Tetris 2

84÷913 kW

General
Reversible units and modular chillers for large systems with scroll compressors and plate heat exchanger. KAPPA REV RANGE

Configurations
A and A+: high efficiency

SLN: super low noise

A /SLN: high efficiency super low noise

/HP: reversible heat pump

/HAT: for high external air temperature

/LN: low noise

/DS: with desuperheater

/DC: with total recovery

Strengths

- Tier 2 compliance: high efficiency configurations with EC fans.
- Chiller with low refrigerant charge
- Wide operating limits
- Intelligent management of defrost cycles: Anti-Ice Circuit
- Night Shift function for noise control (option)
- BlueThink advanced control with integrated web server. Multilogic function and Blueye® supervision system. (options)
- Flowzer: inverter driven pumps (options)

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Reversible units and modular chillers for large systems with scroll compressors and plate heat exchanger. KAPPA REV RANGE

STRUCTURE

The body is modular with a load-bearing frame, made of galvanized sheet-iron coated with polyester powder RAL 5017/7035 which makes it highly resistant to weather conditions. All screws and bolts are stainless steel.

REFRIGERANT

The unit is charged with refrigerant R410A, with GWP=2088 (value at 100 years).

COMPRESSORS

The compressors are hermetic orbiting spiral scroll compressors connected in tandem or in trio, fitted with oil level sight glass, oil equalization line, crankcase heater and electronic protection.

SOURCE-SIDE HEAT EXCHANGER

(excluding HP units)

The exchangers are made with microchannel aluminium coils. Finned pack coils with copper tubes and aluminium fins can be requested as accessory.

to sophisticated production methods, microchannel coils are made using specific aluminium alloys for the tubes and for the fins. This allows the effects of galvanic corrosion to be drastically reduced to always ensure protection of the tubes that confine the refrigerant. Tubes and fins are also subjected to SilFLUX coating processes (or equivalent) or have zinc added to further increase their corrosion resistance.

If the unit has to be installed in an environment with a particularly aggressive atmosphere, e-coated microchannel coils are available as an option. This option is strongly recommended for applications in coastal or highly industrialized areas.

The use of microchannel coils compared to conventional copper/aluminium coils reduces the total weight of the unit by about 10% and gives a reduction in refrigerant charge of at least 30%.

The V-shaped arrangement of the coils enables them to be protected from hail and makes the unit compact. It also guarantees an increase in the air intake surface, and leaves ample space for distribution of the components of the refrigerant circuit and the hydraulic circuit.

To protect the exchangers from corrosion and ensure optimal operation of the unit, we advise following the recommendations given in the user, installation and maintenance manual for cleaning the coils.

For installations within a kilometre of the coast, use of the accessory is strongly recommended Coil treated with anti-corrosion paints.

SOURCE-SIDE HEAT EXCHANGER

(only for HP units)

The exchangers are made with finned pack coils with copper tubes and aluminium fins.

At the base of each coil, there is an Anti-Ice Circuit: this prevents ice formation in the lower part of the coil and therefore allows the unit to operate even with extremely harsh temperatures and with high humidity levels.

The V-shaped arrangement of the coils enables them to be protected from hail and makes the unit compact. It also guarantees an increase in the air intake surface, and leaves ample space for distribution of the components of the refrigerant circuit and the hydraulic circuit.

To protect the exchangers from corrosion and ensure optimal operation of the unit, we advise following the recommendations given in the user, installation and maintenance manual for cleaning the coils. For installations within a kilometre of the coast, use of the accessory is strongly recommended Coil treated with anti-corrosion paints.

FANS

The fans are axial fans, directly coupled to a three-phase 6-pole electric motor, with integrated thermal overload protection (Klixon®) and IP 54 protection rating.

The fan includes the shroud, designed to optimize its efficiency and reduce noise emission to a minimum, and the safety guard.

Fan speed is controlled as standard on all units through a phase cutting speed adjuster, in order to optimize the operating conditions and efficiency of the unit.

USER-SIDE HEAT EXCHANGER

The exchanger is a braze-welded stainless steel plate heat exchanger, insulated with a shroud of closed-cell insulating material.

Models with two refrigerant circuits are fitted with dual circuit heat exchanger with a single hydraulic connection.

Models with three or four refrigerant circuits are made with two manifolded heat exchangers.

For dual circuit models, the unit uses two exchangers already manifolded inside the unit and therefore with a single hydraulic connection.

Each heat exchanger is equipped with:

- a thermostat-controlled anti-freeze heater to protect it from ice formation when the unit is not running
- a temperature probe for freeze protection

REFRIGERANT CIRCUIT

Each refrigerant circuit of the basic unit (cooling only) comprises:

- shut-off valve in the liquid line
- 5/16” charging valves
- liquid sight glass
- replaceable solid cartridge dehydrator filter
- electronic expansion valve
- pressure transducers for reading the high and low pressure values and relevant evaporating and condensing temperatures
- high pressure switches
- low pressure switches (only for models with parametric control)

The pipes of the circuit and the exchanger are insulated with extruded closed-cell expanded elastomer that is resistant to UV rays.

ELECTRICAL CONTROL PANEL

The electrical control panel is made in a painted galvanized sheet-iron box with forced ventilation and IP54 protection rating.

The electrical control panel of the basic unit comprises:

- main disconnect switch
- automatic circuit breakers for compressors with fixed calibration
- fuses for protecting the fans and auxiliary circuits
- thermal magnetic circuit breakers for pumps (if present)
- contactors for compressors, fans and pumps (if present)
- phase monitor
- potential-free general alarm contacts
- single potential free operating contacts for compressors, fans and pumps (if present)
- microprocessor controller with display accessible from the outside
- external air temperature probe
- summer/winter selection from digital input (only for / HP unit)

All the electrical cables inside the panel are numbered and the terminal board dedicated to the customer's connections is coloured blue so that it can be quickly identified in the panel.

Standard power supply of the unit is 400V/3~/50Hz

CONTROL BLUETHINK

The unit is supplied with two types of control according to size and version:

- parametric control: Tetris 2 units from model 10.2 to 16.2. For these units, the advanced control can be ordered as an accessory.
- advanced control: all the other set-ups.

Main controller functions parametric

This is the standard control for models from 10.2 to 16.2. For these units, the advanced control can be ordered as an accessory.

The control allows the following functions:

- water temperature adjustment, with control of the water entering the user-side heat exchanger
- freeze protection
- compressor timings
- automatic rotation of compressor starting sequence
- recording of the alarm log
- RS485 serial port with Modbus protocol
- digital input for general ON/OFF
- digital input for Summer/Winter selection (only for HP units)

For further details on available functions and on displayed information, you can refer to the specific documentation of the control.

By default, the serial connections present as standard are enabled only for reading from BMS. Enabling of writing from BMS is to be requested when ordering.

Main controller functions advanced

The control allows the following functions:

- water temperature adjustment, with control of the water entering the user-side heat exchanger
- freeze protection
- compressor timings
- automatic rotation of compressor starting sequence
- recording of the log of all machine inputs, outputs and states
- automatic rotation of compressor starting sequence
- recording of the alarm log
- RS485 serial port with Modbus protocol
- Ethernet serial port with Modbus protocol and integrated web server preloaded web page
- digital input for general ON/OFF
- digital input for Summer/Winter selection (only for HP units)

For further details on available functions and on displayed information, you can refer to the specific documentation of the control.

By default, the serial connections present as standard are enabled only for reading from BMS. Enabling of writing from BMS is to be requested when ordering.

Main functions of the webserver (only for units with advanced control)

As standard, the Bluethink controller integrates a web-server with a preloaded web page that is accessed via password.

The web page allows the following functions to be carried out (some of these are available only for users with advanced level rights):

- display of the main functions of the unit such as unit serial n°, size, refrigerant
- display of the general status of the machine: water inlet and outlet temperatures, external air temperature, mode (chiller or heat pump), evaporating and condensing pressures, suction and discharge temperatures
- display of the status of compressors, pumps, expansion valves
- display in real time of the graphs of the main quantities
- display of the graphs of logged quantities
- display of alarm log
- management of users on several levels
- remote ON/OFF
- remote set point change
- remote time band change
- remote summer winter mode selection

Human-Machine Interface

The control has a graphic display that allows the following information to be displayed:

- water inlet and outlet temperature
- set temperature and differential set points
- description of alarms
- hour meter of operation and number of start-ups of the unit, the compressors and the pumps (if present)
- high and low pressure values, and relevant condensing and evaporating temperatures
- external air temperature
- superheating at compressor suction.

Management of defrost cycles (only for HP units)

For defrost management, the control of the unit uses a sliding intervention threshold, depending on the pressures inside the unit and the external air temperature. By putting together all this information, the control can identify the presence of ice on the coil and activates the defrosting sequence only when necessary, so as to maximize the energy efficiency of the unit.

Sliding management of the defrost threshold ensures that, as the absolute humidity of outdoor air decreases, the frequency of the defrost cycles gradually decreases because they are carried out only when the ice formed on the coil actually penalizes performance.

The defrost cycle is fully automatic and is carried out using a patented defrost system (patent n° 1335232): during the initial stage, a defrost is carried out by cycle reversal with fans stopped. When the frost on the coil has melted sufficiently, reverse ventilation is activated, that is, with air flow in the opposite direction to that of normal operation, so as to facilitate the ejection of condensed water and detached ice. When the coil is clean, ventilation is reversed again and the unit resumes operation in heat pump mode.

The combination of the sliding intervention threshold and the patented defrost system allows the number and duration of defrost cycles to be optimized and reduced to the minimum.

CONTROLS AND SAFETY DEVICES

All the units are fitted with the following control and safety components:

- high pressure switch with manual reset
- high pressure safety device with automatic reset, for a limited number of occurrences, managed by the controller
- low pressure safety device with automatic reset and limited tripping managed by the controller
- high pressure safety valve
- antifreeze probe at outlet of each evaporator
- mechanical paddle flow switch already installed
- overtemperature protection for compressors and fans

TESTING

All the units are factory-tested and supplied complete with oil and refrigerant.

VERSIONS

Alongside the basic version of the unit, there are various versions that differ in efficiency and noise levels.

A and A+: high efficiency unit

The high efficiency units use larger coils than the basic unit, in order to increase the ratio between exchange surfaces and capacity of the compressors. This allows all models to achieve Eurovent Class A for both EER and COP and consequently also high ESEER values.

SLN and A/SLN: super low noise unit and high efficiency super low noise unit

The SLN and A/SLN version units use a soundproofed compressor compartment and oversize coils compared to the standard efficiency unit.

For SLN/HP version units working in heat pump mode, the fans always operate at 100% speed and therefore guarantee the same performance levels as high efficiency versions.

OPTIONS

/HP: reversible heat pump

In addition to the set-up of a chiller only unit, /HP units comprise (for each refrigerant circuit):

- 4-way reversing valve
- suction separator
- fluid accumulator
- second electronic expansion valve.
- Anti-Ice Circuit at the base of each coil

The Anti-Ice Circuit prevents ice formation in the lower part of the coil and therefore allows the unit to operate even with extremely harsh temperatures and with high humidity levels.

For defrost management, the control of the unit uses a sliding intervention threshold, depending on the pressures inside the unit and the external air temperature. By putting together all this information, the control can identify the presence of ice on the coil and activates the defrosting sequence only when necessary, so as to maximize the energy efficiency of the unit.

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The combination of the sliding intervention threshold and the patented defrost system allows the number and duration of defrost cycles to be optimized and reduced to the minimum.

Summer/winter switching can be done from the control keypad, digital input or BMS (requires write enabling).

/LN: low noise unit

In the unit with /LN option, all the compressors are enclosed in a compartment that is fully soundproofed with sound absorbing material and soundproofing material.

/DC: unit with recovery condenser

In addition to the set-up of a chiller only unit, /DC units comprise:

- a heat recovery condenser for recovering 100% of the condensation heat on each refrigerant circuit. The exchanger is a brazed plate heat exchanger; for multi-circuit units, the heat exchangers are to be manifolded outside the unit (by the customer)
- temperature probe at the inlet of each recovery exchanger
- liquid receiver for each refrigerant circuit with system for emptying the refrigerant from the condensing coil
- potential free contact in the electrical control panel for activation of recovery.

When required by the system, through the closing of a contact, the control automatically manages activation of recovery. Recovery management is carried out through a control on the temperature of the return water. The control also automatically manages safety deactivation of recovery if the condensing pressure becomes too high, and changes to using the condensing coils.

This option is not available for /HP units

/DS: unit with desuperheater

In addition to the set-up of a chiller only unit, /DS units comprise (for each refrigerant circuit) an exchanger for condensation heat recovery of up to 20% (depending on size, version and operating conditions), placed in series with the condensing coils. The exchanger is a braze-welded plate heat exchanger. For multi-circuit units, the exchangers are to be manifolded outside the unit (by the customer).

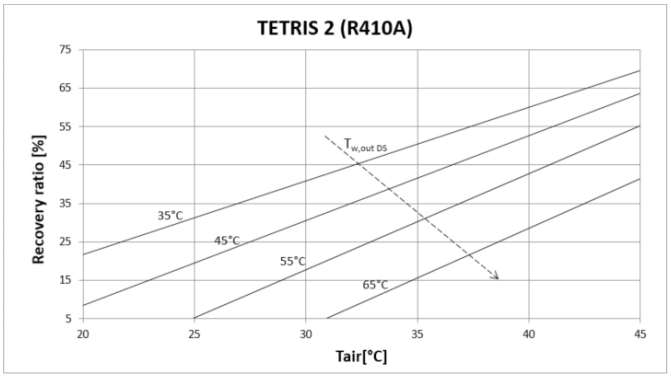
Condensation heat recovery is a function of size, version and operating conditions.

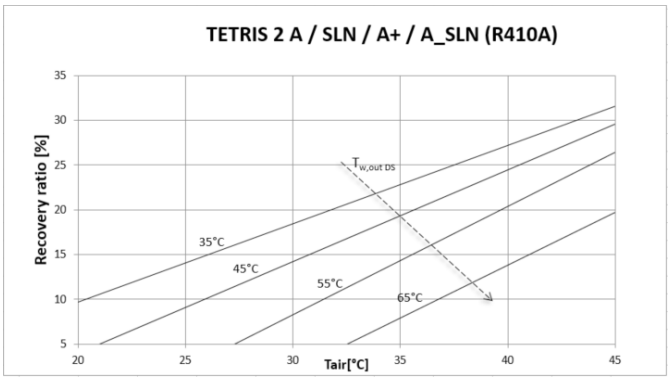
Two illustrative graphs are shown below in which, as the ambient temperature changes, (T_{air}) and as the temperature of the water leaving the heat recovery heat exchanger changes, ($T_{w,out\ DS}$), the percentage of recovered heat is shown as an indication (Recovery ratio).

Condensation heat recovery is a function of size, version and operating conditions.

The percentage of recovered heat is calculated as the ratio between recovered heat flow to the desuperheater and the heat flow to the condenser under nominal conditions, that is, evaporator inlet/outlet water temperature 12/7°C.

In the following graphs, a constant temperature delta of 5°C between water inlet and outlet at the heat recovery heat exchanger has been considered.





This option is also available for /HP units, but in this case, in the installation, it must have provision for shutting off the recovery water circuit during operation in heat pump mode to to avoid taking power from the user-side heat exchanger.

/HAT: unit for high external air temperatures

The unit with /HAT option adopts an electrical control panel made using specific components to withstand high temperatures, special cables and oversize protection parts.

This enables the unit to work with external air temperatures of over 46°C as indicated in the section on operating limits;

operation is guaranteed with external air temperature up to 52°C.

For higher temperatures up to about 55°C, a set-up with air conditioning of the electrical control panel is necessary; the unit works in capacity reduction mode. The feasibility of this set-up must be assessed: please contact our sales department.

HYDRAULIC MODULES

All units can be fitted with hydraulic module in various configurations:

- /1P: hydraulic module with one pump
- /2P: hydraulic module with two pumps
- /3P: hydraulic module with three pumps
- /1PS: hydraulic module with one pump and buffer tank
- /2PS: hydraulic module with two pumps and buffer tank
- /3PS: hydraulic module with three pumps and buffer tank

All the above-mentioned modules have pumps with standard discharge head.

The following are also available:

- modules /1Pr, /2Pr, /1PrS e /2PrS that have pumps with reduced available discharge head
- modules /1PM, /2PM, /3PM, /1PMS, /2PMS and /3PMS that have pumps with increased available discharge head

Hydraulic modules with one pump have:

- one pump
- an expansion vessel

Hydraulic modules with two pumps have:

- two pumps
- a check valve on the delivery side of each pump
- an expansion vessel

In the version with 2 pumps, these are always with one on standby while the other is working. Switching over between the pumps is automatic and is done by time (to balance the hours of operation of each one) or in the event of failure.

Hydraulic modules with three pumps have:

- three pumps
- a check valve on the delivery side of each pump
- an expansion vessel

The 3 pumps operate in parallel and each one processes a third of the total flow rate.If one of the three pumps fails, the unit will work in forced capacity reduction mode (to avoid low pressure alarms) and the remaining two pumps will in any case be able to guarantee about 78% of the rated flow rate.

Hydraulic modules with tank also have:

- a gate valve at the inlet of the pump or the suction manifold
- a tank with drain valve and air valve

Refer to the table of configurations that are not possible to check for availability of specific set-ups.

DESCRIPTION OF ACCESSORIES

Some accessories may be incompatible with each other even if not expressly indicated.

Refrigerant circuit accessories

BC **Capacitive backup battery for electronic expansion valve**

When the compressors stop, the controller always closes the electronic expansion valve to prevent dangerous refrigerant migration. The presence of the backup battery ensures that the electronic valve is kept in closed position even when there is no power supply

This accessory uses a condenser, and not an ordinary battery, as energy storage: this allows it to be unaffected by the memory effect of normal batteries and eliminates its need for maintenance.

BT **Backup battery for electronic expansion valve**

When the compressors stop, the controller always closes the electronic expansion valve to prevent dangerous refrigerant migration. The presence of the backup battery ensures that the electronic valve is kept in closed position even when there is no power supply

BK **Brine Kit**

This accessory is compulsory if a water temperature set point lower than or equal to +3°C is used (if the unit is provided with double set point or variable set point, the lower set point is considered).

The accessory consists of increased insulation and suitable sizing and calibration of some components.

The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the allowed limit temperature.

The unit will be optimized to work at the set point temperature given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

DVS **Double safety valve**

With this accessory, instead of each individual safety valve per circuit, there is a "candelabrum" with two safety valves and a diverter valve for choosing the valve in operation. This allows the safety valves to be replaced without having to drain the machine and without having to stop it.

MAFR_tab_Pressure gauges

The operating pressures of each circuit of the unit can be displayed on the control by accessing the relevant screens. Also, the machine can be fitted with pressure gauges (two for each circuit) installed in a clearly visible position. These allow reading in real time of the working pressures of the refrigerant gas on the low pressure side and on the high pressure side of each refrigerant circuit.

RIC **Liquid receiver**

The adoption of this accessory always guarantees correct feeding of the expansion valve even when the unit is subjected to wide external air temperature ranges.

This accessory is standard on DC and HP units.

RPR **Refrigerant leak detector**

With this accessory, a refrigerant leak detector is placed inside each compressor compartment. Detection of a refrigerant leak is managed by the controller through a specific alarm and display of a specific icon on the display of the controller. This alarm stops the unit.

The accessory can be applied only to units in LN or SLN set-up.

RPR **Refrigerant leak detector**

With this accessory, a refrigerant leak detector is placed inside each compressor compartment. Detection of a refrigerant leak is managed by the controller through a specific alarm and display of a specific icon on the display of the controller. This alarm stops the unit.

The accessory can be applied only to units in LN or SLN set-up.

RUB **Compressor suction and delivery valves**

The valves situated on the delivery side and on the suction side of the compressors allow the compressor to be isolated from the rest of the refrigerant circuit, so making the maintenance operations quicker and less invasive

Fan accessories

VEC **EC fans**

With this accessory, EC fans, with electronically commutated brushless motor, are used for the ventilating section. These guarantee very high efficiency levels for all working conditions and allow a 15% saving on the power absorbed by each fan working at full capacity.

Also, through a 0-10V analogue signal sent to each fan, the microprocessor carries out condensation/evaporation control by continuous adjustment of the air flow rate as the external air temperature changes, with a further reduction in electrical absorption and noise emission.

VEM **Oversize EC fans**

With this accessory, oversize EC fans, with electronically commutated brushless motor, are used for the ventilating section. These guarantee very high efficiency levels for all working conditions. Through a 0-10V analogue signal sent to each fan, the microprocessor carries out condensation/evaporation control by continuous adjustment of the air flow rate as the external air temperature changes, with a further reduction in electrical absorption and noise emission.

Oversize EC fans allow a residual available discharge head of about 100Pa to be obtained.

RECP **Pressure recuperator**

Normally, the air ejected by the fan has a high speed and this manifests itself as kinetic energy that is dissipated into the environment. The pressure recuperator is a passive element situated on the ejection duct of each individual fan designed to allow better conversion of kinetic energy into static pressure, which manifests itself as a higher pressure generated by the fan.

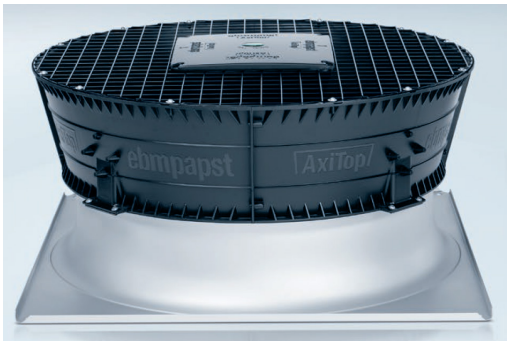
This higher pressure can have at least two possible applications:

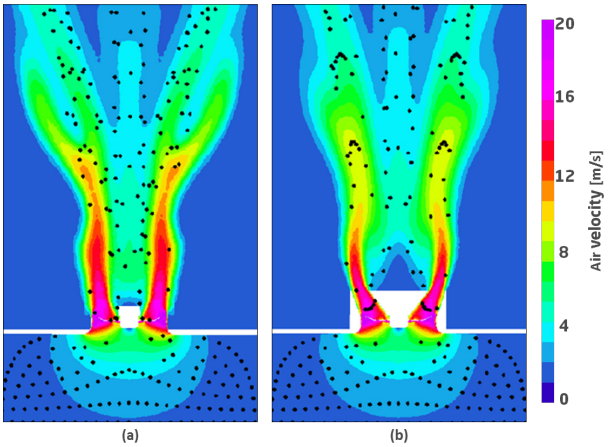
- For the same fan speed, the pressure recuperator allows an increase of about 50Pa in the available pressure of the ventilating section to be obtained. This can be useful for overcoming the head losses that may be present in specific installations. The increase in available pressure is to be considered in addition to the increase that can already be obtained with the application of oversize EC fans
- for the same pressure differential on the air, the pressure recuperator allows the same air flow rate to be obtained with a lower number of revolutions of the fan. This automatically produces a reduction of up to 3 dB(A) in the noise emission of the unit and a reduction in the absorption of the fan, with an immediate increase in the overall efficiency of the unit.

The reduction in total sound power varies depending on the model and version of the unit as it is related to the incidence of noise generated only by the fan section on the total noise emitted by the unit. For SLN units, which already work with a reduced air flow rate, application of the pressure recuperator has a limited or negligible noise reduction effect.

To optimize the performance of the unit, the "VEC" accessory can be combined: the higher efficiency of the EC fans (especially when operating at reduced speed) is added to the performance improvement generated by the pressure recuperator.

The accessory is supplied separately from the unit on one or more pallets and it must compulsorily be installed (by the customer) before the first start-up of the machine.





(a) fan only;

(b) fan with pressure recuperator

Hydraulic circuit accessories

FVP FLOWZER VP - Inverter for manual pump adjustment

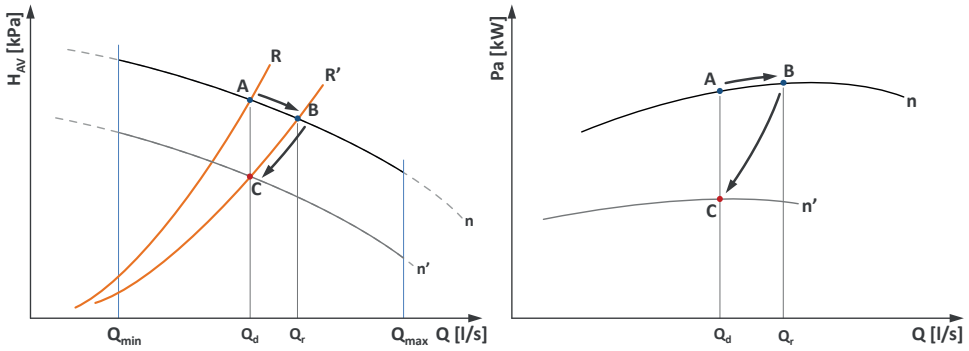
The accessory consists of inserting an inverter in the machine to manually adjust the speed of the pump (or pumps) in order to calibrate the pump flow rate on the head losses of the system.

This accessory is to be combined with one of the integrated hydraulic modules that can be selected for the unit.

Units equipped with integrated hydraulic module allow a certain level of available discharge head (point A) to be obtained under nominal flow rate conditions Q_d.

But the actual head loss level of the system (e.g. characteristic curve R') normally causes the pump to find a different equilibrium point (point B), with a flow rate Q_r higher than Q_d.

In this condition, besides having a different flow rate from the nominal flow rate (and therefore also a different thermal gradient), there is also higher pump power absorption.



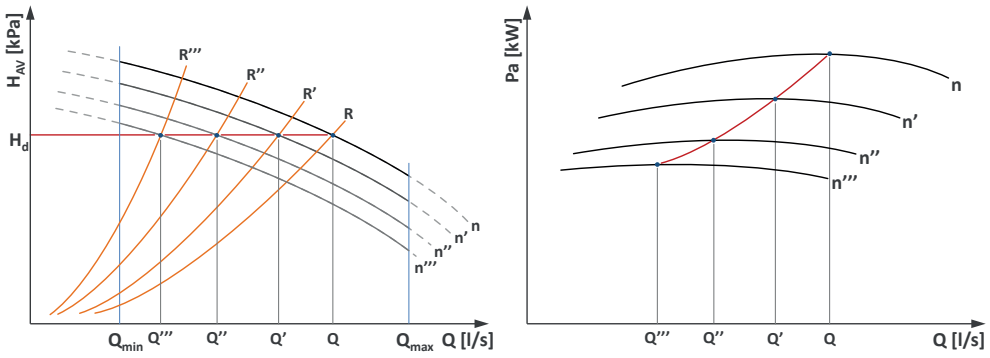
The use of the Flowzer allows the pump speed to be set manually (e.g. at speed n' instead of n) to obtain the design water flow rate and thermal gradient (point C). Once the adjustment procedure has been carried out, the pump will always work at a fixed flow rate.

Use of the Flowzer VP allows the power absorption of the pump to be considerably reduced with consequent energy saving. By way of example:

- a 10% reduction in flow rate gives a reduction in absorbed power of about 27%

FVD FLOWZER VD - Transducer for automatic adjustment

Flowzer VD requires a pressure transducer to be installed in the machine. Through this transducer, the inverter can gauge the actual pressure at the ends of the system and automatically adapt the pump speed to obtain a set available discharge head value. Flowzer VD must be combined with Flowzer VP. This accessory therefore allows a constant pressure system to be achieved.



With the Flowzer VD, the customer can set, directly on the inverter, the available discharge head value H_d that the unit must maintain. As can be seen in the graph, as the system user points close, the resistance curve of the system shifts to the left and therefore the inverter will be able to reduce the pump speed in order to keep the available discharge head of the unit constant. By doing so, an immediate reduction in the power absorbed by the pump will be obtained. The customer will have to check that, in minimum flow rate conditions (that is, with the maximum number of user points closed), this is always higher than or equal to the minimum flow rate allowed by the unit.

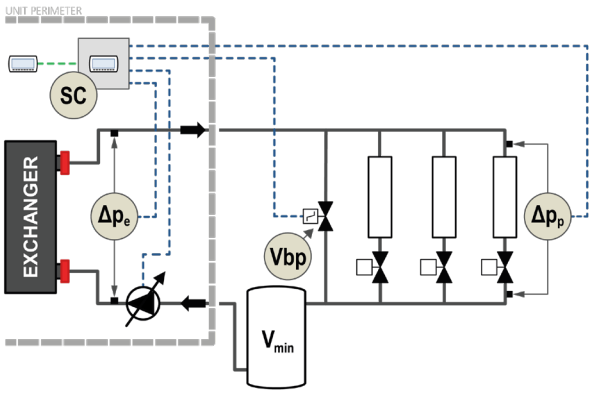
This accessory is useful when the total head losses of the circuit are slightly variable or when they change depending on the seasons (for example, some user points are active only during summer operation and not during winter operation).

The use of this accessory also allows the pump speed to be adapted to possible fouling of the filter on the hydraulic circuit.

FVF FLOWZER VFPP – Kit for variable flow rate primary circuit pump with bypass valve included

Bluethink solution for a variable flow rate system, consisting solely of a user-side primary circuit.
Flowzer VFPP includes:

- a pressure transducer installed at the ends of the user-side exchanger (Δp_e)
- a dedicated control system, installed at the factory in the electrical control panel of the unit (Sc)
- a modulating bypass valve with servo-motor supplied separately with it (V_{bp}) (installation by the customer)
- two system pressure transducers (Δp_p) supplied separately (installation by the customer)



It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit. The accessory is not compatible with Multilogic (please contact our sales department for further details).
The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.
The option offers a complete default package to guarantee simple selection, purchasing and commissioning.
In particular, the unit includes an additional control system, equipped with an advanced algorithm, which interacts with the main advanced Bluethink controller.
The Flowzer VFPP has the advantage of:

- implementing an innovative design, which is alternative to the classic system based on fixed flow-rate primary circuit plus secondary circuit
- being ideal for new or entirely redesigned systems, especially for comfort applications
- achieving a complete variable flow system, with maximum energy saving
- simplifying the layout of the user circuit
- limiting the capex of the system
- achieving complete and reliable control of the system

The maximum energy saving is achieved thanks to:

- a hydraulic decoupler managed by the modulating bypass valve, which regulates the bypass flow rate on the lowest possible value
- an advanced algorithm to prevent hunting by the reversing valve and by the bypass valve, thereby balancing the pump speed and the bypass speed to a minimum

The capex of the system is also reduced thanks to:

- single inverter + pumping module, integrated in the unit
- small internal footprint, due to the simplified layout

The operating principle can be summarized as follows:

- the flowzer VFPP carries out constant control of the discharge head
- the system controller modulates the pump speed according to the condition detected by the system transducers Δp_p
- if the system terminals are switched off, the pump speed will decrease
- the pump speed can be reduced until it reaches the minimum allowed flow rate on the heat exchanger of the unit
- this flow rate is indirectly monitored through the losses detected by the differential pressure transducer Δp_e
- When the minimum allowed flow rate threshold is exceeded, the control system will open the bypass valve V_{bp} to recirculate the flow rate that is not required by the system, but is necessary to guarantee the minimum flow rate to the heat exchanger.

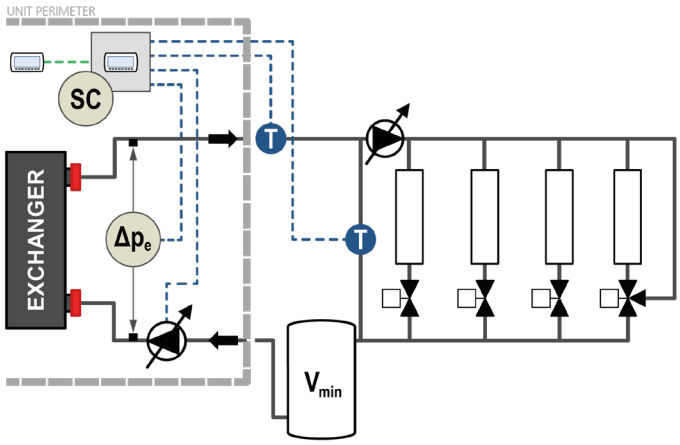
In the required minimum load condition (that is, with all system terminals switched off), the required minimum volume (V_{min}) must be concentrated in the relevant tank, to be installed between the unit and the bypass valve.
The bypass valve V_{bp} is controlled through a 0-10 V signal and must therefore be installed within 30 m of the unit.
The pressure transducers of the system Δp_p provide a 4-20 mA signal and require two 1/4" female fittings. These transducers must be installed within 200 m of the unit, near the system terminal that is affected by the highest line head losses or in any case in a position where it is possible to measure an adequate pressure value.
Further details can be found in the relevant manual.

Bypass valve diameter	TETRIS 2 FC	TETRIS 2A FC	TETRIS 2 SLN FC	TETRIS 2A+ FC	TETRIS 2A SLN FC
2 1/2"				18.4	18.4
				23.5	23.5
3"	27.4	28.4	28.4	27.6	27.6
	29.4	34.4	34.4	31.4	31.4
	32.4				
4"	33.4	38.4	38.4	36.4	36.4
	37.4	43.4	43.4	41.5	41.5
	41.4	47.4	47.4	44.6	44.6
	43.6	50.6	50.6	49.6	49.6
	47.6			54.6	54.6
5"		57.6	57.6		
		64.6	64.6		
		70.6	70.6		

FVPS FLOWZER VPS – Kit for variable flow rate pump with temperature sensors

Bluethink solution for a variable flow rate system, consisting of a primary circuit plus secondary circuit.
Flowzer VPS includes:

- a differential pressure transducer, installed at the factory at the ends of the user-side heat exchanger of the unit (Δp_e)
- a dedicated control system, installed at the factory in the electrical control panel of the unit (Sc)
- two system temperature sensors (T) - supplied separately; installation by the customer



It is obligatory for the option to be combined with the Flowzer VP (inverter) and with one of the hydraulic modules that can be selected for the unit. The accessory is not compatible with Multilogic (please contact our sales department for further details).

The unit must include the advanced Bluethink controller, just one heat exchanger on the user side and a minimum capacity step of 25% or less.

The option offers a complete default package to guarantee simple selection, purchasing and commissioning.

In particular, the unit includes an additional control system, equipped with an advanced algorithm, which interacts with the main advanced Bluethink controller.

The Flowzer VPS has the advantage of:

- being ideal for renovations of existing systems, especially for comfort applications
- achieving a complete variable flow system, with maximum energy saving
- implementing a flexible design, e.g. for scalable or multi-zone systems

The maximum energy saving is achieved thanks to the advanced algorithm, which prevents hunting by the inverter and balances the pump speed and the recirculation flow rate to a minimum.

With refurbishments, the system's capex is limited to the unit and its commissioning.

The dimensions of the inverter of the unit and of the pump module can be favoured by the low design discharge head of the primary circuit.

