



Product Catalog

# Air-Cooled Series R™ Chillers

## Model RTAG

225 to 500 Nominal Tons (60 Hz)





# 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)
- 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.

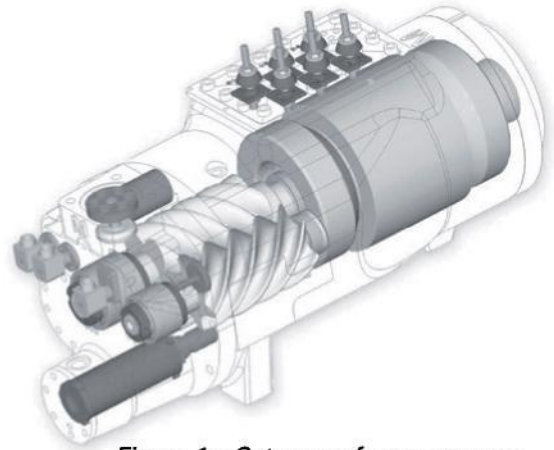
**Proven track record:** The Trane Company is the world's largest manufacturer of large helical rotary compressors used for refrigeration. Over 300,000 compressors worldwide have proven that the Trane helical- rotary compressor has a reliability rate of greater than 99.5% in the first year of operation — 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  $\pm 0.3^{\circ}\text{C}$  [ $\pm 0.5^{\circ}\text{F}$ ] 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  $\pm 1^{\circ}\text{C}$  [ $\pm 2^{\circ}\text{F}$ ]. 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 Control™ 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 the refrigerant to get an excellent heat exchange with water in every operating condition and minimize the quantity of refrigerant used.

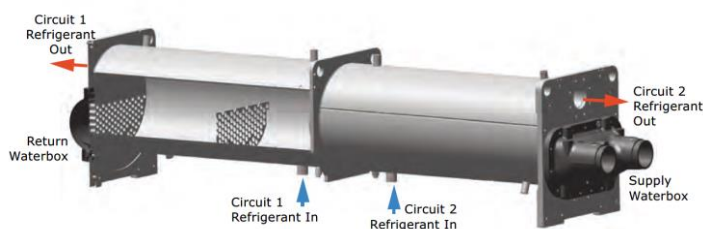


Figure 2 – CHIL Evaporator

## 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 UC 800™ Chiller Controls

The Adaptive Control™ 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 implement 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: 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

UC800 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

UC800 accepts either a 2-10VDC or a 4-20mA input signal to adjust the current limit setpoint from a remote location.

