TRANE

Air-cooled liquid chiller with integrated hydraulic module

Cooling only
CGAN 209 - 210 - 211 - 212 - 213 - 214

Reversible
CXAN 209 - 210 - 211 - 212 - 213 - 214

AquaStream 2®

CG-PRC015-E4

Contents

Introduction

The AquaStream2® chillers range equipped with Scroll compressors combines the latest technologies available to offer an optimum answer for today's air conditioning and process cooling applications:

- Scroll compressor technology, with high performance, limited maintenance and longer lifetime design
- Latest generation of Trane controls, with user friendly graphical interface and integral Adaptive Control™ to guarantee maximum dependability
- High efficiency heat exchangers, allowing significant savings on operating costs
- Integrated hydraulic packages, to shorten installation and commissioning time
- Super-Quiet version, to reduce sound nuisance

Features and benefits

Industry leading performance and flexibility for design engineers

The next generation: designed for You

The fifth generation of the successful Scroll compressor product range has several benefits over the previous design. Your suggestions led to the improvements we've incorporated, including:

- Lower sound level, by using "W" shaped condensers,
- CH530 controls, with touch-screen display, LonTalk® capability and Adaptive Control™,
- Better accessibility to components.

Applications: Operation and control advantages for most applications

The Scroll compressor technology, with fewer moving parts, less rotating mass and less internal friction, associated with CH530 and Adaptive Control™, allow the AquaStream2® range to be used in a wide variety of applications including:

- Comfort cooling: designed for reliability, limited maintenance and high efficiency, with a low sound level,
- Heat pump mode,
- Industrial process cooling: reliable operation with tight control of temperatures,
- Ice/thermal storage,
- Low ambient operation down to -18°C (CGAN only),
- Low-temperature process cooling.

System design and control: Greater application flexibility for increased savings

First-cost and operating cost minimizing system-design concepts are catching on as their validity is proven through applications. These designs can provide lower equipment costs and lower operating costs than those possible with the traditional design methods and past chiller technologies. The concepts of the AquaStream2® range include:

- Heat exchangers with reduced water pressure drops and wider water flow/delta capability
- Integrated hydraulic module and buffer tank
- Thermal storage capability (ice storage)

The AquaStream2® is designed for a wide range of applications and is especially suited for the dynamics of these system saving job designs. The dynamic benefits include:

- Efficient lift capability
- Excellent part load capability
- Tight temperature control.

CH530 controls mean that the CGAN/CXAN chillers can maintain tight leaving-water temperature control in almost any application. These benefits fit especially well with the system design savings ideas listed above.

As the compressor reaches the operating temperatures for the application, the control makes sure you have total temperature control, even with chilled-water flow and/or load changes.

Sound: Lower sound levels through compressor and chiller design

Trane has a proven track record of continuously improving the sound levels of air-cooled chillers. With the AquaStream2® range, Trane has designed a "W" shaped condenser which minimises sound generation due to air turbulences. The space around the chiller can be utilised without requirement of additional sound insulation. Furthermore, their sound optimized design compressors are insulated either with sound jackets or with a sound casing on the Super-Quiet version.

Features and benefits

Minimised job time for contractors through design and testing

Ease of installation

- Footprint: Central to the design of any project is the operating envelope of the chiller. With this in mind, Trane builds the chillers to make the most efficient use of the available installation space. The "W" shaped coil allows smaller clearances around the unit, thus reducing the operating footprint. The space requirement will be smaller than most chillers it might replace, and easier to fit into existing buildings.
- Weight: Furthermore, the decreased weight reduces the requirements for lifting, rigging, and installation. Installation time and efforts are reduced when dealing with a significantly lighter unit.
- Commissioning: CGAN/CXAN comes from the factory fully charged with refrigerant and oil. Extensive factory testing helps ensure trouble-free start-up, resulting in lower installation costs and faster job completion.
- Electrical: As the control is supplied with a transformer, the unit requires only one single electrical connection.

Everything is in the box

Thanks to built-in components, installation is easy and you will make considerable savings using any available space in the technical room.

Only a main power supply and water connections are necessary, the main hydraulic components can be supplied in the "box". The AquaStream2® integrated hydraulic module can be supplied with the following components:

- Evaporator pump
- Evaporator strainer
- Isolation Valves
- Expansion tank on cooling loop
- Flow switch
- Pressure gauge
- Relief valve
- Buffer tank

The Integrated comfort system

The air-cooled AquaStream2® chiller, with the CH530, makes a powerful combination with the Trane Tracer Summit Building Management System to become part of a Trane Integrated Comfort system (ICS). An Integrated Comfort system is a building comfort system comprised of Trane HVAC equipment, integral unit controllers, and building management. It is all designed and commissioned with Trane application expertise to provide comfort, efficiency, and reliability, as well as a single-source warranty and service. Whether you are replacing a chiller or adding one to any centrally controlled plant, the Tracer CH530 chiller communicates in LonTalk® which is an open protocol compatible with almost all BMS. This ability to communicate with other systems using industry-standard control signals allows you to upgrade the control of your chiller plant regardless of your current control system.

Single-source responsibility

A wide range of products designed for complete compatibility is available with the AquaStream2® scroll chillers. Your entire building comfort system can be completed using components from Trane.

The added value of applications expertise

You get a quality chiller, properly selected and applied in a properly designed system. That means a comfort system that works, the first time!

Features and benefits

Reduced total life cycle operating cost for building owner

Energy efficiency: Reduced annual operating expenses

The AquaStream2® chiller design has been optimized in order to achieve record efficiency levels.

With the CH530 chiller control module, control over the chilled water temperature is increased, simultaneously reducing annual operating costs. AquaStream2® chillers offer superior full-load performance and optimised part-load performance.

Reduced maintenance: Less time and money every year

The major recommended maintenance for an AquaStream2® chiller is the annual oil analysis which can be performed at Trane's chemical laboratory. The installation of a strainer upstream the evaporator will eliminates the need to clean the heat exchangers plates. The Adaptive Control™ microprocessor also helps reduce unnecessary maintenance by monitoring, protecting, and taking corrective actions so that the chiller stays on-line when you need it the most. Service calls for nuisance tripouts are virtually eliminated.

Reliability

Trane has designed the AquaStream2® chiller range to be a leader in reliability for all applications:

- Simple design with 64 percent fewer parts than equal capacity reciprocating compressor,
- Scroll compressors have less than a third the torque variations of a reciprocating compressor,
- Advanced microelectronics protect both compressor and motor from typical electrical fault conditions,
- Years of laboratory testing have optimised compressor and chiller systems reliability,
- Air-cooled scroll chillers are factory tested.

Comfort cooling: designed for reliability, energy efficiency, and system design optimisation

Most comfort-cooling applications consider reliability and energy efficiency above all else in the design requirements. With proven reliability and high chiller efficiency, the AquaStream2® chillers are perfectly suited for these applications.

Industrial process cooling / Low temperature process: Reliable operation with tight control of temperatures

The Trane AquaStream2® chillers have the proven reliability required to keep the process running, eliminating concerns for chiller and resulting process downtime. The chiller matches system requirements and rapidly adjusts to match the changes seen by most processes.

Ice / thermal storage

The Trane AquaStream2® chillers can be used in partial or full thermal-storage applications because of their excellent compressor lift (operating temperature range) capability. High reliability and low maintenance means thermal storage applications are possible without a full-time operation/maintenance staff, and Trane Integrated Comfort System Controls can notify a computer of any system issues.

Easy serviceability

Trane AquaStream2® chillers are designed with service personnel in mind. All major components are replaceable without complete unit disassembly. Plus, CH530 provides diagnostic capability to aid service personnel in analysing problems. Therefore, in case a problem does occur, the chiller can be up and running in a shorter period of time.

Application Considerations

Important

Certain application constraints should be considered when sizing, selecting and installing Trane air-cooled chillers. Unit and system reliability is often dependent upon proper and complete compliance with these considerations. When the application varies from the guidelines presented, it should be reviewed with your local Trane sales engineer.

Unit Sizing

Unit capacities are listed in the performance data section. Intentionally over-sizing a unit to assure 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 over-sizing is desired, consider using multiple 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 air-cooled chillers. Use of either will lead to a shortened life to an indeterminable degree. 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

Air-cooled 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 (see Table 13).

Application Considerations

Ambient Limitations

Trane air-cooled chillers are designed for year-round operation over a range of ambient temperatures. The CGAN/CXAN 209-214 chiller will operate as standard in ambient temperatures 0°C to 43°C. With the low ambient option 2 speeds fans, these units will operate down to -10°C, with the one inverter fan per circuit the unit will operate down to -18°C (CGAN only). For operation outside these ranges, contact the local Trane sales office.

Water Flow Limits

The minimum and maximum water flow rates are given in Figure 7. Evaporator flow rates below the tabulated values will result in laminar flow causing freeze-up problems, scaling, stratification and poor control. Flow rates exceeding those listed 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 for the CGAN/CXAN evaporator. A simple piping change can solve this problem. For example: A plastic injection molding process requires 6.0 l/s of 10°C water and returns that water a 15°C. The selected chiller can operate at these temperatures, but has a minimum flow rate of 9.5 l/s. The system layout in Figure 1 can satisfy the process.

Flow Control

Trane provides a chilled electromechanical water flow switch monitored by the control, this will allow the chiller to protect itself in potentially harmful conditions.

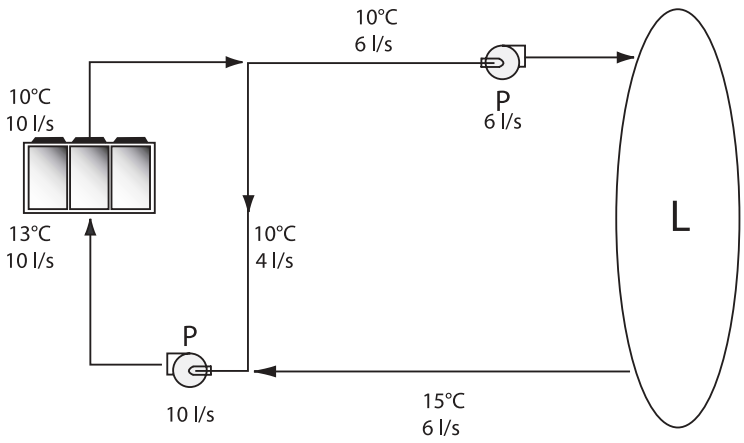
Minimum installation water content

The water volume is an important parameter because it allows a stable chilled water temperature and avoids short cycle operation of the compressors.

Parameters which influence the water temperature stability

- Ambient temperature and water temperature (modify cooling capacity)
- Number of capacity steps.
- Minimum time between two starts of a compressor.
- Water loop volume.
- Load fluctuations.
- The percentage of glycol
- Dead band

Figure 1 - Flow rate out of range



L = Load
P = Pump

Application Considerations

Minimum water volume for a comfort application

For comfort application we can allow water temperature fluctuation at part load. The parameter to take into account is the minimum operating time of the compressor. In order to avoid lubrication problem on a scroll compressor, it must run at least 2 minutes (120 seconds) before it stops.

It is important to check that the total water loop volume is at least equal to the value indicated in Table 1. For specific applications or for additional information, refer to the chiller installation manual or contact your local sales office.

Leaving Water temperature Limits

Trane air-cooled chillers have three distinct leaving water categories: standard, low temperature, and ice making. The standard leaving solution temperature range is 4.4 to 15.6°C. Low temperature machines produce leaving liquid temperatures less than 4.4°C. Since liquid supply temperature setpoints less than 4.4°C result in suction temperatures at or below the freezing point of water, a glycol solution is required for all low temperature machines. Ice making machines have a leaving liquid temperature range -6.7 to 15.6°C. Ice making control includes dual setpoint controls and safeties for ice making and standard cooling capabilities. Consult your local Trane sales engineer for applications or selections involving low temperature or ice making machines. The maximum water temperature that can be circulated through an evaporator when the unit is not operating is 45°C.

Table 1 - Minimum water loop for comfort applications

This table is estimated with: Ambient 35°C, Water 12°/7°C, Water (0% glycol), deadband of 3°C

CGAN Chillers	**Sizes**	**209**	**210**	**211**	**212**	**213**	**214**
	Cooling Capacity (kW)	208	316	350	389	428	462
	Biggest step (%)	27	25	22	17	18	17
	Biggest step (%)	78	79	78	65	78	77
CGAN Minimum water loop	Comfort (l)	**751**	**755**	**745**	**621**	**745**	**737**
	Process (l)	2065	1941	1774	1289	1603	1531

CXAN Chillers	**Sizes**	**209**	**210**	**211**	**212**	**213**	**214**
	Cooling Capacity (kW)	273	300	333	370	407	439
	Biggest step (%)	27	25	22	17	18	17
	Biggest step (%)	75	75	74	62	74	73
CXAN Minimum water loop	Comfort (l)	**713**	**717**	**708**	**590**	**708**	**700**
	Process (l)	1961	1844	1686	1225	1523	1454

Application Considerations

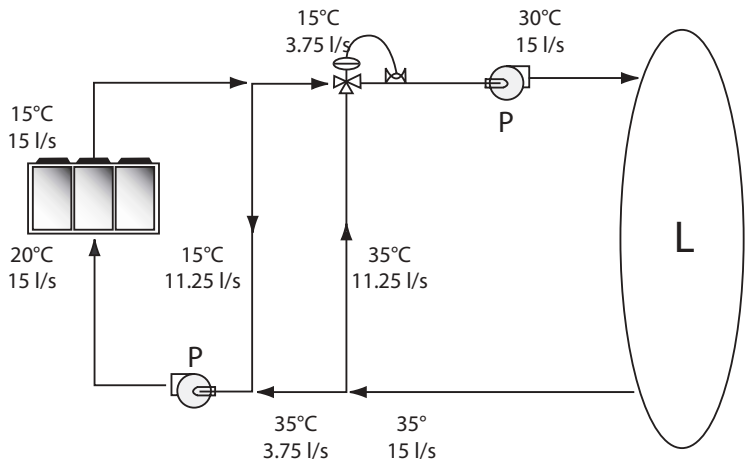
Leaving Water Temperature Out of Range

Many process cooling jobs require temperature ranges that cannot be met with the minimum and maximum published values for the CGAN/CXAN evaporator. A simple piping change can solve this problem. For example: A laboratory load requires 15.0 l/s of water entering the process at 30°C and returning at 35°C. The selected chiller has adequate capacity, but a maximum leaving chilled water temperature of 15.6°C. In Figure 2, 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 simply be more water bypassing and mixing with warm water.