The operating principle can be summarized as follows:

- the flowzer VPS performs intelligent control of the flow rate on the primary circuit, and balances it compared to the flow diagram of the secondary circuit
- the system controller modulates the pump speed according to the condition detected by the system sensors T
- if the system terminals are switched off, the flow rate of the secondary circuit will decrease; therefore the direction of flow is detected indirectly as temperature difference by the system sensors through the separator or the bypass pipe
- the system controller will consequently force the primary pump to reduce its speed, until it reaches the minimum allowed flow rate on the heat exchanger of the unit
- this flow rate is indirectly monitored through the losses detected by the differential pressure transducer Δp_e

In the required minimum load condition (that is, with all system terminals switched off), the necessary minimum volume (V_{min}) must be ensured by the relevant tank to be installed between the unit and the decoupler or bypass pipe.

The temperature sensors of the system T provide a 4-20 mA signal and require 1/2" female fittings.

Further details can be found in the relevant manual.

COL Water manifolds for DS

This accessory provides a pair of manifolds for connection of the partial heat recovery heat exchangers. The installation of the manifolds outside the machine is to be carried out by the customer.

Accessory supplied loose.

PFP User-side pump with Pulse function

As standard, the unit is set to keep the system-side circulation pump on all the time, even when the set point temperature is reached.

But when the unit is provided with this accessory, on reaching the set point, the controller will switch off the pump and start it again at regular intervals for a sufficient time to measure the water temperature. If the controller verifies that the water temperature is still in set point condition, it will switch off the pump again. Otherwise the controller will start the compressors again to meet the requirements of the system.

This accessory therefore allows electrical absorption due to pumping to be drastically reduced, especially in spring and autumn when the load is extremely low.

RA Antifreeze heater

These are electric heaters inserted on the user-side heat exchanger, on the pumps and in the tank (depending on the configuration of the machine) to prevent damage to the hydraulic components due to ice formation during periods when the machine is stopped.

Based on normal operating conditions and the percentage of glycol in the system, an appropriate "antifreeze alarm" temperature is set in the control. When a temperature that is 1K higher than the antifreeze alarm threshold is detected at the outlet from the exchanger, the pump (if present) and the antifreeze heaters are switched on. If the temperature of the outgoing water reaches the antifreeze alarm threshold, the compressors are stopped, keeping the heaters and the pumps active, and the general alarm contact of the machine is activated.

VSIW Water-side safety valve

With this accessory, a safety valve is inserted in the hydraulic circuit of the unit: when the calibration pressure is reached, the valve opens and, by discharging (to be routed by the customer), prevents the system pressure from reaching limits that are dangerous for the components present in the system. The valves have positive action, that is, performance is guaranteed even if the diaphragm deteriorates or breaks.

Electrical accessories

A41 **Power supply 415/3/50**
Power supply 415/3/50.

A43 **Power supply 400/3/50**
The standard power supply of the unit

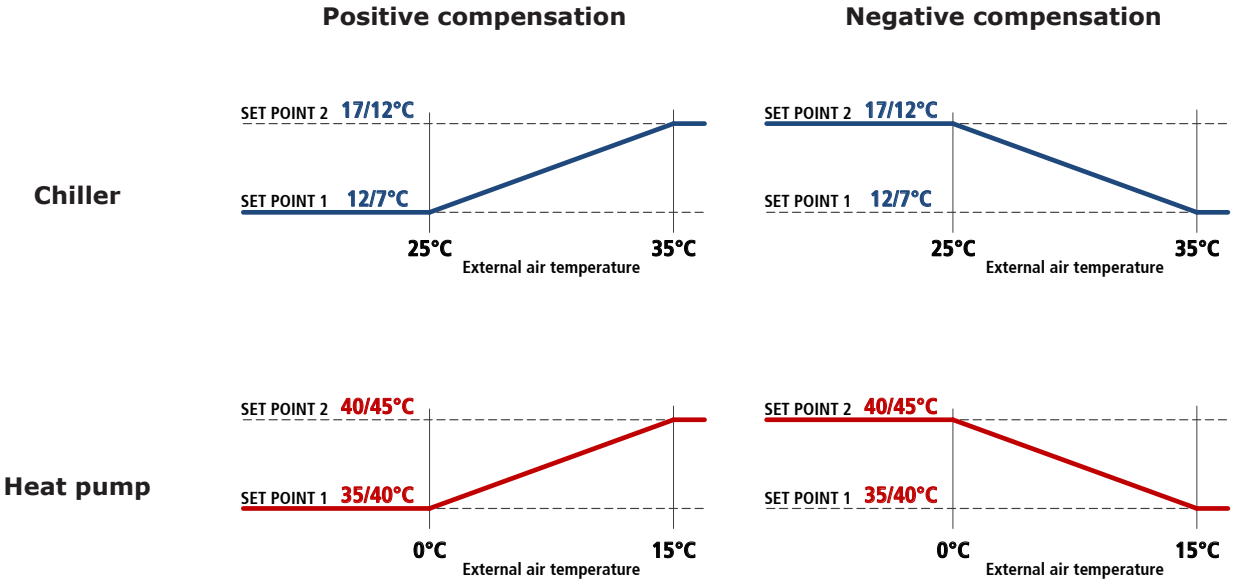
ARU **Stopping of the unit due to temperatures below the operating limit**
With this accessory, it is possible to set the unit so that the controller switches off the compressors when the unit is operating in heat pump mode and the external air temperature falls below a minimum set limit: this will prevent the unit from going into low pressure alarm, so avoiding having to manually restart the machine.
When the external air temperature returns above the set threshold temperature, the unit will automatically resume operation without it being necessary to do anything.
For units equipped with integrated pump, the pump will always be kept running so as to prevent ice formation and ensure correct reading of the temperature and antifreeze safety probes at all times.
The stopping temperature must be set based on the set point temperature and in accordance with what is allowed by the operating limits of the machine.
The same function can be used to set an external air temperature below which to use an alternative heat source because it is more efficient or economically more advantageous.
With the default programming, the limit that considers a production of outgoing water at 45°C is set, therefore:

- -7°C for standard units
- -10°C for /HE and /SLN units.

CA **Advanced control**
With this accessory, the advanced control is used also for sizes/versions provided with the parametric control as standard.

COTW **Outgoing water temperature control**
With this accessory, outgoing instead of incoming water temperature control is used.

CSP **Set point compensation depending on external air temperature**
For units fitted with this accessory, the set point of the unit is set so that it can vary between two values, a maximum and a minimum, depending on the external air temperature. The compensation ramp and the maximum and minimum values of the set point can be changed by the user.
Unless otherwise specified in the order, the controller will be set to implement a positive compensation logic according to the temperatures shown in the following diagrams:



DAA **Double power supply with automatic switching**

A motor-driven automatic switch to which to connect two separate power supply lines (for example, one from the mains power line and one from the uninterruptible power supply unit) is installed in the electrical control panel of the unit.

The switching from one line to another is automatic and obligatorily requires passing through the OFF position.

When this accessory is requested, the power supply of the unit must compulsorily include neutral.

DAM **Double power supply with manual switching**

A manual switch to which to connect two separate power supply lines (for example, one from the mains power line and one from the uninterruptible power supply unit) is installed in the electrical control panel of the unit.

The switching from one line to another is manual and obligatorily requires passing through the OFF position.

IACV **Automatic circuit breakers**

With this accessory, automatic circuit breakers are installed instead of fuses for the protection of auxiliary loads. Also, the same accessory uses automatic circuit breakers with adjustable thermal overload protection to protect the compressors.

LIID **Limitation of the current absorbed by digital input**

When this accessory is requested, a digital input is prepared in the terminal board to activate the forced capacity reduction of the unit to a set fixed level.

This accessory is useful when there is a need to necessarily limit the power absorbed by the unit as regards particular conditions.

We point out that, in some conditions (for example, during defrosting, oil return cycles or hourly compressor rotation procedures), the controller could force the unit to operate at full capacity for limited periods of time.

NSS **Night Shift System**

This accessory is applied to high efficiency units or to SLN units.

In the day time slot, which is normally the one with the highest heat load, priority is given to efficiency and therefore the machine works with a fan control curve that maximises the EER. In this time slot, therefore, the unit is a high efficiency low noise machine (equivalent to A/LN, A+/LN)

In the night time band (or in any case from time band decided by the customer), the priority changes to limiting the noisiness of the machine and therefore the controller carries out an adjustment of the control ramp of the condensing fans, thereby reducing the air flow rate and consequently the noise emission level. So, in this time band, the unit is a super low noise machine (equivalent to SLN).

In any case, if there is a need for additional cooling capacity, the controller will manage the demand, if necessary, by accelerating the fans and keeping condensation within the correct operating limits.

The time slots can be set from the control depending on installation requirements.

When the unit is working in heat pump mode, in order to maximise the COP and to obtain the widest possible operating limits, the control of the unit forces the fans to the maximum speed also during the night time bands.

RE1P **Relay for management of 1 external pump**

This accessory can be requested for units without pumps and allows a pump outside the machine to be controlled.

RE2P **Relay for management of 2 external pumps**

This accessory can be requested for units without pumps and allows two pumps outside the machine to be controlled with a running/stand-by logic by implementing a rotation on the hours of operation.

RIF **Power factor correction to cosφ ≥ 0.95**

With this accessory, an electrical control panel, containing power factor correction capacitors to make the cosφ of the unit greater than or equal to 0.95, is supplied with the unit. The capacitors should be connected (by the customer) to the electrical control panel of the unit in the specially prepared terminal board.

Besides reducing the absorbed reactive power, the use of this accessory also allows the maximum absorbed current to be lowered.

RMMT **Maximum and minimum voltage relay**

This accessory constantly monitors the voltage value and the unit's power supply phase sequence. If the supply voltage does not fall within the set parameters or there is a phase reversal, an alarm is generated that stops the machine to prevent damage to its main parts

SETD **Double set point from digital input**

The accessory allows you to preset two different operating set points and manage the change from one to the other through a digital signal.

The set point temperatures must be specified when ordering. For optimization of the unit, reference will be made to the lower set point in chiller mode and the higher set point in heat pump mode.

Unless otherwise specified in the order, the controller will be set at the factory with the following temperatures:

- in chiller mode, set point 1 to 7°C and set point 2 to 12°C
- in heat pump mode (only for HP units) set point 1 to 45°C and set point 2 to 40°C

SETV **Variable set point with remote signal**

The accessory allows the set point to be varied continuously between two preset values, a maximum and a minimum, depending on an external signal that can be of the 0-1V, 0-10V or 4-20mA type.

The set point temperatures and the type of signal to use for the adjustment must be specified when ordering. For optimization of the unit, reference will be made to the lower set point in chiller mode and the higher set point in heat pump mode.

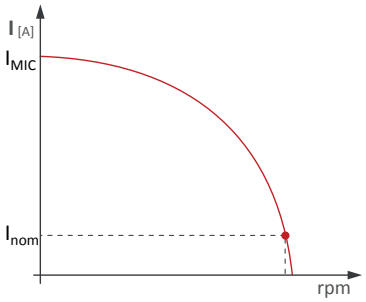
Unless otherwise specified in the order, the controller will be set at the factory with 0-10V analogue input and with the following temperatures:

- in chiller mode, 0V will correspond to a set point of 7°C and 10V will correspond to a set point of 12°C
- in heat pump mode (only for HP units), 0V will correspond to a set point of 45°C and 10V will correspond to a set point of 40°C

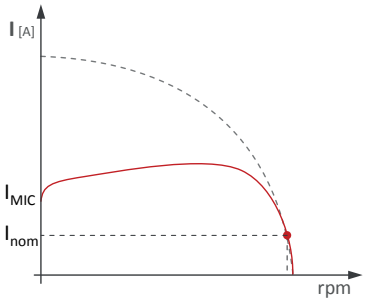
SOFT **Electronic soft-starter**

The scroll compressors have DOL (Direct On Line) starting and therefore the maximum inrush current I_{MIC} will be 4/5 times its nominal current I_{nom}.

If the unit is equipped with the electronic soft-starter accessory, the starting of each compressor is done with an acceleration ramp that allows the effective value (rms value) of the inrush current of the individual compressor to be lowered.



Current trend without accessory Electronic soft-starter



Current trend with accessory Electronic soft-starter

If the unit is equipped with accessory "Power factor correction to cosφ ≥ 0.95", this last will be electro-mechanically connected only at the end of the acceleration ramp of the soft-starter.

SQE **Heater for electrical control panel**

Electric heaters are positioned inside the electrical control panel and these prevent the formation of ice or condensation inside it.

TERM **Remote-controlled user terminal panel**

This accessory allows the terminal normally situated on the machine to be replicated on a support situated at a distance. It is particularly suitable when the unit is placed in an area that is not easily accessible.

The accessory is supplied loose and is to be installed by the customer at a maximum distance of 120m from the unit. We advise using a cable of the following type: "TECO O.R. FE 2x2xAWG24 SN/ST/PUR".

For this accessory, there is a dedicated serial port.

Network accessories

BEET **Blueye® via Ethernet**

This accessory does not include any type of **Blueye® Service**. This service must be purchased separately based on the number of units/devices to be connected and the number of variables to be monitored.

Blueye® is a supervision platform that enables remote monitoring of one or more units in the same system interconnected through a network with Modbus protocol.

The critical variables to be monitored over time are identified for each connected device. These variables are sampled and saved to the cloud so that they are accessible at all times through a web portal or a mobile APP (available for Android and iOS).

The following options can be selected for connection to the internet:

- a LAN (Ethernet) connection - available in the system;
- a connection to a mobile network - at least 3G. The data SIM card is not included.

Subscribing to any of the Blueye® Services enables:

- viewing the history of the monitored variables, in the form of both numerical values and graphs;
- downloading the history of variables in CSV format;
- the creation of automatic reports;
- setting notifications (via APP or mail) with settable thresholds for each variable;
- switching the unit ON/OFF remotely;
- changing the set point remotely;
- selection of SUMMER/WINTER mode remotely (for reversible units only).

Two different types of contracts can be signed.

Blueye® Service Basic:

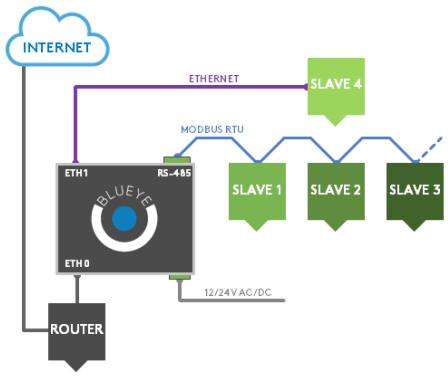
- to monitor a max. of 20 variables in total over max. 5 units/peripherals;
- to set a min. sampling frequency of 60 seconds.

Blueye® Service Advanced:

- to monitor a max. of 200 variables in total over max. 10 units/peripherals;
- to set a min. sampling frequency of 5 seconds.

Both contracts can be supplemented with the following option: **VPN**. Unlike a standard connection, this option is used to create a secure connection (tunnelling) between the user and the remote unit through the Blueye® portal. This type of connection gives full access to the remote controller and enables upgrading of the software (only for units with programmable controller).

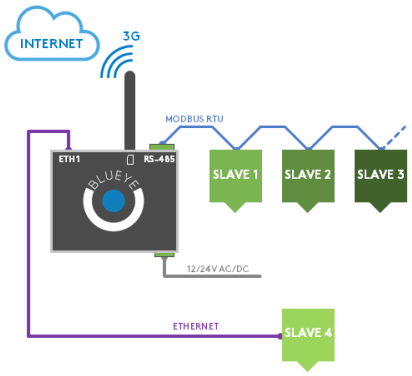
For further details, refer to the specific Blueye® documentation.



BERS Blueye® via RS485

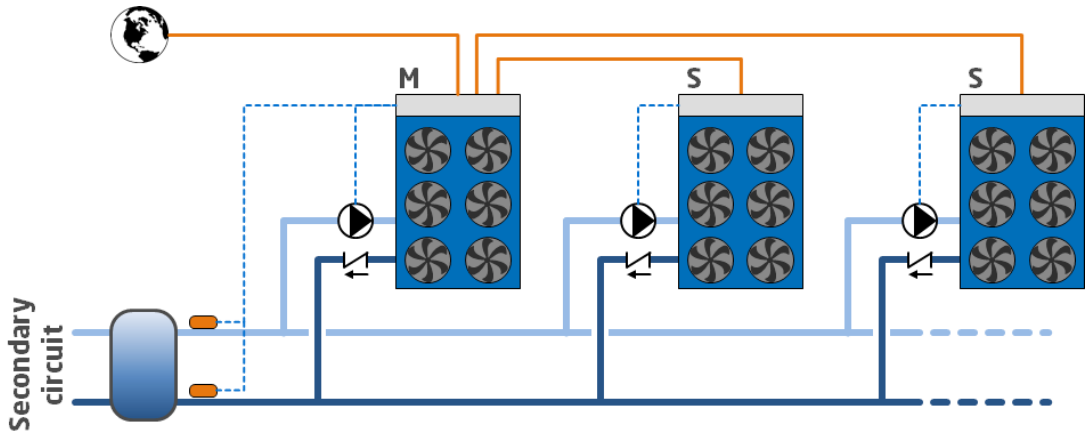
This accessory includes installation on the machine of the **Blueye® Device**, namely the component used to connect to the cloud service for storage of unit operating data.

The Blueye® Device is already installed and wired in the unit. Up to 10 units/peripherals can be connected to one Blueye® Device (depending on the signed Blueye® Service contract) through a RS485 network with Modbus RTU protocol or an Ethernet network with Modbus protocol. If an Ethernet network is used, the unit must also be equipped with a network switch (this accessory is sold separately) having a sufficient number of ports.



FMx Multilogic Function

The Multilogic function allows management of up to 32 units equipped with advanced Bluethink controller and connected in hydraulic parallel with each other.



On the basis of the information recorded by the temperature probes installed on the delivery and return manifolds of the system, with the master unit, a capacity request is generated that is distributed among the units connected in the Multilogic network according to settable priority and optimization logics.

If communication between the units fails or if the master is off-line, the slave units can continue to work according to the set thermoregulation parameters.

The connected units can be different from each other, in terms of capacity and set-up, provided the following rules are complied with:

- if there are both chiller units and heat pumps in the Multilogic network, the Master unit must obligatorily be one of the HP units
- if there are both free cooling and non free-cooling units in the Multilogic network, the Master unit must obligatorily be one of the free-cooling units.

The Multilogic function that can be requested with the unit can be:

- **FM0:** Multilogic function for Slave unit
- **FM2:** Multilogic function for Master unit for managing up to 2 Slaves
- **FM6:** Multilogic function for Master unit for managing up to 6 Slaves

If you need to connect more than 6 slaves (up to 31), you can ask for a quotation from our sales department.

GLO Modbus Lonworks Gateway

With this accessory, a RS485/Lon gateway is installed inside the electrical control panel.

By default, the programming gives read-only access to the control of the unit. Enabling of read/write access should be requested when ordering.

PBA BACnet protocol over IP (Ethernet)

The controller is set for use, in read and write mode, of the BACnet port on IP protocol.

By default, the programming gives read-only access to the control of the unit. Enabling of read/write access should be requested when ordering.

SERI RS485 serial connection with Modbus protocol

RS485 serial connection with Modbus protocol

SMAR Smartlink

This accessory makes it possible to connect the controller of the unit with the controller of a Swegon GOLD™ air handling unit via a simple serial cable, so allowing their operating logics to be merged into a single consciousness that pursues the maximum energy efficiency of the system. The RS485 serial interface is already included and dedicated to connection with Swegon units.

The option is incompatible with:

- double set point
- variable set point with remote signa
- summer/winter selection by digital input
- set point compensation depending on external air temperature
- multilogic
- all communication protocols.

SW4P Network switch with 4 ports

The accessory includes installation in DIN rail of a professional 4-port network switch.Requires Blueye via Ethernet.

SW8P Network switch with 8 ports

The accessory includes installation in DIN rail of a professional 8-port network switch.

Requires Blueye via Ethernet.

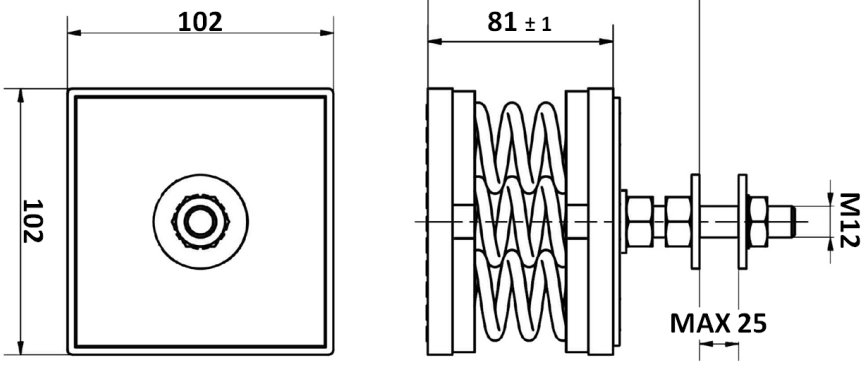
Other accessories

AG **Rubber anti-vibration mounts**

These allow you to reduce the vibrations transmitted from the unit to the surface it is standing on.
Accessory supplied loose.

AM **Spring anti-vibration mounts**

These allow you to reduce the vibrations transmitted from the unit to the surface it is standing on.
Accessory supplied loose.



ALPR **Pre-painted aluminium coil**

This accessory uses finned pack coils with copper tubes and aluminium fins pre-painted with an anti-corrosion treatment.

ANTC **Coil treated with anti-corrosion paints**

The treatment is applied exclusively to finned pack coils with copper tubes and aluminium fins and consists of aluminium passivation and coating with a polyurethane base; a double layer of paint, of which the first passivates the aluminium and acts as primer and the second is a polyurethane based surface coating. The product has high resistance to corrosion and all environmental conditions.

The choice of whether or not to treat the exchanger should be made in relation to the environment in which the unit is to be installed and through observation of other structures and machinery with exposed metal surfaces present in the destination environment.

The cross observation criterion is the most valid method of selection currently available without having to carry out preliminary tests or measurements with instruments. The identified reference environments are:

- marine coastal
- industrial
- urban with a high housing density
- rural

Please note that in cases where different conditions co-exist, even for short periods, the choice must be suitable for preserving the exchanger in the harsher environmental conditions and not in conditions between the worst and best situation.

Particular attention must be given to cases where an environment that is not particularly aggressive becomes aggressive as a consequence of a local and/or temporal concomitant cause such as, for example, due to the presence of a heating flue outlet or an industrial kitchen or a solvent extraction fan in a small craft business.

Protective treatment of the exchanger is strongly recommended if at least one of the points below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the distance from the coast is less than 20 km
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents.

For chiller units, this accessory also includes the "Cu/Al coil" accessory.

FW Water filter

To protect the elements of the hydraulic circuit (in particular, the exchangers), there are Y filters that can stop and settle the particles that are normally present in the water flow and would otherwise settle in the more delicate parts of the hydraulic circuit and damage its heat exchange capacity.

Installation of the water filter is mandatory even when it is not supplied as an accessory.

Accessory supplied loose.

MCHE E-coated microchannel coil

The e-coated microchannel coils are treated by immersion of the whole exchanger in an emulsion of organic resins, solvents, ionic stabilisers and deionised water. This is all subjected to a suitable electric field that causes the formation of a solid, uniform deposit on the exchanger. The function of this deposit will be to protect the aluminium from corrosion without penalising its thermophysical properties.

The choice of whether or not to treat the exchanger should be made in relation to the environment in which the unit is to be installed and through observation of other structures and machinery with exposed metal surfaces present in the destination environment.

The cross observation criterion is the most valid method of selection currently available without having to carry out preliminary tests or measurements with instruments. The identified reference environments are:

- marine coastal
- industrial
- urban with a high housing density
- rural

Please note that in cases where different conditions co-exist, even for short periods, the choice must be suitable for preserving the exchanger in the harsher environmental conditions and not in conditions between the worst and best situation.

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Protective treatment of the exchanger is strongly recommended if at least one of the points below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents.

PRAC **Steel profiles frames for container shipment**

This accessory foresees the mounting of steel profiles frames on the unit for its loading into container.

When this accessory is required it's for the shipping of the unit into container and its loading is mandatory to be done at the factory

PREA **Unit suitable to be disassembled on site**

The unit is delivered so that it can be disassembled easily on site if this makes the installation operations easier.

A unit requested with this option is supplied:

- screwed instead of riveted
- with plugged and not welded pipes
- without refrigerant charge
- untested
- covered by the warranty only if reassembled and screwed together by personnel authorized by the factory

RAAL **Cu/Al coils**

This accessory uses finned pack coils with copper tubes and aluminium fins instead of microchannel coils.

ALPR **Pre-painted aluminium coil**

This accessory uses finned pack coils with copper tubes and aluminium fins pre-painted with an anti-corrosion treatment.

RAT **Anti-intrusion nets**

An arc-welded, painted net (RAL colour 7035) is installed to close off the external openings so as to prevent access to the technical compartment by unauthorized personnel.

SLIT **Special pallet/skid for container shipment**

The unit is placed on a skid that makes the container loading and unloading operations easier.

The accessory is mandatory if shipping by container is required

STL **Brackets for transport over long distances**

The accessory consists of adding reinforcing bars to the structural metalwork. This allows the strength of the structure to be increased for long distance road transport.

TECHNICAL SPECIFICATIONS

TETRIS 2

			10.2	12.2	13.2	15.2	16.2	20.3	24.3
TETRIS 2									
Cooling									
Refrigeration capacity	(1)	kW	108,3	117,7	125,6	139,0	159,2	194,4	228,9
Total absorbed power	(1)	kW	36,1	42,2	48,5	54,3	60,5	75,4	84,8
EER	(1)		3,00	2,79	2,59	2,56	2,63	2,58	2,70
Eurovent efficiency class	(1)		B	C	D	D	D	D	D
ESEER			3,91	3,61	3,53	3,52	3,52	3,75	3,90
TETRIS 2 /HP									
Cooling									
Refrigeration capacity	(1)	kW	105,2	114,3	122,0	134,9	154,6	188,8	222,3
Total absorbed power	(1)	kW	36,2	42,2	48,4	54,4	60,4	75,2	84,9
EER	(1)		2,91	2,71	2,52	2,48	2,56	2,51	2,62
Eurovent efficiency class	(1)		B	C	D	E	D	D	D
ESEER			3,81	3,51	3,44	3,43	3,43	3,65	3,79
Heating									
Heating capacity	(2)	kW	107,7	118,8	128,7	145,8	162,8	192,8	230,9
Total absorbed power	(2)	kW	37,9	42,9	47,5	51,2	57,7	70,4	85,8
COP	(2)		2,84	2,77	2,71	2,85	2,82	2,74	2,69
Eurovent efficiency class	(2)		C	D	D	C	C	D	D
Compressors									
Compressors/Circuits		n°/n°	2/1	2/1	2/1	2/1	2/1	3/1	3/1
Minimum capacity reduction step	(7)	%	50%	44%	50%	45%	50%	33%	33%
Refrigerant charge CH (MCHX)	(3)	kg	11	13	12	17	13	20	19
Refrigerant charge CH (Cu/Al)	(3)	kg	13	15	14	20	15	23	22
Refrigerant charge HP	(3)	kg	24	25	27	30	30	47	45
Fans									
Quantity		n°	2	2	2	2	2	3	3
Total air flow rate CH (MCHX)		m³/h	42.000	42.000	42.000	42.000	42.000	63.000	63.000
Total air flow rate HP		m³/h	40.000	40.000	40.000	40.000	40.000	60.000	60.000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	18,7	20,4	21,7	24,0	27,5	33,6	39,5
Pressure drop CH	(1)	kPa	46	51	52	50	50	46	46
Water flow rate HP	(1)	m³/h	18,2	19,8	21,1	23,3	26,7	32,6	38,4
Pressure drop HP	(1)	kPa	44	48	49	47	47	43	43
Noise levels									
Sound power level cooling	(4)	dB(A)	89	89	89	89	89	92	92
Sound power level heating	(5)	dB(A)	89	89	89	89	89	92	92
Sound pressure level cooling	(6)	dB(A)	57	57	57	57	57	60	60
Sound power level of vers. LN cooling	(4)	dB(A)	86	86	86	86	86	87	88
Sound power level of vers. LN heating	(5)	dB(A)	86	86	86	86	86	87	88
Sound pressure level of vers. LN cooling	(6)	dB(A)	54	54	54	54	54	55	56
Dimensions and weights**									
Length		mm	1.148	1.148	1.148	1.148	1.148	2.297	2.297
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	880	900	920	950	970	1.430	1.480

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

TETRIS 2

			27.4	29.4	32.4	33.4	37.4	41.4	43.6
TETRIS 2									
Cooling									
Refrigeration capacity	(1)	kW	261,5	280,5	304,9	333,8	368,4	406,6	425,8
Total absorbed power	(1)	kW	97,6	112,2	121	134,6	135	147,9	163,1
EER	(1)		2,68	2,50	2,52	2,48	2,73	2,75	2,61
Eurovent efficiency class	(1)		D	D	D	E	C	C	D
ESEER			4,00	3,68	3,88	3,89	4,02	4,07	4,09
TETRIS 2 /HP									
Cooling									
Refrigeration capacity	(1)	kW	253,9	272,3	296,1	324,4	357,4	394,6	413,5
Total absorbed power	(1)	kW	97,3	112,1	120,9	134,6	134,4	147,8	163,4
EER	(1)		2,61	2,43	2,45	2,41	2,66	2,67	2,53
Eurovent efficiency class	(1)		D	E	E	E	D	D	D
ESEER			3,90	3,58	3,78	3,80	3,91	3,97	3,97
Heating									
Heating capacity	(2)	kW	256,7	282,2	307,5	341,1	355,6	400,6	423,2
Total absorbed power	(2)	kW	93	99,4	106,8	118,9	127	137,2	149,5
COP	(2)		2,76	2,84	2,88	2,87	2,80	2,92	2,83
Eurovent efficiency class	(2)		D	C	C	C	C	C	C
Compressors									
Compressors/Circuits		n°/n°	4/2	4/2	4/2	4/2	4/2	4/2	6/2
Minimum capacity reduction step	(7)	%	25%	23%	25%	23%	25%	25%	15%
Refrigerant charge CH (MCHX)	(3)	kg	26	27	28	36	39	39	49
Refrigerant charge CH (Cu/Al)	(3)	kg	30	31	32	41	45	45	56
Refrigerant charge HP	(3)	kg	54	64	64	78	90	90	90
Fans									
Quantity		n°	4	4	4	5	6	6	6
Total air flow rate CH (MCHX)		m³/h	84.000	84.000	84.000	105.000	126.000	126.000	126.000
Total air flow rate HP		m³/h	80.000	80.000	80.000	100.000	120.000	120.000	120.000
User-side heat exchanger									
Quantity		n°	1	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	45,1	48,4	52,6	57,6	63,6	70,2	73,5
Pressure drop CH	(1)	kPa	42	36	41	35	38	38	42
Water flow rate HP	(1)	m³/h	43,8	47,0	51,1	56,0	61,7	68,1	71,4
Pressure drop HP	(1)	kPa	39	34	39	33	36	36	40
Noise levels									
Sound power level cooling	(4)	dB(A)	95	95	96	97	97	97	97
Sound power level heating	(5)	dB(A)	95	95	96	97	97	-	-
Sound pressure level cooling	(6)	dB(A)	63	63	64	65	65	65	65
Sound power level of vers. LN cooling	(4)	dB(A)	89	90	91	92	93	93	93
Sound power level of vers. LN heating	(5)	dB(A)	89	90	91	92	93	-	-
Sound pressure level of vers. LN cooling	(6)	dB(A)	57	58	59	60	61	61	61
Dimensions and weights**									
Length		mm	2.297	2.297	2.297	3.834	3.834	3.834	3.834
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	1.790	1.840	1.870	2.240	2.300	2.370	2.770

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

TETRIS 2

			47.6	50.7	53.8	58.8	62.8	67.9
TETRIS 2								
Cooling								
Refrigeration capacity	(1)	kW	456,2	490,6	523,2	566,6	610,0	650,9
Total absorbed power	(1)	kW	179,6	182,4	194,5	217,9	241,9	254,8
EER	(1)		2,54	2,69	2,69	2,60	2,52	2,55
Eurovent efficiency class	(1)		D	D	D	D	D	D
ESEER			3,99	3,90	3,98	3,97	3,95	3,99
TETRIS 2 /HP								
Cooling								
Refrigeration capacity	(1)	kW	443,0	476,4	508,1	550,2	592,3	632,0
Total absorbed power	(1)	kW	180,1	181,8	194,7	218,3	241,8	254,7
EER	(1)		2,46	2,62	2,61	2,52	2,45	2,48
Eurovent efficiency class	(1)		E	D	D	D	E	E
ESEER			3,89	3,80	3,88	3,86	3,83	3,87
Heating								
Heating capacity	(2)	kW	461,4	487,5	513,2	564,0	614,9	653,5
Total absorbed power	(2)	kW	160,8	178,6	185,9	200	213,5	230,9
COP	(2)		2,87	2,73	2,76	2,82	2,88	2,83
Eurovent efficiency class	(2)		C	D	D	C	C	C
Compressors								
Compressors/Circuits		n°/n°	6/2	7/3	8/4	8/4	8/4	9/3
Minimum capacity reduction step	(7)	%	17%	13%	13%	11%	13%	10%
Refrigerant charge CH (MCHX)	(3)	kg	52	45	52	54	57	72
Refrigerant charge CH (Cu/Al)	(3)	kg	60	52	60	63	65	83
Refrigerant charge HP	(3)	kg	90	99	108	118	128	137
Fans								
Quantity		n°	6	7	8	8	8	9
Total air flow rate CH (MCHX)		m³/h	126.000	147.000	168.000	168.000	168.000	189.000
Total air flow rate HP		m³/h	120.000	140.000	160.000	160.000	160.000	180.000
User-side heat exchanger								
Quantity		n°	1	2	2	2	2	2
Water flow rate CH	(1)	m³/h	78,8	84,7	90,3	97,8	105,3	112,3
Pressure drop CH	(1)	kPa	47	46	42	42	40,7	45,9
Water flow rate HP	(1)	m³/h	76,5	82,2	87,7	94,9	102,2	109,1
Pressure drop HP	(1)	kPa	44	43	39	39	38	43
Noise levels								
Sound power level cooling	(4)	dB(A)	97	98	100	100	100	100
Sound power level heating	(5)	dB(A)	-	-	-	-	-	-
Sound pressure level cooling	(6)	dB(A)	65	66	68	68	68	67
Sound power level of vers. LN cooling	(4)	dB(A)	93	94	95	95	95	96
Sound power level of vers. LN heating	(5)	dB(A)	-	-	-	-	-	-
Sound pressure level of vers. LN cooling	(6)	dB(A)	61	62	63	63	63	63
Dimensions and weights**								
Length		mm	3.834	5.019	5.019	5.019	5.019	6.168
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	2.830	3.340	3.570	3.650	3.730	4.170