## Refrigerant options

R134a

## 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

### 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.

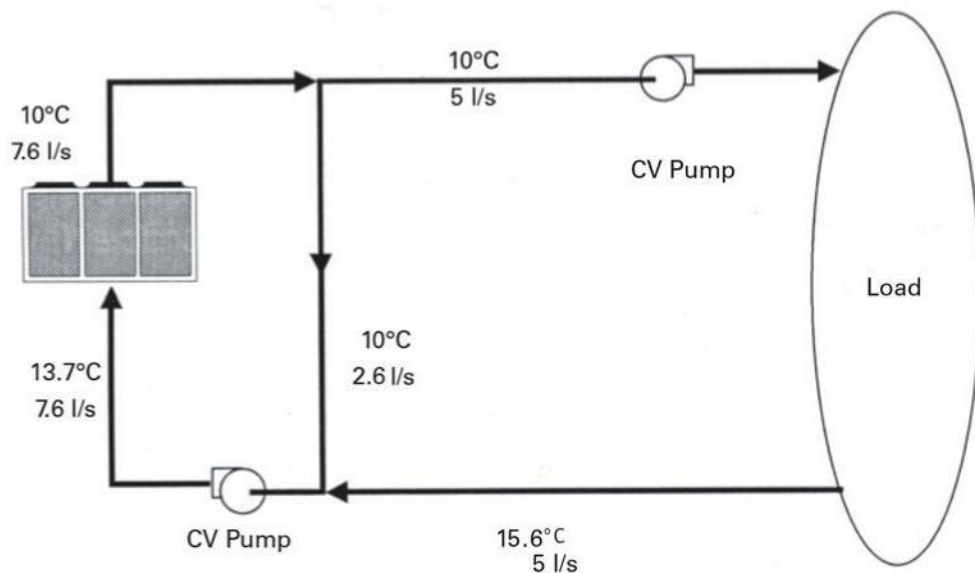


Figure 4 – Flow rate Out of Range

## 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.

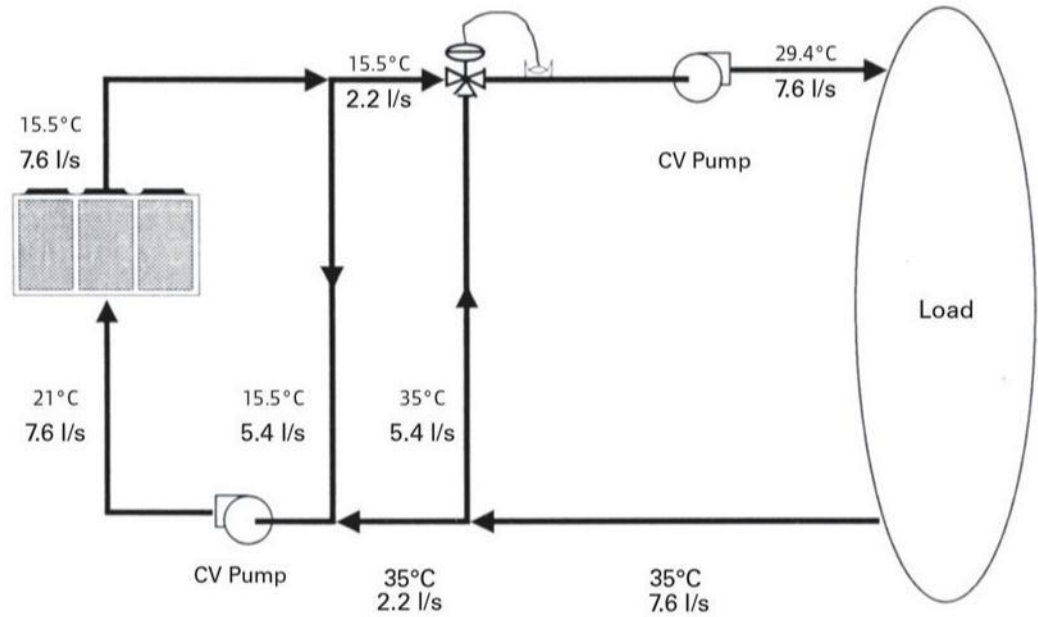


Figure 5 – Temperature Out of Range

#### 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

<u>RTAG</u>	<u>225</u>	<u>E</u>	<u>C</u>	<u>A</u>	<u>0</u>	<u>P</u>	<u>0</u>	<u>A</u>	<u>S</u>	<u>N</u>	<u>S</u>	<u>X</u>	<u>F</u>	<u>N</u>	<u>L</u>	<u>2</u>	<u>S</u>	<u>B</u>			
1-4	5-7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
				<u>X</u>	<u>X</u>	<u>X</u>	<u>E</u>	<u>X</u>	<u>0</u>	<u>X</u>	<u>F</u>	<u>R</u>	<u>V</u>	<u>0</u>	<u>C</u>	<u>1</u>	<u>A</u>	<u>N</u>	<u>X</u>	<u>X</u>	<u>N</u>
				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

225 = 225 Nominal Tons  
 230 = 230 Nominal Tons  
 285 = 285 Nominal Tons  
 310 = 310 Nominal Tons  
 340 = 340 Nominal Tons  
 375 = 375 Nominal Tons  
 400 = 400 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  
 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)

## Digit 21 - Evaporator Water Pressure

L = 150psi

## Digit 22 - Evaporator Configurations

1 = 1 Pass Evaporator(285-440,500)  
 2 = 2 Pass Evaporator(225-230, 460)

## Digit 23 - Thermal Insulation

S = Standard Thermal Insulation

## Digit 24 - Condenser Options

B = Copper tube/Al fin with black coated  
 C = Copper tube/Copper fin coil

## 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)

## 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 (225-230)  
 2 = Dual Point Power Connection (285-500)

## 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 - Premium seasonal efficiency

Model			225P	230P	285P	310P	340P	375P	400P	440P	460P
Compressor	type		Screw compressor								
	starter type		VFD								
	circuits no.		2	2	2	2	2	2	2	2	2
	min load %		18%	18%	12%	12%	12%	9%	9%	9%	9%
Evaporator	type		Flooded (CHIL)								
	flow rate	gpm	511	524	664	735	764	864	926	1012	1048
	pressure drop (WPD)	psid	4.7	4.2	5.4	5.3	5.7	5.7	5.4	4.3	4.2
	connection	inch	6"	6"	6"	6"	6"	8"	8"	8"	6"
Condenser	fan type		Axial Flow								
	fan no.		12	14	14	16	16	18	18	20	28
	fan input power	kW/fan	1.5			1.65			1.5		
	fan speed	RPM	910/200			970 / 200			910/200		
	air flow / fan	CFM	10036			11772			10036		
Power type 1			380V/60HZ/3Ph								
Max RLA 1	Control panel 1	A	534	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	534	542	678	721	721	678	712	717	542
	Control panel 2	A	-	-	269	269	269	678	712	717	542
Power type 2			4000V/60HZ/3Ph								
Max RLA 2	Control panel 1	A	507	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	507	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	441	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	441	447	560	596	596	560	588	592	447
	Control panel 2	A	-	-	222	222	222	560	588	592	447
Refrigerant			R134a								
Refrigerant Charge	ckt 1	lb	216	229	309	348	384	326	326	403	458
	ckt 2	lb	216	229	152	165	165	326	326	403	458
Oil Charge	ckt 1	gal	2.1	2.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	ckt 2	gal	2.1	2.1	2.1	2.1	2.1	4.2	4.2	4.2	4.2
Dimension	Length	inch	296	344	364	410	410	456	456	467.5	698
	Width	inch	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
	Height	inch	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
Shipping weight		lb	12,642	14,134	16,956	18,470	18,506	21,080	21,410	22,922	28,268
Operation weight		lb	12,904	14,423	17,221	18,772	18,808	21,413	21,779	23,376	28,846