Supply Water Temperature Drop

The performance data for the Trane air-cooled chiller is based on a chilled water temperature drop of 5.0°C. Chilled water temperature drops from 3.3 to 10°C may be used as long as minimum and maximum water temperatures and flow rates are 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. Further, temperature drops of less than 3.3°C may result in inadequate refrigerant superheat. Sufficient superheat is always a primary concern in any refrigerant system and is especially important in a package chiller where the evaporator is closely coupled to the compressor. When temperature drops are less than 3.3°C, an evaporator runaround loop may be required.

Figure 2 - Temperature Out of Range



Application Considerations

Variable Flow in the Evaporator

An attractive chilled water system option may be a Variable Primary Flow (VPF) system. VPF systems present building owners with several cost-saving benefits that are directly related to the pumps. The most obvious cost savings results, from eliminating the secondary distribution pump, which in turn avoids the expense incurred with the associated piping connections (material, labour), electrical service, and variable-frequency drive. Building owners often cite pump related energy savings as the reason that prompted them to install a VPF system. With the help of a software analysis tool such as System Analyzer™, DOE-2 or Trace®, you can determine whether the anticipated energy savings justify the use of variable primary flow in a particular application. It may also be easier to apply variable primary flow in an existing chilled-water plant. Unlike the "decoupled" system design, the bypass can be positioned at various points in the chilled-water loop and an additional pump is unnecessary.

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.

Applications Types

- Comfort cooling
- Industrial process cooling
- Ice/thermal storage
- Low temperature process cooling

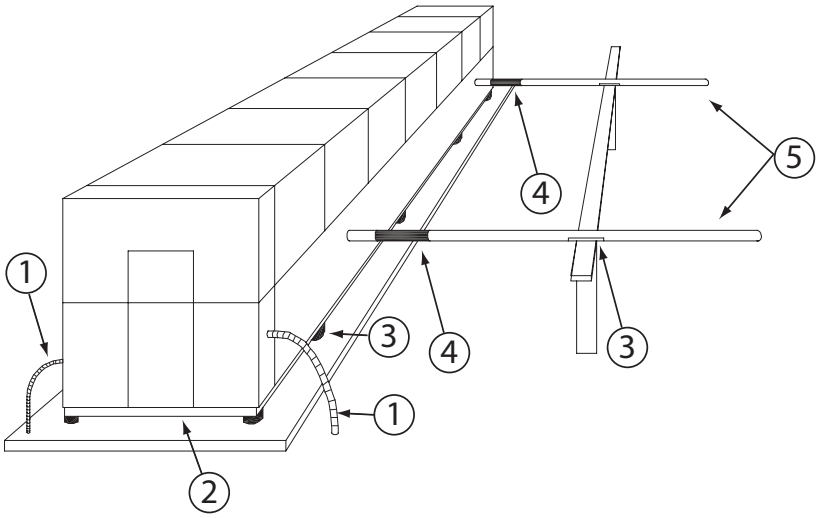
Application Considerations

Typical Unit Installation

HVAC equipment must be located to minimize sound and vibration transmission to the occupied spaces of the building structure it serves. If the equipment must be located in close proximity to a building, it could be placed next to an unoccupied space such as a storage room, mechanical room, etc. It is not recommended to locate the equipment near occupied, sound sensitive areas of the building or near windows.

Locating the equipment away from structures will also prevent sound reflection, which can increase levels at property lines, or other sensitive points. When physically isolating the unit from structures, it is not recommended to use rigid supports to eliminate any metal-to-metal or hard material contact, when possible. This includes replacing spring or metal weave isolation with elastomeric isolators. Figure 3 illustrates isolation recommendations for the Air Cooled AquaStream, for chiller sound ratings, installation tips and considerations on chiller location, pipe isolation, etc.

Figure 3 - Unit isolation recommendations



1 = Flex conduit control power
2 = Concrete base
3 = Neoprene isolators
4 = Elastomeric vibration eliminators
5 = Water piping

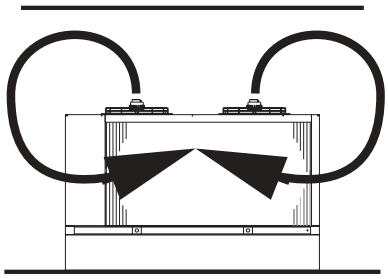
Application Considerations

Close spacing

Vertical clearance

Vertical condenser air discharge must be unobstructed. While it is difficult to predict the degree of warm air recirculation, a unit installed as shown in Figure 4 would have its capacity and efficiency significantly reduced and could possibly encounter nuisance high head pressure tripouts. Performance data is based on free air discharge.

Figure 4 - Vertical air discharge



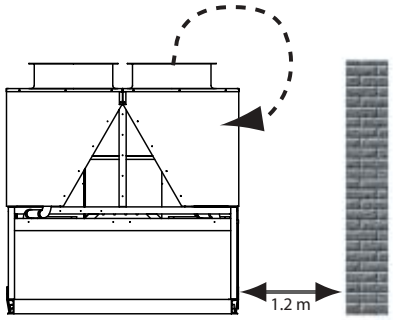
Lateral clearance

The condenser coil inlet must not be obstructed. Thanks to its W-shaped condenser coil design, AquaStream²® lateral clearance is one of the best of the market - it can be as low as 1.2 m.

A unit installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination of coil starvation and warm air recirculation, resulting in unit capacity and efficiency reductions and possible excessive head pressures.

The recommended lateral clearances are given in the certified drawings for multiple chiller installation up to 3 units. For applications with more than 3 chillers, check with the local Trane sales engineer.

Figure 5 - Lateral clearance recommendations



Walled enclosure installations

When the unit is placed in an enclosure or small depression, the top of the fans should be no lower than the top of the enclosure or depression. If they are, consideration should be given to ducting the top of the unit. Ducting individual fans, however, is not recommended. Such applications should always be reviewed with the local Trane sales engineer.

Controls

Figure 6 - DynaView operator interface

Human Interfaces

DynaView is an LCD touchscreen display (Figure 6) that is navigated by file tabs. This is an advanced interface that allows the user to access any important information concerning setpoints, active temperatures, modes, electrical data, pressures, and diagnostics. It uses full text display available in 15 languages.

Adaptive Safety Controls

A centralised microcomputer offers a higher level of machine protection. Since the safety controls are smarter, they limit compressor operation to avoid compressor or evaporator failures, thereby minimizing nuisance shutdown. Tracer™ Chiller Controls directly senses the control variables that govern the operation of the chiller: motor current draw, evaporator pressure and condenser pressure. When any one of these variables approaches a limit condition where damage may occur to the unit or shutdown on a safety, Tracer Chiller Controls takes corrective action to avoid shutdown and keep the chiller operating. This happens through combined actions of compressor stage modulation and fan staging. Tracer Chiller Controls optimises total chiller power consumption during normal operating conditions. During abnormal operating conditions, the microprocessor will continue to optimise chiller performance by taking the corrective action necessary to avoid shutdown. This keeps cooling capacity available until the problem can be solved. Whenever possible, the chiller is allowed to perform its function; making chilled or hot water. In addition, microcomputer controls allow for more types of protection such as phase reversal protection. Overall, the safety controls help keep the building or process running and out of trouble.

Controls

Stand-alone controls

Interfacing to stand-alone units is very simple: 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.

Standard Features External

Auto/Stop

A job-site-provided contact closure will turn the unit on and off.

Chilled Waterflow Interlock

Unit is equipped with a water flow control, it will allow unit operation if a load exists. This feature will allow the unit to run in conjunction with the pump system.

External Interlock

A job-site-provided contact opening wired to this input will turn the unit off and require a manual reset of the unit microcomputer. This closure is typically triggered by a job-site provided system such as a fire alarm.

Chilled Water Pump Control

Unit controller manage operation of the optional single or dual pump of the chiller. When the hydraulic modules is not mounted, unit controls can provide an output to control the external chilled-water pump(s).

One contact closure to the chiller is all that is required to initiate the chilled-water system. Chilled water pump controlled by the chiller is a common point for all AquaStream2® chillers.

Additional Features that May Be Added (require some optional factory-installed hardware)

- Ice-making card
- LON communication card
- Temperature display, compressor kW inhibit, setpoint reset, external setpoint, auxiliary setpoint.
- Customer report relay (alarm latching, alarm auto reset, chiller running, Chiller at full load)

Easy Interface to a Generic Building Management System

Controlling the AquaStream2® chillers with building management systems is state-of-the-art, yet simple with either:

- the LonTalk Communications Interface for Chillers (LCI-C)
- or Generic Building Management System Hardwire Points.

Simple Interface with Other Control Systems

Microcomputer controls afford simple interface with other control systems, such as time clocks, building automation systems, and ice storage systems. This means you have the flexibility to meet job requirements while not having to learn a complicated control system.

This setup has the same standard features as a stand-alone water chiller, with the possibility of having additional optional features.

Controls

What are LonTalk, Echelon, and LonMark?

LonTalk is a communication protocol developed by the Echelon Corporation. The LonMark association develops control profiles using the LonTalk communication protocol. LonTalk is a unit level communications protocol, unlike BACNet used at the system level.

LonTalk Communications Interface for Chillers (LCI-C)

LonTalk Communications Interface for Chillers (LCI-C) provides a generic automation system with the LonMark chiller profile inputs/outputs. The inputs/ outputs include both mandatory and optional network variables.

Note: LonMark network variable names are in parentheses when different from chiller naming convention.

Chiller Inputs:
- Chiller Enable/Disable
- Ice Making (Chiller Mode)
- External setpoint or kW limitation setpoint
- Unit emergency stop report
- Auxiliary setpoint enable

Chiller Enable/Disable

Allows for chiller to be started or stopped depending on if certain operating conditions are met.

Ice Making

Provides interface with ice making control systems.

External setpoint or kW limitation setpoint

Allow to modify, remotely, the setpoints of the unit:

By modifying the water leaving temperature setpoint of the unit,

Or by limiting the load of the unit thus the electrical input.

Chiller Outputs:
- On/Off
- Active Setpoint
- Leaving Chilled Water Temperature
- Entering Chilled Water Temperature
- Alarm Descriptor
- Chiller Status

On/Off

Indicates the current state of the chiller

Active Setpoint

Indicates the current value of the leaving water temperature setpoint

Controls

Leaving Chilled Water Temperature

Provides the current leaving water temperature

Entering Chilled Water Temperature

Provides the current entering water temperature.

Alarm Descriptor

Provides alarm messages based on predetermined criteria

Chiller Status

Indicates the running modes and states of the chiller, i.e. Running in alarm mode, chiller enabled, chiller being locally controlled, etc...

Generic Building Management System via LonTalk

GBAS may be achieved via hardware input/output as well.

The input/outputs are as follows:

Chiller hardwire inputs include:

- Chiller enable/disable
- Circuit enable/disable
- External chilled water setpoint - (Optional feature)
- Ice making enable - (Optional feature)

External Chilled Water Setpoint - (Optional feature)

Allows the external setting independent of the front panel setpoint by one of two means:

1. 2-10 VDC input, or
2. 4-20 mA input

Chiller hardwire outputs include:

- Compressor running indication
- Alarm indication (Ckt 1/Ckt 2)
- Maximum capacity
- Ice making status

Alarm Indication Contacts - (Optional feature)

The unit provides three single-pole/double-throw contact closures to indicate:

1. Compressor on/off status
2. Compressor running at maximum capacity
3. Failure has occurred (Ckt 1/Ckt 2)

These contact closures may be used to trigger job site supplied alarm lights or alarm bells.

Ice Making Control - (Optional feature)

Provides interface with ice making control systems.

Controls

Tracer Summit™ Controls - Interface with the Trane Integrated Comfort System (ICS)

Trane Chiller Plant Control

The Tracer Chiller Plant Manager building management system provides building automation and energy management functions through stand-alone control. The Chiller Plant Control is capable of monitoring and controlling your entire chiller plant system.

Application software available:

- Process control language
- Boolean processing
- Zone control
- Reports and logs
- Custom messages
- Run time and maintenance
- Trend log
- PID control loops

And of course, the Trane Chiller Plant Control can be used on a stand-alone basis or tied into a complete building automation system. When the air-cooled chiller is used in conjunction with a Trane Tracer Summit™ system, the unit can be monitored and controlled from a remote location.

The air-cooled chiller can be controlled to fit into the overall building automation strategy by using time-of-day scheduling, timed override, demand limiting, and chiller sequencing. A building owner can completely monitor the Air-cooled chiller from the Tracer system, since all of the monitoring information indicated on the microcomputer can be read on the unit controllers Tracer system display. In addition, all the powerful diagnostic information can be read back at the Tracer system. Best of all, this powerful capability comes over a single twisted pair of wires! Air-cooled chillers can interface with many different external control systems, from simple stand-alone units to ice-making systems. Each unit requires a single-source, three phases power supply. A single twisted pair of wires tied directly between the AquaStream2® chillers and a Tracer Summit™ system provides control, monitoring, and diagnostic capabilities. Control functions include auto/stop, adjustment of leaving-water-temperature set point and control of ice-making mode.

Controls

The Tracer system reads monitoring information such as entering- and leaving-evaporator-water temperatures and air temperature. Over 60 individual diagnostic codes can be read by the Tracer system. In addition, the Tracer system can provide sequencing control for up to 25 units on the same chilled-water loop. Pump sequencing control can be provided from the Tracer system.

Tracer ICS is not available in conjunction with the external set point capability.