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

TETRIS 2

			70.9	74.10	78.10	80.12	87.12	93.12
TETRIS 2								
Cooling								
Refrigeration capacity	(1)	kW	685,4	717,8	761,2	792,9	852,9	912,6
Total absorbed power	(1)	kW	264,4	277,1	300,8	301,9	330,5	359,3
EER	(1)		2,59	2,59	2,53	2,63	2,58	2,54
Eurovent efficiency class	(1)		D	D	D	D	D	D
ESEER			4,15	4,15	4,05	4,18	4,15	4,13
TETRIS 2 /HP								
Cooling								
Refrigeration capacity	(1)	kW	665,6	697,0	739,1	769,9	828,1	886,2
Total absorbed power	(1)	kW	264,2	276,9	300,6	301,7	330,3	359,1
EER	(1)		2,52	2,52	2,46	2,55	2,51	2,47
Eurovent efficiency class	(1)		D	D	E	D	D	E
ESEER			4,03	4,03	3,93	4,06	4,03	4,01
Heating								
Heating capacity	(2)	kW	691,6	717,9	768,8	769,8	845,9	922,4
Total absorbed power	(2)	kW	246,1	253,5	267,5	278,2	299,7	321,2
COP	(2)		2,81	2,83	2,87	2,77	2,82	2,87
Eurovent efficiency class	(2)		C	C	C	D	C	C
Compressors								
Compressors/Circuits		n°/n°	9/3	10/4	10/4	12/4	12/4	12/4
Minimum capacity reduction step	(7)	%	11%	9%	10%	8%	8%	8%
Refrigerant charge CH (MCHX)	(3)	kg	71	78	80	112	108	104
Refrigerant charge CH (Cu/Al)	(3)	kg	82	90	92	129	124	120
Refrigerant charge HP	(3)	kg	135	144	154	180	180	180
Fans								
Quantity		n°	9	10	10	12	12	12
Total air flow rate CH (MCHX)		m³/h	189.000	210.000	210.000	252.000	252.000	252.000
Total air flow rate HP		m³/h	180.000	200.000	200.000	240.000	240.000	240.000
User-side heat exchanger								
Quantity		n°	2	2	2	2	2	2
Water flow rate CH	(1)	m³/h	118,3	123,9	131,4	136,8	147,2	157,5
Pressure drop CH	(1)	kPa	45,5	47,1	47,1	43,9	43,9	47,1
Water flow rate HP	(1)	m³/h	114,9	120,3	127,5	132,8	142,9	152,9
Pressure drop HP	(1)	kPa	43	44	44	41	41	44
Noise levels								
Sound power level cooling	(4)	dB(A)	100	101	101	102	102	102
Sound power level heating	(5)	dB(A)	-	-	-	-	-	-
Sound pressure level cooling	(6)	dB(A)	67	68	68	69	69	69
Sound power level of vers. LN cooling	(4)	dB(A)	96	97	98	99	99	99
Sound power level of vers. LN heating	(5)	dB(A)	-	-	-	-	-	-
Sound pressure level of vers. LN cooling	(6)	dB(A)	63	64	65	66	66	66
Dimensions and weights**								
Length		mm	6.168	6.168	6.168	7.316	7.316	7.316
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	4.230	4.480	4.550	5.060	5.200	5.350

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

TETRIS 2 A

			11.2	17.2	23.2	28.4	34.4	38.4
TETRIS 2 A								
Cooling								
Refrigeration capacity	(1)	kW	111,6	160,8	229,0	273,0	322,5	361,2
Total absorbed power	(1)	kW	35,8	50,9	73,4	86,4	101,7	116,1
EER	(1)		3,12	3,16	3,12	3,16	3,17	3,11
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			4,01	4,05	3,96	4,23	4,20	4,22
TETRIS 2 A /HP								
Cooling								
Refrigeration capacity	(1)	kW	110,8	159,3	227,3	268,7	319,0	359,3
Total absorbed power	(1)	kW	35,7	50,7	73,3	86,1	101,3	115,9
EER	(1)		3,10	3,14	3,10	3,12	3,15	3,10
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			3,99	4,01	3,93	4,17	4,16	4,20
Heating								
Heating capacity	(2)	kW	134,8	179,9	247,8	302,0	356,3	383,5
Total absorbed power	(2)	kW	40,3	56	77	92,1	109,6	118,7
COP	(2)		3,35	3,21	3,22	3,28	3,25	3,23
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	2/1	2/1	2/1	4/2	4/2	4/2
Minimum capacity reduction step	(7)	%	50%	45%	50%	21%	23%	25%
Refrigerant charge CH (MCHX)	(3)	kg	11	18	23	29	34	34
Refrigerant charge CH (Cu/Al)	(3)	kg	13	20	27	33	39	39
Refrigerant charge HP	(3)	kg	28	43	57	71	85	85
Fans								
Quantity		n°	2	3	4	5	6	6
Total air flow rate CH (MCHX)		m³/h	42.000	63.000	84.000	105.000	126.000	126.000
Total air flow rate HP		m³/h	40.000	60.000	80.000	100.000	120.000	120.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	19,3	27,8	39,5	47,1	55,6	62,4
Pressure drop CH	(1)	kPa	47	42	29	32	37	43
Water flow rate HP	(1)	m³/h	19,2	27,5	39,2	46,4	55	62
Pressure drop HP	(1)	kPa	46	41	28	30	35	40
Noise levels								
Sound power level cooling	(4)	dB(A)	86	88	89	90	91	91
Sound power level heating	(5)	dB(A)	86	88	89	90	91	91
Sound pressure level cooling	(6)	dB(A)	54	56	57	58	59	59
Sound power level of vers. LN cooling	(4)	dB(A)	82	84	85	86	87	87
Sound power level of vers. LN heating	(5)	dB(A)	82	84	85	86	87	87
Sound pressure level of vers. LN cooling	(6)	dB(A)	50	52	53	54	55	55
Dimensions and weights**								
Length		mm	1.148	2.297	2.297	3.834	3.834	3.834
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	890	1.290	1.360	2.160	2.290	2.320

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) unit operating at nominal operating capacity, with no accessories of any kind, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measurements carried out in accordance with standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 1 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

TETRIS 2 A

			43.4	47.4	50.6	57.6	64.6	70.6
TETRIS 2 A								
Cooling								
Refrigeration capacity	(1)	kW	418,2	455,0	483,9	541,5	619,5	683,4
Total absorbed power	(1)	kW	134,5	146,3	152,2	170,8	198,4	219,0
EER	(1)		3,11	3,11	3,18	3,17	3,12	3,12
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			4,18	4,25	4,31	4,30	4,28	4,34
TETRIS 2 A /HP								
Cooling								
Refrigeration capacity	(1)	kW	416,1	453,0	479,0	536,7	615,5	679,1
Total absorbed power	(1)	kW	134,2	146,1	151,6	170,4	198,2	218,7
EER	(1)		3,10	3,10	3,16	3,15	3,10	3,10
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			4,15	4,23	4,27	4,27	4,26	4,32
Heating								
Heating capacity	(2)	kW	457,7	487,1	537,3	603,7	687,0	756,4
Total absorbed power	(2)	kW	140,8	150,3	164,3	185,2	212	232,4
COP	(2)		3,25	3,24	3,27	3,26	3,24	3,25
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	4/2	4/2	6/2	6/2	6/2	6/2
Minimum capacity reduction step	(7)	%	21%	25%	15%	17%	14%	17%
Refrigerant charge CH (MCHX)	(3)	kg	47	51	54	59	65	70
Refrigerant charge CH (Cu/Al)	(3)	kg	53	59	62	68	75	80
Refrigerant charge HP	(3)	kg	103	115	127	141	154	160
Fans								
Quantity		n°	7	8	9	10	11	12
Total air flow rate CH (MCHX)		m³/h	147.000	168.000	189.000	210.000	231.000	252.000
Total air flow rate HP		m³/h	140.000	160.000	180.000	200.000	220.000	240.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	72,2	78,4	83,4	93,4	106,8	117,9
Pressure drop CH	(1)	kPa	42	25	24	30	31	36
Water flow rate HP	(1)	m³/h	71,8	78,1	82,6	92,5	106,1	117,1
Pressure drop HP	(1)	kPa	39	24	23	28	29	35
Noise levels								
Sound power level cooling	(4)	dB(A)	91	92	93	93	93	93
Sound power level heating	(5)	dB(A)	91	-	-	-	-	-
Sound pressure level cooling	(6)	dB(A)	58	59	61	60	61	61
Sound power level of vers. LN cooling	(4)	dB(A)	87	88	89	89	89	89
Sound power level of vers. LN heating	(5)	dB(A)	87	-	-	-	-	-
Sound pressure level of vers. LN cooling	(6)	dB(A)	54	55	57	57	57	57
Dimensions and weights**								
Length		mm	5.019	5.019	6.168	6.168	7.316	7.316
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	2.650	2.770	3.500	3.580	3.850	3.940

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) unit operating at nominal operating capacity, with no accessories of any kind, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measurements carried out in accordance with standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 1 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

Tetris 2 SLN

			11.2	17.2	23.2	28.4	34.4	38.4
TETRIS 2 SLN								
Cooling								
Refrigeration capacity	(1)	kW	105,1	151,7	214,7	256,1	304,0	339,3
Total absorbed power	(1)	kW	37,3	52,9	76,7	89,9	105,5	121,2
EER	(1)		2,82	2,87	2,80	2,85	2,88	2,80
Eurovent efficiency class	(1)		C	C	C	C	C	C
ESEER			3,62	3,67	3,54	3,81	3,80	3,79
TETRIS 2 SLN /HP								
Cooling								
Refrigeration capacity	(1)	kW	104,4	150,2	213,2	252,1	300,7	337,4
Total absorbed power	(1)	kW	37,7	53,5	77,5	90,7	106,6	122,7
EER	(1)		2,77	2,81	2,75	2,78	2,82	2,75
Eurovent efficiency class	(1)		C	C	C	C	C	C
ESEER			3,56	3,60	3,48	3,71	3,72	3,72
Heating								
Heating capacity	(2)	kW	134,8	179,9	247,8	302,0	356,3	383,5
Total absorbed power	(2)	kW	40,3	56	77	92,1	109,6	118,7
COP	(2)		3,35	3,21	3,22	3,28	3,25	3,23
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	2/1	2/1	2/1	4/2	4/2	4/2
Minimum capacity reduction step	(7)	%	50%	45%	50%	21%	23%	25%
Refrigerant charge CH (MCHX)	(3)	kg	11	18	23	29	34	34
Refrigerant charge CH (Cu/Al)	(3)	kg	13	20	27	33	39	39
Refrigerant charge HP	(3)	kg	28	43	57	71	85	85
Fans								
Quantity		n°	2	3	4	5	6	6
Total air flow rate CH (MCHX)		m³/h	32.000	48.000	64.000	80.000	96.000	96.000
Total air flow rate HP		m³/h	40.000	60.000	80.000	100.000	120.000	120.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	18,2	26,2	37	44,2	52,5	58,6
Pressure drop CH	(1)	kPa	45	40	28	30	35	41
Water flow rate HP	(1)	m³/h	18	26	36,8	43,5	51,9	58,2
Pressure drop HP	(1)	kPa	44	39	26	28	33	38
Noise levels								
Sound power level cooling	(4)	dB(A)	79	82	82	84	85	85
Sound power level heating	(5)	dB(A)	82	84	85	86	87	87
Sound pressure level cooling	(6)	dB(A)	47	50	50	52	53	53
Dimensions and weights**								
Length		mm	1.148	2.297	2.297	3.834	3.834	3.834
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	890	1.290	1.360	2.160	2.290	2.320

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

** Basic CH unit without included accessories

Tetris 2 SLN

			43.4	47.4	50.6	57.6	64.6	70.6
TETRIS 2 SLN								
Cooling								
Refrigeration capacity	(1)	kW	392,0	426,4	455,8	510,0	581,9	641,8
Total absorbed power	(1)	kW	141,0	152,8	158,3	177,7	207,8	228,8
EER	(1)		2,78	2,79	2,88	2,87	2,80	2,81
Eurovent efficiency class	(1)		C	C	C	C	C	C
ESEER			3,73	3,80	3,90	3,89	3,84	3,90
TETRIS 2 SLN /HP								
Cooling								
Refrigeration capacity	(1)	kW	390,0	424,5	451,2	505,5	578,2	637,8
Total absorbed power	(1)	kW	142,9	154,9	160	179,9	210,2	231,6
EER	(1)		2,73	2,74	2,82	2,81	2,75	2,75
Eurovent efficiency class	(1)		C	C	C	C	C	C
ESEER			3,66	3,74	3,82	3,81	3,76	3,82
Heating								
Heating capacity	(2)	kW	457,7	487,1	537,3	603,7	687,0	756,4
Total absorbed power	(2)	kW	140,8	150,3	164,3	185,2	212	232,4
COP	(2)		3,25	3,24	3,27	3,26	3,24	3,25
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	4/2	4/2	6/2	6/2	6/2	6/2
Minimum capacity reduction step	(7)	%	21%	25%	15%	17%	14%	17%
Refrigerant charge CH (MCHX)	(3)	kg	47	51	54	59	65	70
Refrigerant charge CH (Cu/Al)	(3)	kg	53	59	62	68	75	80
Refrigerant charge HP	(3)	kg	103	115	127	141	154	160
Fans								
Quantity		n°	7	8	9	10	11	12
Total air flow rate CH (MCHX)		m³/h	112.000	128.000	144.000	160.000	176.000	192.000
Total air flow rate HP		m³/h	140.000	160.000	180.000	200.000	220.000	240.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	67,6	73,5	78,6	87,9	100,3	110,7
Pressure drop CH	(1)	kPa	39	23	23	28	29	34
Water flow rate HP	(1)	m³/h	67,3	73,2	77,8	87,1	99,7	110
Pressure drop HP	(1)	kPa	37	22	22	26	28	33
Noise levels								
Sound power level cooling	(4)	dB(A)	85	85	87	87	87	87
Sound power level heating	(5)	dB(A)	87	-	-	-	-	-
Sound pressure level cooling	(6)	dB(A)	52	53	55	55	54	55
Dimensions and weights**								
Length		mm	5.019	5.019	6.168	6.168	7.316	7.316
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	2.650	2.770	3.500	3.580	3.850	3.940

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

** Basic CH unit without included accessories

Tetris 2 A+

			8.2	13.3	18.4	23.5	27.6	31.4
TETRIS 2 A+								
Cooling								
Refrigeration capacity	(1)	kW	88,5	132,9	180,3	225,3	270,4	310,4
Total absorbed power	(1)	kW	26,9	40,4	53,7	67,2	80,7	93,2
EER	(1)		3,29	3,29	3,36	3,35	3,35	3,33
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			4,13	4,26	4,33	4,29	4,26	4,28
TETRIS 2 A+ /HP								
Cooling								
Refrigeration capacity	(1)	kW	85,8	128,8	174,9	218,5	262,1	306,8
Total absorbed power	(1)	kW	26,7	40,0	53,2	66,6	80,1	96,5
EER	(1)		3,21	3,22	3,29	3,28	3,27	3,18
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			4,03	4,16	4,23	4,19	4,16	4,08
Heating								
Heating capacity	(2)	kW	90,2	135,2	180,0	225,2	270,1	322,7
Total absorbed power	(2)	kW	27,1	40,5	53,7	67,4	80,9	99,6
COP	(2)		3,33	3,34	3,35	3,34	3,34	3,24
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	2/1	3/1	4/2	5/2	6/2	4/2
Minimum capacity reduction step	(7)	%	50%	33%	25%	20%	17%	24%
Refrigerant charge CH (MCHX)	(3)	kg	10	15	23	27	33	42
Refrigerant charge CH (Cu/Al)	(3)	kg	12	18	26	31	37	49
Refrigerant charge HP	(3)	kg	28	42	58	71	86	100
Fans								
Quantity		n°	2	3	4	5	6	7
Total air flow rate CH (MCHX)		m³/h	42.000	63.000	84.000	105.000	126.000	147.000
Total air flow rate HP		m³/h	40.000	60.000	80.000	100.000	120.000	140.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	15,3	23	31,1	38,9	46,7	53,6
Pressure drop CH	(1)	kPa	35	36	23	35	35	34
Water flow rate HP	(1)	m³/h	14,8	22,2	30,2	37,7	45,2	52,9
Pressure drop HP	(1)	kPa	33	34	22	33	33	33
Noise levels								
Sound power level cooling	(4)	dB(A)	83	85	86	87	88	93
Sound power level heating	(5)	dB(A)	83	85	86	87	88	93
Sound pressure level cooling	(6)	dB(A)	51	53	54	55	56	61
Sound power level of vers. LN cooling	(4)	dB(A)	79	81	82	83	84	89
Sound power level of vers. LN heating	(5)	dB(A)	79	81	82	83	84	89
Sound pressure level of vers. LN cooling	(6)	dB(A)	47	49	50	51	52	57
Dimensions and weights**								
Length		mm	1.148	2.297	2.297	3.834	3.834	5.019
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	720	1.100	1.380	1.830	1.970	2.560

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (in known condition 4), related to a distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

Tetris 2 A+

			36.4	41.5	44.6	49.6	54.6
TETRIS 2 A+							
Cooling							
Refrigeration capacity	(1)	kW	372,0	404,0	435,4	497,1	558,8
Total absorbed power	(1)	kW	111,7	120,6	130,0	148,8	167,3
EER	(1)		3,33	3,35	3,35	3,34	3,34
Eurovent efficiency class	(1)		A	A	A	A	A
ESEER			4,30	4,25	4,20	4,30	4,28
TETRIS 2 A+ /HP							
Cooling							
Refrigeration capacity	(1)	kW	360,6	398,4	432,1	489,5	541,3
Total absorbed power	(1)	kW	110,6	124,9	135,0	153,4	166,0
EER	(1)		3,26	3,19	3,20	3,19	3,26
Eurovent efficiency class	(1)		A	A	A	A	A
ESEER			4,20	4,05	4,01	4,09	4,17
Heating							
Heating capacity	(2)	kW	373,3	418,6	453,5	514,6	559,8
Total absorbed power	(2)	kW	112,1	128,8	140,4	157,8	168,1
COP	(2)		3,33	3,25	3,23	3,26	3,33
Eurovent efficiency class	(2)		A	A	A	A	A
Compressors							
Compressors/Circuits		n°/n°	4/2	5/2	6/2	6/2	6/2
Minimum capacity reduction step	(7)	%	25%	19%	17%	15%	17%
Refrigerant charge CH (MCHX)	(3)	kg	48	56	61	69	77
Refrigerant charge CH (Cu/Al)	(3)	kg	55	64	70	79	88
Refrigerant charge HP	(3)	kg	115	130	144	159	175
Fans							
Quantity		n°	8	9	10	11	12
Total air flow rate CH (MCHX)		m³/h	168.000	189.000	210.000	231.000	252.000
Total air flow rate HP		m³/h	160.000	180.000	200.000	220.000	240.000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate CH	(1)	m³/h	64,2	69,7	75,1	85,8	96,4
Pressure drop CH	(1)	kPa	32	33	34	35	34
Water flow rate HP	(1)	m³/h	62,2	68,7	74,5	84,4	93,3
Pressure drop HP	(1)	kPa	30	32	34	34	32
Noise levels							
Sound power level cooling	(4)	dB(A)	93	94	95	95	95
Sound power level heating	(5)	dB(A)	93	94	-	-	-
Sound pressure level cooling	(6)	dB(A)	61	62	63	63	63
Sound power level of vers. LN cooling	(4)	dB(A)	89	90	91	91	91
Sound power level of vers. LN heating	(5)	dB(A)	89	90	-	-	-
Sound pressure level of vers. LN cooling	(6)	dB(A)	57	58	59	59	59
Dimensions and weights**							
Length		mm	5.019	6.168	6.168	7.316	7.316
Depth		mm	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	2.680	3.140	3.330	3.710	3.820

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (in known condition 4), related to a distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the "Minimum water content in the system" section.

** Basic CH unit without included accessories

Tetris 2 A SLN

			8.2	13.3	18.4	23.5	27.6	31.4
TETRIS 2 A SLN								
Cooling								
Refrigeration capacity	(1)	kW	86,4	129,6	175,8	219,7	263,7	303,0
Total absorbed power	(1)	kW	26,9	40,3	53,6	67,2	80,6	92,9
EER	(1)		3,21	3,22	3,28	3,27	3,27	3,26
Eurovent efficiency class	(1)		A	A	A	A	A	A
ESEER			3,97	4,09	4,16	4,12	4,09	4,12
TETRIS 2 A SLN /HP								
Cooling								
Refrigeration capacity	(1)	kW	83,8	125,8	170,5	212,9	255,6	298,9
Total absorbed power	(1)	kW	27,6	41,2	55,0	68,9	82,7	100,3
EER	(1)		3,04	3,05	3,10	3,09	3,09	2,98
Eurovent efficiency class	(1)		B	B	A	B	B	B
ESEER			3,87	3,99	4,04	4,00	3,98	3,86
Heating								
Heating capacity	(2)	kW	90,2	135,2	180,0	225,2	270,1	322,7
Total absorbed power	(2)	kW	27,1	40,5	53,7	67,4	80,9	99,6
COP	(2)		3,33	3,34	3,35	3,34	3,34	3,24
Eurovent efficiency class	(2)		A	A	A	A	A	A
Compressors								
Compressors/Circuits		n°/n°	2/1	3/1	4/2	5/2	6/2	4/2
Minimum capacity reduction step	(7)	%	50%	33%	25%	20%	17%	24%
Refrigerant charge CH (MCHX)	(3)	kg	10	15	23	27	33	42
Refrigerant charge CH (Cu/Al)	(3)	kg	12	18	26	31	37	49
Refrigerant charge HP	(3)	kg	28	42	58	71	86	100
Fans								
Quantity		n°	2	3	4	5	6	7
Total air flow rate CH (MCHX)		m³/h	32.000	48.000	64.000	80.000	96.000	112.000
Total air flow rate HP		m³/h	40.000	60.000	80.000	100.000	120.000	140.000
User-side heat exchanger								
Quantity		n°	1	1	1	1	1	1
Water flow rate CH	(1)	m³/h	14,9	22,4	30,3	37,9	45,5	52,3
Pressure drop CH	(1)	kPa	33	34	22	33	33	32
Water flow rate HP	(1)	m³/h	14,5	21,7	29,4	36,7	44,1	51,6
Pressure drop HP	(1)	kPa	31	32	21	31	31	31
Noise levels								
Sound power level cooling	(4)	dB(A)	76	78	79	80	81	86
Sound power level heating	(5)	dB(A)	79	81	82	83	84	89
Sound pressure level cooling	(6)	dB(A)	44	46	47	48	49	54
Dimensions and weights**								
Length		mm	1.148	2.297	2.297	3.834	3.834	5.019
Depth		mm	2.260	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	720	1.100	1.380	1.830	1.970	2.560

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

** Basic CH unit without included accessories

Tetris 2 A SLN

			36.4	41.5	44.6	49.6	54.6
TETRIS 2 A SLN							
Cooling							
Refrigeration capacity	(1)	kW	362,7	393,8	424,8	484,4	544,1
Total absorbed power	(1)	kW	111,9	120,8	129,9	149,1	167,9
EER	(1)		3,24	3,26	3,27	3,25	3,24
Eurovent efficiency class	(1)		A	A	A	A	A
ESEER			4,12	4,07	4,05	4,13	4,10
TETRIS 2 A SLN /HP							
Cooling							
Refrigeration capacity	(1)	kW	351,3	388,0	421,2	476,7	527,0
Total absorbed power	(1)	kW	114,4	129,8	140,4	160,0	171,7
EER	(1)		3,07	2,99	3,00	2,98	3,07
Eurovent efficiency class	(1)		B	B	B	B	B
ESEER			4,00	3,83	3,98	4,06	4,15
Heating							
Heating capacity	(2)	kW	373,3	418,6	453,5	514,6	559,8
Total absorbed power	(2)	kW	112,1	128,8	140,4	157,8	168,1
COP	(2)		3,33	3,25	3,23	3,26	3,33
Eurovent efficiency class	(2)		A	A	A	A	A
Compressors							
Compressors/Circuits		n°/n°	4/2	5/2	6/2	6/2	6/2
Minimum capacity reduction step	(7)	%	25%	19%	17%	15%	17%
Refrigerant charge CH (MCHX)	(3)	kg	48	56	61	69	77
Refrigerant charge CH (Cu/Al)	(3)	kg	55	64	70	79	88
Refrigerant charge HP	(3)	kg	115	130	144	159	175
Fans							
Quantity		n°	8	9	10	11	12
Total air flow rate CH (MCHX)		m³/h	128.000	144.000	160.000	176.000	192.000
Total air flow rate HP		m³/h	160.000	180.000	200.000	220.000	240.000
User-side heat exchanger							
Quantity		n°	1	1	1	1	1
Water flow rate CH	(1)	m³/h	62,6	67,9	73,3	83,6	93,8
Pressure drop CH	(1)	kPa	31	31	32	33	32
Water flow rate HP	(1)	m³/h	60,6	66,9	72,6	82,2	90,9
Pressure drop HP	(1)	kPa	29	30	32	32	30
Noise levels							
Sound power level cooling	(4)	dB(A)	86	87	88	88	88
Sound power level heating	(5)	dB(A)	89	90	-	-	-
Sound pressure level cooling	(6)	dB(A)	54	55	56	56	56
Dimensions and weights**							
Length		mm	5.019	6.168	6.168	7.316	7.316
Depth		mm	2.260	2.260	2.260	2.260	2.260
Height		mm	2.440	2.440	2.440	2.440	2.440
Operating weight		kg	2.680	3.140	3.330	3.710	3.820

CH: chiller unit; HP: heat pump unit; MCHX: unit with microchannel coils; CuAl: unit with copper/aluminium tube/fin coils

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

(2) Outside air temperature 7°C DB, 6°C WB; condenser inlet/outlet water temperature 40/45°C. Values in accordance with EN 14511.

(3) Theoretical values referred to the basic unit. The amount of gas actually charged in the unit may differ.

(4) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 35°C and user-side heat exchanger water inlet-outlet temperature of 12-7°C. Binding values. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

(5) Unit operating at nominal operating capacity, without any accessories, with external air temperature of 7°C (6°C wb) and user-side heat exchanger water inlet-outlet temperature of 40-45°C. Values obtained from measures taken according to standard ISO 3744.

(6) Values obtained from the sound power level (conditions: note 4), related to a distance of 10 m from the unit in free field with directivity factor Q=2. Non-binding values.

(7) Approximate value. The minimum capacity reached by the unit depends on the operating conditions. The value shown may not be suitable for calculating the minimum volume of water: to do this, consult the “Minimum water content in the system” section.

** Basic CH unit without included accessories

ECODESIGN

INTRODUCTION

The Ecodesign/ErP Directive (2009/125/EC) lays down new standards for more efficient energy use.

The Directive contains various regulations; as regards chiller products and heat pumps, the regulations of interest are the following:

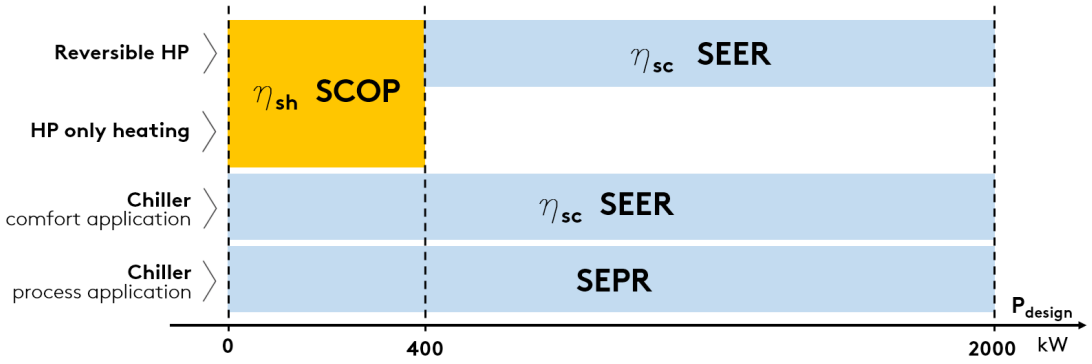
- Regulation 2013/813, for small heat pumps (Pdesign ≤ 400 kW)
- Regulation 2016/2281, for chillers and heat pumps with Pdesign > 400 kW
- Regulation 2013/811, for heat pumps with Pdesign ≤ 70 kW.

The last-mentioned regulation (2013/811) regards the labelling (Ecolabel certification) of small heat pumps.
The other two regulations (2013/813 and 2016/2281) set seasonal efficiency targets that the products must comply with to be sold and installed in the European Union (essential requirement for CE marking).
These efficiency limits are defined through ratios, which are respectively:

- ηsh (SCOP), with reference to regulation 2013/813
- ηsc (SEER) for comfort applications and SEPR for process applications, with reference to regulation 2016/2281.

As regards regulation 2016/2281, with effect from 1st January 2021, the required minimum efficiency limit will be raised (Tier 2) from the current threshold (Tier 1).

The figure below schematically illustrates the correspondence between product and reference energy ratio.



Some notes and clarifications:

For comfort applications, regulation 2016/2281 sets the ηsc (SEER) ratio in two different operating conditions:

- SEER calculated with machine inlet/outlet water temperature of 12/7°C (low temperature application),
- SEER calculated with machine inlet/outlet water temperature of 23/18°C (medium temperature application).

The minimum efficiency requirement is the same, but can be met at condition 12/7°C or at condition 23/18°C, depending on the application envisaged for the machine.

Regulation 2013/813 distinguishes two different types: at low temperature and at medium temperature.
The following refer to the application at low temperature: (low temperature application) all heat pumps whose maximum delivery temperature for heating purposes is lower than 52°C with source at temperature of -7°C and -8°C wet bulb (air-water unit) or inlet 10°C (water-water unit), at the reference design conditions for an average climate.For these, the efficiency ratio is "low temperature application" (outlet water temperature 35°C).
For all the other heat pumps, the efficiency ratio is related to "medium temperature application" (outlet water temperature 55°C).
The ratios must be calculated according to the reference European heating season in average climatic conditions.

The minimum efficiency requirements set by the regulations are indicated below.

REGULATION 2016/2281, comfort application

TYPE OF UNIT		MINIMUM REQUIREMENT			
		Tier 1		Tier 2 (2021)	
SOURCE	**Pdesign**	**ηsc [%]**	**SEER**	**ηsc [%]**	**SEER**
air	< 400kW	149	3,8	161	4,1
air	≥ 400kW	161	4,1	179	4,55
water	< 400kW	196	5,1	200	5,2
water	≥ 400kW and < 1500kW	227	5,875	252	6,5
water	≥ 1500kW	245	6,325	272	7

REGULATION 2016/2281, process application

TYPE OF UNIT		MINIMUM REQUIREMENT	
		Tier 1	Tier 2 (2021)
SOURCE	**Pdesign**	**SEPR**	**SEPR**
air	< 400kW	4,5	5
air	≥ 400kW	5	5,5
water	< 400kW	6,5	7
water	≥ 400kW and < 1500kW	7,5	8
water	≥ 1500kW	8	8,5

REGULATION 2013/813

SOURCE	APPLICATION	MINIMUM REQUIREMENT	
		ηsh [%]	**SCOP**
air	low temperature application	125	3,2
air	low temperature application	125	3,325
water	medium temperature application	110	2,825
water	medium temperature application	110	2,95

The conformity of the product must be checked according to the type of application, whether comfort or process, and at the required outlet water temperature.

The two schematic tables below, respectively for comfort application and for process application, indicate the reference of the required conformity according to the type of product and the set point temperature (reference to regulations 2016/2281 and 2013/813).

Important note: for mixed comfort and process applications, the reference application for conformity is the comfort application.

COMFORT APPLICATION

PRODUCT	OUTLET WATER TEMPERATURE	COMPLIANCE INDEX	REGULATION
Chiller	< 18°C	SEER/ηsc low temperature application	2016/2283
	≥ 18°C	SEER/ηsc medium temperature application	2016/2283
Heat pumps (reversible and only heating) Pdesign≤400kW		SCOP/ηsh	2013/815
Reversible heat pumps Pdesign>400kW	< 18°C	SEER/ηsc low temperature application	2016/2283
	≥ 18°C	SEER/ηsc medium temperature application	2016/2283
Heat pumps only heating Pdesign>400kW		-	-

- = exemption from Ecodesign

PROCESS APPLICATION

PRODUCT	OUTLET WATER TEMPERATURE	COMPLIANCE INDEX	REGULATION
Chiller	≥ +2°C , ≤ 12°C	SEPR	2016/2283
	> 12°C	-	-
	> -8°C , < +2°C	-	-

- = exemption from Ecodesign

Some specifications and notes follow.

Partly completed machinery

The term partly completed machinery refers to all units without a user-side or source-side heat exchanger, and therefore to all LC, LE, LC/HP and LE/HP versions. Since these are "non-complete" machines, conformity with Ecodesign depends on combination with the remote heat exchanger.

All the partly completed machinery is CE marked and accompanied by a declaration of conformity. Installation in European Union countries is therefore allowed; correct selection and installation of the remote heat exchanger must be ensured, in accordance with the above cases.

EC fans:

The only option that positively affects the performance of the unit, by increasing its seasonal energy efficiency ratio, is the VEC accessory.

A unit equipped with EC fans has a higher SEER (ηsc) than the configuration with standard fans.

TETRIS 2 RANGE

As specifically regards the Tetris 2 range, the regulations of interest for the various units in various configurations are indicated below.

Tetris 2:
- chiller version: regulation 2016/2281
- /HP version: up to size 37.4 regulation 2013/813, from size 41.4 regulation 2016/2281

Tetris 2 A and Tetris 2 SLN:
- chiller version: regulation 2016/2281
- /HP version: up to size 43.4 regulation 2013/813, from size 47.4 regulation 2016/2281

Tetris 2 A+ and Tetris 2 A SLN
- chiller version: regulation 2016/2281
- /HP version: up to size 41.5 regulation 2013/813, from size 44.6 regulation 2016/2281

The tables below give information on the conformity of the units and the seasonal energy performance ratios with regard to the reference regulation.