Note:

- Unit voltage options: 380V/60Hz/3Ph, 400V/60Hz/3Ph, 460V/60Hz/3Ph
- Single power connection: model 225 to 230; Dual power connection: model 285 to 460.
- 460P model is 2 sections design, and be shipped separately by Trane factory.



## General Data - 60Hz - High efficiency

Model			400	500
Compressor	type		Screw compressor	
	starter type		Wye-Delta Closed Transition Starter	
	circuits no.		2	2
	min load %		7.5%	7.5%
Evaporator	type		Flooded (CHIL)	
	flow rate	gpm	1154	944
	pressure drop (WPD)	psid	5.6	5.6
	connection	inch	8"	8"
Condenser	fan type		Axial flow	
	fan no.		18	20
	fan input power		kW/fan	2
	fan speed		RPM	860
	air flow / fan		CFM	11478
Power type 1			380V/60HZ/3Ph	
Max RLA 1	Control panel 1	A	531	686
	Control panel 2	A	531	686
Start-up Current 1	Control panel 1	A	712	792
	Control panel 2	A	712	792
Power type 2			400V/60HZ/3Ph	
Max RLA 2	Control panel 1	A	504	651
	Control panel 2	A	504	651
Start-up Current 2	Control panel 1	A	676	752
	Control panel 2	A	676	752
Power type 3			460V/60HZ/3Ph	
Max RLA 3	Control panel 1	A	438	566
	Control panel 2	A	438	566
Start-up Current 3	Control panel 1	A	588	654
	Control panel 2	A	588	654
Refrigerant			R134a	
Refrigerant Charge	ckt 1	lb	326	406
	ckt 2	lb	326	406
Oil Charge	ckt 1	gal	4.2	4.2
	ckt 2	gal	4.2	4.2
Dimension	Length	inch	456	467.5
	Width	inch	88.4	88.4
	Height	inch	97.6	97.6
Shipping weight		lb	20640	22481
Operation weight		lb	21008	22935

## Note:

- Unit voltage options: 380V/60Hz/3Ph, 400V/60Hz/3Ph, 460V/50Hz/3Ph.
- Dual power connection: model 400 to 500.



# Controls System

## Tracer UC800 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 controller's 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 UC800 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 UC800 controller features a 7" LCD touchscreen, 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

## TracerTU Interface

TracerTU (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, TracerTU, supports service and maintenance tasks. TracerTU 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. TracerTU 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 TracerTU indicators visually confirm the availability of each connected sensor, relay, and actuator.