Required Options

Tracer Interface

Additional Options that May Be Used

Ice-Making Control

External Trane Devices Required

Tracer Summit™, Tracer 100 System or Tracer Chiller Plant Control

Ice-Making Systems Controls

An ice-making option may be ordered with the air-cooled chiller. The unit will have two operating modes, ice making and normal daytime cooling. In the ice making mode, the air-cooled chiller will operate at full compressor capacity until the return chilled-fluid temperature entering the evaporator meets the ice making set point. Two input signals are required to the air-cooled chiller for the ice-making option. The first is an auto/stop signal for scheduling, and the second is required to switch the unit between the ice-making mode and normal daytime operation. The signals are provided by a remote job site building-automation device such as a time clock or a manual switch. In addition, the signals may be provided over the twisted wire pair from a Tracer™ system, or a LonTalk Communication Interface but will require the communication boards provided with the Ice Making Control Option.

Additional Options That May Be Used

- Failure Indication Contacts Communications Interface (For Tracer Systems)
- Chilled-Water Temperature Reset

Options

Operation

- Cooling only
- Reversible

Hydraulic

7 versions available

- No hydraulic control
- With one contractor (16A) to control a remote pump
- With two contractors (16A) to control 2 remote double pumps
- With single pump integrated hydraulic module with high head pressure
- With single pump integrated hydraulic module with low head pressure
- With double pump integrated hydraulic module with high head pressure
- With double pump integrated hydraulic module with low head pressure

Hydraulic module

- Single or double pump
- Expansion vessel (50 l)
- Pressure relief valve set to 4 bar
- Water strainer
- Shut-off valves
- Drainage valve
- Pressure ports for gauge connection
- Water pressure gauge
- Thermally insulated evaporator and liquid line to reduce water condensing or freezing
- Pump winter freeze protection down to -18°C (the pump is activated under an ambient temperature setting)

Balancing valve

The balancing valve is necessary to tune the water flow to reach the requested water temperature difference. It is an accessory to be mounted on site.

Hydraulic connection for welding

Victaulic extra length tubes to weld the chiller to the hydraulic circuits

Buffer tank (only available with hydraulic module)

The water tank is located inside the standard chiller base which allow to keep the same footprint. The 600 litre tank is fully insulated and is engineered for a continuous flow.

The purpose of such device is to increase the circuit inertia, it is necessary with short water loops. A high circuit inertia reduces the compressors cycling to increase the compressors life span and also to smooth the water temperature for comfort or demanding processes (see Table 1).

Condenser

Fan control for low ambient operation in cooling mode:

1-speed fan down to 0°C (standard)

One 2-speed fan per circuit to work down to -10°C

One inverter fans per circuit to work down to -18°C (CGAN only)

Super-Quiet version

Use special design fan that provides -5dB(A) average sound reduction compared to the standard version. The condenser is fitted with special designed low speed fans and all compressors will be isolated inside a sound attenuating compartment.

Condenser fins type

- Aluminum fins and copper tubes (standard)
- Copper fins
- Aluminum fins with black epoxy fin protection, for locations where the coils might be exposed to corrosive environment.

Coil protection grilles

Side coils are protected with grilles

Full protection grilles

Coil protection grilles and protection of the lower part of the unit, to protect also the refrigerant circuits and most components.

Refrigerant circuit - HP and LP pressure gauges

Reading is done on each circuit on the high pressure and low pressure and side. Pressure measurement can also be done through the controller (pressure transducers)

Neoprene isolator

Isolating pad specially dimensioned to reduce vibration transmission to the supporting structure of the unit.

For any other request please contact your local Trane Sales office

Options

Electrical

Phase reversal protection

Disable the unit from working if phases are not plugged correctly.

Soft starter

May be requested to reduce the peek of the compressors starting current (see Tables 2-5)

Antifreeze protection

To protect the evaporator, hydraulic module and buffer tank down to -10°C.

Control

Customer report relay

Four factory-installed contacts with the following preset default assignments:

- Alarm Latching
- Alarm auto-reset
- Chiller running
- Maximum capacity of chiller reached

Ice making card / auxiliary setpoint

This card will enable the chiller to be integrated in an ice storage system and also to work with 2 setpoints.

External chilled setpoint and display card

With this card it is possible to remotely:

- Modify the chiller setpoint or limit the compressor kW load
- Display the leaving water temperature setpoint.

LonTalk® Communication Interface

Permits bi-directional communication to the Trane Integrated Comfort™ system and provides the LonMark® chiller profile input/outputs for use with a generic BAS (Building Automation System)

General Data

Table 2 - General data CGAN Standard R407C

		CGAN 209 Standard R407C	CGAN 210 Standard R407C	CGAN 211 Standard R407C	CGAN 212 Standard R407C	CGAN 213 Standard R407C	CGAN 214 Standard R407C
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	287.7	315.6	350.2	389.2	428.1	462.1
Total Power input in cooling	(kW)	107.4	120.4	130.2	139.4	155.8	171.6
COP		2.68	2.62	2.69	2.79	2.75	2.69
Evaporator water pressure drop	(kPa)	33	35	34	42	43	50
Available head pressure (5) Low head pressure / standard head pressure	(kPa)	114/173	103/167	114/162	97/146	85/135	83/134
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	95	95	95	96	96	96
System Data							
Number of refrigerant circuits		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	(%)	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll					
Model		2 X (25T+30T)	2 X (30T+30T)	3 x 25T+2 x 30T	2 x (25T+25T+25T)	3 x 25T+3 x 30T	2 x (30T+30T+30T)
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate					
Water volume (total)	(l)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic					
Fan							
Type		Propeller					
Number		6	6	7	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive					
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	117300	117300	131000	144700	141900	139100
Total Motor HP (4)	(kW)	9.4	9.4	11.0	12.6	12.6	12.6
Total Rated Amps (4)	(A)	19.6	19.6	22.8	26.1	26.1	26.1
Motor RPM	(rpm)	915	915	915	915	915	915
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2680	2710	3070	3370	3490	3590
Shipping Weight	(kg)	2650	2680	3030	3330	3450	3550
Refrigerant Charge (3) Circuit 1/Circuit 2	(kg)	41/41	41/41	56/41	56/56	60/56	60/60
Oil Charge per circuit Circuit 1/Circuit 2	(l)	12.6/12.6	12.6/12.6	18.9/12.6	18.9/18.9	18.9/18.9	18.9/18.9

(1) at Eurovent Conditions (Evap 12°C/7°C - Air. 35°C)
(2) for all fans
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option

General Data

Table 3 - General data CGAN Super Quiet R407C

		CGAN 209 Super Quiet R407C	CGAN 210 Super Quiet R407C	CGAN 211 Super Quiet R407C	CGAN 212 Super Quiet R407C	CGAN 213 Super Quiet R407C	CGAN 214 Super Quiet R407C
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	287.5	315.3	344.6	377.5	412.3	442.3
Total Power input in cooling	(kW)	104.8	117.8	130.5	142.7	162.7	181.8
COP		2.74	2.68	2.64	2.65	2.53	2.43
Evaporator water pressure drop	(kPa)	33	35	33	40	40	44
Available head pressure (5) Low head pressure / standard head pressure	(kPa)	114/173	103/167	116/164	102/151	93/142	92/143
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	90	90	90	90	90	91
System Data							
Number of refrigerant circuits		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	(%)	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll					
Model		2 X (25T+30T)	2 X (30T+30T)	3 x 25T+2 x 30T	2 x (25T+25T+25T)	3 x 25T+3 x 30T	2 x (30T+30T+30T)
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate					
Water volume (total)	(l)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic					
Fan							
Type		Propeller					
Number		8	8	8	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive					
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	115400	115400	112600	109700	107100	104500
Total Motor HP (4)	(kW)	6	6	6	6	6	6
Total Rated Amps (4)	(A)	14.5	14.5	14.5	14.5	14.5	14.5
Motor RPM	(rpm)	690	690	690	690	690	690
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2850	2880	3220	3490	3620	3720
Shipping Weight	(kg)	2820	2850	3180	3450	3580	3680
Refrigerant Charge (3) Circuit 1/Circuit 2	(kg)	41/41	41/41	56/41	56/56	60/56	60/60
Oil Charge per circuit Circuit 1/Circuit 2	(l)	12.6/12.6	12.6/12.6	18.9/12.6	18.9/18.9	18.9/18.9	18.9/18.9

(1) at Eurovent Conditions (Evap 12°C/7°C - Air. 35°C)
(2) for all fans
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option

General Data

Table 4 - General data CGAN Standard R22

		CGAN 209 Standard R22	CGAN 210 Standard R22	CGAN 211 Standard R22	CGAN 212 Standard R22	CGAN 213 Standard R22	CGAN 214 Standard R22
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	282.1	311.6	343.6	376.1	415.5	453.6
Total Power input in cooling	(kW)	101.3	117.2	123.6	130.1	148.9	167.3
COP		2.78	2.66	2.78	2.89	2.79	2.71
Evaporator water pressure drop	(kPa)	31	34	33	39	41	49
Available head pressure (5) Low head pressure / standard head pressure	(kPa)	117/175	105/168	117/164	104/152	91/141	88/139
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	95	95	95	96	96	96
System Data							
Number of refrigerant circuits		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	(%)	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll					
Model		2 X (25T+30T)	2 X (30T+30T)	3 x 25T+2 x 30T	2 x (25T+25T+25T)	3 x 25T+3 x 30T	2 x (30T+30T+30T)
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate					
Water volume (total)	(l)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic					
Fan							
Type		Propeller					
Number		6	6	7	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive					
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	117300	117300	131000	144700	141900	139100
Total Motor HP (4)	(kW)	9.4	9.4	11.0	12.6	12.6	12.6
Total Rated Amps (4)	(A)	19.6	19.6	22.8	26.1	26.1	26.1
Motor RPM	(rpm)	915	915	915	915	915	915
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2680	2710	3070	3370	3490	3590
Shipping Weight	(kg)	2650	2680	3030	3330	3450	3550
Refrigerant Charge (3) Circuit 1/Circuit 2	(kg)	41/41	41/41	56/41	56/56	60/56	60/60
Oil Charge per circuit Circuit 1/Circuit 2	(l)	12.6/12.6	12.6/12.6	18.9/12.6	18.9/18.9	18.9/18.9	18.9/18.9

(1) at Eurovent Conditions (Evap 12°C/7°C - Air. 35°C)
(2) for all fans
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option

General Data

Table 5 - General data CGAN Super Quiet R22

		CGAN 209 Super Quiet R22	CGAN 210 Super Quiet R22	CGAN 211 Super Quiet R22	CGAN 212 Super Quiet R22	CGAN 213 Super Quiet R22	CGAN 214 Super Quiet R22
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	282.0	311.4	339.1	366.7	405.0	441.9
Total Power input in cooling	(kW)	98.6	114.6	123.6	133.0	155.2	177.5
COP		2.86	2.72	2.74	2.76	2.61	2.49
Evaporator water pressure drop	(kPa)	30	33	33	36	36	44
Available head pressure (5) Low head pressure / standard head pressure	(kPa)	117/176	105/168	118/166	107/155	96/145	93/143
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	90	90	90	90	90	91
System Data							
Number of refrigerant circuits		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	(%)	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll					
Model		2 X (25T+30T)	2 X (30T+30T)	3 x 25T+2 x 30T	2 x (25T+25T+25T)	3 x 25T+3 x 30T	2 x (30T+30T+30T)
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate					
Water volume (total)	(l)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic					
Fan							
Type		Propeller					
Number		8	8	8	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive					
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	115400	115400	112600	109700	107100	104500
Total Motor HP	(kW)	6	6	6	6	6	6
Total Rated Amps	(A)	14.5	14.5	14.5	14.5	14.5	14.5
Motor RPM	(rpm)	690	690	690	690	690	690
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2850	2880	3220	3490	3620	3720
Shipping Weight	(kg)	2820	2850	3180	3450	3580	3680
Refrigerant Charge (3)							
Circuit 1/Circuit 2	(kg)	41/41	41/41	56/41	56/56	60/56	60/60
Oil Charge per circuit							
Circuit 1/Circuit 2	(l)	12.6/12.6	12.6/12.6	18.9/12.6	18.9/18.9	18.9/18.9	18.9/18.9

(1) at Eurovent Conditions (Evap 12°C/7°C - Air. 35°C)
(2) for all fans
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option

General Data

Table 6 - General data CXAN Standard R407C

		CXAN 209 Standard R407C	CXAN 210 Standard R407C	CXAN 211 Standard R407C	CXAN 212 Standard R407C	CXAN 213 Standard R407C	CXAN 214 Standard R407C
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	277.1	305.5	335.2	367.8	410.1	451.4
Total Power input in cooling	(kW)	109.6	118.7	131.3	145.8	155.1	165.1
COP		2.55	2.59	2.55	2.53	2.64	2.73
Evaporator water pressure drop	(kPa)	33	35	34	40	43	51
Evaporator head pressure available (5)	(kPa)	119 / 178	109 / 172	120 / 168	108 / 157	94 / 145	88 / 141
Net Heating Capacity		291.1	317.8	351.6	384.4	425.4	467.4
Total Power input in heating	(kW)	107.2	112.6	131.4	146.4	159.2	172.0
COP		2.72	2.82	2.68	2.63	2.67	2.72
Pressure drop in heating	(kPa)	36	39	37	44	45	55
Pressure available in heating (5) high head pressure/ Low head pressure	(kPa)	116 / 173	106 / 167	117 / 163	104 / 150	92 / 139	86 / 134
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	95	95	95	96	96	96
System Data							
Number of refrigerant circuit		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	%	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		(25T+30T)	(30T+30T)	3x25T+2x30T	6x25T	3x25T+3x30T	6x30T
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Water volume (total)	(L)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic
Fan							
Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number		6	6	7	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive	Direct drive	Direct drive	Direct drive	Direct drive	Direct drive
Speeds number		1	1	1	1	1	1
Air flow	(m^3/h)	114200	114200	129600	145100	142300	139500
Motors Number		6	6	7	8	8	8
Total Motor HP (4)	(kW)	9.42	9.42	10.99	12.56	12.56	12.56
Total Rated Amps (4)	(A)	19.56	19.56	22.82	26.08	26.08	26.08
Motor RPM	(rpm)	915	915	915	915	915	915
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2950	2990	3260	3500	3640	3750
Shipping Weight	(kg)	2930	2960	3230	3470	3600	3700
Refrigerant Charge (3) Circuit 1 / Circuit 2	(kg)	58 / 58	58 / 58	58 / 58	58 / 58	63 / 58	63 / 63
Oil Charge per circuit Circuit 1 / Circuit 2	(l)	12.6 / 12.6	12.6 / 12.6	18.9 / 12.6	18.9 / 18.9	18.9 / 18.9	18.9 / 18.9