TETRIS 2

			10.2	12.2	13.2	15.2	16.2	20.3	24.3
REGULATION 2016/2281									
Pdesign	(1)	kW	108,3	117,7	125,6	139,0	159,2	194,4	228,9
Compliance 12/7									
Compliance	(1)		Y	Y	Y	Y	N	Y	Y
ηsc	(1)	%	149,8	150,4	149,0	149,9	N	155,4	152,3
SEER	(1)		3,82	3,83	3,80	3,82	N	3,96	3,88
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 12/7 unit with EC fans									
Compliance	(1)		Y	Y	Y	Y	Y	Y	Y
ηsc	(1)	%	152,6	155,8	150,6	154,2	149,0	160,6	157,0
SEER	(1)		3,89	3,97	3,84	3,93	3,8	4,09	4,00
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 23/18									
Compliance	(2)		Y	Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	167,0	-	-
SEER	(2)		-	-	-	-	4,25	-	-
Compliance SEPR									
Compliance	(3)		Y	Y	Y	Y	Y	Y	Y
SEPR	(3)		5,21	4,99	4,99	4,86	5,18	4,87	5,19

TETRIS 2

			27.4	29.4	32.4	33.4	37.4	41.4	43.6
REGULATION 2016/2281									
Pdesign	(1)	kW	261,5	280,5	304,9	333,8	368,4	406,6	425,8
Compliance 12/7									
Compliance	(1)		Y	Y	Y	Y	Y	Y	Y
ηsc	(1)	%	153,8	150,4	149,4	154,3	156,2	161,1	161,0
SEER	(1)		3,92	3,83	3,81	3,93	3,98	4,10	4,10
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 12/7 unit with EC fans									
Compliance	(1)		Y	Y	Y	Y	Y	Y	Y
ηsc	(1)	%	157,4	152,2	150,6	158,2	160,6	162,6	164,3
SEER	(1)		4,01	3,88	3,84	4,03	4,09	4,14	4,18
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 23/18									
Compliance	(2)		Y	Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-	-
Compliance SEPR									
Compliance	(3)		Y	Y	Y	Y	Y	Y	Y
SEPR	(3)		4,93	4,66	4,86	4,98	5,3	5,42	5

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the indicated condition: it can be installed only in non-EU countries.

- = value not necessary: conformity is already provided at the most restrictive condition (1).

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2

			47.6	50.7	53.8	58.8	62.8	67.9	70.9
REGULATION 2016/2281									
Pdesign	(1)	kW	456,2	490,6	523,2	566,6	610,0	650,9	685,4
Compliance 12/7									
Compliance	(1)		Y	Y	Y	N	N	Y	Y
ηsc	(1)	%	161,1	161,1	161,1	N	N	161,2	161,0
SEER	(1)		4,10	4,10	4,10	N	N	4,10	4,10
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 12/7 unit with EC fans									
Compliance	(1)		Y	Y	Y	Y	Y	Y	Y
ηsc	(1)	%	162,2	162,1	162,2	161,2	161,0	163,8	163,7
SEER	(1)		4,13	4,13	4,13	4,1	4,1	4,17	4,17
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 23/18									
Compliance	(2)		Y	Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	175,0	174,9	-	-
SEER	(2)		-	-	-	4,45	4,45	-	-
Compliance SEPR									
Compliance	(3)		Y	Y	Y	Y	Y	Y	Y
SEPR	(3)		5	5,03	5	5,15	5	5,02	5,06

			70.9	74.10	78.10	80.12	87.12	93.12
REGULATION 2016/2281								
Pdesign	(1)	kW	685,4	717,8	761,2	792,9	852,9	912,6
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	161,0	161	161,1	161,1	161,1	161
SEER	(1)		4,10	4,10	4,10	4,10	4,10	4,10
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	163,7	163,8	162,2	167,9	166,1	164,4
SEER	(1)		4,17	4,17	4,13	4,27	4,23	4,19
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,06	5	5	5	5,02	5

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the indicated condition: it can be installed only in non-EU countries.

- = value not necessary: conformity is already provided at the most restrictive condition (1).

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2 /HP

			10.2	12.2	13.2	15.2	16.2	20.3
REGULATION 2013/813								
Pdesign	(4)	kW	104,1	114,7	126,4	141,6	155,2	189,9
Compliance	(4)		Y	Y	Y	Y	Y	Y
ηsh	(4)	%	131,5	133,5	130,9	137,3	134,2	139,4
SCOP	(4)		3,36	3,41	3,35	3,51	3,43	3,56

			24.3	27.4	29.4	32.4	33.4	37.4
REGULATION 2013/813								
Pdesign	(4)	kW	228	232,7	256,6	282,7	318,9	388,5
Compliance	(4)		Y	Y	Y	Y	Y	Y
ηsh	(4)	%	137,9	139,9	139,2	138,6	142,8	141,0
SCOP	(4)		3,52	3,57	3,56	3,54	3,64	3,60

Y = unit in compliance with Ecodesign at the indicated condition.

(4) User-side heat exchanger water inlet/outlet temperature 30/35, Average climate profile, with reference to regulation 2013/813 and norm EN 14825.

TETRIS 2 /HP

			41.4	43.6	47.6	50.7	53.8	58.8	62.8
REGULATION 2016/2281									
Pdesign	(1)	kW	394,6	413,5	443,0	476,4	508,1	550,2	592,3
Compliance 12/7									
Compliance	(1)		N	N	N	N	N	N	N
ηsc	(1)	%	N	N	N	N	N	N	N
SEER	(1)		N	N	N	N	N	N	N
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 12/7 unit with EC fans									
Compliance	(1)		Y	N	N	N	N	N	N
ηsc	(1)	%	156,5	N	N	N	N	N	N
SEER	(1)		3,99	N	N	N	N	N	N
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 23/18									
Compliance	(2)		Y	Y	Y	Y	Y	Y	Y
ηsc	(2)	%	168,0	171,0	166,1	164,0	168,1	162,2	161,5
SEER	(2)		4,28	4,35	4,23	4,18	4,28	4,13	4,11

			67.9	70.9	74.10	78.10	80.12	87.12	93.12
REGULATION 2016/2281									
Pdesign	(1)	kW	632,0	665,6	697,0	739,1	769,9	828,1	886,2
Compliance 12/7									
Compliance	(1)		N	N	N	N	N	N	N
ηsc	(1)	%	N	N	N	N	N	N	N
SEER	(1)		N	N	N	N	N	N	N
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 12/7 unit with EC fans									
Compliance	(1)		N	N	Y	Y	Y	Y	Y
ηsc	(1)	%	N	N	161,2	161,1	162,0	161,0	161,0
SEER	(1)		N	N	4,10	4,10	4,13	4,10	4,10
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N	N
Compliance 23/18									
Compliance	(2)		Y	Y	Y	Y	Y	Y	Y
ηsc	(2)	%	167,6	166,8	167,4	166,4	176,4	170,3	168,2
SEER	(2)		4,26	4,25	4,26	4,23	4,48	4,33	4,28

Y = unit in compliance with Ecodesign at the indicated condition.

N = unit not in compliance with Ecodesign at the indicated condition: it can be installed only in non-EU countries.

- = value not necessary: conformity is already provided at the most restrictive condition (1).

(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

TETRIS 2 A

			11.2	17.2	23.2	28.4	34.4	38.4
REGULATION 2016/2281								
Pdesign	(1)	kW	111,6	160,8	229,0	273,0	322,5	361,2
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	151,8	158,2	152,6	162,2	165	159,8
SEER	(1)		3,87	4,03	3,89	4,13	4,20	4,07
Compliance Tier 2 (2021)	(1)		N	N	N	Y	Y	N
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	161,0	167,4	161,4	173,4	176,2	166,2
SEER	(1)		4,10	4,26	4,11	4,41	4,48	4,23
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,28	5,36	5,5	5,42	5,41	5,32

			43.4	47.4	50.6	57.6	64.6	70.6
REGULATION 2016/2281								
Pdesign	(1)	kW	418,2	455,0	483,9	541,5	619,5	683,4
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	162,2	165,4	168,2	169,4	169,4	169,0
SEER	(1)		4,13	4,21	4,28	4,31	4,31	4,30
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	167,0	173,4	183,8	183,8	183,0	182,2
SEER	(1)		4,25	4,41	4,67	4,67	4,65	4,63
Compliance Tier 2 (2021)	(1)		N	N	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,53	5,55	5,46	5,5	5,66	5,66

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2 A /HP

			11.2	17.2	23.2	28.4	34.4	38.4	43.4
REGULATION 2013/813									
Pdesign	(4)	kW	104,0	152,0	215,6	256,2	304,9	331,2	383,6
Compliance	(4)		Y	Y	Y	Y	Y	Y	Y
ηsh	(4)	%	138,6	142,6	142,2	144,2	144,2	144,2	146,2
SCOP	(4)		3,54	3,64	3,63	3,68	3,68	3,68	3,73

Y = unit in compliance with Ecodesign at the indicated condition.

(4) User-side heat exchanger water inlet/outlet temperature 30/35, Average climate profile, with reference to regulation 2013/813 and norm EN 14825.

TETRIS 2 A /HP

			47.4	50.6	57.6	64.6	70.6
REGULATION 2016/2281							
Pdesign	(1)	kW	453,0	479,0	536,7	615,5	679,1
Compliance 12/7							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	162,2	165,8	167,8	165,8	165,4
SEER	(1)		4,13	4,22	4,27	4,22	4,21
Compliance Tier 2 (2021)	(1)		N	N	N	N	N
Compliance 12/7 unit with EC fans							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	167,4	179,8	179,4	179,4	179,0
SEER	(1)		4,26	4,57	4,56	4,56	4,55
Compliance Tier 2 (2021)	(1)		N	Y	Y	Y	Y
Compliance 23/18							
Compliance	(2)		Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-
SEER	(2)		-	-	-	-	-

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

TETRIS 2 SLN

			11.2	17.2	23.2	28.4	34.4	38.4
REGULATION 2016/2281								
Pdesign	(1)	kW	105,1	151,7	214,7	256,1	304,0	339,3
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	149,8	157,0	149,0	161,8	162,6	158,2
SEER	(1)		3,82	4,00	3,80	4,12	4,14	4,03
Compliance Tier 2 (2021)	(1)		N	N	N	Y	Y	N
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	161,0	166,6	161,0	173,4	174,2	164,6
SEER	(1)		4,10	4,24	4,10	4,410	4,43	4,19
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,28	5,36	5,5	5,42	5,41	5,32

			43.4	47.4	50.6	57.6	64.6	70.6
REGULATION 2016/2281								
Pdesign	(1)	kW	392,0	426,4	455,8	510,0	581,9	641,8
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	158,2	161,0	164,2	166,2	166,2	165,8
SEER	(1)		4,03	4,10	4,18	4,23	4,23	4,22
Compliance Tier 2 (2021)	(1)		N	N	N	N	N	N
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	165,4	169,4	183,0	182,6	180,6	179,8
SEER	(1)		4,21	4,31	4,65	4,64	4,59	4,57
Compliance Tier 2 (2021)	(1)		Y	N	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,53	5,55	5,46	5,5	5,66	5,66

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2 SLN /HP

			11.2	17.2	23.2	28.4	34.4	38.4	43.4
REGULATION 2013/813									
Pdesign	(4)	kW	104,0	152,0	215,6	256,2	304,9	331,2	383,6
Compliance	(4)		Y	Y	Y	Y	Y	Y	Y
ηsh	(4)	%	138,6	142,6	142,2	144,2	144,2	144,2	146,2
SCOP	(4)		3,54	3,64	3,63	3,68	3,68	3,68	3,73

Y = unit in compliance with Ecodesign at the indicated condition.

(4) User-side heat exchanger water inlet/outlet temperature 30/35, Average climate profile, with reference to regulation 2013/813 and norm EN 14825.

TETRIS 2 SLN /HP

			47.4	50.6	57.6	64.6	70.6
REGULATION 2016/2281							
Pdesign	(1)	kW	424,5	451,2	505,5	578,2	637,8
Compliance 12/7							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	161,0	162,6	164,6	165,0	164,6
SEER	(1)		4,10	4,14	4,19	4,20	4,19
Compliance Tier 2 (2021)	(1)		N	N	N	N	N
Compliance 12/7 unit with EC fans							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	166,6	179,8	180,6	179,2	179,0
SEER	(1)		4,24	4,57	4,59	4,555	4,551
Compliance Tier 2 (2021)	(1)		N	Y	Y	Y	Y
Compliance 23/18							
Compliance	(2)		Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-
SEER	(2)		-	-	-	-	-

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

TETRIS 2 A+

			8.2	13.3	18.4	23.5	27.6	31.4
REGULATION 2016/2281								
Pdesign	(1)	kW	88,5	132,9	180,3	225,3	270,4	310,4
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	152,4	160,9	162,5	164,1	166,0	164,9
SEER	(1)		3,89	4,10	4,14	4,18	4,22	4,20
Compliance Tier 2 (2021)	(1)		N	Y	Y	Y	Y	Y
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	164,0	178,2	174,6	182,1	183,1	178,9
SEER	(1)		4,18	4,53	4,44	4,63	4,65	4,55
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,66	5,66	5,69	5,74	5,6	5,57

			36.4	41.5	44.6	49.6	54.6
REGULATION 2016/2281							
Pdesign	(1)	kW	372,0	404,0	435,4	497,1	558,8
Compliance 12/7							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	164,8	168,8	166,6	168,5	169,5
SEER	(1)		4,20	4,30	4,24	4,29	4,31
Compliance Tier 2 (2021)	(1)		Y	N	N	N	N
Compliance 12/7 unit with EC fans							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	176,8	186,1	184,9	186,1	186,3
SEER	(1)		4,50	4,73	4,70	4,73	4,73
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Compliance 23/18							
Compliance	(2)		Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-
SEER	(2)		-	-	-	-	-
Compliance SEPR							
Compliance	(3)		Y	Y	Y	Y	Y
SEPR	(3)		5,68	5,64	5,66	5,69	5,55

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2 A+ /HP

			8.2	13.3	18.4	23.5
REGULATION 2013/813						
Pdesign	(4)	kW	85,3	131,6	176,4	216,3
Compliance	(4)		Y	Y	Y	Y
ηsh	(4)	%	139,6	144,2	144,5	141,2
SCOP	(4)		3,56	3,68	3,69	3,6,0

			27.6	31.4	36.4	41.5
REGULATION 2013/813						
Pdesign	(4)	kW	259,5	305,8	352,9	399
Compliance	(4)		Y	Y	Y	Y
ηsh	(4)	%	141,5	143,7	143,0	145,1
SCOP	(4)		3,61	3,67	3,65	3,7,0

Y = unit in compliance with Ecodesign at the indicated condition.

(4) User-side heat exchanger water inlet/outlet temperature 30/35, Average climate profile, with reference to regulation 2013/813 and norm EN 14825.

TETRIS 2 A+ /HP

			44.6	49.6	54.6
REGULATION 2016/2281					
Pdesign	(1)	kW	432,1	489,5	541,3
Compliance 12/7					
Compliance	(1)		Y	Y	Y
ηsc	(1)	%	164,0	164,2	164,8
SEER	(1)		4,18	4,18	4,19
Compliance Tier 2 (2021)	(1)		N	N	N
Compliance 12/7 unit with EC fans					
Compliance	(1)		Y	Y	Y
ηsc	(1)	%	186,64	182,00	182,96
SEER	(1)		4,74	4,63	4,65
Compliance Tier 2 (2021)	(1)		Y	Y	Y
Compliance 23/18					
Compliance	(2)		Y	Y	Y
ηsc	(2)	%	-	-	-
SEER	(2)		-	-	-

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

TETRIS 2 A SLN

			8.2	13.3	18.4	23.5	27.6	31.4
REGULATION 2016/2281								
Pdesign	(1)	kW	86,4	129,6	175,8	219,7	263,7	303,0
Compliance 12/7								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	151,4	159,4	161,4	162,6	164,6	163,4
SEER	(1)		3,86	4,06	4,11	4,14	4,19	4,16
Compliance Tier 2 (2021)	(1)		N	N	Y	Y	Y	Y
Compliance 12/7 unit with EC fans								
Compliance	(1)		Y	Y	Y	Y	Y	Y
ηsc	(1)	%	163,4	177,4	173,4	180,6	180,6	178,6
SEER	(1)		4,16	4,51	4,41	4,59	4,59	4,54
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y	Y
Compliance 23/18								
Compliance	(2)		Y	Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-	-
SEER	(2)		-	-	-	-	-	-
Compliance SEPR								
Compliance	(3)		Y	Y	Y	Y	Y	Y
SEPR	(3)		5,55	5,66	5,66	5,69	5,74	5,6

			36.4	41.5	44.6	49.6	54.6
REGULATION 2016/2281							
Pdesign	(1)	kW	362,7	393,8	424,8	484,4	544,1
Compliance 12/7							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	163,4	167,0	165,0	167,0	167,0
SEER	(1)		4,16	4,25	4,20	4,25	4,25
Compliance Tier 2 (2021)	(1)		Y	N	N	N	N
Compliance 12/7 unit with EC fans							
Compliance	(1)		Y	Y	Y	Y	Y
ηsc	(1)	%	176,6	185,8	184,2	185,4	185,8
SEER	(1)		4,49	4,72	4,68	4,71	4,72
Compliance Tier 2 (2021)	(1)		Y	Y	Y	Y	Y
Compliance 23/18							
Compliance	(2)		Y	Y	Y	Y	Y
ηsc	(2)	%	-	-	-	-	-
SEER	(2)		-	-	-	-	-
Compliance SEPR							
Compliance	(3)		Y	Y	Y	Y	Y
SEPR	(3)		5,57	5,68	5,64	5,66	5,69

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

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(3) User-side heat exchanger water inlet/outlet temperature 12/7°C, with reference to regulation 2016/2281 and norm EN 14825.

TETRIS 2 A SLN /HP

			8.2	13.3	18.4	23.5
REGULATION 2013/813						
Pdesign	(4)	kW	85,3	131,6	176,4	216,3
Compliance	(4)		Y	Y	Y	Y
ηsh	(4)	%	139,6	144,2	144,5	141,2
SCOP	(4)		3,56	3,68	3,69	3,60

			27.6	31.4	36.4	41.5
REGULATION 2013/813						
Pdesign	(4)	kW	259,5	305,8	352,9	399,0
Compliance	(4)		Y	Y	Y	Y
ηsh	(4)	%	141,5	143,7	143,0	145,1
SCOP	(4)		3,61	3,67	3,65	3,70

Y = unit in compliance with Ecodesign at the indicated condition.

(4) User-side heat exchanger water inlet/outlet temperature 30/35, Average climate profile, with reference to regulation 2013/813 and norm EN 14825.

TETRIS 2 A SLN /HP

			44.6	49.6	54.6
REGULATION 2016/2281					
Pdesign	(1)	kW	421,2	476,7	527,0
Compliance 12/7					
Compliance	(1)		Y	Y	Y
ηsc	(1)	%	165,4	165,4	167,4
SEER	(1)		4,21	4,21	4,26
Compliance Tier 2 (2021)	(1)		N	N	N
Compliance 12/7 unit with EC fans					
Compliance	(1)		Y	Y	Y
ηsc	(1)	%	182,2	181,8	182,6
SEER	(1)		4,63	4,62	4,64
Compliance Tier 2 (2021)	(1)		Y	Y	Y
Compliance 23/18					
Compliance	(2)		Y	Y	Y
ηsc	(2)	%	-	-	-
SEER	(2)		-	-	-

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(1) User-side heat exchanger water inlet/outlet temperature 12/7°C (low temperature application), with reference to regulation 2016/2281 and standard EN 14825.

(2) User-side heat exchanger water inlet/outlet temperature 23/18°C (medium temperature application), with reference to regulation 2016/2281 and standard EN 14825.

ELECTRICAL SPECIFICATIONS

TETRIS 2

			10.2	12.2	13.2	15.2	16.2	20.3	24.3
General electrical specifications									
Max. absorbed power (FLI)	(1)	kW	54	60	65	73	80	98	120
Max. absorbed current (FLA)	(1)	A	82	90	98	113	127	147	191
Rated current (Inom)	(2)	A	68	76	83	94	103	124	156
cosφ standard unit	(2)		0.83	0.84	0.85	0.85	0.85	0.85	0.85
Nominal current with power factor correction (Inom)	(2)	A	59	67	74	85	93	111	141
cosφ unit with power factor correction	(2)		0.96	0.96	0.95	0.94	0.94	0.95	0.94
Max. inrush current (MIC)	(3)	A	270	317	325	363	378	374	442
Maximum inrush current with soft-starter (MIC)	(4)	A	180	208	216	239	254	265	318
Power supply		V/ph/Hz	400/3~/52						
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52						
Suggested line section	(5)	mm²	4x35 mm² FG7OR	4x35 mm² FG7OR	4x35 mm² FG7OR	4x50 mm² FG7OR	4x50 mm² FG7OR	4x70 mm² FG7OR	4x95 mm² FG7OR
Suggested line protection	(6)		NH00 125A	NH00 125A	NH00 125A	NH00 160A	NH00 160A	NH1 200A	NH1 250A
Electrical specifications for fans									
Rated power of fan standard		n° x kW	2 x 2.0	2 x 2.0	2 x 2.0	2 x 2.0	2 x 2.0	3 x 2.0	3 x 2.0
Rated current of fan standard		n° x A	2 x 4.3	2 x 4.3	2 x 4.3	2 x 4.3	2 x 4.3	3 x 4.3	3 x 4.3
Rated power of fan EC		n° x kW	2 x 1.9	2 x 1.9	2 x 1.9	2 x 1.9	2 x 1.9	3 x 1.9	3 x 1.9
Rated current of fan EC		n° x A	2 x 2.9	2 x 2.9	2 x 2.9	2 x 2.9	2 x 2.9	3 x 2.9	3 x 2.9
Rated power of fan oversize EC		n° x kW	2 x 3.0	2 x 3.0	2 x 3.0	2 x 3.0	2 x 3.0	3 x 3.0	3 x 3.0
Rated current of fan oversize EC		n° x A	2 x 4.5	2 x 4.5	2 x 4.5	2 x 4.5	2 x 4.5	3 x 4.5	3 x 4.5

			27.4	29.4	32.4	33.4	37.4	41.4	43.6
General electrical specifications									
Max. absorbed power (FLI)	(1)	kW	131	145	160	174	186	200	218
Max. absorbed current (FLA)	(1)	A	196	225	254	288	311	333	338
Rated current (Inom)	(2)	A	166	187	207	233	249	264	280
cosφ standard unit	(2)		0.82	0.84	0.84	0.87	0.86	0.87	0.84
Nominal current with power factor correction (Inom)	(2)	A	145	167	185	216	230	247	250
cosφ unit with power factor correction	(2)		0.94	0.94	0.94	0.94	0.93	0.93	0.94
Max. inrush current (MIC)	(3)	A	423	476	505	543	566	582	588
Maximum inrush current with soft-starter (MIC)	(4)	A	314	352	381	412	435	452	464
Power supply		V/ph/Hz	400/3~/52						
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52						
Suggested line section	(5)	mm²	4x95 mm² FG7OR	4x150 mm² FG7OR	4x150 mm² FG7OR	2x(4x70 mm²) FG7OR	2x(4x70 mm²) FG7OR	2x(4x70 mm²) FG7OR	2x(4x70 mm²) FG7OR
Suggested line protection	(6)		NH1 250A	NH2 315A	NH2 315A	NH2 400A	NH2 400A	NH2 400A	NH2 400A
Electrical specifications for fans									
Rated power of fan standard		n° x kW	4 x 2.0	4 x 2.0	4 x 2.0	5 x 2.0	6 x 2.0	6 x 2.0	6 x 2.0
Rated current of fan standard		n° x A	4 x 4.3	4 x 4.3	4 x 4.3	5 x 4.3	6 x 4.3	6 x 4.3	6 x 4.3
Rated power of fan EC		n° x kW	4 x 1.9	4 x 1.9	4 x 1.9	5 x 1.9	6 x 1.9	6 x 1.9	6 x 1.9
Rated current of fan EC		n° x A	4 x 2.9	4 x 2.9	4 x 2.9	5 x 2.9	6 x 2.9	6 x 2.9	6 x 2.9
Rated power of fan oversize EC		n° x kW	4 x 3.0	4 x 3.0	4 x 3.0	5 x 3.0	6 x 3.0	6 x 3.0	6 x 3.0
Rated current of fan oversize EC		n° x A	4 x 4.5	4 x 4.5	4 x 4.5	5 x 4.5	6 x 4.5	6 x 4.5	6 x 4.5

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + 0.6 x LRA of the largest compressor)

(5) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(6) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

TETRIS 2

			47.6	50.7	53.8	58.8	62.8	67.9
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	240	251	262	291	320	338
Max. absorbed current (FLA)	(1)	A	382	386	391	450	509	528
Rated current (Inom)	(2)	A	311	277	289	321	353	374
cosφ standard unit	(2)		0.85	0.85	0.85	0.85	0.85	0.85
Nominal current with power factor correction (Inom)	(2)	A	281	245	256	287	316	335
cosφ unit with power factor correction	(2)		0.94	0.96	0.96	0.95	0.95	0.95
Max. inrush current (MIC)	(3)	A	632	637	619	701	760	779
Maximum inrush current with soft-starter (MIC)	(4)	A	508	513	510	577	636	655
Power supply		V/ph/Hz	400/3~/52					
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52					
Suggested line section	(5)	mm²	2x(4x120 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x150 mm²) FG7OR	2x(4x150 mm²) FG7OR	2x(4x150 mm²) FG7OR
Suggested line protection	(6)		NH3 500A	NH3 500A	NH3 500A	NH3 630A	NH3 630A	NH3 630A
Electrical specifications for fans								
Rated power of fan standard		n° x kW	6 x 2.0	7 x 2.0	8 x 2.0	8 x 2.0	8 x 2.0	9 x 2.0
Rated current of fan standard		n° x A	6 x 4.3	7 x 4.3	8 x 4.3	8 x 4.3	8 x 4.3	9 x 4.3
Rated power of fan EC		n° x kW	6 x 1.9	7 x 1.9	8 x 1.9	8 x 1.9	8 x 1.9	9 x 1.9
Rated current of fan EC		n° x A	6 x 2.9	7 x 2.9	8 x 2.9	8 x 2.9	8 x 2.9	9 x 2.9
Rated power of fan oversize EC		n° x kW	6 x 3.0	7 x 3.0	8 x 3.0	8 x 3.0	8 x 3.0	9 x 3.0
Rated current of fan oversize EC		n° x A	6 x 4.5	7 x 4.5	8 x 4.5	8 x 4.5	8 x 4.5	9 x 4.5

			70.9	74.10	78.10	80.12	87.12	93.12
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	360	371	400	392	436	480
Max. absorbed current (FLA)	(1)	A	572	577	636	587	675	763
Rated current (Inom)	(2)	A	398	410	442	434	482	530
cosφ standard unit	(2)		0.85	0.85	0.85	0.85	0.85	0.85
Nominal current with power factor correction (Inom)	(2)	A	356	367	395	384	427	474
cosφ unit with power factor correction	(2)		0.95	0.95	0.95	0.96	0.96	0.95
Max. inrush current (MIC)	(3)	A	823	828	887	814	926	1,014
Maximum inrush current with soft-starter (MIC)	(4)	A	699	704	763	705	802	890
Power supply		V/ph/Hz	400/3~/52					
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52					
Suggested line section	(5)	mm²	3x(4x120 mm²) FG7OR	3x(4x120 mm²) FG7OR	3x(4x120 mm²) FG7OR	3x(4x120 mm²) FG7OR	3x(4x120 mm²) FG7OR	4x(4x120 mm²) FG7OR
Suggested line protection	(6)		NH4 800A	NH4 800A	NH4 800A	NH4 800A	NH4 800A	NH4 1000A
Electrical specifications for fans								
Rated power of fan standard		n° x kW	9 x 2.0	10 x 2.0	10 x 2.0	12 x 2.0	12 x 2.0	12 x 2.0
Rated current of fan standard		n° x A	9 x 4.3	10 x 4.3	10 x 4.3	12 x 4.3	12 x 4.3	12 x 4.3
Rated power of fan EC		n° x kW	9 x 1.9	10 x 1.9	10 x 1.9	12 x 1.9	12 x 1.9	12 x 1.9
Rated current of fan EC		n° x A	9 x 2.9	10 x 2.9	10 x 2.9	12 x 2.9	12 x 2.9	12 x 2.9
Rated power of fan oversize EC		n° x kW	9 x 3.0	10 x 3.0	10 x 3.0	12 x 3.0	12 x 3.0	12 x 3.0
Rated current of fan oversize EC		n° x A	9 x 4.5	10 x 4.5	10 x 4.5	12 x 4.5	12 x 4.5	12 x 4.5

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + 0.6 x LRA of the largest compressor)

(5) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(6) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

TETRIS 2 A - TETRIS 2 SLN

			11.2	17.2	23.2	28.4	34.4	38.4
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	54	75	102	128	149	164
Max. absorbed current (FLA)	(1)	A	82	117	171	198	234	263
Rated current (Inom)	(2)	A	69	85	136	153	169	185
cosφ standard unit	(2)		0,82	0,84	0,86	0,83	0,84	0,84
Nominal current with power factor correction (Inom)	(2)	A	59	75	123	134	149	164
cosφ unit with power factor correction	(2)		0,96	0,95	0,95	0,95	0,95	0,95
Max. inrush current (MIC)	(3)	A	270	368	392	449	484	514
Maximum inrush current with soft-starter (MIC)	(4)	A	180	244	273	325	360	390
Power supply		V/ph/Hz	400/3~/52					
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52					
Suggested line section	(5)	mm²	4x25 mm² FG7OR	4x50 mm² FG7OR	4x70 mm² FG7OR	4x120 mm² FG7OR	4x150 mm² FG7OR	4x150 mm² FG7OR
Suggested line protection	(6)		NH00 100A	NH00 160A	NH1 200A	NH1 250A	NH2 315A	NH2 315A
Electrical specifications for fans								
Rated power of fan standard		n° x kW	2 x 2,0	3 x 2,0	4 x 2,0	5 x 2,0	6 x 2,0	6 x 2,0
Rated current of fan standard		n° x A	2 x 4,3	3 x 4,3	4 x 4,3	5 x 4,3	6 x 4,3	6 x 4,3
Rated power of fan EC		n° x kW	2 x 1,9	3 x 1,9	4 x 1,9	5 x 1,9	6 x 1,9	6 x 1,9
Rated current of fan EC		n° x A	2 x 2,9	3 x 2,9	4 x 2,9	5 x 2,9	6 x 2,9	6 x 2,9
Rated power of fan oversize EC		n° x kW	2 x 3,0	3 x 3,0	4 x 3,0	5 x 3,0	6 x 3,0	6 x 3,0
Rated current of fan oversize EC		n° x A	2 x 4,5	3 x 4,5	4 x 4,5	5 x 4,5	6 x 4,5	6 x 4,5

			43.4	47.4	50.6	57.6	64.6	70.6
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	185	204	224	248	279	307
Max. absorbed current (FLA)	(1)	A	307	341	350	399	463	512
Rated current (Inom)	(2)	A	245	273	254	282	463	512
cosφ standard unit	(2)		0,87	0,86	0,84	0,84	0,87	0,87
Nominal current with power factor correction (Inom)	(2)	A	224	247	225	249	424	469
cosφ unit with power factor correction	(2)		0,95	0,95	0,95	0,95	0,95	0,95
Max. inrush current (MIC)	(3)	A	529	563	601	650	684	733
Maximum inrush current with soft-starter (MIC)	(4)	A	409	443	477	526	565	614
Power supply		V/ph/Hz	400/3~/52					
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52					
Suggested line section	(5)	mm²	2x(4x70 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x150 mm²) FG7OR	2x(4x150 mm²) FG7OR
Suggested line protection	(6)		NH2 400A	NH3 500A	NH3 500A	NH3 500A	NH3 630A	NH3 630A
Electrical specifications for fans								
Rated power of fan standard		n° x kW	7 x 2,0	8 x 2,0	9 x 2,0	10 x 2,0	11 x 2,0	12 x 2,0
Rated current of fan standard		n° x A	7 x 4,3	8 x 4,3	9 x 4,3	10 x 4,3	11 x 4,3	12 x 4,3
Rated power of fan EC		n° x kW	7 x 1,9	8 x 1,9	9 x 1,9	10 x 1,9	11 x 1,9	12 x 1,9
Rated current of fan EC		n° x A	7 x 2,9	8 x 2,9	9 x 2,9	10 x 2,9	11 x 2,9	12 x 2,9
Rated power of fan oversize EC		n° x kW	7 x 3,0	8 x 3,0	9 x 3,0	10 x 3,0	11 x 3,0	12 x 3,0
Rated current of fan oversize EC		n° x A	7 x 4,5	8 x 4,5	9 x 4,5	10 x 4,5	11 x 4,5	12 x 4,5

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + 0.6 x LRA of the largest compressor)

(5) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(6) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

TETRIS 2 A+ - TETRIS 2 A SLN

			8.2	13.3	18.4	23.5	27.6	31.4
General electrical specifications								
Max. absorbed power (FLI)	(1)	kW	41	61	82	102	122	144
Max. absorbed current (FLA)	(1)	A	69	104	138	173	208	223
Rated current (Inom)	(2)	A	60	90	120	149	179	165
cosφ standard unit	(2)		0.76	0.76	0.76	0.76	0.76	0.83
Nominal current with power factor correction (Inom)	(2)	A	48	72	96	119	143	144
cosφ unit with power factor correction	(2)		0.95	0.95	0.95	0.95	0.95	0.95
Max. inrush current (MIC)	(3)	A	213	248	282	317	351	474
Maximum inrush current with soft-starter (MIC)	(4)	A	143	178	213	247	282	350
Power supply		V/ph/Hz	400/3~/52					
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52					
Suggested line section	(5)	mm²	4x25 mm² FG7OR	4x35 mm² FG7OR	4x70 mm² FG7OR	4x120 mm² FG7OR	4x120 mm² FG7OR	4x150 mm² FG7OR
Suggested line protection	(6)		NH00 100A	NH00 125A	NH1 200A	NH1 250A	NH1 250A	NH2 315A
Electrical specifications for fans								
Rated power of fan standard		n° x kW	2 x 2,0	3 x 2,0	4 x 2,0	5 x 2,0	6 x 2,0	7 x 2,0
Rated current of fan standard		n° x A	2 x 4,3	3 x 4,3	4 x 4,3	5 x 4,3	6 x 4,3	7 x 4,3
Rated power of fan EC		n° x kW	2 x 1,9	3 x 1,9	4 x 1,9	5 x 1,9	6 x 1,9	7 x 1,9
Rated current of fan EC		n° x A	2 x 2,9	3 x 2,9	4 x 2,9	5 x 2,9	6 x 2,9	7 x 2,9
Rated power of fan oversize EC		n° x kW	2 x 3,0	3 x 3,0	4 x 3,0	5 x 3,0	6 x 3,0	7 x 3,0
Rated current of fan oversize EC		n° x A	2 x 4,5	3 x 4,5	4 x 4,5	5 x 4,5	6 x 4,5	7 x 4,5

			36.4	41.5	44.6	49.6	54.6
General electrical specifications							
Max. absorbed power (FLI)	(1)	kW	168	186	204	228	252
Max. absorbed current (FLA)	(1)	A	272	291	311	359	407
Rated current (Inom)	(2)	A	193	214	234	262	290
cosφ standard unit	(2)		0.83	0.84	0.83	0.84	0.84
Nominal current with power factor correction (Inom)	(2)	A	169	189	204	232	256
cosφ unit with power factor correction	(2)		0.95	0.95	0.95	0.95	0.95
Max. inrush current (MIC)	(3)	A	522	542	538	610	658
Maximum inrush current with soft-starter (MIC)	(4)	A	398	418	429	486	534
Power supply		V/ph/Hz	400/3~/52				
Power supply for auxiliary circuits		V/ph/Hz	230-24/1~/52				
Suggested line section	(5)	mm²	2x(4x70 mm²) FG7OR	2x(4x70 mm²) FG7OR	2x(4x70 mm²) FG7OR	2x(4x120 mm²) FG7OR	2x(4x120 mm²) FG7OR
Suggested line protection	(6)		NH2 400A	NH2 400A	NH2 400A	NH3 500A	NH3 500A
Electrical specifications for fans							
Rated power of fan standard		n° x kW	8 x 2,0	9 x 2,0	10 x 2,0	11 x 2,0	12 x 2,0
Rated current of fan standard		n° x A	8 x 4,3	9 x 4,3	10 x 4,3	11 x 4,3	12 x 4,3
Rated power of fan EC		n° x kW	8 x 1,9	9 x 1,9	10 x 1,9	11 x 1,9	12 x 1,9
Rated current of fan EC		n° x A	8 x 2,9	9 x 2,9	10 x 2,9	11 x 2,9	12 x 2,9
Rated power of fan oversize EC		n° x kW	8 x 3,0	9 x 3,0	10 x 3,0	11 x 3,0	12 x 3,0
Rated current of fan oversize EC		n° x A	8 x 4,5	9 x 4,5	10 x 4,5	11 x 4,5	12 x 4,5

(1) Data regarding the unit without accessories working in maximum power absorption conditions

(2) Datum related to the unit without accessories working in standard conditions (A35°C; W12/7°C)

(3) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + LRA of the largest compressor)

(4) Maximum effective RMS value of the current when the last compressor starts (FLA of the entire unit - FLA of the largest compressor + 0.6 x LRA of the largest compressor)

(5) These values are determined for cables with operating temperature of 40°C, EPR insulation and a line with a maximum length of 50m. The line section must be determined by a qualified technician based on the protection devices, the length of the line, the type of cable used and the type of installation.