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

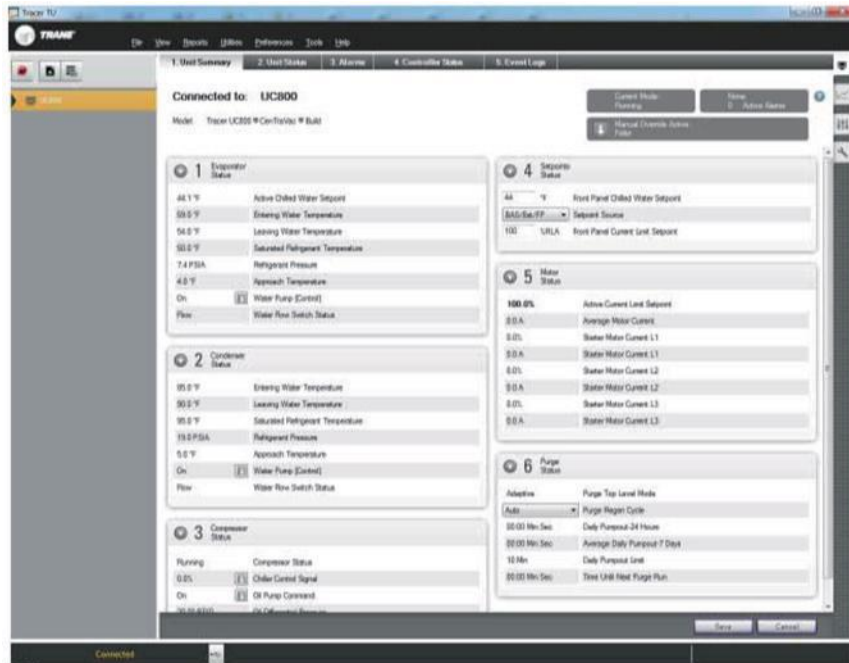


Figure 7 – TracerTU interface

## 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 unequalled 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 SCTM 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 UC800 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 – Premium seasonal efficiency

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
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	168/168	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	168/168	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	141,168/168	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	168,168/168	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	168,168/168	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	141,168/141,168	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	168,168/168,168	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	168,168/168,168	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	168,168/168,168	1065,1065/1065,1065	346,346/346,346	14/14	1.65	4.7	

## Electrical data – High efficiency

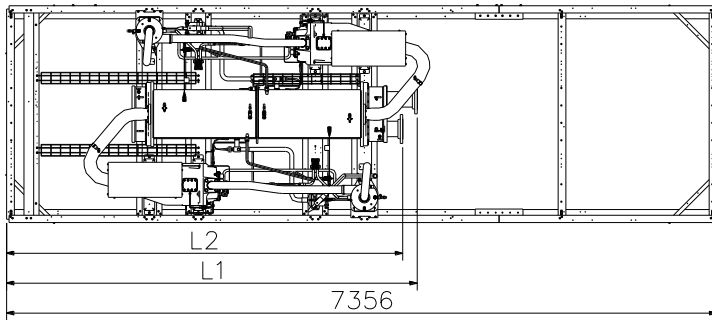
Motor Data										
				Compressor (Each)			Fan (Each)			
Unit size	Rated Voltage	Unit Power Conns	Qty	RLA Comp1A, Comp1B/ Comp2A, Comp2B	XLRA Comp1A, Comp1B/ Comp2A, Comp2B	YLRA Comp1A, Comp1B/ Comp2A, Comp2B	Qty	Ckt1/ Ckt2	kW	FLA
400	380/60/3	2	4	203,203/203,203	1306,1306/1306,1306	424,424/424,424	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	
400	460/60/3	2	4	168,168/168,168	1065,1065/1065,1065	346,346/346,346	9/9	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	

**Notes:**

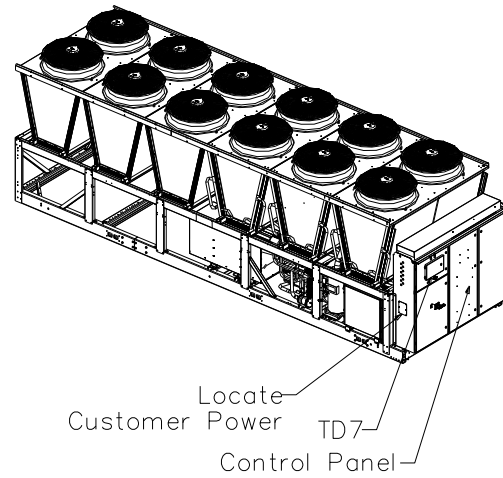
1. MCA-Minimum circuit ampacity.
2. MOP-Maximum over current protection.
3. RDE-Recommend time delay fuse size.
4. RLA-Rated load amps.
5. XLRA-Locked rotor amps are based on full winding starts.
6. YLRA-Locked rotor amps in Wye configuration.
7. Customer need to provide an isolated power 230V/60Hz/1Ph to heat the Evaporator.