(1) at Eurovent Conditions (Cooling :Water 12°C/7°C - Air. 35°C // Heating :Water 40°C/45°C - Air. DB7°C / WB6°C)
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option
(6) Hydrostatic pressure 3 bar at 45°C with -12°C mini

General Data

Table 7 - General data CXAN Super Quiet R407C

		CXAN 209 Super Quiet R407C	CXAN 210 Super Quiet R407C	CXAN 211 Super Quiet R407C	CXAN 212 Super Quiet R407C	CXAN 213 Super Quiet R407C	CXAN 214 Super Quiet R407C
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	276.3	303.4	329.6	354.0	393.8	431.2
Total Power input in cooling	(kW)	105.6	115.5	131.7	148.0	160.7	173.2
COP		2.62	2.63	2.50	2.39	2.44	2.49
Evaporator water pressure drop	(kPa)	33	35	33	38	39	47
Evaporator head pressure available (5)	(kPa)	119 / 178	109 / 172	122 / 170	112 / 162	101 / 152	97 / 149
Net Heating Capacity		291.1	318.8	351.6	380.3	419.2	457.2
Total Power input in heating	(kW)	103.9	109.3	126.2	139.6	151.9	164.3
COP		2.80	2.91	2.78	2.72	2.76	2.78
Pressure drop in heating	(kPa)	36	39	37	43	44	53
Pressure available in heating (5)	(kPa)	112 / 173	101 / 167	114 / 163	101 / 151	89 / 141	85 / 139
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	90	90	90	90	90	91
System Data							
Numer of refrigerant circuit		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	%	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		(25T+30T)	(30T+30T)	3x25T+2x30T	6x25T	3x25T+3x30T	6x30T
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Water volume (total)	(L)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic
Fan							
Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number		8	8	8	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive	Direct drive	Direct drive	Direct drive	Direct drive	Direct drive
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	110000	110000	110000	110000	107500	104900
Motors Number		8	8	8	8	8	8
Total Motor HP (4)	(kW)	6	6	6	6	6	6
Total Rated Amps (4)	(A)	14.5	14.5	14.5	14.5	14.5	14.5
Motor RPM	(rpm)	690	690	690	690	690	690
Dimensions							
Height	(mm)	2423	2423	2423	2423	2424	2425
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	3120	3160	3410	3630	3770	3870
Shipping Weight	(kg)	3100	3130	3380	3600	3730	3830
Refrigerant Charge (3)							
Circuit 1 / Circuit 2	(kg)	58 / 58	58 / 58	58 / 58	58 / 58	63 / 58	63 / 63
Oil Charge per circuit							
Circuit 1 / Circuit 2	(l)	12.6 / 12.6	12.6 / 12.6	18.9 / 12.6	18.9 / 18.9	18.9 / 18.9	18.9 / 18.9

(1) at Eurovent Conditions (Cooling :Water 12°C/7°C - Air. 35°C // Heating :Water 40°C/45°C - Air. DB7°C / WB6°C)
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option
(6) Hydrostatic pressure 3 bar at 45°C with -12°C mini

General Data

Table 8 - General data CXAN Standard R22

		CXAN 209 Standard R22	CXAN 210 Standard R22	CXAN 211 Standard R22	CXAN 212 Standard R22	CXAN 213 Standard R22	CXAN 214 Standard R22
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	271.3	298.5	329.6	359.3	402.0	442.8
Total Power input in cooling	(kW)	103.7	112.4	125.3	138.3	148.0	158.1
COP		2.62	2.66	2.62	2.60	2.72	2.79
Evaporator water pressure drop	(kPa)	32	34	33	39	41	49
Evaporator head pressure available (5)	(kPa)	122 / 180	111 / 174	122 / 170	110 / 160	97 / 149	93 / 145
Net Heating Capacity	(kW)	286.8	312.4	345.5	377.8	417.1	458.9
Total Power input in heating	(kW)	102.9	108.0	126.2	140.5	152.9	165.2
COP		2.78	2.89	2.73	2.68	2.73	2.77
Pressure drop in heating	(kPa)	35	37	36	42	44	53
Pressure available in heating (5)	(kPa)	115 / 175	104 / 169	116 / 165	103 / 153	91 / 142	85 / 139
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	95	95	95	96	96	96
System Data							
Number of refrigerant circuit		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	%	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Min supply cable size	(mm^2)	150	150	185	185	240	240
Max supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		(25T+30T)	(30T+30T)	3x25T+2x30T	6x25T	3x25T+3x30T	6x30T
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Water volume (total)	(L)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic
Fan							
Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number		6	6	7	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive	Direct drive	Direct drive	Direct drive	Direct drive	Direct drive
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	114200	114200	129600	145100	142300	139500
Motors Number		6	6	7	8	8	8
Total Motor HP (4)	(kW)	9.4	9.4	11.0	12.6	12.6	12.6
Total Rated Amps (4)	(A)	19.6	19.6	22.8	26.1	26.1	26.1
Motor RPM	(rpm)	915	915	915	915	915	915
Dimensions							
Height	(mm)	2323	2323	2323	2323	2323	2323
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	2950	2990	3260	3500	3640	3750
Shipping Weight	(kg)	2930	2960	3230	3470	3600	3700
Refrigerant Charge (3)							
Circuit 1 / Circuit 2	(kg)	41 / 41	41 / 41	56 / 41	56 / 56	60 / 56	60 / 60
Oil Charge per circuit							
Circuit 1 / Circuit 2	(l)	12.6 / 12.6	12.6 / 12.6	18.9 / 12.6	18.9 / 18.9	18.9 / 18.9	18.9 / 18.9

(1) at Eurovent Conditions (Cooling :Water 12°C/7°C - Air. 35°C // Heating :Water 40°C/45°C - Air. DB7°C / WB6°C)
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option
(6) Hydrostatic pressure 3 bar at 45°C with -12°C mini

General Data

Table 9 - General data CXAN Super Quiet R22

		CXAN 209 Super Quiet R22	CGAN 210 Super Quiet R22	CGAN 211 Super Quiet R22	CGAN 212 Super Quiet R22	CGAN 213 Super Quiet R22	CGAN 214 Super Quiet R22
Eurovent Performances (1)							
Net Cooling Capacity		270.7	297.5	322.0	346.8	385.2	422.7
Total Power input in cooling	(kW)	100.9	110.3	125.7	141.3	153.3	165.5
COP		2.68	2.70	2.56	2.45	2.51	2.55
Evaporator water pressure drop		31	34	31	36	38	45
Evaporator head pressure available (5)	(kPa)	122 / 180	111 / 174	122 / 173	110 / 165	97 / 156	93 / 153
Net Cooling Capacity	(kw)	285.0	311.6	343.4	373.1	410.0	447.9
Total Power input in heating	(kW)	99.8	104.9	121.1	134.0	145.9	157.8
COP		2.86	2.97	2.84	2.78	2.81	2.84
Pressure drop in heating		35	37	36	42	42	50
Pressure available in heating (5)	(kPa)	122 / 175	111 / 169	122 / 165	110 / 154	97 / 145	93 / 143
Main Power supply		400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Sound Power Level (5)	(dBA)	90	90	90	90	90	91
System Data							
Number of refrigerant circuit		2	2	2	2	2	2
Number of capacity steps		4	4	5	6	6	6
Minimum capacity	%	23	25	19	17	15	17
Units Amps							
Nominal (4)	(A)	247	269	282	326	359	392
Start-up Amps							
Standard unit	(A)	509	531	544	551	621	654
With soft starter option	(A)	381	403	416	443	493	526
Short circuit unit capacity	(kA)	15	15	15	15	15	15
Max supply cable size	(mm^2)	150	150	185	185	240	240
Min supply cable size	(mm^2)	240	240	240	240	240	240
Compressor							
Number		4	4	5	6	6	6
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		(25T+30T)	(30T+30T)	3x25T+2x30T	6x25T	3x25T+3x30T	6x30T
Rated Amps (comp 25T/ Comp 30T)	(A)	52/62.5	62.5/62.5	52/62.5	52/52	52/62.5	62.5/62.5
Locked rotor Amps (comp 25T/ Comp 30T)	(A)	272/310	310/310	272/310	272/272	272/310	310/310
Motor RPM	(rpm)	2900	2900	2900	2900	2900	2900
Power factor (comp 25T/ Comp 30T)		0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87	0.87/0.87
Sump Heater	(W)	150	150	150	150	150	150
Evaporator							
Number		1	1	1	1	1	1
Type		Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate	Brazed plate
Water volume (total)	(L)	26.8	29.2	35.6	35.6	42.0	42.0
Antifreeze Heater	(W)	200	200	200	200	200	200
Unit water connection							
Chilled water	(Inch/mm)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)	4" (100)
Type		Victaulic	Victaulic	Victaulic	Victaulic	Victaulic	Victaulic
Fan							
Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number		8	8	8	8	8	8
Diameter	(mm)	760	760	760	760	760	760
Drive type		Direct drive	Direct drive	Direct drive	Direct drive	Direct drive	Direct drive
Number of speeds		1	1	1	1	1	1
Air flow	(m^3/h)	110000	110000	110000	110000	107500	104900
Motors Number		8	8	8	8	8	8
Total Motor HP (4)	(kW)	6	6	6	6	6	6
Total Rated Amps (4)	(A)	14.5	14.5	14.5	14.5	14.5	14.5
Motor RPM	(rpm)	690	690	690	690	690	690
Dimensions							
Height	(mm)	2423	2423	2423	2423	2424	2425
Length	(mm)	5135	5135	5135	5135	5135	5135
Width	(mm)	2230	2230	2230	2230	2230	2230
Operating Weight	(kg)	3120	3160	3410	3630	3770	3870
Shipping Weight	(kg)	3100	3130	3380	3600	3730	3830
Refrigerant Charge (3)							
Circuit 1 / Circuit 2	(kg)	58 / 58	58 / 58	58 / 58	58 / 58	63 / 58	63 / 63
Oil Charge per circuit							
Circuit 1 / Circuit 2	(l)	12.6 / 12.6	12.6 / 12.6	18.9 / 12.6	18.9 / 18.9	18.9 / 18.9	18.9 / 18.9

(1) at Eurovent Conditions (Cooling :Water 12°C/7°C - Air. 35°C // Heating :Water 40°C/45°C - Air. DB7°C / WB6°C)
(3) per circuit
(4) Max rated conditions.
(5) Single Pump Option
(6) Hydrostatic pressure 3 bar at 45°C with -12°C mini

General Data

Table 10 - General data - Hydraulic module (option)

Rated Amps (1)		(A)	14.7
Motor RPM		(rpm)	2900
Water strainer diameter		(inches)	4
Expansion tank volume		(l)	50
User volume expansion capacity (2)		(l)	3000
Max. water-side operating pressure			
	without hydraulic module	(kPa)	1000
	with hydraulic module	(kPa)	400
Option additional weight (1)		(kg)	300
Water tank volume (option)		(l)	600
Water tank additional shipping weight		(kg)	270

(1) For dual pump high head pressure
(2) Hydrostatic pressure 3 bar at 45°C with -12°C mini

Table 11 - Standard Operating Envelope

Fan control	**1-speed fan**	**2-speed fan**	**Speed inverter (CGAN only)**
Min. outdoor air temperature (°C)	+0	-10	-18
Max. outdoor air temperature (°C)	+43*	+43*	+43*
Min. leaving water temperature CGAN/CXAN (C°)	-12 / -10	-12 / -10	-12 / -10
Max. leaving water temperature (°C)	15	15	15

Note: Super Quiet version size 213-214 are limited to 39°C max ambient temperature for 7/12°C.
See performance data for specific information.

General Data

Table 12 - Part load performance data - Integrated Part Load Value in accordance with ARI 550 590-98

R407C refrigerant	A 100% load	B 75% load	C 50% load	D 25% load	IPLV Integrated Part Load value	
Ambient temperatures	35°C	26.6°C	18.3°C	12.8°C	Not applicable	
Weight	0.01	0.42	0.45	0.12	(1)	(2)
CGAN Standard	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	IPLV - EER (MBh/kW)	IPLV - COP (kW/kW)
209	9.08	11.59	14.42	16.31	13.43	3.93
210	8.92	12.30	16.81	18.35	15.07	4.41
211	9.18	12.75	16.64	18.30	15.17	4.44
212	9.53	13.27	16.77	16.10	15.17	4.44
213	9.38	13.43	17.21	16.67	15.48	4.53
214	9.19	13.31	17.25	16.94	15.48	4.53

R407C refrigerant	A 100% load	B 75% load	C 50% load	D 25% load	IPLV Integrated Part Load value	
Ambient temperatures	35°C	26.6°C	18.3°C	12.8°C	Not applicable	
Weight	0.01	0.42	0.45	0.12	(1)	(2)
CGAN Super Quiet	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	IPLV - EER (MBh/kW)	IPLV - COP (kW/kW)
209	9.33	11.99	15.07	17.12	13.94	4.08
210	9.12	12.71	18.14	19.89	15.99	4.69
211	9.02	13.22	17.73	20.81	16.09	4.72
212	9.02	13.43	18.45	20.50	16.50	4.84
213	8.61	13.33	18.76	20.81	16.61	4.87
214	8.30	13.02	18.35	20.71	16.30	4.78

(1) IPLV = 0.01A + 0.42B + 0.45C + 0.12D
(2) COP = EER / 3,42

Conditions:
Leaving water temperature = 7°C
Entering water temperature at full load = 12°C
Constant water flow at all conditions
Ambient temperature depending on the load

General Data

Table 12 - Part load performance data - Integrated Part Load Value in accordance with ARI 550 590-98

R407C refrigerant	A 100% load	B 75% load	C 50% load	D 25% load	IPLV Integrated Part Load value	
Ambient temperatures	35°C	26.6°C	18.3°C	12.8°C	Not applicable	
Weight	0.01	0.42	0.45	0.12	(1)	(2)
CXAN Standard	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	IPLV - EER (MBh/kW)	IPLV - COP (kW/kW)
CXAN 209 Std	8.71	11.12	13.83	15.10	13.43	3.93
CXAN 210 std	8.84	12.22	16.82	15.20	15.07	4.41
CXAN 211 std	8.71	12.41	15.98	18.13	15.17	4.44
CXAN 212 std	8.64	12.35	15.98	15.59	15.17	4.44
CXAN 213 std	9.02	12.95	16.65	16.27	15.48	4.53
CXAN 214 std	9.33	13.42	17.22	16.73	15.48	4.53

R407C refrigerant	A 100% load	B 75% load	C 50% load	D 25% load	IPLV Integrated Part Load value	
Ambient temperatures	35°C	26.6°C	18.3°C	12.8°C	Not applicable	
Weight	0.01	0.42	0.45	0.12	(1)	(2)
CXAN Super Quiet	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	EER (MBh/kW)	IPLV - EER (MBh/kW)	IPLV - COP (kW/kW)
CXAN 209 SQ	8.93	11.49	14.41	15.09	13.22	3.87
CXAN 210 SQ	8.96	12.64	18.08	17.39	15.58	4.56
CXAN 211 SQ	8.52	12.81	17.06	20.81	15.68	4.59
CXAN 212 SQ	8.16	12.47	17.60	20.10	15.68	4.59
CXAN 213 SQ	8.34	12.90	18.22	19.34	15.99	4.69
CXAN 214 SQ	8.49	13.22	18.56	20.85	16.50	4.84

(1) IPLV = 0.01A + 0.42B + 0.45C + 0.12D
(2) COP = EER / 3,42

Conditions:
Leaving water temperature = 7°C
Entering water temperature at full load = 12°C
Constant water flow at all conditions
Ambient temperature depending on the load

Selection procedure

Trane air-cooled chiller performances are rated in accordance with the Eurovent Certification Program, available at www.eurovent-certification.com.