(6) The correct line protection part must be determined by a qualified technician based on the length of the line, the type of cable used and the type of installation.

HYDRAULIC MODULES

TETRIS 2

			10.2	12.2	13.2	15.2	16.2	20.3	24.3
Volume of the expansion vessel		l	18	18	18	18	18	18	18
Volume of the buffer tank		l	300	300	300	300	300	300	300
Standard pumps									
Pump model 1P			P3	P9	P9	P9	P9	P10	P17
Pump model 2P			P3	P9	P9	P9	P9	P10	P17
Pump model 3P			-	-	-	-	-	-	-
Available head 1P	(1)	kPa	154	143	130	144	135	160	219
Available head 2P	(1)	kPa	136	128	110	133	122	138	190
Available head 3P	(1)	kPa	-	-	-	-	-	-	-
Oversize pumps									
Pump model 1PM			P10	P11	P11	P11	P11	P17	P22
Pump model 2PM			P10	P11	P11	P11	P11	P17	P22
Pump model 3PM			-	-	-	-	-	-	-
Available head 1PM	(1)	kPa	233	287	274	277	267	235	282
Available head 2PM	(1)	kPa	214	263	244	265	254	214	252
Available head 3PM	(1)	kPa	-	-	-	-	-	-	-

			27.4	29.4	32.4	33.4	37.4	41.4	43.6
Volume of the expansion vessel		l	18	18	18	18	18	18	18
Volume of the buffer tank		l	300	300	300	300	300	300	300
Standard pumps									
Pump model 1P			P17	P17	P17	P17	P17	P25	P25
Pump model 2P			-	-	-	-	-	-	-
Pump model 3P			P3	P3	P3	P10	P10	P10	P10
Available head 1P	(1)	kPa	219	212	193	214	203	248	228
Available head 2P	(1)	kPa	-	-	-	-	-	-	-
Available head 3P	(1)	kPa	154	150	135	243	234	213	206
Oversize pumps									
Pump model 1PM			P22	P22	P22	P22	P22	P28	P28
Pump model 2PM			-	-	-	-	-	-	-
Pump model 3PM			P7	P7	P7	P11	P11	P11	P11
Available head 1PM	(1)	kPa	288	287	274	299	290	276	274
Available head 2PM	(1)	kPa	-	-	-	-	-	-	-
Available head 3PM	(1)	kPa	285	274	249	312	303	281	275

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

TETRIS 2

			47.6	50.7	53.8	58.8	62.8	67.9
Volume of the expansion vessel		l	18	25	25	25	25	25
Volume of the buffer tank		l	300	500	500	500	500	500
Standard pumps								
Pump model 1P			P25	P25	P25	P25	P25	P27
Pump model 2P			-	-	-	-	-	-
Pump model 3P			P10	P10	P10	P10	P11	P11
Available head 1P	(1)	kPa	212	195	178	180	160	153
Available head 2P	(1)	kPa	-	-	-	-	-	-
Available head 3P	(1)	kPa	188	174	163	142	214	191
Oversize pumps								
Pump model 1PM			P28	P28	P28	P28	P28	P29
Pump model 2PM			-	-	-	-	-	-
Pump model 3PM			P11	P11	P11	P11	P18	P18
Available head 1PM	(1)	kPa	260	251	244	254	244	281
Available head 2PM	(1)	kPa	-	-	-	-	-	-
Available head 3PM	(1)	kPa	258	244	233	213	305	292

			70.9	74.10	78.10	80.12	87.12	93.12
Volume of the expansion vessel		l	25	25	25	25	25	25
Volume of the buffer tank		l	500	500	500	700	700	700
Standard pumps								
Pump model 1P			P27	P27	P27	P27	P28	P28
Pump model 2P			-	-	-	-	-	-
Pump model 3P			P11	P11	P17	P17	P17	P17
Available head 1P	(1)	kPa	142	149	134	131	170	144
Available head 2P	(1)	kPa	-	-	-	-	-	-
Available head 3P	(1)	kPa	175	155	183	180	162	138
Oversize pumps								
Pump model 1PM			P29	P29	P29	P29	P31	P31
Pump model 2PM			-	-	-	-	-	-
Pump model 3PM			P18	P18	P18	P18	P18	P18
Available head 1PM	(1)	kPa	273	260	247	244	283	249
Available head 2PM	(1)	kPa	-	-	-	-	-	-
Available head 3PM	(1)	kPa	286	275	264	262	244	222

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

TETRIS 2 A

			11.2	17.2	23.2	28.4	34.4	38.4
Volume of the expansion vessel		l	18	18	18	18	18	18
Volume of the buffer tank		l	300	300	300	300	300	300
Standard pumps								
Pump model 1P			P9	P9	P10	P17	P17	P17
Pump model 2P			P9	P9	-	-	-	-
Pump model 3P			-	-	P3	P3	P3	P3
Available head 1P	(1)	kPa	165	147	170	234	201	175
Available head 2P	(1)	kPa	146	135	-	-	-	-
Available head 3P	(1)	kPa	-	-	183	167	142	122
Oversize pumps								
Pump model 1PM			P11	P11	P14	P18	P18	P18
Pump model 2PM			P11	P11	-	-	-	-
Pump model 3PM			-	-	P7	P7	P7	P7
Available head 1PM	(1)	kPa	302	279	303	315	285	260
Available head 2PM	(1)	kPa	283	267	-	-	-	-
Available head 3PM	(1)	kPa	-	-	335	302	259	227
Small pumps								
Pump model 1Pr			P33	P33	P9	P34	P34	P15
Pump model 2Pr			P33	P33	P9	P34	P34	P15
Available head 1Pr	(1)	kPa	98	84	117	130	97	122
Available head 2Pr	(1)	kPa	79	72	104	117	88	108

			43.4	47.4	50.6	57.6	64.6	70.6
Volume of the expansion vessel		l	25	25	25	25	25	25
Volume of the buffer tank		l	500	500	500	500	700	700
Standard pumps								
Pump model 1P			P17	P21	P21	P21	P27	P27
Pump model 2P			-	-	-	-	-	-
Pump model 3P			P9	P9	P9	P10	P10	P10
Available head 1P	(1)	kPa	167	197	190	186	215	199
Available head 2P	(1)	kPa	-	-	-	-	-	-
Available head 3P	(1)	kPa	155	161	152	188	162	155
Oversize pumps								
Pump model 1PM			P18	P26	P26	P26	P29	P29
Pump model 2PM			-	-	-	-	-	-
Pump model 3PM			P11	P11	P11	P14	P14	P14
Available head 1PM	(1)	kPa	255	354	346	364	325	309
Available head 2PM	(1)	kPa	-	-	-	-	-	-
Available head 3PM	(1)	kPa	289	294	284	359	299	289
Small pumps								
Pump model 1Pr			P35	P36	P36	P36	P21	P21
Pump model 2Pr			P35	P36	P36	P36	P21	P21
Available head 1Pr	(1)	kPa	106	149	140	119	132	95
Available head 2Pr	(1)	kPa	94	112	102	106	113	77

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

TETRIS 2 SLN

			11.2	17.2	23.2	28.4	34.4	38.4
Volume of the expansion vessel		l	18	18	18	18	18	18
Volume of the buffer tank		l	300	300	300	300	300	300
Standard pumps								
Pump model 1P			P9	P9	P10	P17	P17	P17
Pump model 2P			P9	P9	-	-	-	-
Pump model 3P			-	-	P3	P3	P3	P3
Available head 1P	(1)	kPa	165	147	170	234	201	175
Available head 2P	(1)	kPa	146	135	-	-	-	-
Available head 3P	(1)	kPa	-	-	183	167	142	122
Oversize pumps								
Pump model 1PM			P11	P11	P14	P18	P18	P18
Pump model 2PM			P11	P11	-	-	-	-
Pump model 3PM			-	-	P7	P7	P7	P7
Available head 1PM	(1)	kPa	302	279	303	315	285	260
Available head 2PM	(1)	kPa	283	267	-	-	-	-
Available head 3PM	(1)	kPa	-	-	335	302	259	227
Small pumps								
Pump model 1Pr			P33	P33	P9	P34	P34	P15
Pump model 2Pr			P33	P33	P9	P34	P34	P15
Available head 1Pr	(1)	kPa	102	90	132	130	97	134
Available head 2Pr	(1)	kPa	83	78	118	117	90	120

			43.4	47.4	50.6	57.6	64.6	70.6
Volume of the expansion vessel		l	25	25	25	25	25	25
Volume of the buffer tank		l	500	500	500	500	700	700
Standard pumps								
Pump model 1P			P17	P21	P21	P21	P27	P27
Pump model 2P			-	-	-	-	-	-
Pump model 3P			P9	P9	P9	P10	P10	P10
Available head 1P	(1)	kPa	167	197	190	186	215	199
Available head 2P	(1)	kPa	-	-	-	-	-	-
Available head 3P	(1)	kPa	155	161	152	188	162	155
Oversize pumps								
Pump model 1PM			P18	P26	P26	P26	P29	P29
Pump model 2PM			-	-	-	-	-	-
Pump model 3PM			P11	P11	P11	P14	P14	P14
Available head 1PM	(1)	kPa	255	354	346	364	325	309
Available head 2PM	(1)	kPa	-	-	-	-	-	-
Available head 3PM	(1)	kPa	289	294	284	359	299	289
Small pumps								
Pump model 1Pr			P35	P36	P36	P36	P21	P21
Pump model 2Pr			P35	P36	P36	P36	P21	P21
Available head 1Pr	(1)	kPa	117	159	149	130	147	112
Available head 2Pr	(1)	kPa	104	122	111	117	128	94

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

TETRIS 2 A+

			8.2	13.3	18.4	23.5	27.6	31.4
Volume of the expansion vessel		l	18	18	18	18	18	24
Volume of the buffer tank		l	300	300	300	300	300	500
Standard pumps								
Pump model 1P			P2	P3	P9	P10	P15	P15
Pump model 2P			P2	P3	-	-	-	-
Pump model 3P			-	-	P1	P2	P2	P3
Available head 1P	(1)	kPa	160	141	140	158	159	150
Available head 2P	(1)	kPa	142	127	-	-	-	-
Available head 3P	(1)	kPa	-	-	126	156	130	130
Oversize pumps								
Pump model 1PM			P5	P7	P11	P14	P18	P18
Pump model 2PM			P5	P7	-	-	-	-
Pump model 3PM			-	-	P5	P5	P7	P7
Available head 1PM	(1)	kPa	239	227	270	290	305	294
Available head 2PM	(1)	kPa	221	213	-	-	-	-
Available head 3PM	(1)	kPa	-	-	262	241	276	251
Small pumps								
Pump model 1Pr			P1	P32	P33	P9	P34	P34
Pump model 2Pr			P1	P32	P33	P9	P34	P34
Available head 1Pr	(1)	kPa	120	103	116	109	131	115
Available head 2Pr	(1)	kPa	102	89	102	97	121	108

			36.4	41.5	44.6	49.6	54.6
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	500	500	500	700	700
Standard pumps							
Pump model 1P			P15	P17	P21	P21	P21
Pump model 2P			-	-	-	-	-
Pump model 3P			P3	P3	P9	P9	P9
Available head 1P	(1)	kPa	140	174	183	173	164
Available head 2P	(1)	kPa	-	-	-	-	-
Available head 3P	(1)	kPa	120	128	130	115	100
Oversize pumps							
Pump model 1PM			P18	P18	P22	P22	P22
Pump model 2PM			-	-	-	-	-
Pump model 3PM			P7	P11	P11	P11	P11
Available head 1PM	(1)	kPa	278	261	269	257	246
Available head 2PM	(1)	kPa	-	-	-	-	-
Available head 3PM	(1)	kPa	218	282	263	246	230
Small pumps							
Pump model 1Pr			P34	P15	P35	P36	P36
Pump model 2Pr			P34	P15	P35	P36	P36
Available head 1Pr	(1)	kPa	84	112	102	134	112
Available head 2Pr	(1)	kPa	72	100	90	121	99

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

TETRIS 2 A SLN

			8.2	13.3	18.4	23.5	27.6	31.4
Volume of the expansion vessel		l	18	18	18	18	18	24
Volume of the buffer tank		l	300	300	300	300	300	500
Standard pumps								
Pump model 1P			P2	P3	P9	P10	P15	P15
Pump model 2P			P2	P3	-	-	-	-
Pump model 3P			-	-	P1	P2	P2	P3
Available head 1P	(1)	kPa	160	141	140	158	159	150
Available head 2P	(1)	kPa	142	127	-	-	-	-
Available head 3P	(1)	kPa	-	-	126	156	130	130
Oversize pumps								
Pump model 1PM			P5	P7	P11	P14	P18	P18
Pump model 2PM			P5	P7	-	-	-	-
Pump model 3PM			-	-	P5	P5	P7	P7
Available head 1PM	(1)	kPa	239	227	270	290	305	294
Available head 2PM	(1)	kPa	221	213	-	-	-	-
Available head 3PM	(1)	kPa	-	-	262	241	276	251
Small pumps								
Pump model 1Pr			P1	P32	P33	P9	P34	P34
Pump model 2Pr			P1	P32	P33	P9	P34	P34
Available head 1Pr	(1)	kPa	120	106	91	114	131	118
Available head 2Pr	(1)	kPa	102	92	77	108	121	108

			36.4	41.5	44.6	49.6	54.6
Volume of the expansion vessel		l	24	24	24	24	24
Volume of the buffer tank		l	500	500	500	700	700
Standard pumps							
Pump model 1P			P15	P17	P21	P21	P21
Pump model 2P			-	-	-	-	-
Pump model 3P			P3	P3	P9	P9	P9
Available head 1P	(1)	kPa	140	174	183	173	164
Available head 2P	(1)	kPa	-	-	-	-	-
Available head 3P	(1)	kPa	120	128	130	115	100
Oversize pumps							
Pump model 1PM			P18	P18	P22	P22	P22
Pump model 2PM			-	-	-	-	-
Pump model 3PM			P7	P11	P11	P11	P11
Available head 1PM	(1)	kPa	278	261	269	257	246
Available head 2PM	(1)	kPa	-	-	-	-	-
Available head 3PM	(1)	kPa	218	282	263	246	230
Small pumps							
Pump model 1Pr			P34	P15	P35	P36	P36
Pump model 2Pr			P34	P15	P35	P36	P36
Available head 1Pr	(1)	kPa	89	118	102	134	118
Available head 2Pr	(1)	kPa	77	106	144	121	105

(1) External air temperature 35°C, user-side heat exchanger water inlet/outlet temperature 12/7°C. Values in accordance with EN 14511.

HYDRAULIC MODULES

	Rated power	Rated current	Min. flow rate	Max. flow rate
	kW	A	m³/h	m³/h
P1	1,1	2,5	7	20
P2	1,5	3,2	7	20
P3	1,9	4,5	12	34
P4	3,0	5,9	12	34
P5	2,2	4,5	6	20
P6	3,0	6,1	6	20
P7	3,0	6,1	6	24
P8	4,0	8,7	6	24
P9	2,2	4,5	12	51
P10	3,0	6,1	12	51
P11	4,0	8,7	12	51
P12	4,0	8,7	12	51
P13	5,5	10,4	12	51
P14	5,5	10,4	12	51
P15	4,0	8,7	24	72
P16	5,5	10,4	24	72
P17	5,5	10,4	24	87
P18	7,5	13,7	24	87
P19	7,5	13,7	24	87
P20	9,2	17,2	24	87
P21	7,5	13,6	42	132
P22	11,0	21,3	42	138
P23	11,0	21,3	42	138
P24	15,0	27,7	42	138
P25	9,2	17,2	42	132
P26	15,0	27,7	35	157
P27	11,0	20,2	58	237
P28	15,0	26,6	65	255
P29	18,5	33,0	70	270
P30	18,5	33,0	70	270
P31	22,0	40,4	50	233
P32	1,5	3,4	12	29
P33	1,5	3,4	12	42
P34	3,0	6,1	24	72
P35	4,0	8,7	38	110
P36	5,5	10,4	42	126

USER-SIDE EXCHANGER FLOW RATE FIELDS

The units are sized and optimized for the following nominal conditions: external air 35°C, inlet-outlet of the user-side exchanger 12/7°C.

The units can work at design conditions different from nominal conditions, provided that:

- the design condition falls within the operating limits specified below
- the unit is equipped with all the accessories necessary for operation of the unit (e.g. brine kit)
- the flow rate at design conditions (that is, of the specific application) must always come within the allowed flow rate ranges specified below. If the design conditions require a water flow rate that does not come within the allowed operating range, you must contact our sales department that will identify the most suitable solution for the specific application.

TETRIS 2

	Qmin	Qmax
	m³/h	m³/h
10.2	9,4	28,1
12.2	10,2	30,5
13.2	10,9	32,6
15.2	12,0	36,1
16.2	13,8	41,3
20.3	16,8	50,4
24.3	19,8	59,3
27.4	22,6	67,7
29.4	24,2	72,6
32.4	26,3	78,9
33.4	28,8	86,4
37.4	31,8	95,4
41.4	35,1	105,2
43.6	36,7	110,2
47.6	39,4	118,1
50.7	42,3	127,0
53.8	45,1	135,4
58.8	48,9	146,7
62.8	52,6	157,9
67.9	56,2	168,5
70.9	59,2	177,5
74.10	62,0	185,9
78.10	65,7	197,1
80.12	68,4	205,2
87.12	73,6	220,8
93.12	78,8	236,3

TETRIS 2 A

	Qmin	Qmax
	m³/h	m³/h
11.2	9,6	28,9
17.2	13,9	41,7
23.2	19,8	59,3
28.4	23,6	70,7
34.4	27,8	83,5
38.4	31,2	93,5
43.4	36,1	108,3
47.4	39,2	117,7
50.6	41,7	125,1
57.6	46,7	140,1
64.6	53,4	160,2
70.6	58,9	176,8

TETRIS 2 A+

	Qmin	Qmax
	m³/h	m³/h
8.2	7,7	23,0
13.3	11,5	34,4
18.4	15,6	46,7
23.5	19,4	58,3
27.6	23,3	70,0
31.4	26,8	80,3
36.4	32,1	96,3
41.5	34,8	104,5
44.6	37,6	112,7
49.6	42,9	128,6
54.6	48,2	144,6

TETRIS 2 SLN

	Qmin	Qmax
	m³/h	m³/h
11.2	9,1	27,3
17.2	13,1	39,3
23.2	18,5	55,6
28.4	22,1	66,3
34.4	26,2	78,7
38.4	29,3	87,8
43.4	33,8	101,5
47.4	36,8	110,3
50.6	39,3	117,8
57.6	44,0	131,9
64.6	50,2	150,5
70.6	55,3	166,0

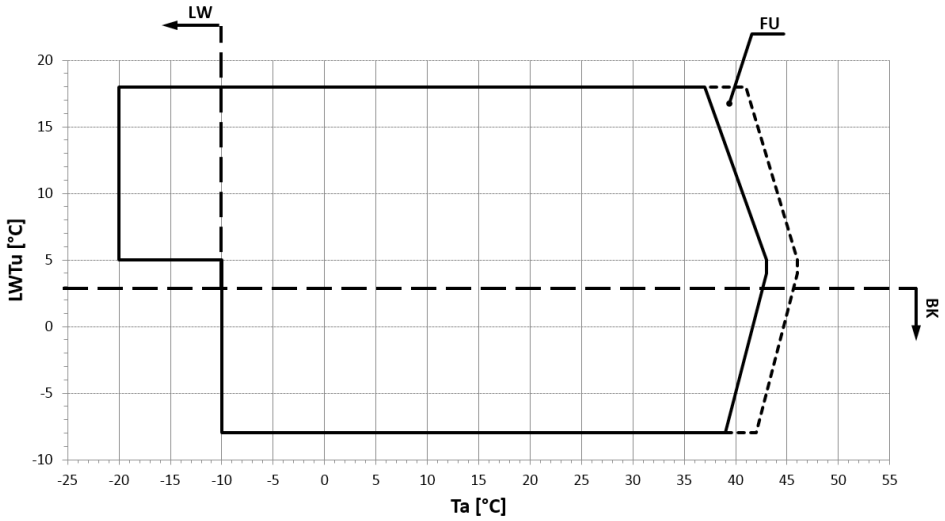
TETRIS 2 A SLN

	Qmin	Qmax
	m³/h	m³/h
8.2	7,5	22,4
13.3	11,2	33,6
18.4	15,2	45,5
23.5	19,0	56,9
27.6	22,7	68,2
31.4	26,1	78,4
36.4	31,3	93,8
41.5	34,0	101,9
44.6	36,6	109,9
49.6	41,8	125,3
54.6	46,9	140,8

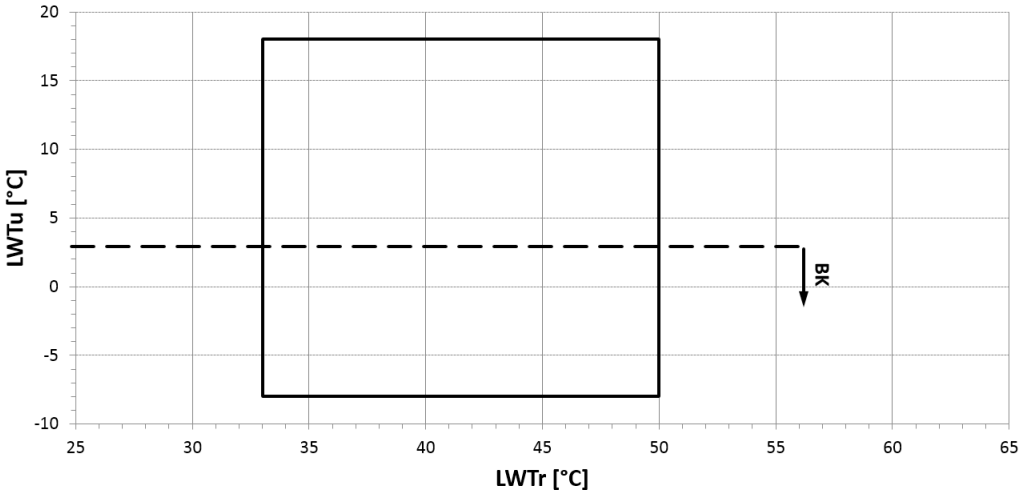
OPERATING LIMITS

TETRIS 2

COOLING



TOTAL RECOVERY



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

LWTr: water outlet temperature from the recovery exchanger

LW: in the indicated area, the unit can work only where there is no wind

/HAT: the /HAT version is obligatory in the area indicated by the arrow. The /HAT unit adopts an electrical control panel made using specific components to withstand high temperatures, special cables and oversize protection parts that guarantee operation with external air temperature up to 52°C. For higher temperatures up to about 55°C, a set-up with air conditioning of the electrical control panel is necessary; the unit works in capacity reduction mode. The feasibility of this set-up must be assessed: please contact our sales department.

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices

BK: For LWTu lower or equal to +3°C, it is mandatory to fit the "Brine Kit" accessory

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

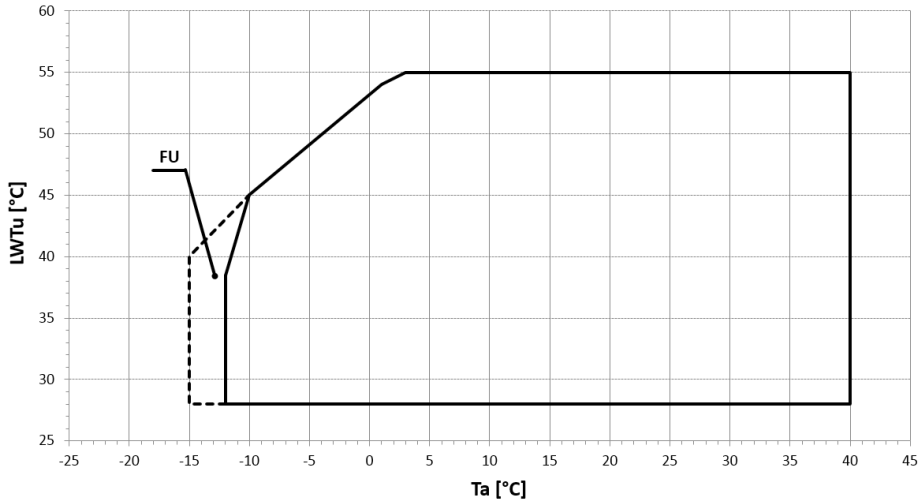
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

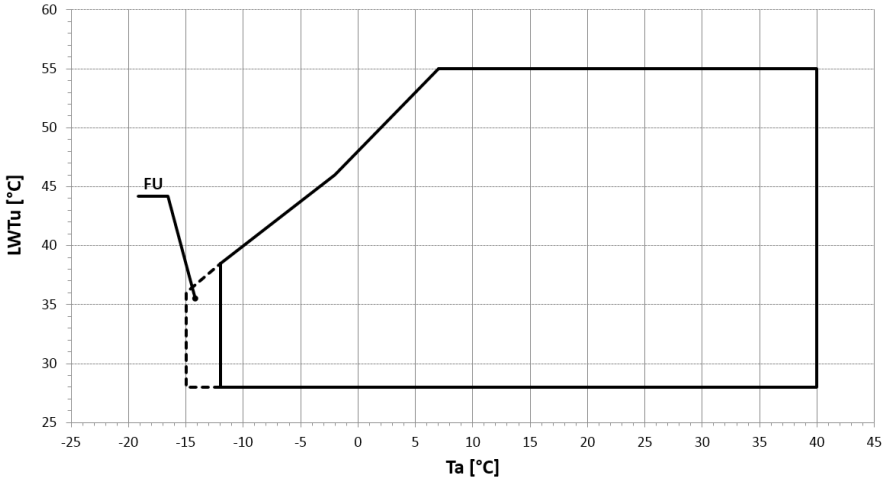
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

HEATING

For models Tetris 2 10.2, 16.2, 24.3, 32.4, 33.4, 37.4, 41.4, 47.6, 62.8, 70.9, 78.10, 93.12

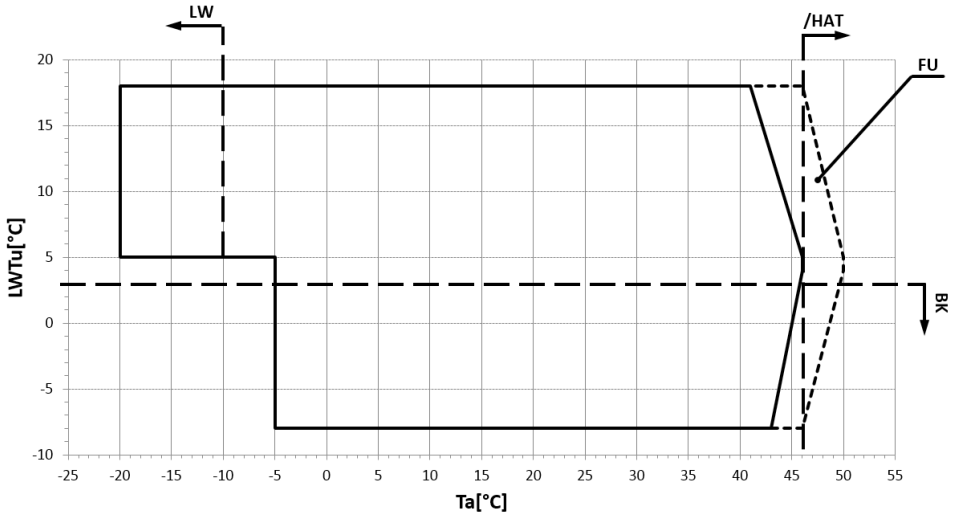


For models Tetris 2 12.2, 13.2, 15.2, 20.3, 27.4, 29.4, 43.6, 50.7, 53.8, 58.8, 67.9, 74.10, 80.12, 87.12

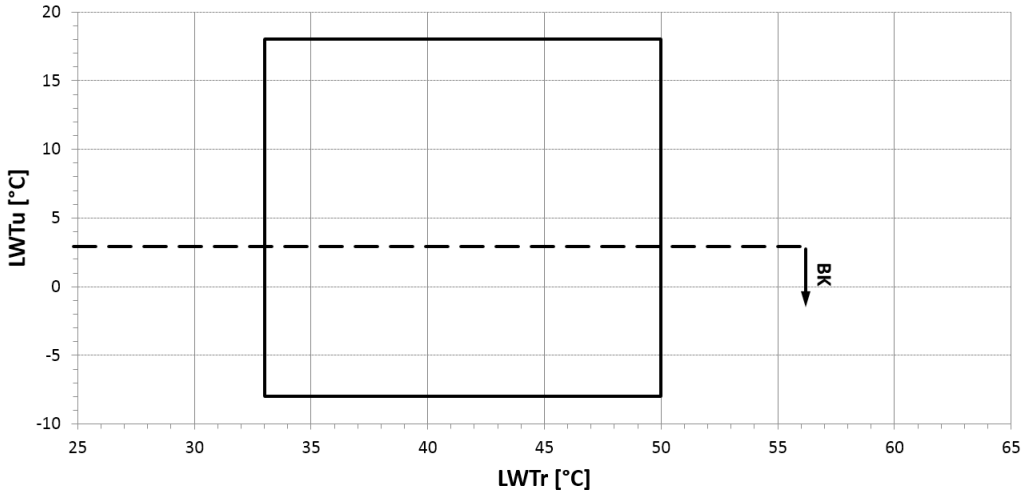


TETRIS 2 A - TETRIS 2 SLN

COOLING



TOTAL RECOVERY



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

LWTr: water outlet temperature from the recovery exchanger

LW: in the indicated area, the unit can work only where there is no wind

/HAT: the /HAT version is obligatory in the area indicated by the arrow. The /HAT unit adopts an electrical control panel made using specific components to withstand high temperatures, special cables and oversize protection parts that guarantee operation with external air temperature up to 52°C. For higher temperatures up to about 55°C, a set-up with air conditioning of the electrical control panel is necessary; the unit works in capacity reduction mode. The feasibility of this set-up must be assessed: please contact our sales department.