# Dimensional Data

## RTAG 225P

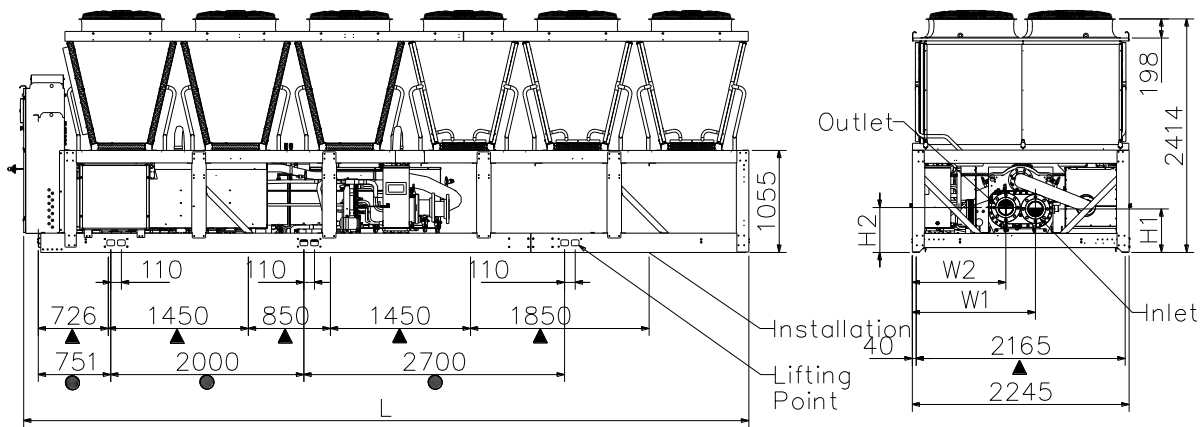


Top View (With fan /coil removed)



Locate Customer Power  
TD7 Control Panel

ISO View



Side View

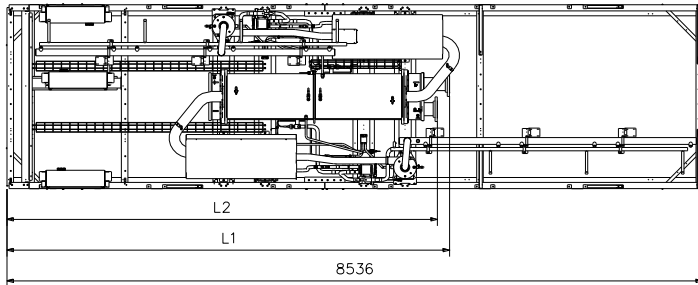
▲ Installation Point  
● Lifting Point

Back View

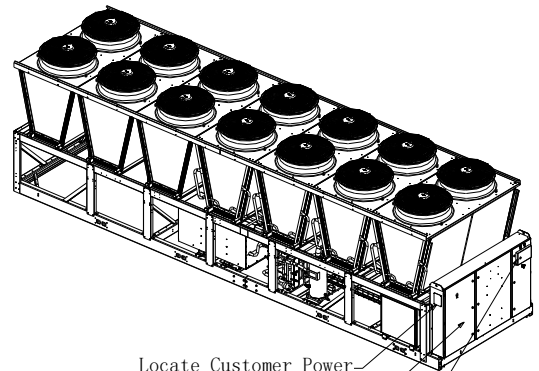
Unit	Water Box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
225P	150psi	450	465	1275	970	3938	3938	6"	7510