The chiller capacity Tables 15-22 cover the most frequently encountered leaving liquid temperatures. The tables reflect a 5°C water temperature drop through the evaporator and at see level. For other conditions apply the appropriate Performance Data Adjustment Factors from Tables 13 and 14. For other conditions, contact your local Trane sales engineer.

To select a Trane air-cooled chiller, the following information details are required:

1. Design load in cooling capacity (and heating capacity for CXAN) (kW)
2. Design chilled water temperature drop (and hot water temperature for CXAN) (°C)
3. Design leaving chilled water temperature (°C)
4. Design ambient temperature (°C)
5. Maximum allowed sound power of the unit (dB(a)).

Evaporator flow rates can be determined by using the following formulas:

l/s = (Capacity (kW) / [specific heat (kj/kg/°C)] / [Temperature Drop) (°C)]

Note: Flow rates must fall within the limits specified in Figures 7-9.

Selection Example

Given:

- Required System Load = 400 kW
- Leaving Chilled Water Temperature (LCWT) = 9°C Chilled Water
- Temperature Drop = 5°C (design conditions)
- Ambient Temperature = 35°C
- Evaporator Fouling Factor = 0.044 m^2/K/kW
- Sound level = 91 dB(A)

Example

1. From Table 16, a CGAN 212 Super-Quiet at the given conditions will produce 400.9 kW cooling.
2. To calculate the chilled water flow rate we use the formula given below:
   Water flow rate = (400.9 / 0.418 / 5°C = 19.2 l/s
3. To determine the evaporator pressure drop use the flow rate (l/s) and pressure drop in Figure 7. Entering the curve at 19.2 l/s, the pressure drop for a nominal size 212 evaporator is 45 Pa.
4. Apply if necessary, first correction factors from Table 13 and then correction factors from Table 14.

Minimum Leaving Chilled Water Temperature Setpoint

The minimum leaving chilled water temperature setpoint for water is 4.4°C. For those applications requiring lower setpoints, a glycol solution must be used. Contact the local Trane sales engineer for additional information.

Data from the table may be interpolated but should never be extrapolated. For data out of the tables or under different conditions contact your local Trane Sales Office.

Selection procedure

You may apply both of those factors (first Table 13 then Table 14)

Table 13 - Performance data adjustment altitude and delta T factors (1)

	Elevation											
	Sea Level			600 m			1200 m			1800 m		
Chilled Water Temp. Delta T	Cooling capacity factor	Power input factor	Flow rate factor	Cooling capacity factor	Power input factor	Flow rate factor	Cooling capacity factor	Power input factor	Flow rate factor	Cooling capacity factor	Power input factor	Flow rate factor
4 °C	0.997	0.999	1.246	0.987	1.012	1.233	0.975	1.027	1.217	0.960	1.045	1.200
5 °C	1.000	1.000	1.000	0.989	1.013	0.989	0.977	1.028	0.977	0.963	1.047	0.963
6 °C	1.003	1.001	0.835	0.992	1.014	0.826	0.979	1.030	0.816	0.965	1.048	0.804
7 °C	1.004	1.002	0.717	0.993	1.016	0.710	0.981	1.031	0.701	0.966	1.049	0.690
8 °C	1.006	1.003	0.629	0.995	1.016	0.622	0.982	1.032	0.614	0.968	1.050	0.605

(1) with fouling factor of 0.044 m²/°C/kW

Table 14 - Performance data adjustment with glycol

Correction factors to apply in case of the use of Glycol in the water loops

Fluid Type	Glycol Concentration	Performance		Evaporator	
	Evaporator	Cooling Capacity Factor	Power input Factor	Flow rate Factor (1)	Pressure drop Factor (2)
Water in Evaporator	0%	1.00	1.00	1.00	1.00
Ethylene Glycol	10%	0.99	1.00	1.02	1.02
	20%	0.98	1.00	1.05	1.06
	30%	0.97	1.00	1.10	1.10
Mono-Propylene Glycol	10%	0.99	1.00	1.01	1.05
	20%	0.97	1.00	1.03	1.10
	30%	0.96	1.00	1.05	1.17

(1) Flow rate with capacity modification
(2) Pressure drop to be used after flow rate factor

Example:
CCw = Cooling capacity with water
CCeg = Cooling capacity with ethylene glycol
FRw = Flow rate with water
FReg = Flow rate with ethylene glycol
PDw = Pressure drop with water
PDeg = Pressure drop with ethylene glycol

Formula:
CCeg = CCw x CC-M
FRw = CCg / 4.18 / 5°C =
FReg = FR * FR-M
PDeg = PDw X PD-F

- **CGAN 212 STD**
- **35°C ambient temperature**
- **30% glycol**
- **Water = 12°C / 7°C**
- **CCw = 389.2 kW**
- **CCeg = 389.2 X 0.97 = 377.5 kW**
- **FRw = 377.5/4.18/5 = 18.04 l/s**
- **FReg = 18.04 X 1.10 = 19.84 l/s**
- **PDw = 48 kPa**
- **PDeg = 48 x 1.10 = 53 kPa**

Performance data

Table 15 - Cooling performance data CGAN Standard R407C

		Ambient air temperature									
		25°C		30 °C		35 °C		40 °C		43 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CGAN 209 STD	5 °C	302.5	79.8	286.5	88.2	269.5	97.8	251.4	108.7	240.0	115.8
	7 °C	322.5	81.7	305.6	90.1	287.7	99.8	268.8	110.8	256.9	117.9
	9 °C	343.2	83.6	325.3	92.2	306.5	102.0	286.7	112.9	274.4	120.1
CGAN 210 STD	5 °C	334.5	90.7	315.6	99.8	295.6	110.3	274.4	120.2	261.0	129.9
	7 °C	356.6	93.0	336.7	102.2	315.6	112.8	293.4	122.7	279.5	132.6
	9 °C	379.3	95.3	358.4	104.6	336.3	115.3	313.1	125.4	298.7	135.3
CGAN 211 STD	5 °C	367.7	96.5	348.7	106.8	328.3	118.6	306.5	132.0	292.8	140.8
	7 °C	391.9	98.8	371.7	109.2	350.2	121.1	327.4	134.5	313.1	143.3
	9 °C	416.8	101.2	395.5	111.7	372.9	123.7	349.1	137.2	42°C (1)	-
CGAN 212 STD	5 °C	405.6	102.2	386.1	113.3	365.1	126.2	342.6	140.7	328.3	150.2
	7 °C	432.1	104.5	411.3	115.8	389.2	128.7	365.5	143.2	350.7	152.6
	9 °C	459.5	106.9	437.5	118.3	414.2	131.3	389.4	145.8	373.9	155.2
CGAN 213 STD	5 °C	448.2	114.8	425.5	127.5	401.1	142.0	374.8	158.4	358.2	169.1
	7 °C	478.0	117.6	453.9	130.5	428.1	145.1	400.6	161.6	383.2	172.3
	9 °C	508.8	120.5	483.3	133.5	456.2	148.3	427.3	164.9	409.2	175.7
CGAN 214 STD	5 °C	485.4	126.9	459.8	141.0	432.3	157.2	402.7	175.4	383.9	187.3
	7 °C	518.2	130.1	491.1	144.5	462.1	160.8	431.0	179.2	411.3	191.3
	9 °C	552.0	133.4	523.5	148.0	492.9	164.6	460.3	183.3	439.8	195.4

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 16 - Cooling performance data CGAN Super Quiet R407C

		Ambient air temperature							
		25 °C		30 °C		35 °C		40 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CGAN 209 SQ	5 °C	302.4	79.9	286.4	88.3	269.3	98.0	251.2	108.9
	7 °C	322.4	81.8	305.5	90.3	287.5	100.0	268.5	111.0
	9 °C	343.0	83.8	325.1	92.4	306.3	102.2	286.4	113.1
CGAN 210 SQ	5 °C	334.3	90.9	315.4	100.0	295.3	110.5	274.1	122.4
	7 °C	356.3	93.1	336.4	102.4	315.3	113.0	293.1	125.0
	9 °C	379.0	95.5	358.0	104.9	335.9	115.6	312.7	127.7
CGAN 211 SQ	5 °C	363.9	99.7	344.3	110.5	323.3	122.9	301.0	136.9
	7 °C	387.4	102.2	366.6	113.2	344.6	125.7	321.2	139.7
	9 °C	411.6	104.9	389.7	116.0	366.5	128.6	342.1	142.6
CGAN 212 SQ	5 °C	397.5	108.6	376.9	120.8	354.8	134.7	331.2	150.4
	7 °C	422.7	111.4	400.8	123.8	377.5	137.8	352.8	153.4
	9 °C	448.6	114.3	425.5	126.9	400.9	141.0	375.1	156.5
CGAN 213 SQ	5 °C	437.4	123.8	413.2	137.9	387.2	153.8	359.4	171.6
	7 °C	465.3	127.3	439.7	141.6	412.3	157.8	39°C (1)	-
	9 °C	494.0	131.0	466.9	145.6	438.1	161.9	38°C (1)	-
CGAN 214 SQ	5 °C	472.0	138.4	444.6	154.3	415.1	172.2	383.5	192.1
	7 °C	502.5	142.5	473.4	158.7	442.3	176.9	39°C (1)	-
	9 °C	533.6	146.9	503.0	163.4	470.3	182.0	38°C (1)	-

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 17 - Cooling performance data CGAN Standard R22

		Ambient air temperature									
		25 °C		30 °C		35 °C		40 °C		45 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)
CGAN 209 STD	5 °C	289.3	75.0	277.3	82.9	264.7	92.0	251.3	102.1	237.2	113.4
	7 °C	308.1	76.6	295.5	84.6	282.1	93.7	268.0	103.9	253.1	115.3
	9 °C	327.5	78.3	314.2	86.3	300.1	95.5	285.2	105.8	269.4	117.2
CGAN 210 STD	5 °C	320.1	88.4	306.8	97.4	292.8	107.6	278.2	119.0	262.9	131.7
	7 °C	340.6	90.2	326.4	99.3	311.6	109.6	296.1	121.1	279.8	133.9
	9 °C	361.7	92.1	346.6	101.3	330.9	111.7	314.4	123.3	297.1	136.3
CGAN 211 STD	5 °C	352.4	91.3	337.9	101.1	322.5	112.3	306.2	124.9	289.0	138.9
	7 °C	375.2	93.2	359.9	103.2	343.6	114.5	326.4	127.1	308.2	141.2
	9 °C	398.8	95.3	382.6	105.3	365.5	116.7	347.3	129.4	328.1	143.6
CGAN 212 STD	5 °C	385.0	94.8	369.3	105.3	352.4	117.3	334.5	130.8	315.3	145.8
	7 °C	410.2	96.9	393.7	107.5	376.1	119.5	357.2	133.1	337.0	148.1
	9 °C	436.5	99.3	419.2	109.9	400.6	122.0	380.8	135.5	359.5	150.6
CGAN 213 STD	5 °C	424.0	109.7	407.4	121.8	389.7	135.6	371.0	150.9	351.2	168.0
	7 °C	451.7	112.0	434.1	124.3	415.5	138.2	395.8	153.7	374.8	170.9
	9 °C	480.4	114.5	461.9	126.9	442.2	140.9	421.3	156.6	399.1	174.0
CGAN 214 STD	5 °C	461.5	124.5	444.1	138.3	425.7	153.8	406.4	171.1	386.1	190.2
	7 °C	491.5	127.0	473.0	141.0	453.6	156.7	433.1	174.3	411.5	193.7
	9 °C	522.5	129.6	503.0	143.8	482.3	159.8	460.5	177.6	437.5	197.3