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices

BK: For LWTu lower or equal to +3°C, it is mandatory to fit the "Brine Kit" accessory

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

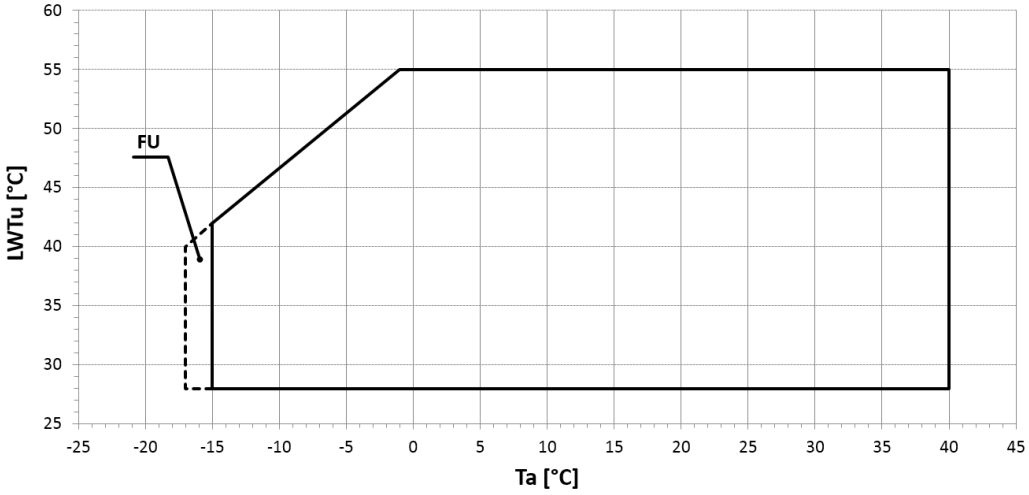
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

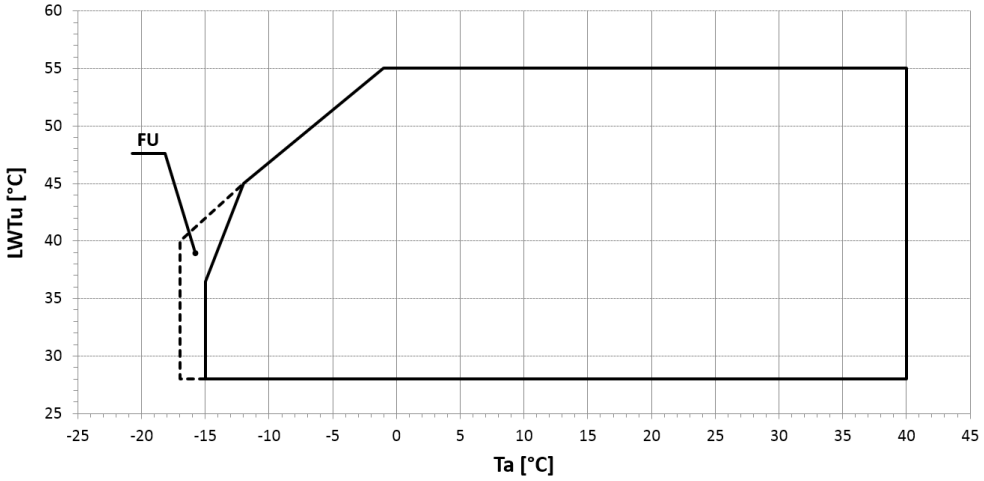
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

HEATING

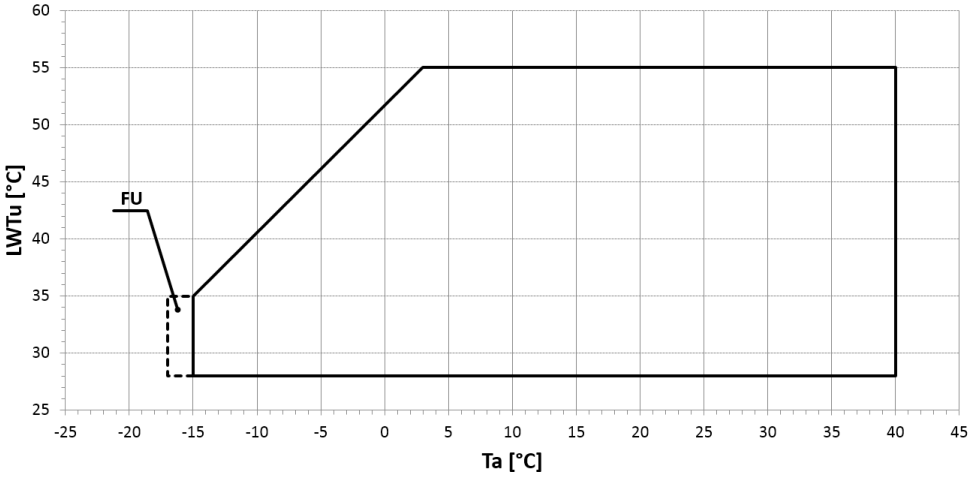
For models Tetris 2 A / Tetris 2 SLN 23.2



For models Tetris 2 A / Tetris 2 SLN 11.2, 38.4, 43.4, 47.4, 57.6, 64.6, 70.6

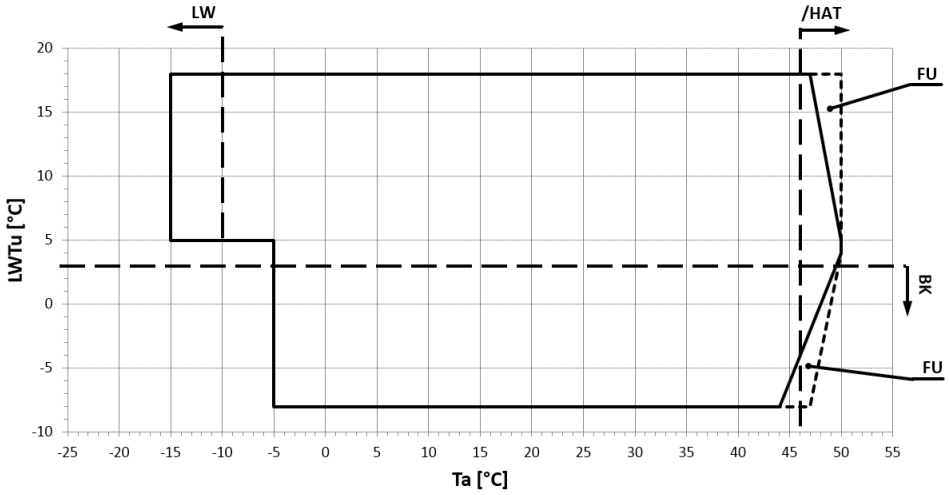


For models Tetris 2 A / Tetris 2 SLN 17.2, 28.4, 34.4, 50.6

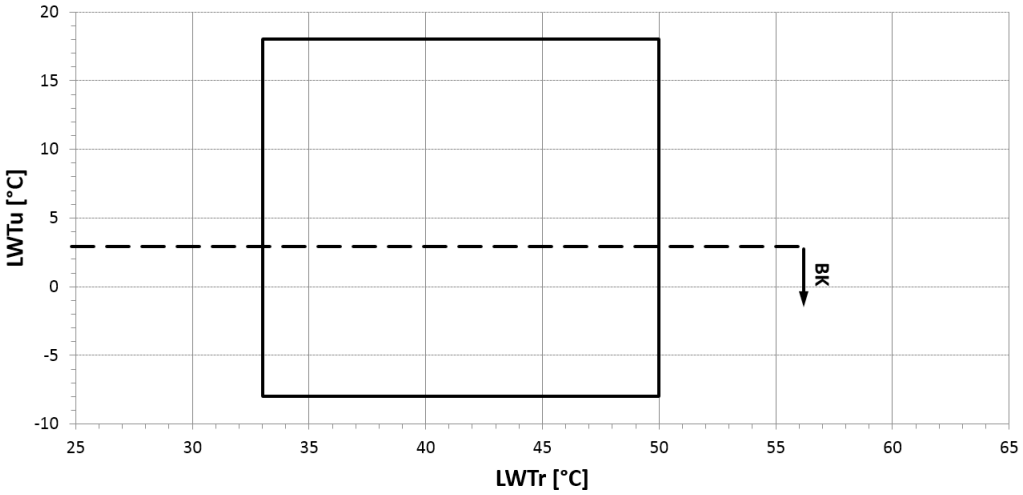


TETRIS 2 A+ - TETRIS 2 A SLN

COOLING



TOTAL RECOVERY



Ta: external air temperature

LWTu: water outlet temperature from the user-side heat exchanger

LWTr: water outlet temperature from the recovery exchanger

LW: in the indicated area, the unit can work only where there is no wind

/HAT: the /HAT version is obligatory in the area indicated by the arrow. The /HAT unit adopts an electrical control panel made using specific components to withstand high temperatures, special cables and oversize protection parts that guarantee operation with external air temperature up to 52°C. For higher temperatures up to about 55°C, a set-up with air conditioning of the electrical control panel is necessary; the unit works in capacity reduction mode. The feasibility of this set-up must be assessed: please contact our sales department.

FU: in the indicated area, the control could actuate a forced capacity reduction of the compressors so as to prevent tripping of the safety devices

BK: For LWTu lower or equal to +3°C, it is mandatory to fit the "Brine Kit" accessory

For LWTu below +5°C, it is compulsory to use suitable percentages of antifreeze additives (glycols) to prevent ice formation in the exchanger.

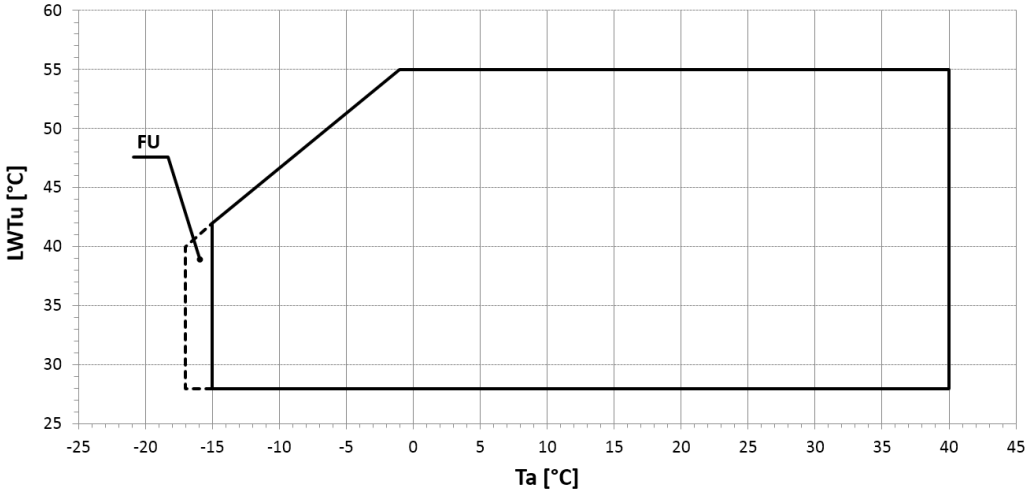
The inlet and outlet temperatures of the user-side exchanger must be given on ordering to allow correct setting of the alarm parameters and verification of the sizing of the expansion valve.

The cooling set point can then be changed by the customer in an interval that, compared to the set point given on ordering, ranges from -1K up to the maximum temperature allowed by the above-stated operating limits.

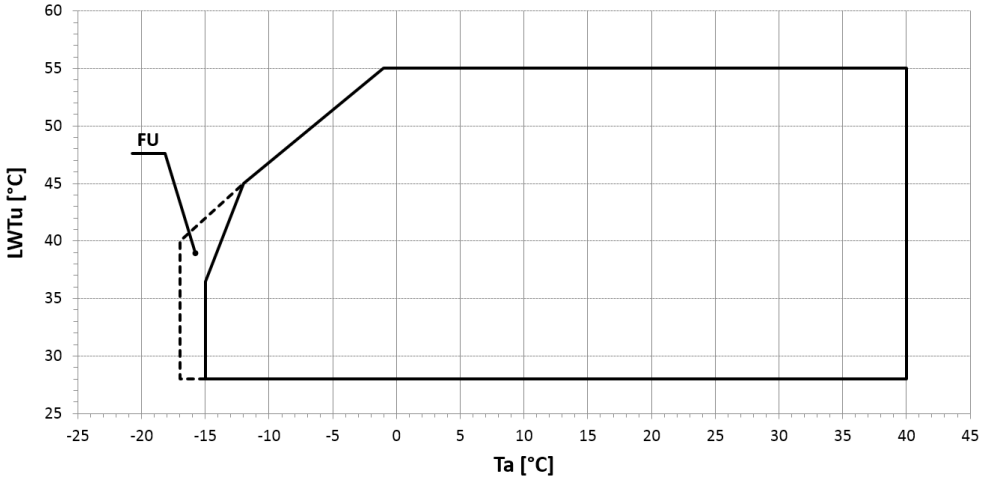
The unit will be optimized to work at the set point temperatures given on ordering. For different set points, the cooling capacity provided and the level of efficiency of the machine could decrease and move away from these conditions.

HEATING

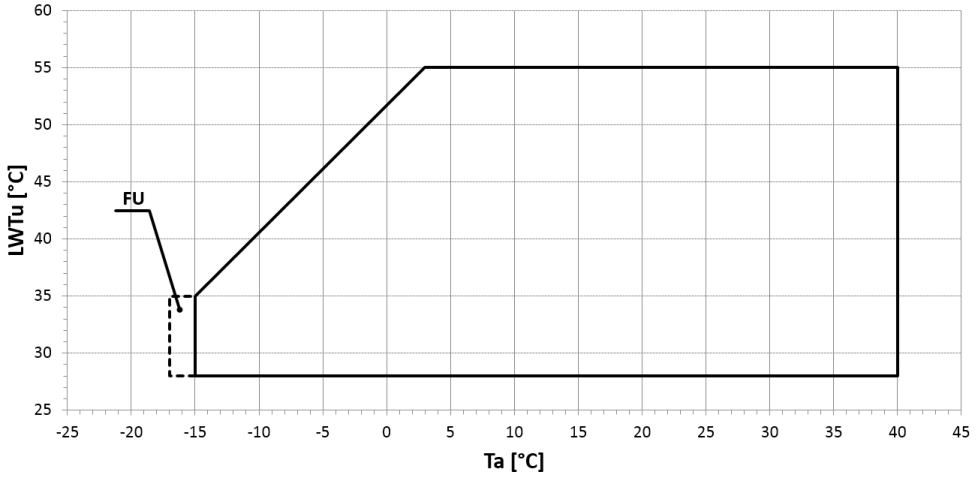
For models Tetris 2 A+ / Tetris 2 A SLN 8.2, 13.3, 18.4, 23.5, 27.6



For models Tetris 2 A+ / Tetris 2 A SLN 36.4, 54.6



For models Tetris 2 A+ / Tetris 2 A SLN 31.4, 41.5, 44.6, 49.6



NOISE LEVELS

TETRIS 2

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
10.2	87	55	86	54	85	53	84	52	85	53	82	50	73	41	66	34	**89**	**57**
12.2	87	55	86	54	85	53	84	52	85	53	82	50	73	41	66	34	**89**	**57**
13.2	87	55	86	54	85	53	84	52	85	53	82	50	73	41	66	34	**89**	**57**
15.2	88	56	87	55	86	54	85	53	85	53	83	51	74	42	67	35	**89**	**57**
16.2	88	56	87	55	86	54	85	53	85	53	83	51	74	42	67	35	**89**	**57**
20.3	91	59	90	58	89	57	88	56	88	56	85	53	77	45	70	38	**92**	**60**
24.3	91	59	90	58	89	57	88	56	88	56	85	53	77	45	70	38	**92**	**60**
27.3	94	62	93	61	92	60	91	59	91	59	88	56	80	48	73	41	**95**	**63**
29.4	94	62	93	61	92	60	91	59	91	59	88	56	80	48	73	41	**95**	**63**
32.4	95	63	94	62	93	61	92	60	92	60	89	57	81	49	74	42	**96**	**64**
33.4	96	64	95	63	94	62	93	61	93	61	90	58	82	50	75	43	**97**	**65**
37.4	96	64	95	63	94	62	93	61	93	61	90	58	82	50	75	43	**97**	**65**
41.4	96	64	95	63	94	62	93	61	93	61	90	58	82	50	75	43	**97**	**65**
43.6	96	64	95	63	94	62	93	61	93	61	90	58	82	50	75	43	**97**	**65**
47.6	96	64	95	63	94	62	93	61	93	61	90	58	82	50	75	43	**97**	**65**
50.7	97	65	96	64	95	63	94	62	94	62	91	59	83	51	76	44	**98**	**66**
53.8	99	67	98	66	97	65	96	64	95	63	93	61	85	53	77	45	**100**	**68**
58.8	99	67	98	66	97	65	96	64	95	63	93	61	85	53	77	45	**100**	**68**
62.8	99	67	98	66	97	65	96	64	95	63	93	61	85	53	77	45	**100**	**68**
67.9	99	66	98	65	97	64	96	63	95	62	93	60	85	52	77	44	**100**	**67**
70.9	99	66	98	65	97	64	96	63	95	62	93	60	85	52	77	44	**100**	**67**
74.10	100	67	99	66	98	65	97	64	96	63	94	61	86	53	78	45	**101**	**68**
78.10	100	67	99	66	98	65	97	64	96	63	94	61	86	53	78	45	**101**	**68**
80.12	101	68	100	67	99	66	98	65	97	64	95	62	87	54	79	46	**102**	**69**
87.12	101	68	100	67	99	66	98	65	97	64	95	62	87	54	79	46	**102**	**69**
93.12	101	68	100	67	99	66	98	65	97	64	95	62	87	54	79	46	**102**	**69**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels. Lw_tot is the only binding value. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

TETRIS 2 /LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
10.2	86	54	82	50	84	52	84	52	82	50	74	42	66	34	59	27	**86**	**54**
12.2	86	54	82	50	84	52	84	52	82	50	74	42	66	34	59	27	**86**	**54**
13.2	86	54	82	50	84	52	84	52	82	50	74	42	66	34	59	27	**86**	**54**
15.2	87	55	83	51	85	53	85	53	82	50	75	43	67	35	60	28	**86**	**54**
16.2	87	55	83	51	85	53	85	53	82	50	75	43	67	35	60	28	**86**	**54**
20.3	88	56	85	53	86	54	86	54	83	51	76	44	69	37	62	30	**87**	**55**
24.3	89	57	87	55	87	55	87	55	84	52	76	44	69	37	62	30	**88**	**56**
27.3	90	58	87	55	88	56	88	56	85	53	77	45	70	38	63	31	**89**	**57**
29.4	91	59	87	55	89	57	88	56	86	54	77	45	70	38	63	31	**90**	**58**
32.4	92	60	88	56	90	58	90	58	87	55	79	47	72	40	65	33	**91**	**59**
33.4	93	61	89	57	91	59	91	59	88	56	80	48	73	41	66	34	**92**	**60**
37.4	93	61	89	57	91	59	91	59	88	56	80	48	73	41	66	34	**92**	**60**
41.4	94	62	90	58	92	60	92	60	89	57	81	49	74	42	67	35	**93**	**61**
43.6	94	62	90	58	92	60	92	60	89	57	81	49	74	42	67	35	**93**	**61**
47.6	94	62	90	58	92	60	92	60	89	57	81	49	74	42	67	35	**93**	**61**
50.7	95	63	91	59	93	61	93	61	90	58	82	50	75	43	68	36	**94**	**62**
53.8	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**
58.8	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**
62.8	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**
67.9	97	64	93	60	95	62	95	62	93	60	84	51	77	44	70	37	**96**	**63**
70.9	97	64	93	60	95	62	95	62	93	60	84	51	77	44	70	37	**96**	**63**
74.10	98	65	94	61	96	63	96	63	92	59	85	52	78	45	70	37	**97**	**64**
78.10	99	66	95	62	97	64	97	64	93	60	86	53	79	46	71	38	**98**	**65**
80.12	100	67	96	63	98	65	98	65	94	61	87	54	80	47	72	39	**99**	**66**
87.12	100	67	96	63	98	65	98	65	94	61	87	54	80	47	72	39	**99**	**66**
93.12	100	67	96	63	98	65	98	65	94	61	87	54	80	47	72	39	**99**	**66**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels. Lw_tot is the only binding value. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

TETRIS 2 A

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
11.2	76	44	66	34	77	45	79	47	79	47	83	51	75	43	65	33	**86**	**54**
17.2	71	39	62	30	77	45	79	47	83	51	84	52	78	46	71	39	**88**	**56**
23.2	68	36	68	36	82	50	86	54	86	54	81	49	76	44	72	40	**89**	**57**
28.4	77	45	67	35	80	48	82	50	84	52	86	54	79	47	72	40	**90**	**58**
34.4	74	42	65	33	80	48	82	50	86	54	87	55	81	49	74	42	**91**	**59**
38.4	73	41	64	32	80	47	83	51	87	54	87	54	81	48	73	41	**91**	**59**
43.4	77	45	72	39	82	50	87	55	87	55	84	51	79	47	76	44	**91**	**58**
47.4	71	38	71	38	85	52	89	56	89	56	84	51	79	47	75	43	**92**	**59**
50.6	76	43	66	34	82	49	84	52	88	56	89	56	83	50	76	43	**93**	**61**
57.6	75	43	66	34	82	49	85	52	89	56	88	56	82	50	75	43	**93**	**61**
64.6	79	47	74	41	84	52	89	57	89	57	86	54	81	49	79	46	**93**	**61**
70.6	72	40	72	40	86	54	90	58	90	58	85	53	81	48	77	44	**93**	**61**

TETRIS 2 A/LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
11.2	73	41	63	31	74	42	75	43	75	43	79	47	71	39	62	30	**82**	**50**
17.2	67	35	59	27	73	41	75	43	79	47	80	48	74	42	68	36	**84**	**52**
23.2	65	33	65	33	78	46	82	50	82	50	77	45	73	41	69	37	**85**	**53**
28.4	73	41	64	32	76	44	78	46	80	48	82	50	76	44	69	37	**86**	**54**
34.4	70	38	62	30	76	44	79	47	82	50	83	51	77	45	71	39	**87**	**55**
38.4	70	37	61	29	76	44	79	47	83	50	83	50	77	44	70	37	**87**	**55**
43.4	74	41	68	36	78	46	83	51	83	51	80	48	75	43	73	40	**87**	**54**
47.4	68	35	67	35	81	48	84	52	85	52	80	48	76	43	72	39	**88**	**55**
50.6	72	40	63	31	78	46	80	48	84	52	85	52	79	46	72	40	**89**	**57**
57.6	72	39	63	31	78	45	81	48	85	52	84	52	79	46	72	39	**89**	**57**
64.6	76	43	70	38	80	48	85	53	85	53	82	50	78	45	75	42	**89**	**57**
70.6	69	37	69	37	82	50	86	53	86	54	82	49	77	45	73	41	**89**	**57**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels. Lw_tot is the only binding value. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

TETRIS 2 SLN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
11.2	70	38	61	29	71	39	72	40	72	40	76	44	69	37	60	28	**79**	**47**
17.2	66	34	57	25	71	39	74	42	77	45	78	46	72	40	66	34	**82**	**50**
23.2	63	31	62	30	75	43	79	47	79	47	75	43	70	38	67	35	**82**	**50**
28.4	71	39	62	30	74	42	76	44	78	46	80	48	74	42	67	35	**84**	**52**
34.4	69	37	60	28	74	42	77	45	80	48	81	49	75	43	69	37	**85**	**53**
38.4	68	36	60	27	74	42	77	45	81	48	81	48	75	42	68	36	**85**	**53**
43.4	72	39	66	34	76	44	81	48	81	48	78	45	73	41	71	38	**85**	**52**
47.4	65	33	65	33	78	46	82	49	82	49	78	45	73	41	70	37	**85**	**53**
50.6	70	38	62	29	76	44	78	46	82	50	83	50	77	44	71	38	**87**	**55**
57.6	70	38	62	29	76	44	79	46	83	50	82	50	77	44	70	37	**87**	**55**
64.6	74	41	68	36	78	45	83	50	83	50	80	47	75	43	73	40	**87**	**54**
70.6	67	35	67	35	80	47	84	51	84	51	79	47	75	42	71	39	**87**	**55**

TETRIS 2 A+

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
8.2	62	30	60	28	75	43	75	43	80	48	74	42	72	40	66	34	**83**	**51**
13.3	62	30	60	28	76	44	77	45	83	51	76	44	73	41	66	34	**85**	**53**
18.4	76	44	66	34	77	45	79	47	79	47	83	51	75	43	65	33	**86**	**54**
23.5	66	34	64	32	79	47	79	47	84	52	78	46	76	44	71	39	**87**	**55**
27.6	71	39	62	30	77	45	79	47	83	51	84	52	78	46	71	39	**88**	**56**
31.4	76	43	66	34	82	49	84	52	88	56	89	56	83	50	76	43	**93**	**61**
36.4	76	43	66	34	82	49	84	52	88	56	89	56	83	50	76	43	**93**	**61**
41.5	95	63	91	59	93	61	93	61	90	58	82	50	75	43	68	36	**94**	**62**
44.6	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**
49.6	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**
54.6	96	64	92	60	94	62	94	62	91	59	83	51	76	44	69	37	**95**	**63**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels. Lw_tot is the only binding value. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

TETRIS 2 A+ /LN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
8.2	61	29	56	24	74	42	75	43	77	45	66	34	65	33	59	27	**79**	**47**
13.3	61	29	56	24	75	43	77	45	79	47	68	36	66	34	59	27	**81**	**49**
18.4	64	32	59	27	77	45	79	47	80	48	69	37	68	36	63	31	**82**	**50**
23.5	65	33	60	28	78	46	79	47	81	49	70	38	69	37	64	32	**83**	**51**
27.6	65	33	60	28	79	47	80	48	82	50	72	40	70	38	64	32	**84**	**52**
31.4	68	36	68	36	82	50	86	54	86	54	81	49	76	44	72	40	**89**	**57**
36.4	68	36	68	36	82	50	86	54	86	54	81	49	76	44	72	40	**89**	**57**
41.5	77	45	67	35	80	48	82	50	84	52	86	54	79	47	72	40	**90**	**58**
44.6	74	42	65	33	80	48	82	50	86	54	87	55	81	49	74	42	**91**	**59**
49.6	73	41	64	32	80	47	83	51	87	54	87	54	81	48	73	41	**91**	**59**
54.6	73	41	64	32	80	47	83	51	87	54	87	54	81	48	73	41	**91**	**59**

TETRIS 2 A SLN

	Octave bands [dB]																Total [dB(A)]	
	63 Hz		125 Hz		250 Hz		500 Hz		1000 Hz		2000 Hz		4000 Hz		8000 Hz			
	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw	Lp	Lw_tot	Lp_tot
8.2	60	28	52	20	73	41	74	42	73	41	57	25	57	25	51	19	**76**	**44**
13.3	60	28	52	20	74	42	76	44	75	43	60	28	58	26	51	19	**78**	**46**
18.4	63	31	55	23	76	44	78	46	76	44	60	28	60	28	55	23	**79**	**47**
23.5	64	32	56	24	77	45	78	46	77	45	61	29	61	29	56	24	**80**	**48**
27.6	64	32	56	24	78	46	79	47	78	46	63	31	62	30	56	24	**81**	**49**
31.4	73	41	64	32	76	44	78	46	80	48	82	50	76	44	69	37	**86**	**54**
36.4	73	41	64	32	76	44	78	46	80	48	82	50	76	44	69	37	**86**	**54**
41.5	70	38	62	30	76	44	79	47	82	50	83	51	77	45	71	39	**87**	**55**
44.6	89	57	87	55	87	55	87	55	84	52	76	44	69	37	62	30	**88**	**56**
49.6	89	57	87	55	87	55	87	55	84	52	76	44	69	37	62	30	**88**	**56**
54.6	89	57	87	55	87	55	87	55	84	52	76	44	69	37	62	30	**88**	**56**

Reference conditions: External air temperature 35°C; user-side heat exchanger water water inlet-outlet temperature of 12-7°C; unit operating at nominal operating capacity, without any accessories.

Lw: sound power levels. Lw_tot is the only binding value. Values obtained from measures taken according to standard ISO 3744 and to the Eurovent certification programme where applicable.

Lp: sound pressure levels calculated from sound power levels, related to distance of 10m from the unit in free field with directivity factor Q=2. Non-binding values.

CONFIGURATIONS THAT ARE NOT POSSIBLE

TETRIS 2

	CHILLER ONLY												HEAT PUMP					
	/DC / 1P	/DC / 2P	/DC /3P	/DC /1PS	/DC /2PS	/DC /3PS	/DS / 1P	/DS / 2P	/DS /3P	/DS /1PS	/DS /2PS	/DS /3PS	HP /DS /1P	HP /DS /2P	HP /DS /3P	HP /DS /1PS	HP /DS /2PS	HP /DS /3PS
10.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
12.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
13.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
15.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
16.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
20.3			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.
24.3			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.
27.4		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.
29.4		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.
32.4		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.
33.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
37.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
41.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
43.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
47.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
50.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
53.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
58.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
62.8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
67.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
70.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
74.10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
78.10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
80.12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
87.12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
93.12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a.: configuration not available

TETRIS 2 A - TETRIS 2 SLN

	CHILLER ONLY												HEAT PUMP					
	/DC /1P	/DC /2P	/DC /3P	/DC /1PS	/DC /2PS	/DC /3PS	/DS /1P	/DS /2P	/DS /3P	/DS /1PS	/DS /2PS	/DS /3PS	HP /DS /1P	HP /DS /2P	HP /DS /3P	HP /DS /1PS	HP /DS /2PS	HP /DS /3PS
11.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
17.2			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.
23.2		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.
28.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
34.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
38.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
43.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
47.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
50.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
57.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
64.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
70.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	

n.a.: configuration not available

TETRIS 2 A+ - TETRIS 2 A SLN

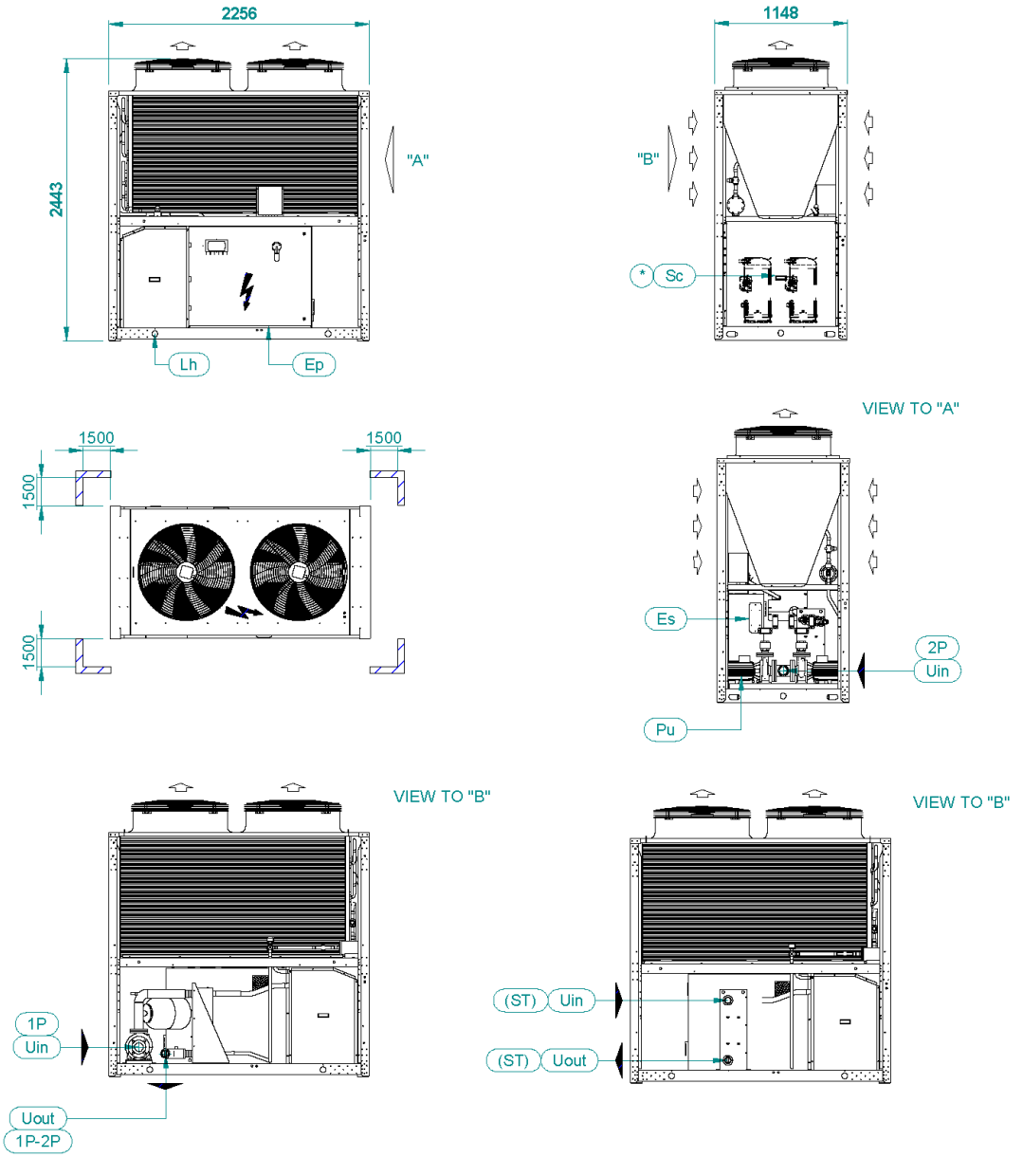
	CHILLER ONLY												HEAT PUMP					
	/DC /1P	/DC /2P	/DC /3P	/DC /1PS	/DC /2PS	/DC /3PS	/DS /1P	/DS /2P	/DS /3P	/DS /1PS	/DS /2PS	/DS /3PS	HP /DS /1P	HP /DS /2P	HP /DS /3P	HP /DS /1PS	HP /DS /2PS	HP /DS /3PS
8.2			n.a.			n.a.			n.a.			n.a.		n.a.	n.a.		n.a.	n.a.
13.3			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.			n.a.	n.a.	n.a.	n.a.
18.4		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.		n.a.		n.a.	n.a.	n.a.
23.5		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
27.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
31.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
36.4		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
41.5		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
46.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
49.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	
54.6		n.a.			n.a.			n.a.			n.a.			n.a.			n.a.	

n.a.: configuration not available

DIMENSIONAL DIAGRAMS

TETRIS 2 10.2-16.2 (ST)-1P-2P

A4F849A

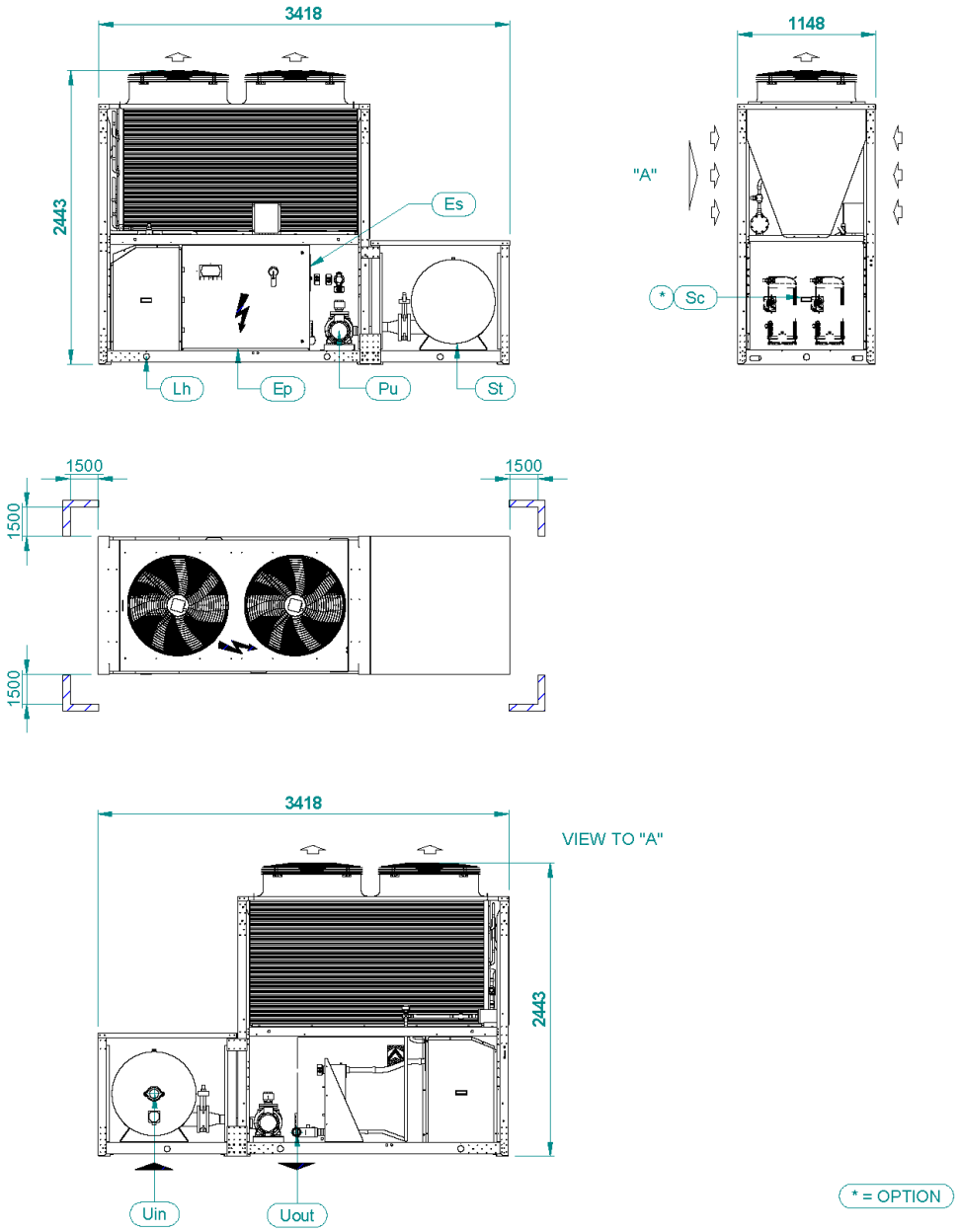


SIZE	10.2	12.2	13.2	15.2	16.2
Uin (ST)	G 2"M	G 2"M	G 2"M	G 2"M	G 2"M
Uin 1P	OD 60.3	G 2"1/2 F	G 2"1/2 F	G 2"1/2 F	G 2"1/2 F
Uin 2P	G 2"F	G 2"1/2 F	G 2"1/2 F	G 2"1/2 F	G 2"1/2 F
Uout	G 2"M	G 2"M	G 2"M	G 2"M	G 2"M
	OD 60.3 grooved connection				