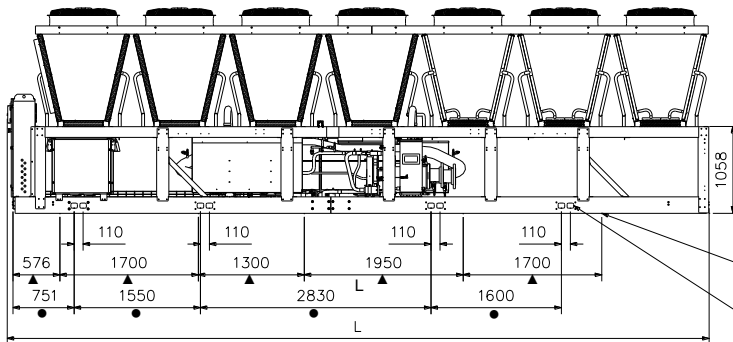
RTAG 230P



**Top View**  
(With fan/coil removed)

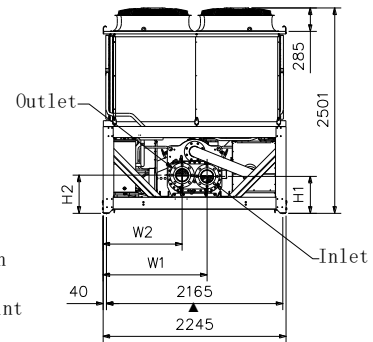


Locate Customer Power  
Control Panel  
**ISO View**  
TD7



**Side View**

▲ Installation  
● Lifting Point

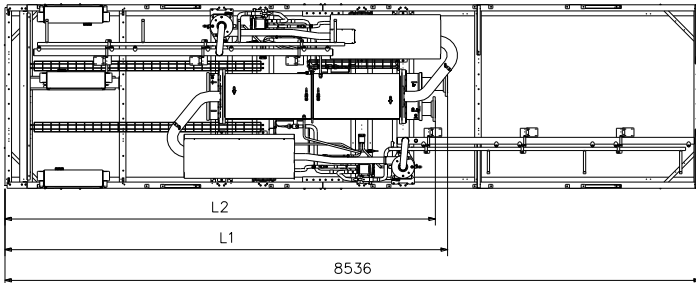


**Back View**  
(With near side control panel removed)

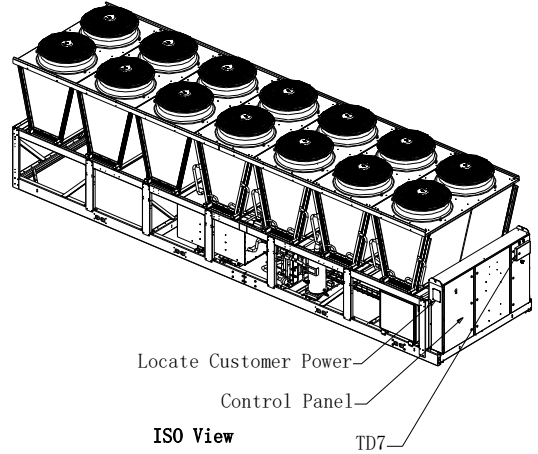
Unit	Water Box	H1 (mm)	H2 (mm)	W1 (mm)	W2 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
230P	150psi	450	465	1275	970	5118	5118	6"	8732

## Dimensional Data

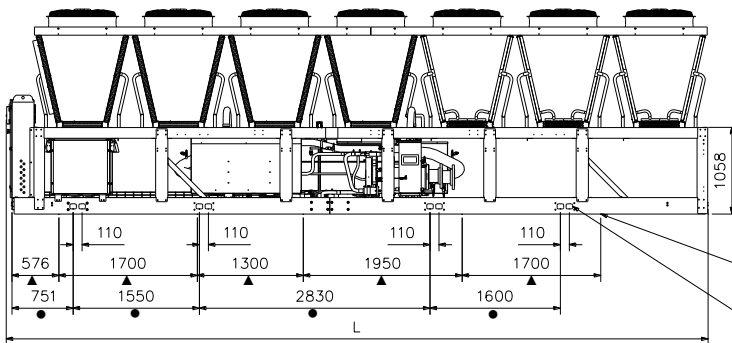
### RTAG 285P



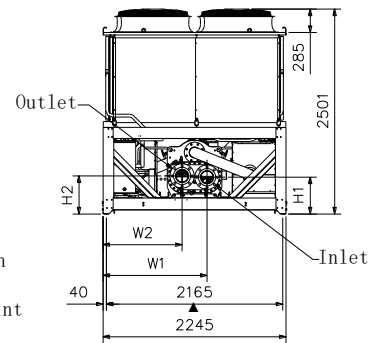
**Top View**  
(With fan/coil removed)



**ISO View**



**Side View**

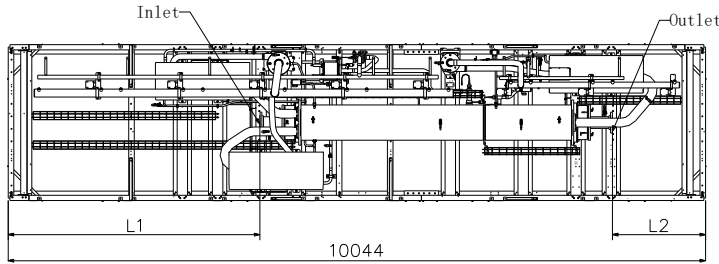


**Back View**  
(With near side control panel removed)

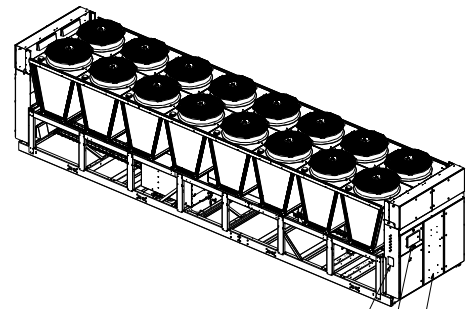
- ▲ Installation
- Lifting Point

Unit	Water Box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
285P	150psi	450	1120	2698	1593	6"	9246

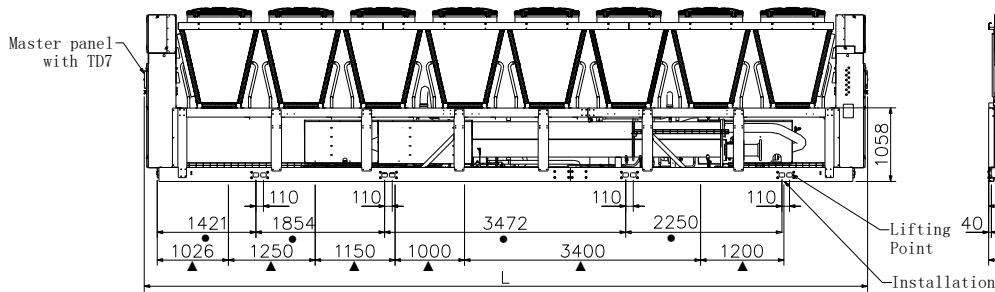
**RTAG 310/340P**



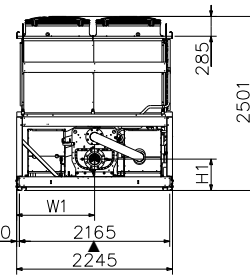
**Top View**  
(With fan/coil removed)