(1) Compressors only

Performance data

Table 18 - Cooling performance data CGAN Super Quiet R22

		Ambient air temperature							
		25 °C		30 °C		35 °C		40 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)	Cooling cap (kW)	Power input (kW)
CGAN 209 SQ	5 °C	289.2	75.1	277.2	83.0	264.6	92.1	251.2	102.3
	7 °C	308.0	76.7	295.3	84.7	282.0	93.8	267.8	104.1
	9 °C	327.4	78.4	314.1	86.5	299.9	95.7	285.0	106.0
CGAN 210 SQ	5 °C	320.0	88.6	306.6	97.6	292.7	107.8	278.0	119.3
	7 °C	340.4	90.4	326.2	99.5	311.4	109.8	295.8	121.4
	9 °C	361.5	92.3	346.4	101.5	330.6	111.9	314.1	123.6
CGAN 211 SQ	5 °C	349.2	94.4	334.3	104.7	318.4	116.5	301.7	129.6
	7 °C	371.5	96.5	355.7	107.0	339.0	118.8	321.3	132.1
	9 °C	394.6	98.8	377.9	109.4	360.3	121.4	341.5	134.7
CGAN 212 SQ	5 °C	378.5	100.9	362.0	112.4	344.3	125.4	325.4	139.9
	7 °C	402.8	103.4	385.4	115.0	366.8	128.1	346.8	142.7
	9 °C	428.1	106.2	409.7	117.9	390.1	131.0	369.1	145.8
CGAN 213 SQ	5 °C	416.8	118.4	399.2	131.8	380.6	147.0	360.9	163.8
	7 °C	443.3	121.3	424.7	135.0	405.0	150.3	384.0	167.4
	9 °C	470.7	124.5	451.0	138.4	430.1	153.9	407.8	171.2
CGAN 214 SQ	5 °C	453.7	135.8	435.2	151.3	415.8	168.5	395.3	187.7
	7 °C	482.2	139.2	462.6	154.9	441.9	172.6	420.0	192.1
	9 °C	511.6	142.7	490.7	158.8	468.6	176.8	445.2	196.7

Performance data

Table 19 - Cooling performance data CXAN Standard R407C

		Ambient air temperature									
		25 °C		30 °C		35 °C		40 °C		43 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CXAN 209 STD	5 °C	291.4	79.6	276.1	88.1	259.7	97.9	242.3	108.9	231.3	116.2
	7 °C	310.4	81.5	294.3	90.1	277.1	99.9	258.8	111.0	247.4	118.3
	9 °C	330.0	83.4	313.0	92.1	295.0	102.0	276.0	113.2	264.1	120.4
CXAN 210 STD	5 °C	322.4	87.6	304.5	96.8	285.4	107.4	265.1	119.4	252.3	127.2
	7 °C	343.4	89.8	324.6	99.2	304.6	109.9	283.3	121.9	269.9	129.9
	9 °C	365.1	92.1	345.3	101.6	324.3	112.4	302.1	124.6	288.3	132.6
CXAN 211 STD	5 °C	353.3	97.0	334.5	107.3	314.5	119.0	293.1	132.3	279.6	141.0
	7 °C	376.1	99.5	356.3	109.9	335.2	121.7	312.8	135.0	298.8	143.7
	9 °C	399.6	102.1	378.7	112.6	356.6	124.5	333.2	137.8	318.6	146.5
CXAN 212 STD	5 °C	385.2	106.6	365.5	117.9	344.6	130.8	322.1	145.4	308.0	154.9
	7 °C	409.7	109.3	388.9	120.8	366.8	133.7	343.4	148.2	328.6	157.7
	9 °C	435.0	112.2	413.1	123.8	389.9	136.8	365.4	151.2	42°C (1)	-
CXAN 213 STD	5 °C	431.3	115.0	408.7	127.0	384.6	140.6	358.9	156.1	342.6	166.2
	7 °C	459.4	118.2	435.5	130.2	410.1	144.0	383.1	159.4	366.1	169.5
	9 °C	488.3	121.4	463.2	133.6	436.4	147.5	408.2	163.0	42°C (1)	-
CXAN 214 STD	5 °C	474.0	123.1	449.2	135.7	422.6	150.2	394.2	166.6	376.2	177.5
	7 °C	505.7	126.5	479.5	139.2	451.4	153.9	421.6	170.5	402.7	181.5
	9 °C	538.5	130.1	510.8	142.9	481.3	157.8	449.9	174.6	430.1	185.7

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 20 - Cooling performance CXAN Super Quiet R407C

		Ambient air temperature									
		25 °C		30 °C		35 °C		40 °C		43 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CXAN 209 SQ	5 °C	290.9	80.0	275.5	88.6	259.1	98.4	241.6	109.6	230.6	116.9
	7 °C	309.8	81.9	293.6	90.6	276.3	100.5	258.0	111.7	246.5	119.0
	9 °C	329.3	83.9	312.2	92.7	294.1	102.7	275.0	113.9	263.1	121.2
CXAN 210 SQ	5 °C	321.5	88.1	303.6	97.5	284.4	108.2	264.0	120.2	251.1	128.1
	7 °C	342.5	90.4	323.6	99.8	303.4	110.7	282.1	122.8	268.6	130.8
	9 °C	364.0	92.8	344.1	102.3	323.0	113.3	300.7	125.6	286.8	133.6
CXAN 211 SQ	5 °C	348.6	100.6	329.3	111.5	308.7	123.9	286.8	137.7	41°C (1)	-
	7 °C	370.6	103.4	350.3	114.4	328.7	126.8	305.7	140.7	40°C (1)	-
	9 °C	393.3	106.3	371.9	117.4	349.3	129.9	39°C (1)	-	-	-
CXAN 212 SQ	5 °C	375.6	113.3	355.1	125.7	333.1	139.7	309.7	155.3	41°C (1)	-
	7 °C	398.8	116.6	377.1	129.1	354.0	143.1	329.5	158.6	40°C (1)	-
	9 °C	422.6	120.0	399.8	132.6	375.6	146.6	39°C (1)	-	-	-
CXAN 213 SQ	5 °C	418.5	123.5	394.7	136.7	369.3	151.7	342.2	168.5	41°C (1)	-
	7 °C	444.7	127.3	419.5	140.7	392.8	155.8	364.4	172.6	40°C (1)	-
	9 °C	471.5	131.3	445.0	144.9	416.9	160.1	39°C (1)	-	-	-
CXAN 214 SQ	5 °C	459.6	133.2	433.2	147.4	404.9	163.6	374.7	181.7	42°C (1)	-
	7 °C	489.0	137.5	461.0	151.9	431.2	168.3	399.5	186.7	40°C (1)	-
	9 °C	519.1	142.0	489.6	156.7	458.3	173.4	425.0	192.1	40°C (1)	-

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 21 - Cooling performance CXAN Standard R22

		Ambient air temperature									
		25 °C		30 °C		35 °C		40 °C		43 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CXAN 209 STD	5 °C	278.4	76.0	266.9	84.1	254.7	93.3	241.7	103.6	233.6	110.4
	7 °C	296.3	77.6	284.2	85.8	271.3	95.0	257.6	105.4	249.1	112.3
	9 °C	314.8	79.3	302.0	87.5	288.5	96.9	274.1	107.4	265.0	114.2
CXAN 210 STD	5 °C	306.3	83.9	293.7	92.7	280.6	102.6	266.8	113.7	258.1	120.9
	7 °C	325.7	85.6	312.4	94.5	298.4	104.6	283.8	115.8	274.6	123.1
	9 °C	345.6	87.4	331.6	96.4	316.8	106.6	301.3	117.9	291.6	125.4
CXAN 211 STD	5 °C	338.0	92.5	323.7	102.3	308.7	113.4	292.7	125.8	282.7	133.9
	7 °C	359.6	94.7	344.5	104.5	328.6	115.7	311.8	128.2	301.2	136.4
	9 °C	381.9	97.0	366.0	106.9	349.3	118.2	331.5	130.7	320.3	139.0
CXAN 212 STD	5 °C	370.0	101.5	354.1	112.3	337.1	124.5	319.0	138.2	307.6	147.2
	7 °C	393.9	104.1	377.1	114.9	359.3	127.2	340.2	141.0	328.2	149.9
	9 °C	418.6	106.9	401.1	117.8	382.3	130.1	362.3	143.9	349.6	152.9
CXAN 213 STD	5 °C	412.6	110.0	395.5	121.3	377.5	134.0	358.5	148.3	346.5	157.6
	7 °C	439.0	112.8	421.0	124.1	402.0	137.0	381.9	151.3	369.3	160.7
	9 °C	466.4	115.6	447.4	127.1	427.3	140.1	406.1	154.5	392.8	164.0
CXAN 214 STD	5 °C	450.9	118.6	433.3	130.5	415.0	143.9	395.7	158.9	383.7	168.7
	7 °C	479.9	121.3	461.3	133.3	441.8	146.9	421.4	162.1	408.6	172.1
	9 °C	509.8	124.1	490.2	136.3	469.5	150.1	447.8	165.5	434.3	175.6

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 22 - Cooling performance CXAN Super Quiet R22

		Ambient air temperature									
		25 °C		30 °C		35 °C		40 °C		42 °C	
	Leaving water temperature	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)	Cooling cap (kW)	Power input (kW) (2)
CXAN 209 SQ	5 °C	278.0	76.5	266.4	84.7	254.2	94.0	241.2	104.5	235.8	109.0
	7 °C	295.9	78.2	283.6	86.4	270.7	95.8	257.0	106.3	251.3	110.9
	9 °C	314.3	79.9	301.4	88.3	287.8	97.7	273.3	108.3	267.3	112.9
CXAN 210 SQ	5 °C	305.5	84.5	292.9	93.4	279.7	103.4	265.8	114.6	260.1	119.4
	7 °C	324.8	86.2	311.4	95.2	297.4	105.4	282.7	116.8	276.6	121.7
	9 °C	344.6	88.1	330.5	97.2	315.7	107.5	300.0	119.0	293.6	123.9
CXAN 211 SQ	5 °C	332.7	96.2	318.1	106.6	302.7	118.2	286.3	131.3	40°C (1)	-
	7 °C	353.6	98.6	338.3	109.0	322.0	120.8	304.7	134.0	297.5	139.6
	9 °C	375.3	101.1	359.1	111.7	341.8	123.6	323.6	136.8	316.0	142.5
CXAN 212 SQ	5 °C	360.2	108.1	343.6	119.9	325.9	133.2	307.0	148.0	299.1	154.3
	7 °C	382.9	111.2	365.4	123.0	346.8	136.4	326.9	151.3	318.5	157.7
	9 °C	406.4	114.4	388.0	126.4	368.4	139.9	347.4	154.8	338.6	161.2
CXAN 213 SQ	5 °C	398.8	118.3	381.1	130.8	362.4	144.8	342.6	160.5	334.4	167.2
	7 °C	423.7	121.6	404.9	134.2	385.2	148.5	364.2	164.3	355.5	171.1
	9 °C	449.3	125.1	429.5	137.9	408.6	152.3	386.4	168.3	377.2	175.1
CXAN 214 SQ	5 °C	435.0	128.4	416.9	141.7	397.8	156.7	377.8	173.4	369.5	180.6
	7 °C	462.2	131.8	442.9	145.4	422.7	160.6	401.3	177.6	392.5	184.9
	9 °C	490.1	135.3	469.6	149.2	448.1	164.7	425.4	181.9	415.9	189.3

(1) Maximum ambient temperature
(2) Compressors only

Performance data

Table 23 - Heating performance data CXAN Standard R407C

		Ambient air temperature							
		-4 °C		0 °C		7 °C		14 °C	
	Leaving water temperature	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)
CXAN 209 STD	35 °C	217.5	75.0	246.0	76.4	301.0	78.8	373.5	81.1
	40 °C	216.3	84.5	243.6	85.7	296.3	88.1	366.3	90.5
	45 °C	215.9	95.5	242.5	96.3	291.6	98.1	359.2	100.7
	50 °C	-	-	240.3	108.3	287.4	109.8	350.7	111.5
CXAN 210 STD	35 °C	237.5	79.2	270.5	81.0	332.2	83.3	415.1	86.2
	40 °C	234.7	88.9	266.5	90.5	325.4	93.2	404.5	95.8
	45 °C	231.8	99.7	262.1	101.4	318.3	103.5	394.1	106.5
	50 °C	-	-	258.4	113.3	311.6	115.3	382.6	117.8
CXAN 211 STD	35 °C	261.9	91.8	296.3	93.5	362.2	96.8	449.4	100.2
	40 °C	261.1	103.7	294.5	105.3	355.0	107.5	440.4	111.4
	45 °C	260.8	117.0	292.4	118.3	351.5	120.7	431.5	123.7
	50 °C	-	-	-	-	346.7	134.8	422.5	136.8
CXAN 212 STD	35 °C	287.4	101.9	323.9	103.8	392.6	107.2	485.3	110.9
	40 °C	288.2	115.5	322.7	116.9	388.6	120.1	477.3	123.4
	45 °C	289.9	131.2	322.3	132.2	384.5	134.1	469.5	137.2
	50 °C	-	-	-	-	380.8	150.1	461.1	151.8
CXAN 213 STD	35 °C	317.1	111.9	358.7	114.0	436.8	117.5	541.6	121.5
	40 °C	316.5	126.0	356.2	127.9	431.1	131.3	531.4	135.4
	45 °C	311.9	140.9	354.3	143.9	425.6	146.7	522.8	150.6
	50 °C	-	-	-	-	420.5	163.9	513.3	167.1
CXAN 214 STD	35 °C	346.9	121.6	393.4	123.6	481.9	127.8	598.2	132.1
	40 °C	345.7	136.6	390.1	139.0	474.2	143.0	586.3	147.2
	45 °C	341.0	152.6	380.2	153.9	467.2	159.4	576.2	163.7
	50 °C	-	-	382.9	174.1	460.4	177.7	564.8	181.0