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

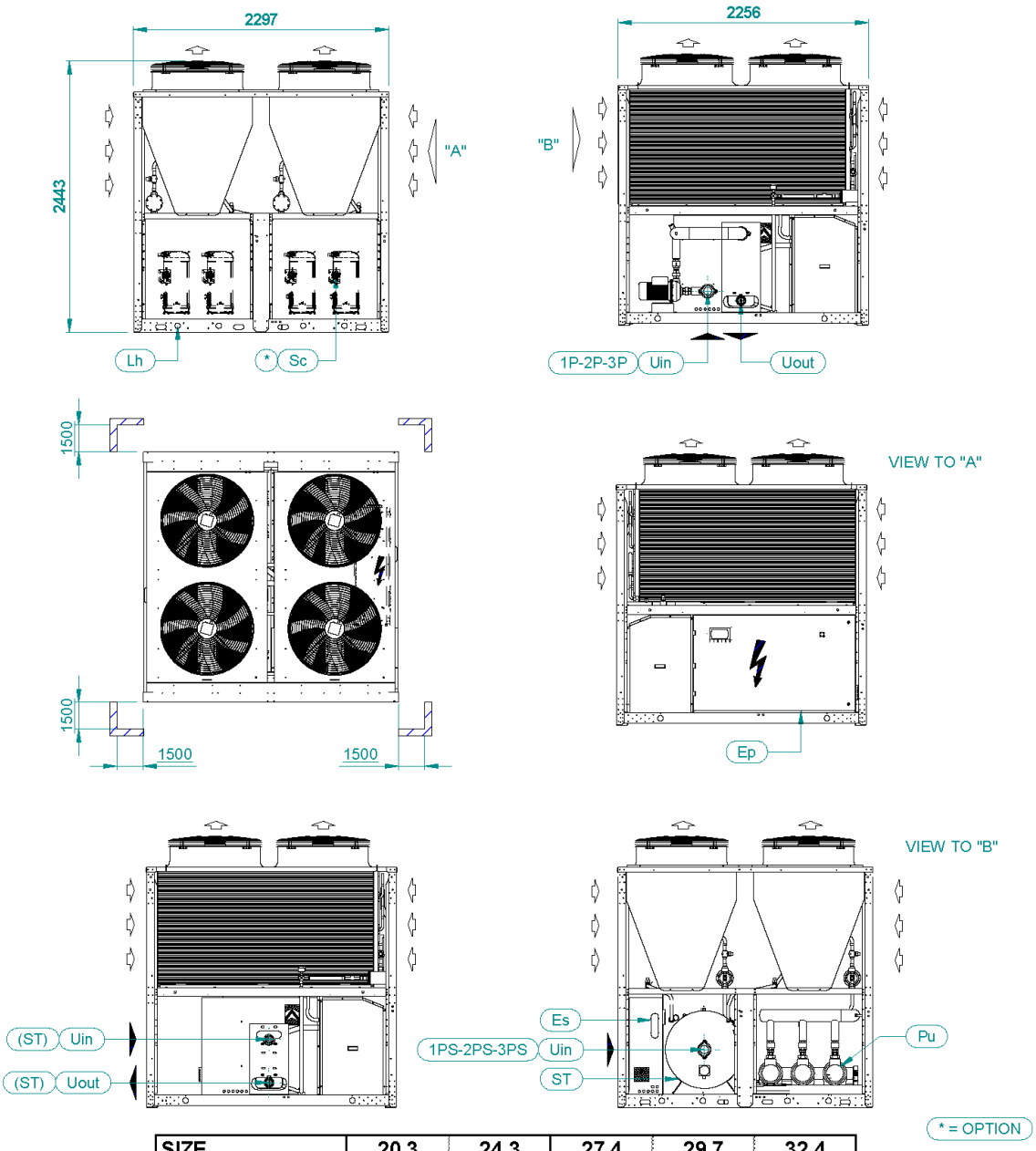
TETRIS 2 10.2-16.2 1PS-2PS

A4F850A



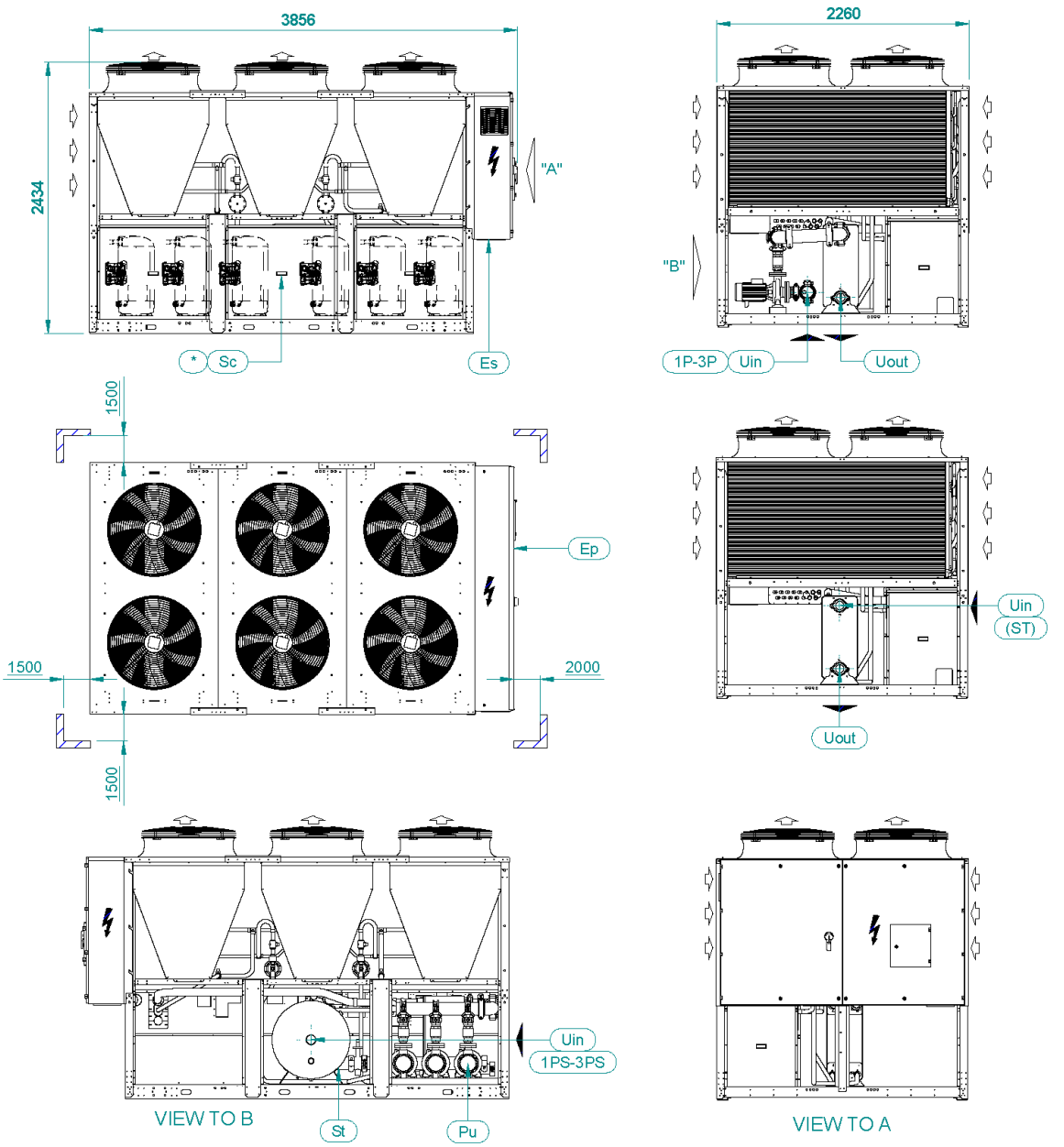
SIZE	10.2	12.2	13.2	15.2	16.2
Uin 1PS -2PS	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9
Uout	G 2"M	G 2"M	G 2"M	G 2"M	G 2"M
	OD 88.9 grooved connection				

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.



SIZE	20.3	24.3	27.4	29.7	32.4
Uin (ST)	G 2"M	G 2"M	OD 88.9	OD 88.9	OD 88.9
Uin 1P	OD 76.1	OD 76.1	OD 76.1	OD 76.1	OD 76.1
Uin 2P	OD 76.1	OD 76.1	-	-	-
Uin 3P	-	-	OD 114.3	OD 114.3	OD 114.3
Uin 1PS-2PS-3SP	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9
Uout	G 2"M	G 2"M	OD 88.9	OD 88.9	OD 88.9
	OD 76.1, OD 88.9 and OD 114.3 are grooved connections				

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.



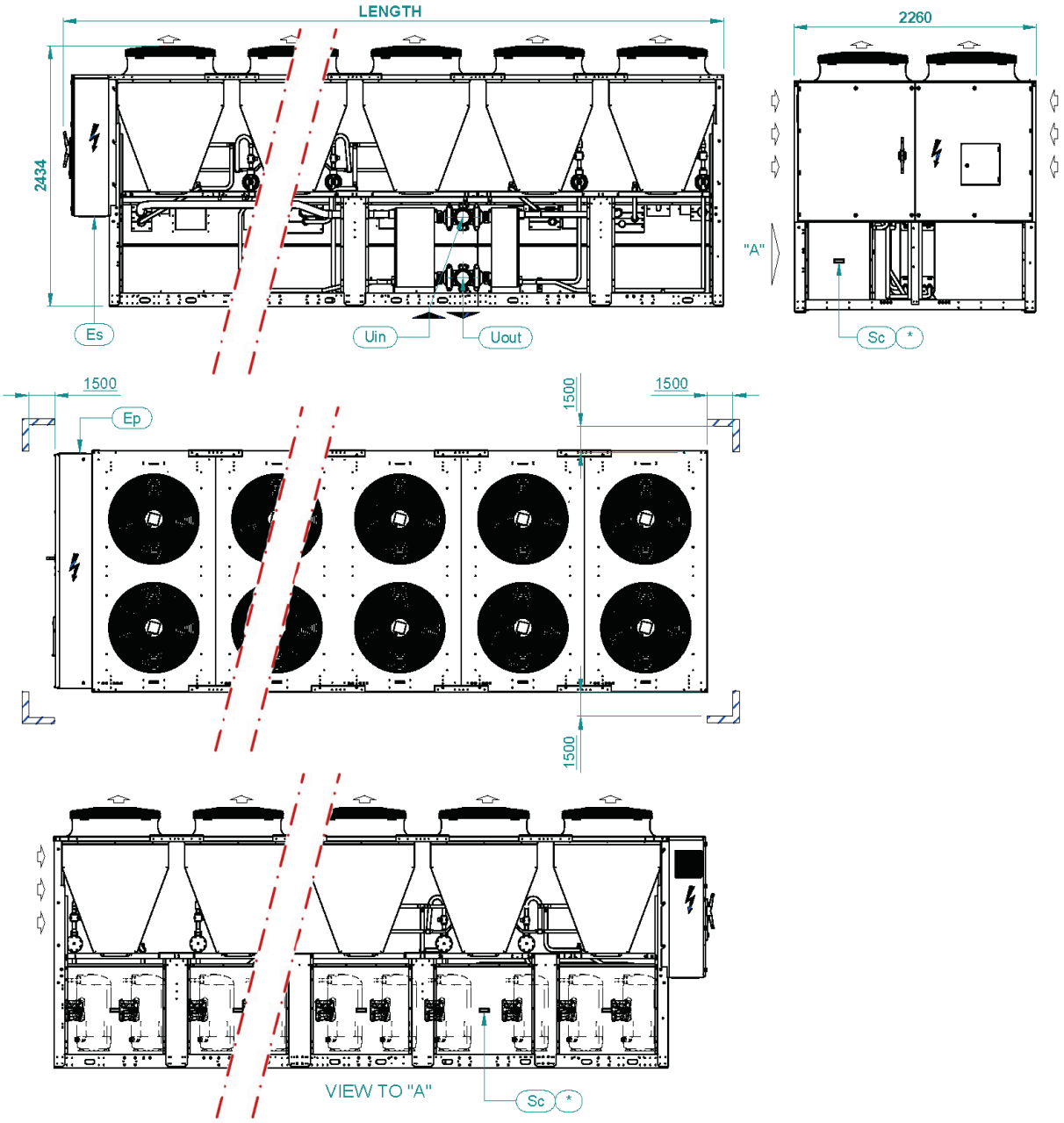
* = OPTION

SIZE	33.4	37.4	41.4	43.6	47.6
Uin (ST)	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9
Uin 1P	OD 76.1	OD 76.1	OD 88.9	OD 88.9	OD 88.9
Uin 3P	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 114.3
Uin 1PS-3PS	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9
Uout	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9
	OD 76.1, OD 88.9 and OD 114.3 are grooved connections				

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 50.7-93.12 (ST)

A4F853A

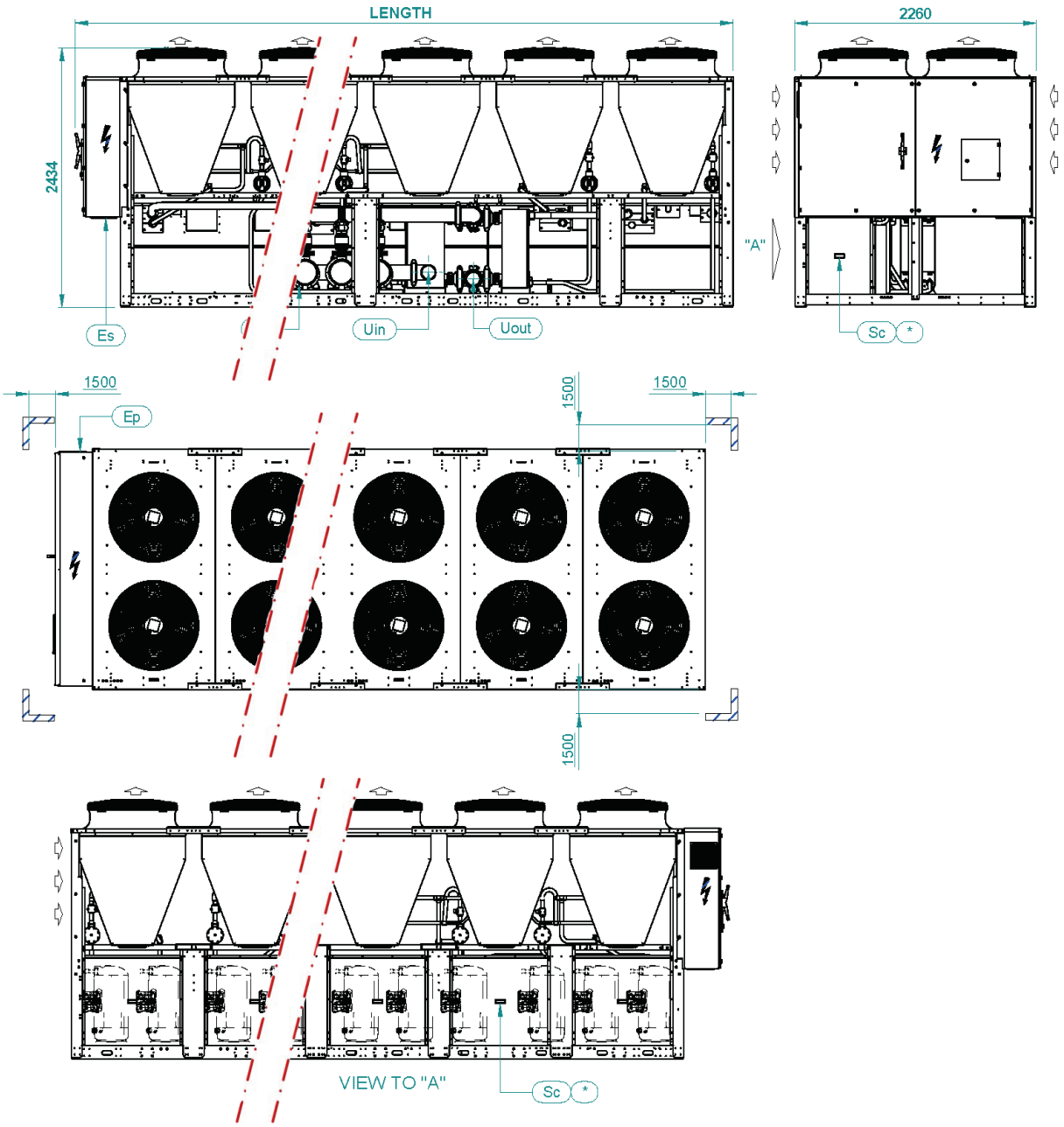


SIZE	50.7	53.8	58.8	62.8	67.9	70.9	74.10	78.10	80.12	87.12	93.12
LENGTH (mm)	5022	5022			6153		6153		7302		
Uin	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uout	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
	OD 114.3 and OD 139.7 are grooved connections										

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 50.7-93.12 1P-3P

A4F854A

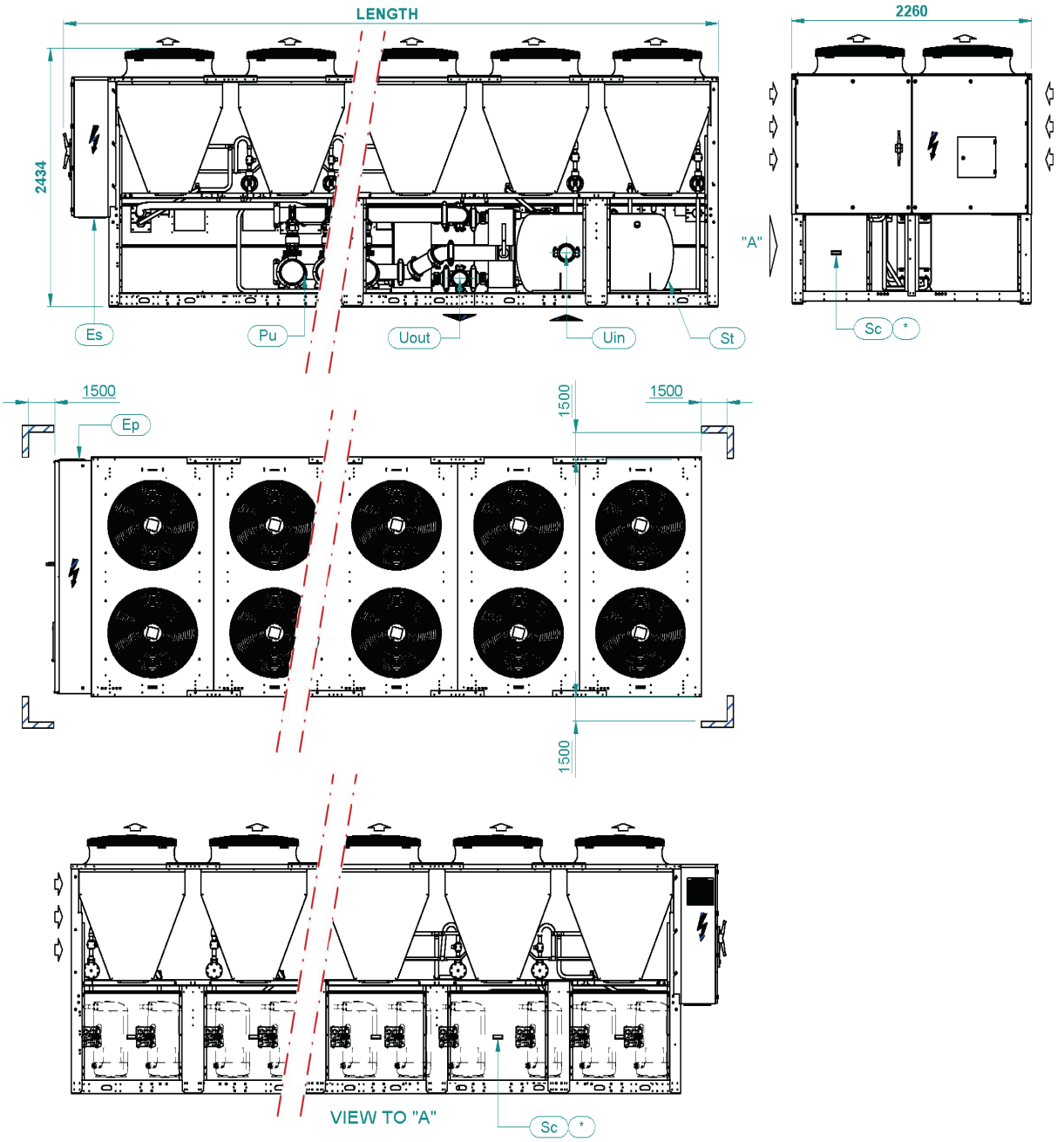


SIZE	50.7	53.8	58.8	62.8	67.9	70.9	74.10	78.10	80.12	87.12	93.12
LENGTH (mm)	5022	5022			6153		6153		7302		
Uin 1P	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uin 3P	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uout 1P-3P	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
	OD 114.3 and OD 139.7 are grooved connections										

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

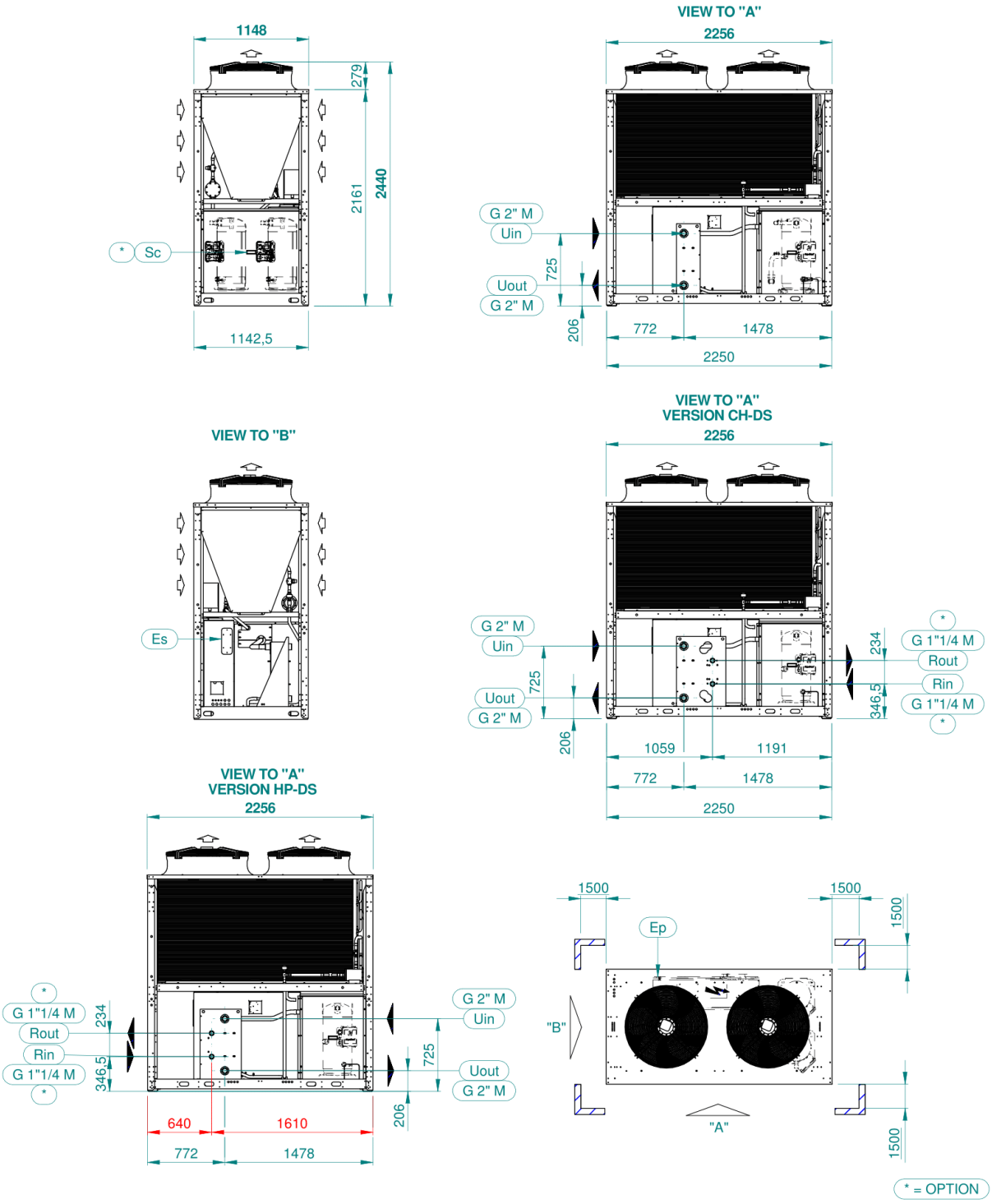
TETRIS 2 50.7-93.12 1PS-3PS

A4F855A



SIZE	50.7	53.8	58.8	62.8	67.9	70.9	74.10	78.10	80.12	87.12	93.12
LENGTH (mm)	5022	5022			6153		6153		7302		
Uin 1PS-3PS	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uout 1PS-3PS	OD 114.3	OD 114.3	OD 114.3	OD 114.3	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
	OD 114.3 and OD 139.7 are grooved connections										

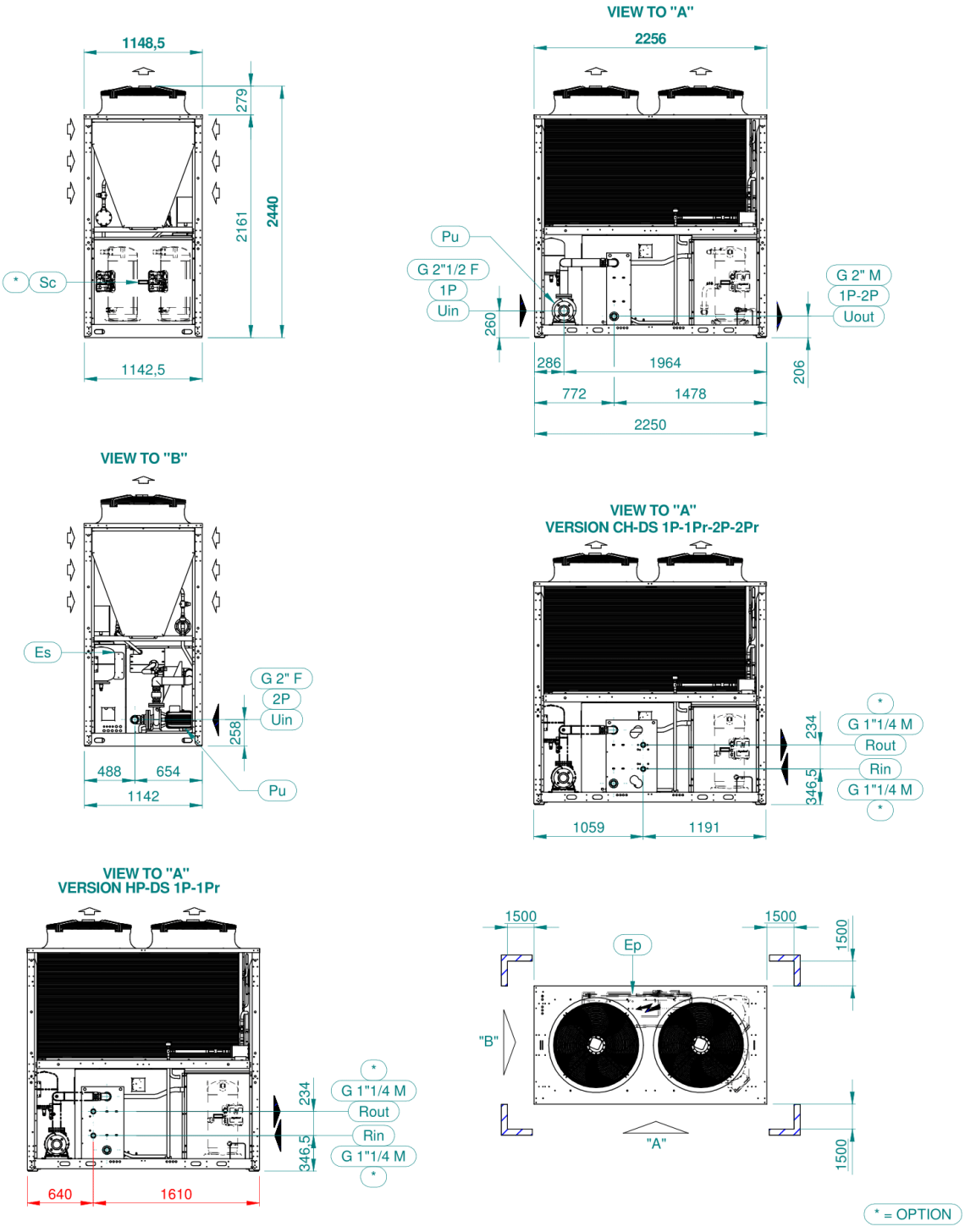
Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.



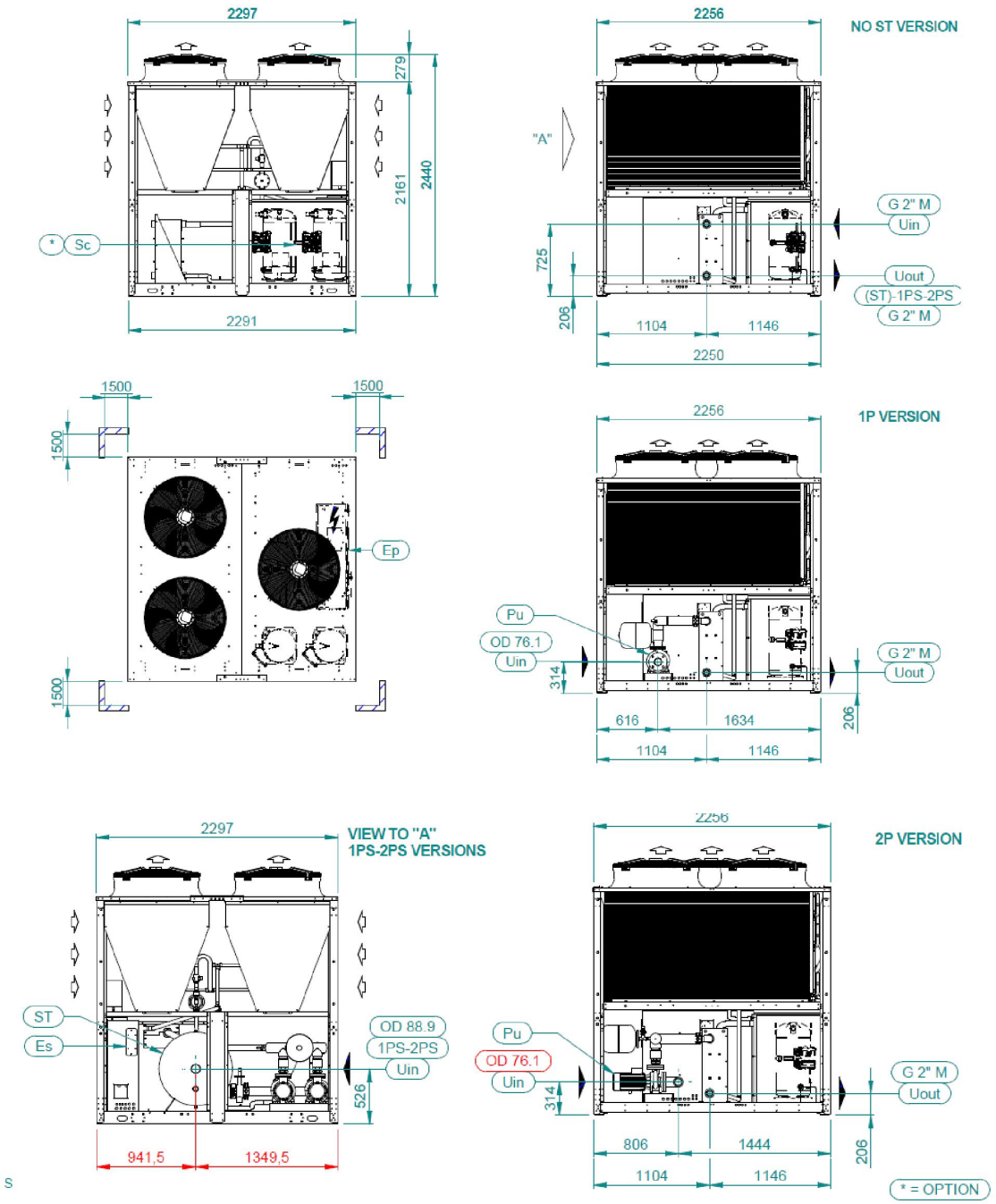
Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 11.2 1P-1PR-2P-2PR

A4F386C



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.