**ISO View**  
Locate Customer Power  
TD7  
Control Panel



**Side View**



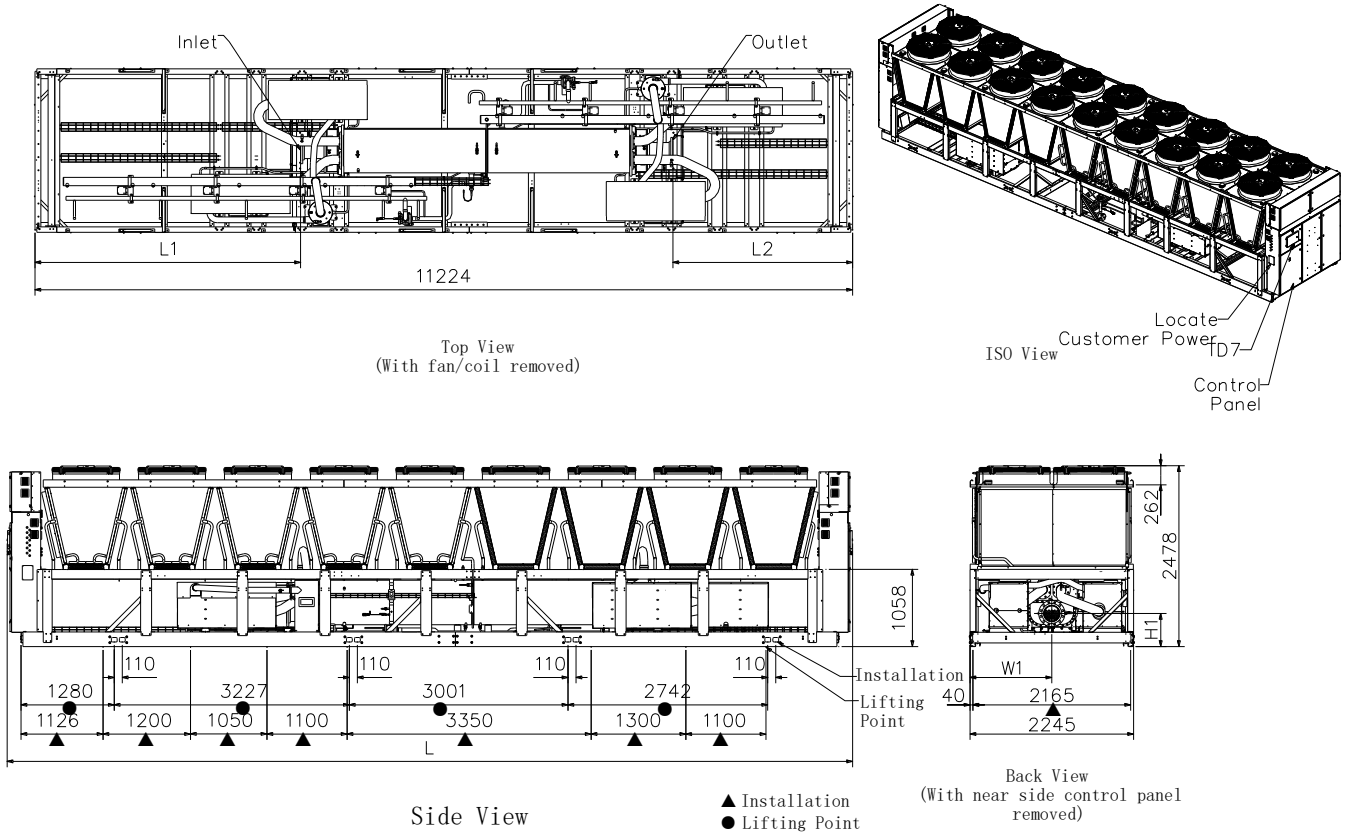
**Back View**  
(With near side control panel removed)

- ▲ Installation
- Lifting Point

Unit	Water Box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
310P	150psi	450	1120	3877	1593	6"	10418
340P	150psi	450	1120	3877	1593	6"	10418