(1) Compressors only

Performance data

Table 24 - Heating performance CXAN Super Quiet R407C

		Ambient air temperature							
		-4 °C		0 °C		7 °C		14 °C	
	Leaving water temperature	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)
CXAN 209 SQ	35 °C	218.1	75.1	245.7	76.6	299.0	78.6	369.9	80.9
	40 °C	216.8	84.5	243.3	85.6	294.8	88.0	363.6	90.4
	45 °C	216.7	95.5	242.1	96.4	290.7	98.2	356.4	100.6
	50 °C	-	-	240.8	108.4	286.5	109.6	348.4	111.1
CXAN 210 SQ	35 °C	238.1	79.3	270.6	81.1	331.0	83.4	412.0	85.8
	40 °C	235.9	89.0	266.3	90.4	324.3	93.1	401.3	95.7
	45 °C	233.2	99.7	262.5	101.3	317.6	103.5	392.0	106.4
	50 °C	-	-	259.2	113.2	311.5	115.4	381.2	117.9
CXAN 211 SQ	35 °C	262.8	91.6	296.6	93.2	360.1	96.5	444.9	99.7
	40 °C	262.6	103.3	294.9	105.1	353.5	107.2	436.9	111.1
	45 °C	262.6	116.8	293.4	118.2	350.6	120.4	428.8	123.6
	50 °C	-	-	-	-	346.5	134.6	420.5	136.6
CXAN 212 SQ	35 °C	286.6	101.5	321.3	103.3	386.8	106.7	475.5	110.4
	40 °C	288.2	115.2	321.4	116.5	383.4	119.1	468.7	122.8
	45 °C	290.9	130.8	321.7	131.9	380.6	133.8	462.2	136.7
	50 °C	-	-	-	-	378.3	150.0	455.6	151.5
CXAN 213 SQ	35 °C	313.9	111.3	353.1	113.3	426.9	117.0	526.0	120.7
	40 °C	314.5	125.7	351.8	127.4	422.8	130.8	518.6	134.7
	45 °C	311.0	140.5	351.3	143.5	418.7	146.0	511.1	150.0
	50 °C	-	-	-	-	415.0	163.4	503.1	166.1
CXAN 214 SQ	35 °C	341.3	120.8	385.2	123.2	467.4	126.9	577.2	131.1
	40 °C	341.0	136.3	382.9	138.2	462.4	142.2	568.7	146.3
	45 °C	338.1	152.0	375.1	153.3	457.0	158.4	559.2	162.8
	50 °C	-	-	-	-	452.1	176.7	550.6	180.3

(1) Compressors only

Performance data

Table 25 - Heating performance CXAN Standard R22

		Ambient air temperature							
		-4 °C		0 °C		7 °C		14 °C	
	Leaving water temperature	Heating cap (kW)	Power input (kW) (1)	Heating cap (kW)	Power input (kW) (1)	Heating cap (kW)	Power input (kW) (1)	Heating cap (kW)	Power input (kW) (1)
CXAN 209 STD	35 °C	213.1	72.0	241.1	73.3	295.0	75.7	366.0	77.9
	40 °C	212.0	81.1	238.7	82.2	290.4	84.5	359.0	86.9
	45 °C	211.6	91.6	237.6	92.5	285.7	94.2	352.0	96.6
	50 °C	-	-	235.5	104.0	281.6	105.4	343.7	107.0
CXAN 210 STD	35 °C	232.8	76.0	265.1	77.7	325.6	80.0	406.8	82.8
	40 °C	230.0	85.4	261.2	86.9	318.9	89.5	396.4	91.9
	45 °C	227.1	95.7	256.9	97.3	311.9	99.4	386.2	102.2
	50 °C	-	-	253.2	108.8	305.4	110.7	375.0	113.1
CXAN 211 STD	35 °C	256.6	88.1	290.4	89.7	354.9	92.9	440.4	96.2
	40 °C	255.8	99.5	288.6	101.0	347.9	103.2	431.6	106.9
	45 °C	255.6	112.3	286.6	113.6	344.5	115.9	422.9	118.8
	50 °C	-	-	-	-	339.8	129.4	414.1	131.3
CXAN 212 STD	35 °C	281.7	97.9	317.4	99.6	384.7	102.9	475.6	106.4
	40 °C	282.4	110.9	316.2	112.2	380.8	115.3	467.8	118.5
	45 °C	284.1	126.0	315.9	126.9	376.8	128.8	460.1	131.7
	50 °C	-	-	-	-	373.2	144.1	451.9	145.7
CXAN 213 STD	35 °C	310.7	107.4	351.6	109.4	428.0	112.8	530.7	116.6
	40 °C	310.1	120.9	349.1	122.8	422.4	126.0	520.7	130.0
	45 °C	305.6	135.3	347.2	138.1	417.1	140.8	512.3	144.6
	50 °C	-	-	-	-	412.1	157.3	503.1	160.4
CXAN 214 STD	35 °C	340.0	116.7	385.6	118.7	472.2	122.7	586.2	126.8
	40 °C	338.8	131.2	382.3	133.5	464.7	137.3	574.6	141.4
	45 °C	334.2	146.5	372.6	147.7	457.9	153.0	564.7	157.2
	50 °C	-	-	375.2	167.1	451.2	170.6	553.5	173.8

(1) Compressors only

Performance data

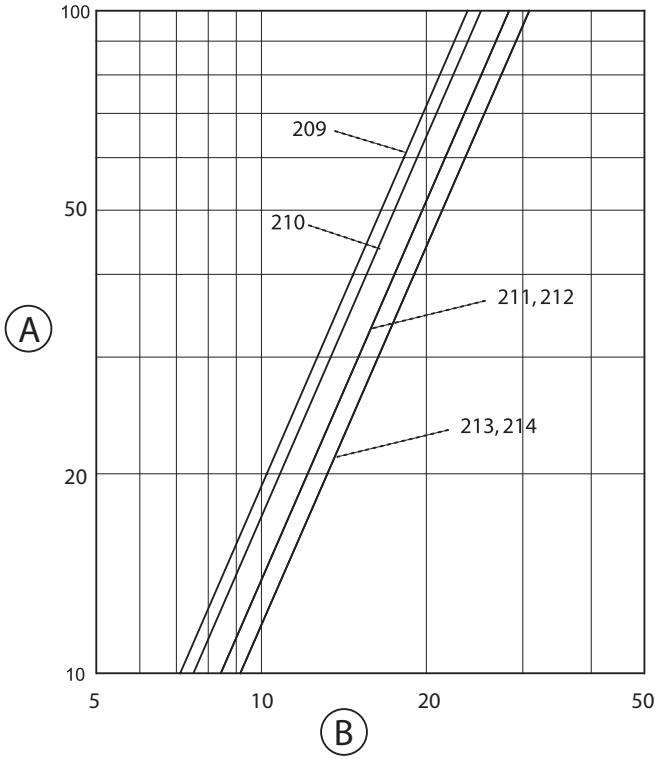
Table 26 - Heating performance CXAN Super Quiet R22

		Ambient air temperature							
		-4 °C		0 °C		7 °C		14 °C	
	Leaving water temperature	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)	Heating cap (kW)	Power input (1) (kW)
CXAN 209 SQ	35 °C	213.8	72.1	240.8	73.6	293.0	75.4	362.5	77.7
	40 °C	212.5	81.1	238.5	82.1	288.9	84.5	356.3	86.8
	45 °C	212.4	91.7	237.3	92.5	284.9	94.2	349.3	96.6
	50 °C	-	-	236.0	104.1	280.8	105.2	341.4	106.6
CXAN 210 SQ	35 °C	233.3	76.1	265.2	77.8	324.3	80.0	403.7	82.4
	40 °C	231.2	85.4	261.0	86.8	317.8	89.3	393.3	91.9
	45 °C	228.5	95.7	257.3	97.2	311.3	99.3	384.2	102.2
	50 °C	-	-	254.0	108.7	305.3	110.8	373.5	113.2
CXAN 211 SQ	35 °C	257.5	88.0	290.7	89.5	352.9	92.6	436.0	95.7
	40 °C	257.3	99.2	289.0	100.9	346.4	103.0	428.1	106.7
	45 °C	257.4	112.1	287.5	113.5	343.6	115.6	420.2	118.6
	50 °C	-	-	-	-	339.6	129.2	412.1	131.1
CXAN 212 SQ	35 °C	280.9	97.4	314.9	99.1	379.1	102.4	466.0	106.0
	40 °C	282.5	110.6	315.0	111.9	375.7	114.4	459.4	117.9
	45 °C	285.1	125.6	315.2	126.7	373.0	128.4	453.0	131.2
	50 °C	-	-	-	-	370.8	144.0	446.5	145.4
CXAN 213 SQ	35 °C	307.6	106.9	346.1	108.8	418.4	112.3	515.5	115.8
	40 °C	308.2	120.7	344.8	122.3	414.4	125.5	508.3	129.3
	45 °C	304.8	134.9	344.3	137.8	410.4	140.2	500.9	144.0
	50 °C	-	-	-	-	406.7	156.9	493.0	159.5
CXAN 214 SQ	35 °C	334.5	116.0	377.5	118.3	458.1	121.8	565.7	125.8
	40 °C	334.2	130.9	375.3	132.7	453.1	136.6	557.4	140.5
	45 °C	331.3	145.9	367.6	147.1	447.8	152.0	548.0	156.3
	50 °C	-	-	-	-	443.0	169.7	539.6	173.1

(1) Compressors only

Hydraulic data

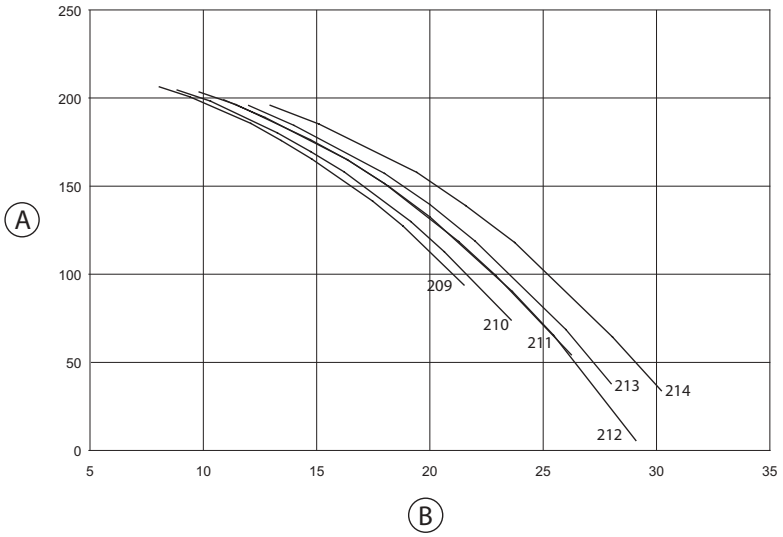
Figure 7 - Water pressure drop without hydraulic module



A = Pressure drop (kPa)
B = Water flow (l/s)

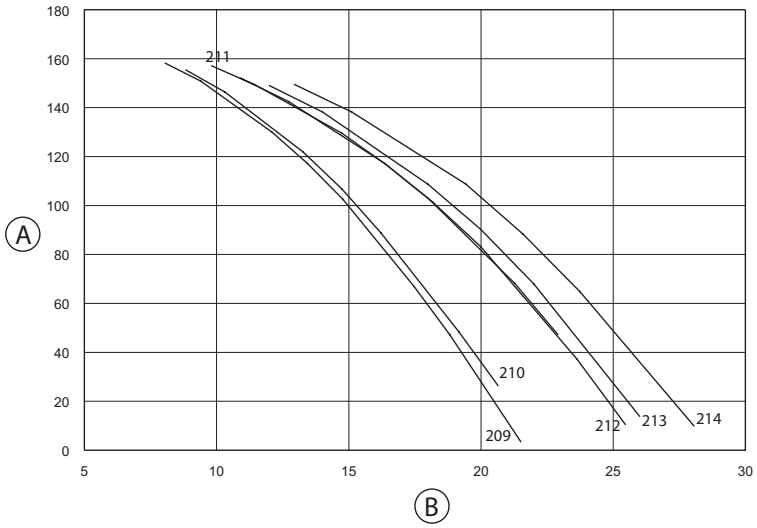
Hydraulic data

Figure 8 - Chiller Available pressure (Hydraulic module standard head pump)



A = Available pressure (kPa)
B = Water flow (l/s)

Figure 9 - Chiller Available pressure (Hydraulic module low head pump)



A = Available pressure (kPa)
B = Water flow (l/s)

Sound data

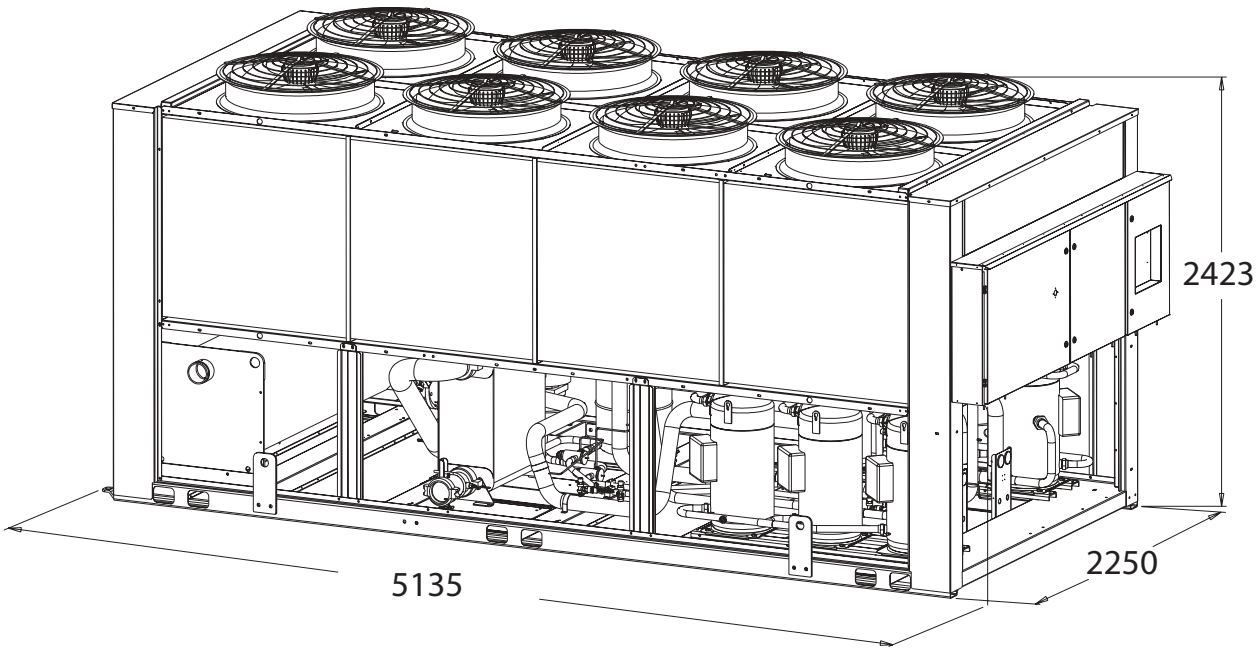
Table 27 - Sound power level in dB(A) (1)

