Note: *A separated field supplied low voltage power source is required to power the evaporator freeze protection.*

Condenser and Fans

Air-cooled condenser coils have aluminum fins mechanically bonded to internally finned seamless copper tubing. The condenser coil has an integral subcooling circuit. Condensers are factory proof and leak tested at 506 psig.

Direct-drive vertical-discharge airfoil condenser fans are dynamically balanced.
Standard units will start and operate from 0°C to 46°C (32°F to115°F) ambient.
Standard ambient or high ambient, standard noise or low noise are equipped with three-phase AC condenser fan motors.

Refrigerant Circuit

Each unit has one or two refrigerant circuits, with one or two rotary screw compressors per circuit. Each refrigerant circuit includes liquid line shut off valve, removable core filter, charging port, high pressure and low pressure safety valves and electronic expansion valve.

Electrical Panel

Single point power connection (100 - 230 models) or dual point power connection (255 - 500 models) with disconnect switch and fuses.

The disconnect switch is mechanically interlocked to disconnect line power from the starter before the starter doors are open.

All components and control cables are numbered in accordance with CEI 60750.

A factory-installed, factory-wired control power transformer provides all unit control power and Symbio800 module power. All the starter elements are enclosed in an IP54 panel, with hinged door.

Unit Controls (Tracer Symbio800)

The microprocessor-based control panel is factory installed and factory-tested. The control system is powered by a control power transformer. It loads and unloads the chiller through adjustment of the compressor slide valve on models RTAG H/X and through a Adaptive Frequency Drive on the model RTAG P.

Microprocessor-based chilled water reset based on return water is standard. The Symbio800 utilizing the “Adaptive Control™” microprocessor automatically takes action to prevent unit shutdown due to abnormal operating conditions associated with low evaporator refrigerant temperature, high condensing temperature, and motor current overload. If abnormal operating condition continues and protective limit is reached, the refrigerant circuit will be shut down.

Controller includes machine protection shutdown requiring manual reset for:

- Low evaporator refrigerant temperature and pressure
- High condenser refrigerant pressure
- Low oil flow
- Critical sensor or detection circuit fault
- Motor current overload
- High compressor discharge temperature
- Communications lost between modules
- Electrical distribution faults: phase loss, phase imbalance, phase reversal
- External and local emergency stop
- Starter transition failure.

The panel includes machine protection shutdown with automatic reset when the condition is corrected for:

- Momentary power loss
- Over / under voltage
- Loss of evaporator water flow.

Over 100 diagnostic checks is made and are displayed when a fault is detected. The display indicates the fault, the type of reset required, the time and date the diagnostic occurred, the mode in which the machine was operating at the time of the diagnostic, and a help message. A diagnostic history displays the last 20 diagnostics with the time and date of their occurrence. Alarms and diagnostics are displayed in chronological order, with a color/symbol code: red octagon for immediate shutdown, yellow triangle for normal shutdown and blue circle for warning.

Human interface with Touchable DisplayTraneTD7

- Factory-mounted above the control panel door
- UV Resistant touchscreen
- -40°C to 70°C operating temperature
- IP56 rated
- CE certification
- Emissions: EN55011(Class B)
- Immunity: EN61000 (Industrial)
- 7” diagonal
- 800x480 pixels
- TFT LCD @ 600 nits brightness
- 16 bit color graphic display

Display features:

- Alarms
- Reports
- Chiller settings
- Display settings
- Graphing

Dry contacts

Symbio800 provides a flexible alarm or chiller status indication to a remote location through a hard wired interface to a dry contact closure. Four relays are available for this function.

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

RTAG-PRC001F-EN Nov 2022
Supercedes RTAG-PRC001E-EN (May 2022)