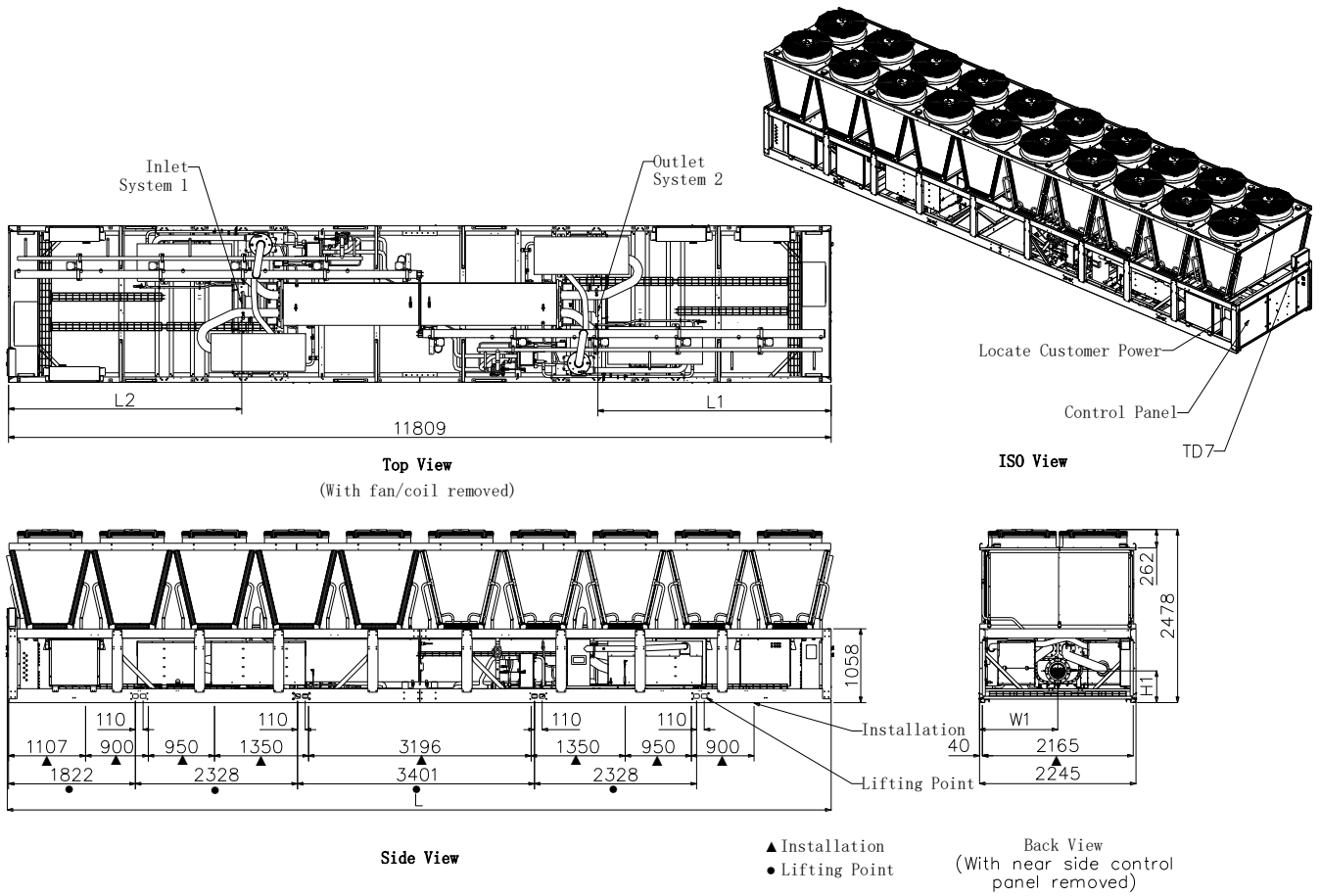
## Dimensional Data

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



Unit	Water Box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
400H	150psi	453	1120	3882	2703	8"	11580
375P	150psi	453	1120	3882	2703	8"	11580
400P	150psi	453	1120	3882	2703	8"	11580

RTAG 440P, 500H



Unit	Water Box	H1 (mm)	W1 (mm)	L1 (mm)	L2 (mm)	Water pipe	L (mm)
440P	150psi	453	1120	3582	3582	8"	11875
500H	150psi	453	1120	3582	3582	8"	11875



# Mechanical Specifications

## General

Chilled water production will be made by a factory assembled and tested, air-cooled liquid chiller, Trane type RTAG H/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 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)

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 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.

## 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 to 115°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 (225-230 models) or dual point power connection (285-500 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 UC800 module power. All the starter elements are enclosed in an IP54 panel, with hinged door.

## Unit Controls (Tracer UC800)

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 and through a Adaptive Frequency Drive on the model RTAG P.

Microprocessor-based chilled water reset based on return water is standard. The UC800 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

## Mechanical Specifications

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- 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**

UC800 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.



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