CGAN / CXAN Standard	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lw Global
209	72	80	83	91	89	86	80	71	**95**
210	72	80	83	91	89	87	80	72	**95**
211	73	80	84	92	90	87	80	72	**95**
212	74	81	85	92	90	86	80	72	**96**
213	74	81	85	92	90	88	81	73	**96**
214	74	81	85	92	91	89	82	73	**96**
CGAN / CXAN Super Quiet									
209	66	74	77	85	84	83	77	68	**90**
210	66	74	77	85	84	83	78	69	**90**
211	66	74	77	85	84	83	77	68	**90**
212	66	74	77	85	84	82	77	68	**90**
213	66	74	77	85	84	84	78	69	**90**
214	66	74	77	85	85	85	79	70	**91**

(1) with hydraulic module running

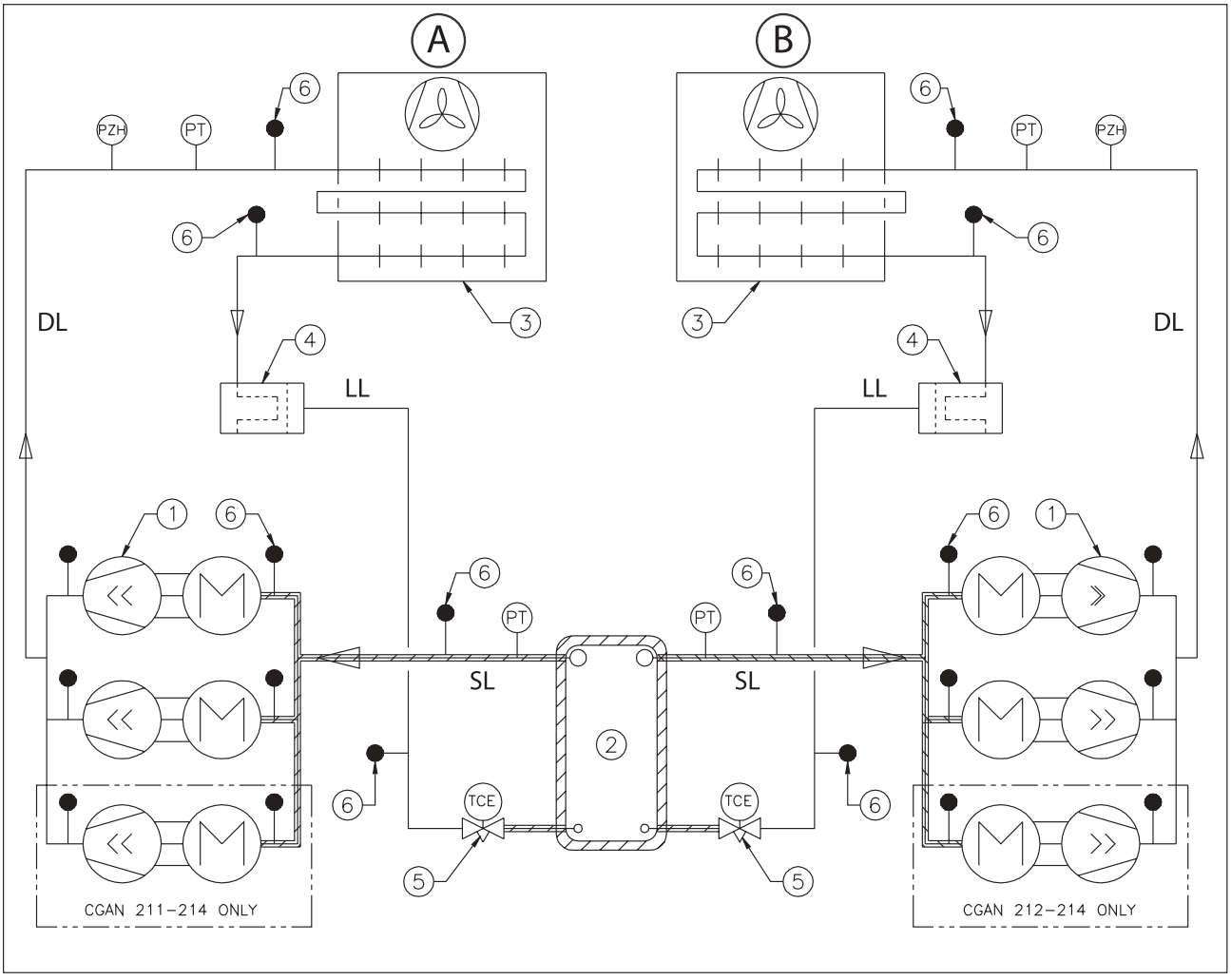
Unit schematics

Figure 10 - Overall maximum unit dimensions (mm)



Unit schematics

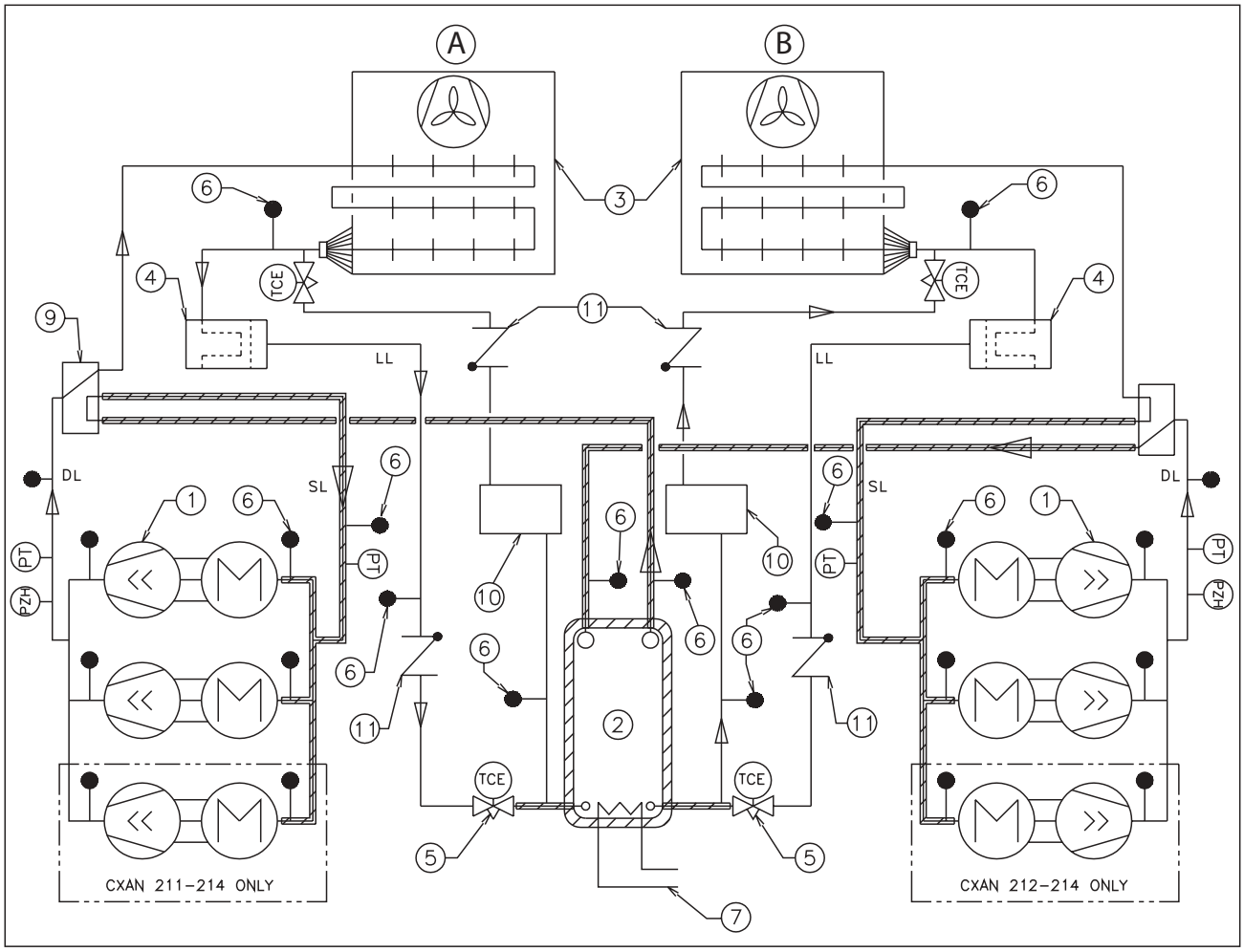
Figure 11 - CGAN Chiller schematics



A = Circuit 1
B = Circuit 2
LL = Liquid line
DL = Discharge line
SL = Suction line
PZH = High pressure switch
PT = Pressure transducer
TCE = Expansion valve
1 = Scroll compressor
2 = Braze plate evaporator
3 = Air-cooled condenser
4 = Filter drier
5 = Expansion valve
6 = ¼ SAE male pressure tab

Unit schematics

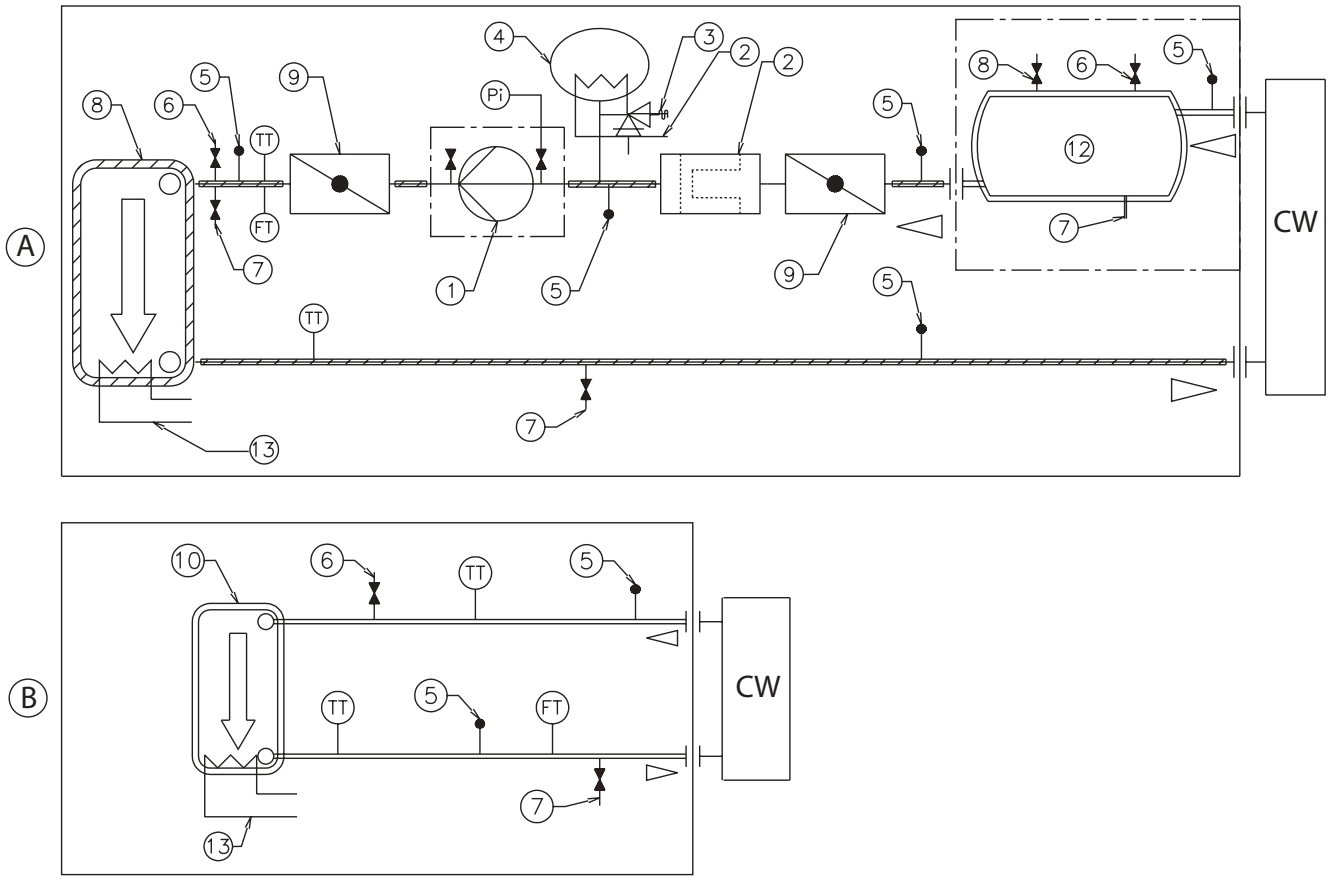
Figure 12 - CXAN Chiller schematics



A = Circuit 1
B = Circuit 2
LL = Liquid line
DL = Discharge line
SL = Suction line
PZH = High pressure switch
PT = Pressure transducer
TCE = Expansion valve
1 = Scroll compressor
2 = Braze plate evaporator
3 = Air-cooled condenser
4 = Filter drier
5 = Expansion valve
6 = ¼ SAE male pressure tab
7 = Antifreeze protect
8 = Option gaze
9 = Reversing cycle solenoide valve
10 = Receiver
11 = Check valve

Unit schematics

Figure 12 - CGAN/CXAN Hydraulic module schematics



A = Circuit with hydraulic module
B = Circuit without hydraulic module
CW = Chilled water
FT = Water flow switch
TT = Temperature sensor
Pi = Gauge
1 = Single or double water pump
2 = Water strainer
3 = Relief valve
4 = Expansion tank
5 = Valve for pressure point
6 = Manual air vent
7 = Manual water vent
8 = Automatic air vent
9 = Stop butterfly valve
10 = Insulated evaporator
12 = Optional buffer tank
13 = Antifreeze protection
14 = Schraeder ¼ SAE male

Notes

Notes

Quality Management
System Approval

Literature Order Number	CG-PRC015-E4
Date	1105
Supersedes	CG-PRC015-E4_0805
Literature Stocking Location	Europe

www.trane.com

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