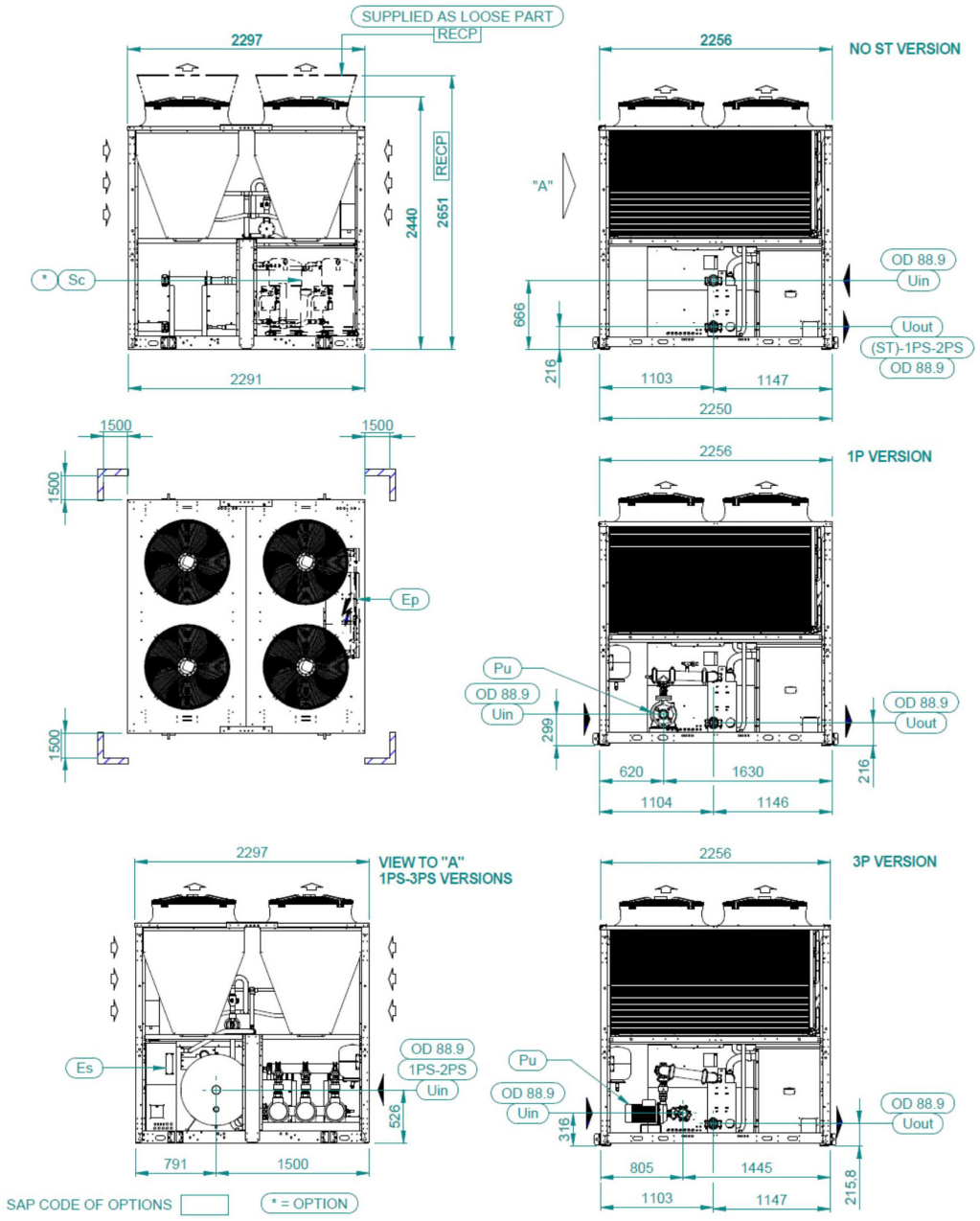
SIZE	17.2
Uin (ST)	G 2"M
Uin 1P	OD 76.1
Uin 2P	OD 76.1
Uin 3P	-
Uin 1PS-2PS-3SP	OD 88.9
Uout	G 2"M

OD 76.1, OD 88.9 are grooved connections

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 23.4

EDIM000014



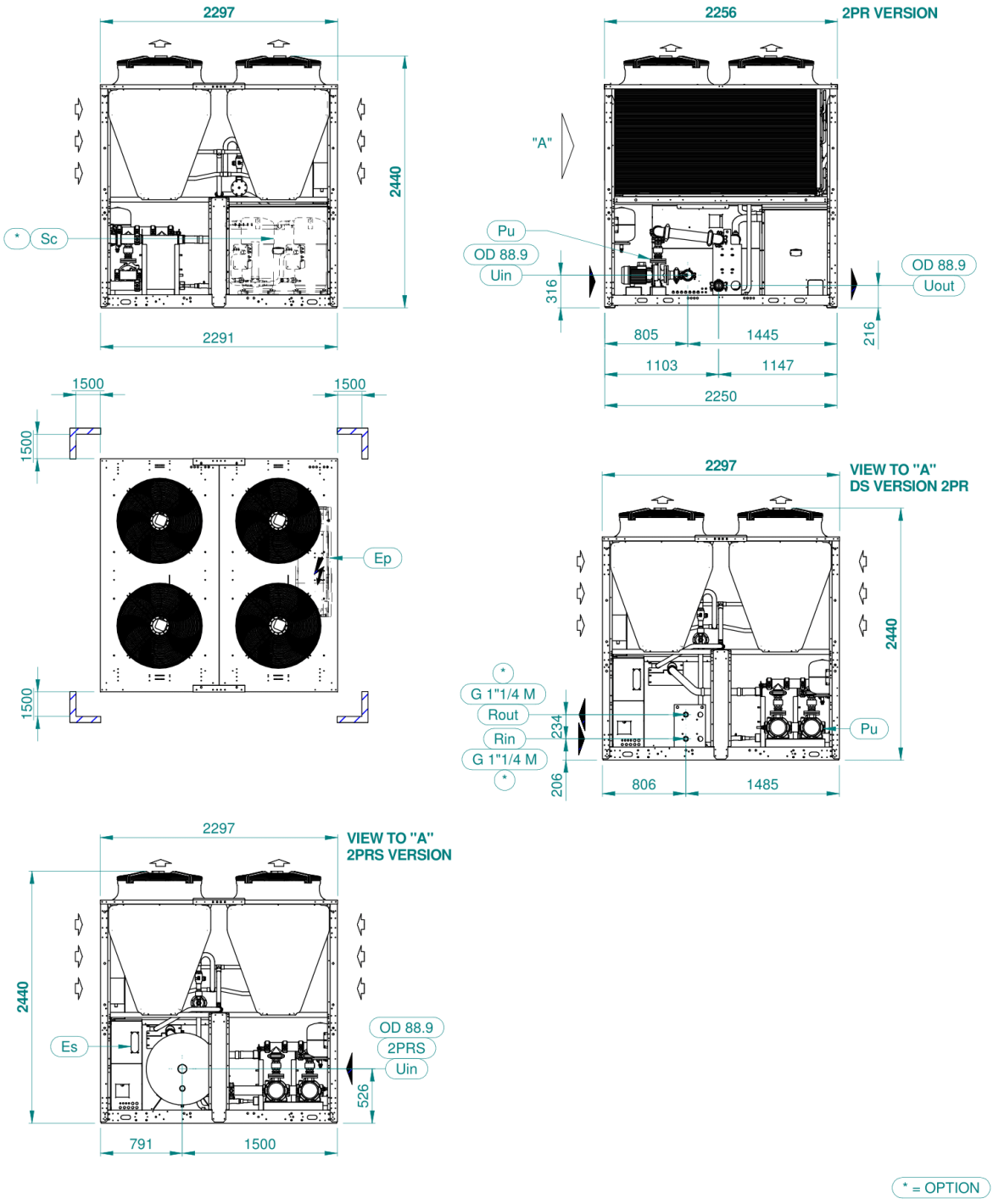
SIZE	23.2
Uin (ST)	OD 88.9
Uin 1P	OD 88.9
Uin 2P	-
Uin 3P	OD 88.9
Uin 1PS-2PS-3SP	OD 88.9
Uout	OD 88.9

OD 88.9 are grooved connections

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 23.2 2PR-2PRS

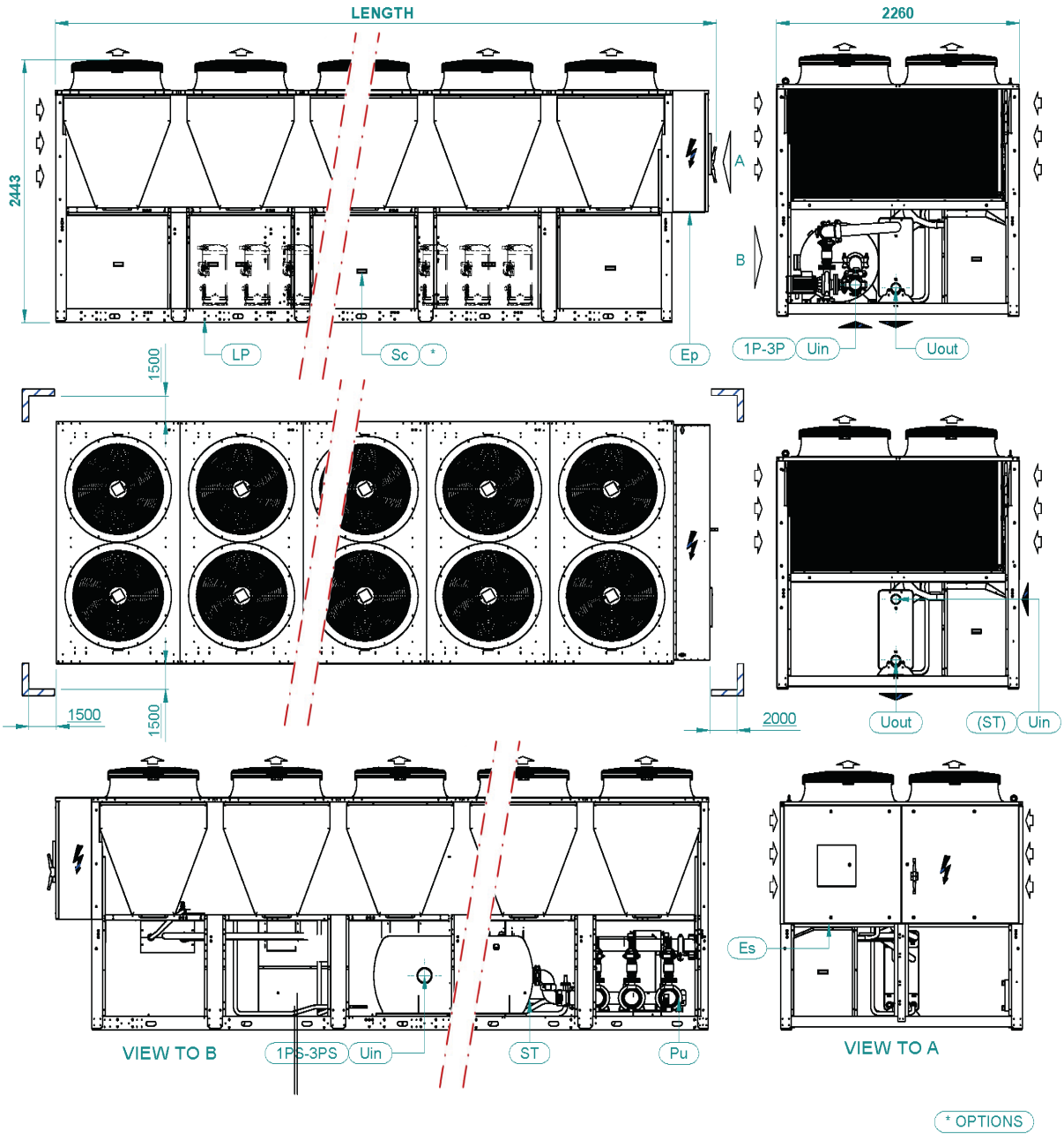
DDIM000311A



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 28.4 - 70.6

A4F862A

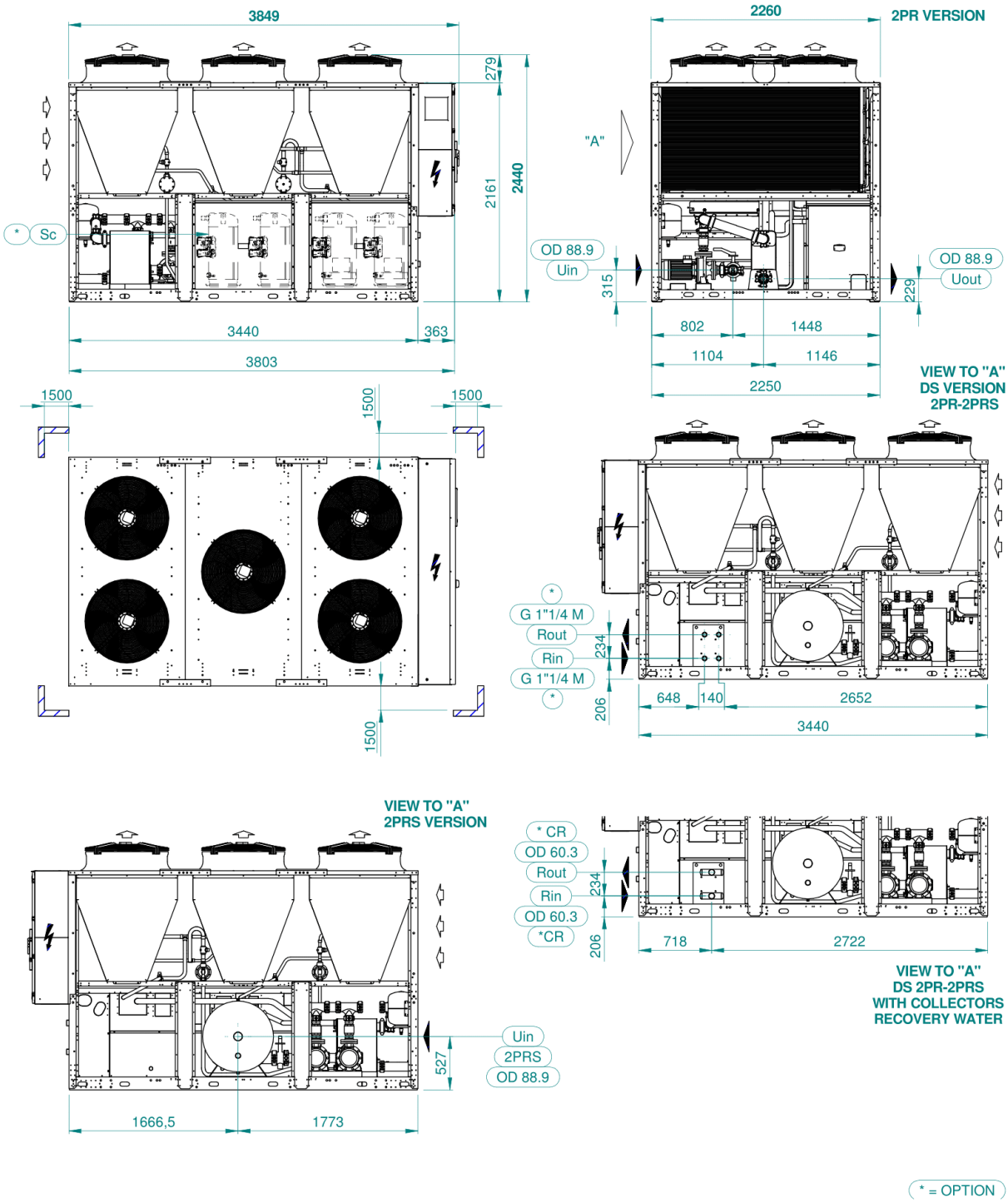


SIZE	28.4	34.4	38.4	43.4	47.4	50.6	57.6	64.6	70.6
LENGTH (mm)	3856	3856	3856	5022	5022	6153	6153	7302	7302
Uin (ST)	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3
Uin 1P-3P	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3
Uin 1PS-3PS	OD 88.9	OD 88.9	OD 88.9	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uout	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3
	OD 88.9, OD 114.3 and OD 139.7 are grooved connections								

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 28.4 2PR-2PRS

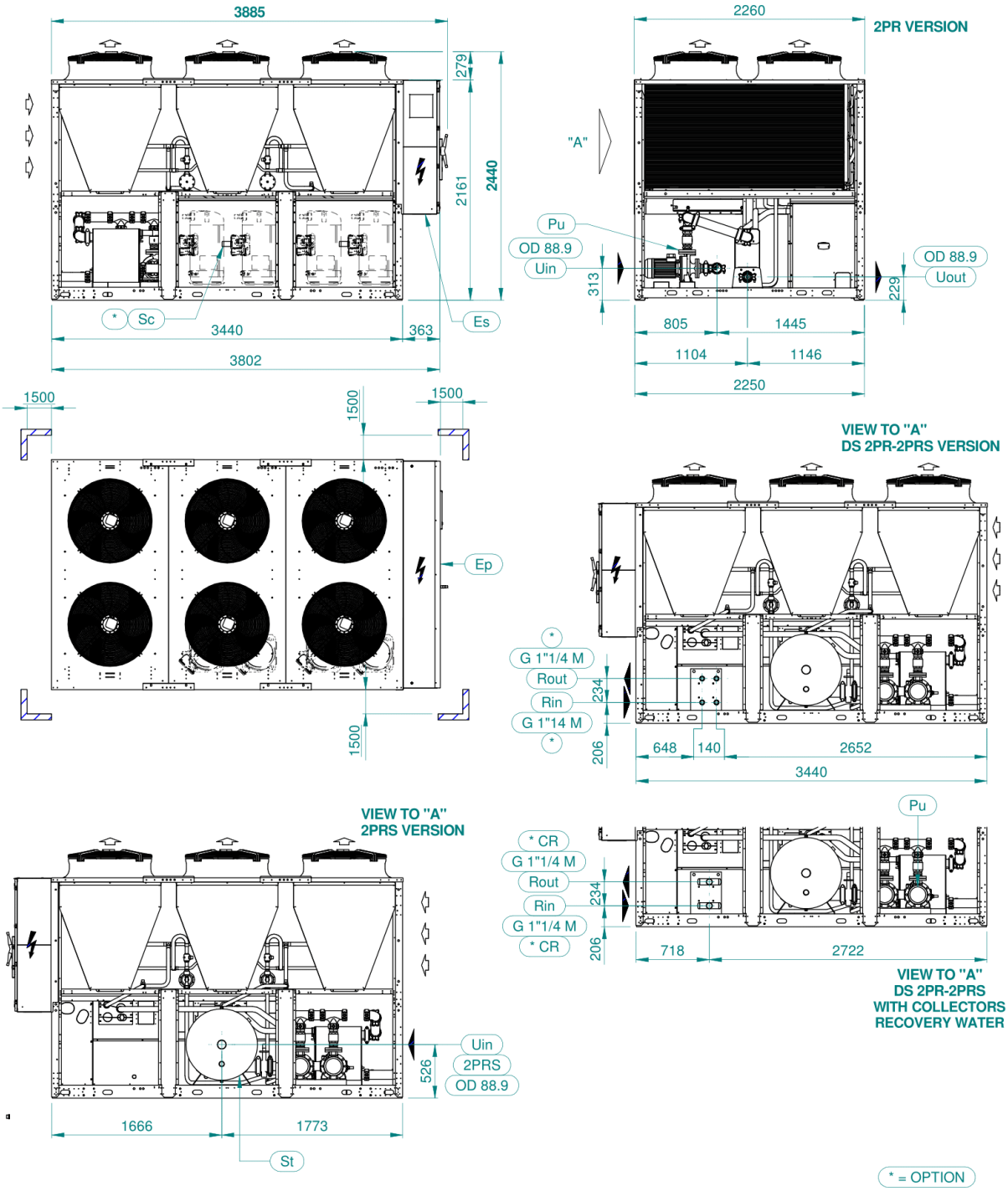
DDIM000312A



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 34.4-38.4 2PR-2PRS

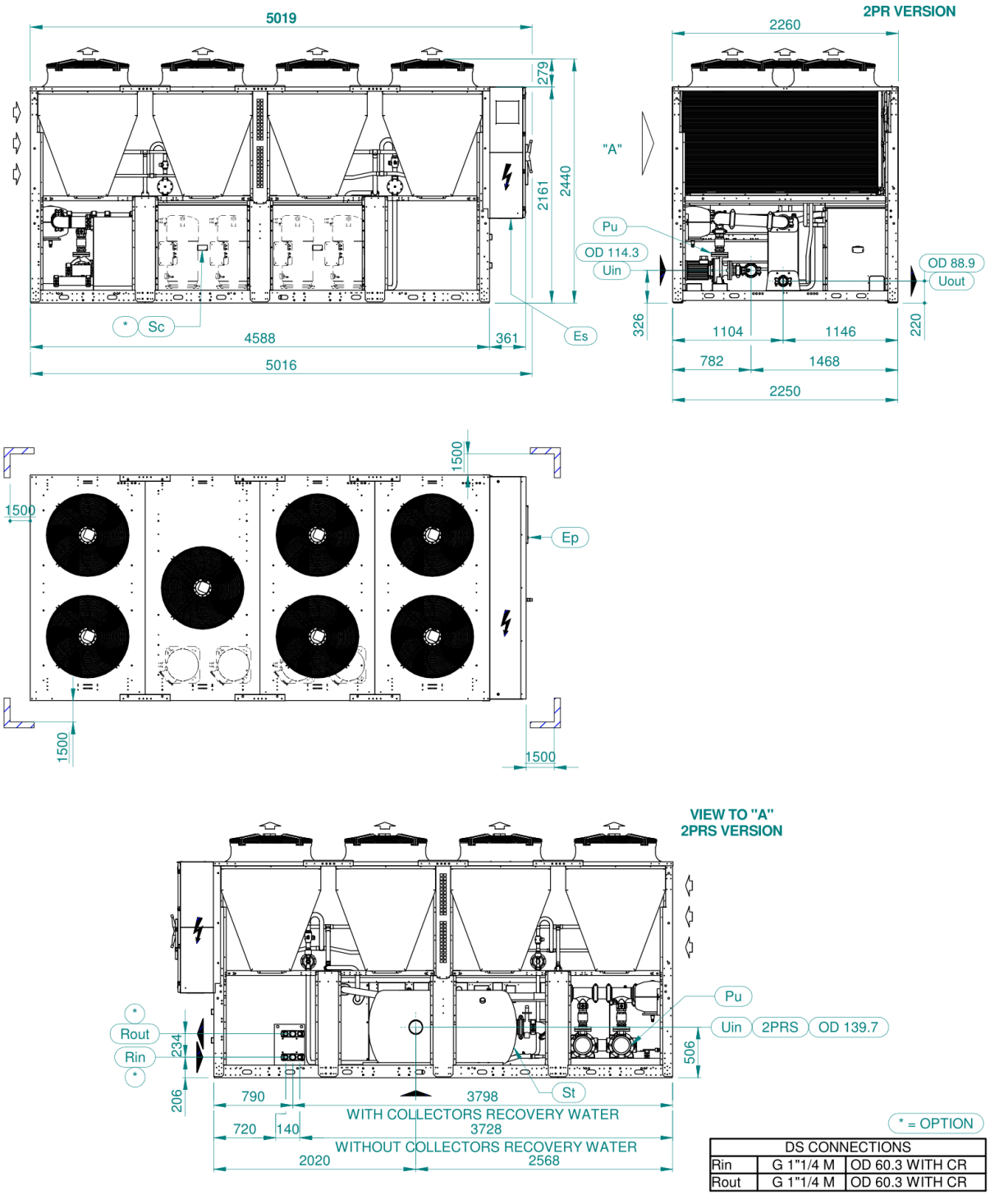
DDIM000316A



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 43.4 2PR-2PRS

DDIM000318A

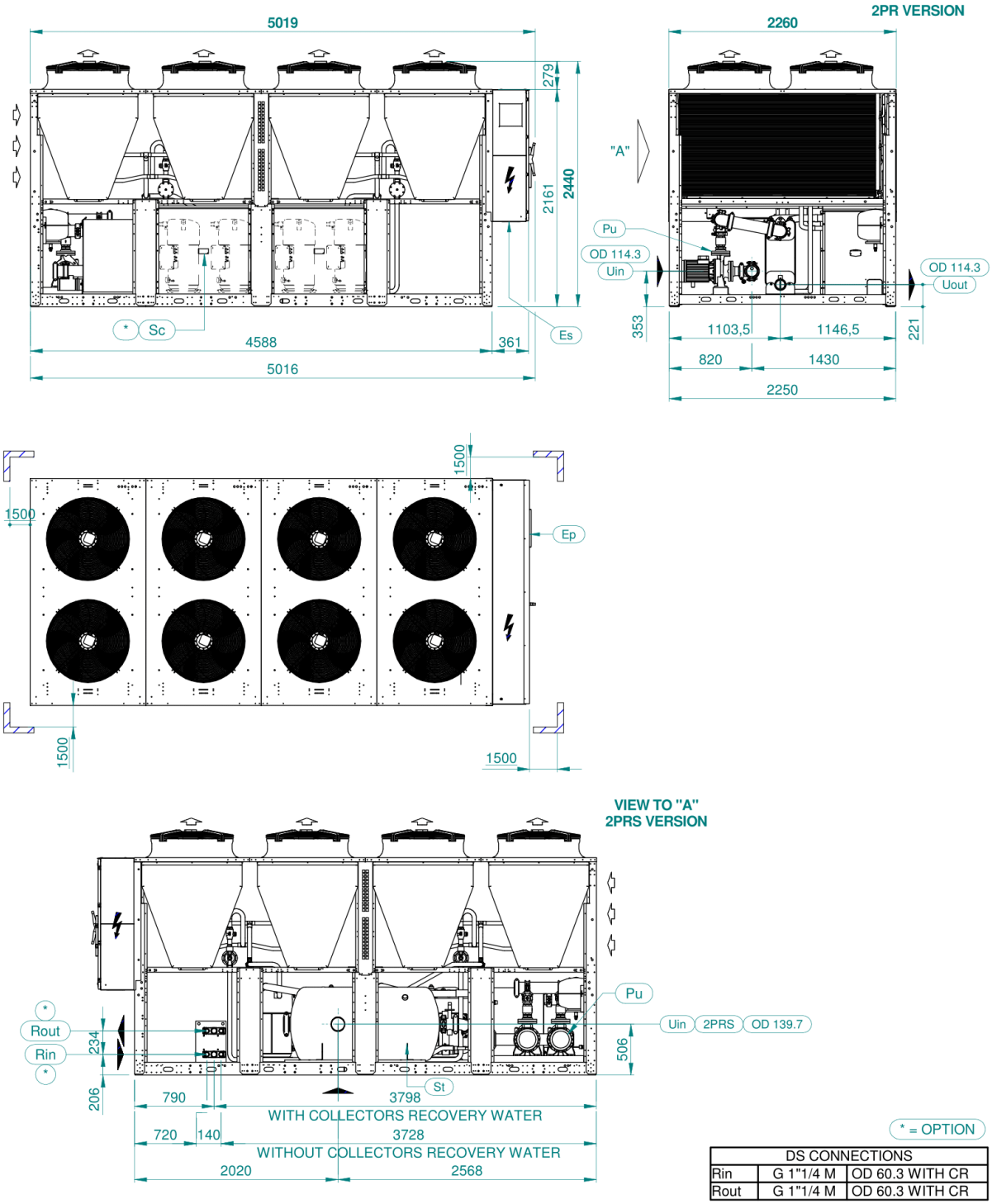


DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 47.4 2PR-2PRS

DDIM000319A

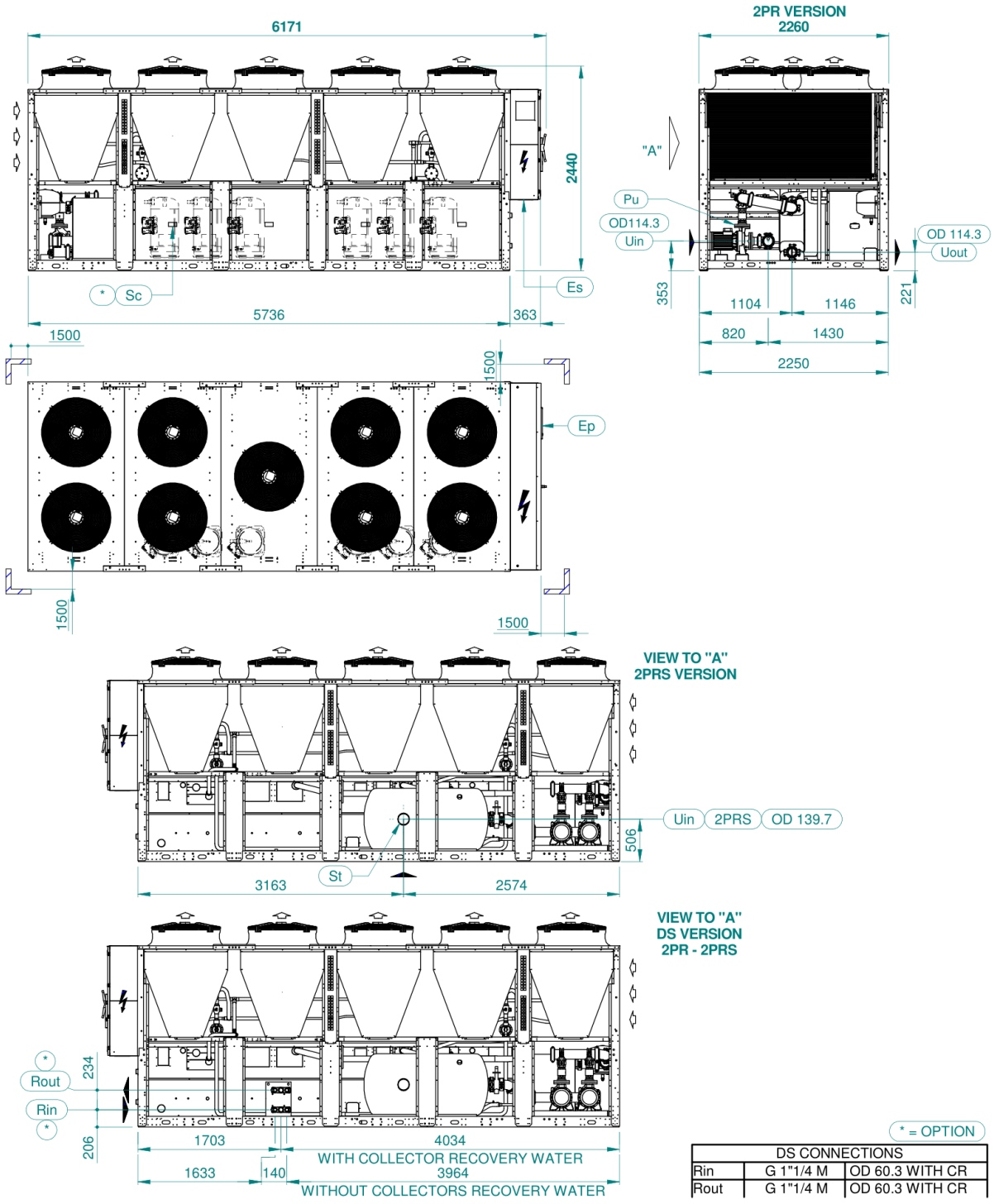


DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 50.6 2PR-2PRS

DDIM000320A



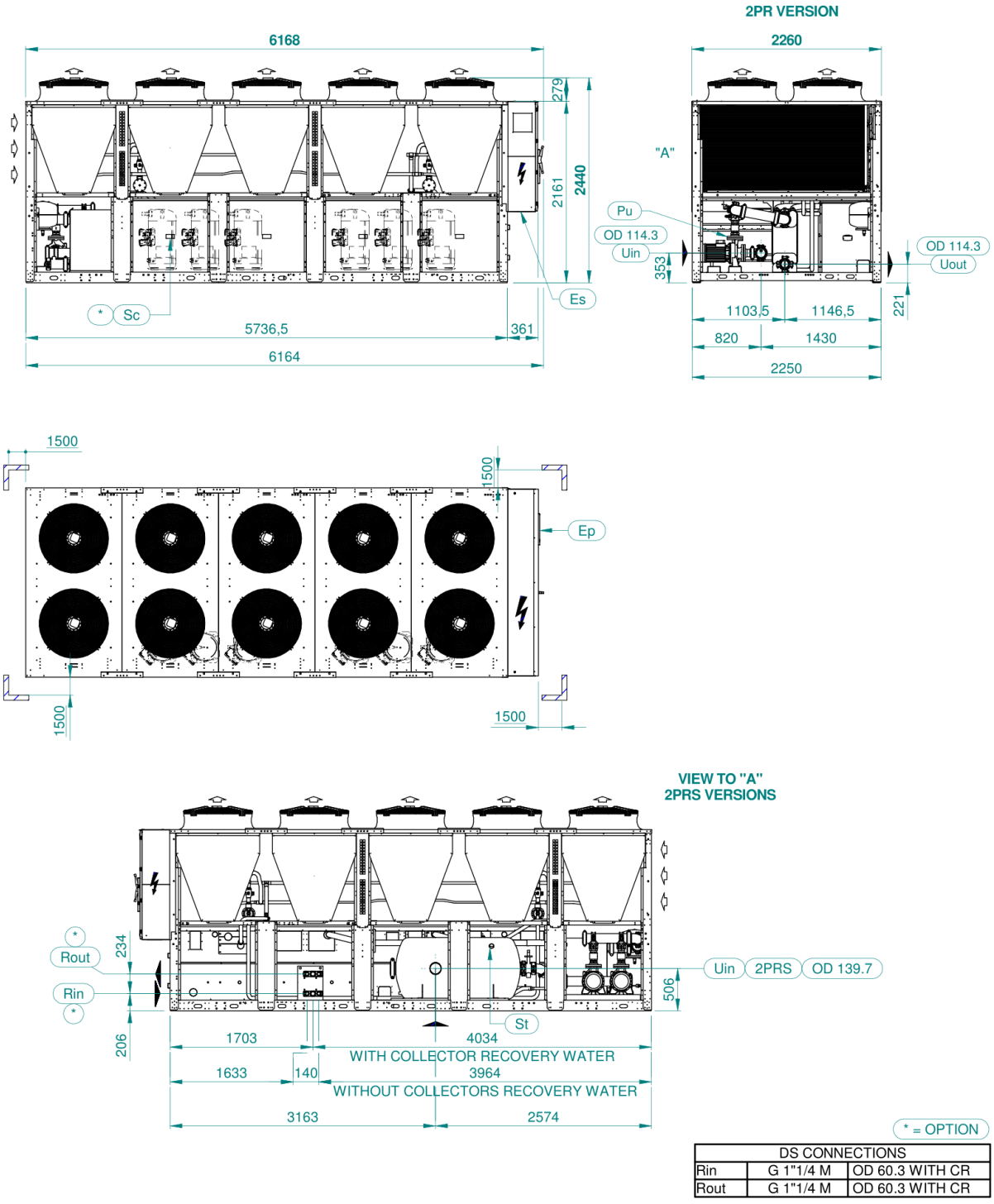
* = OPTION

DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

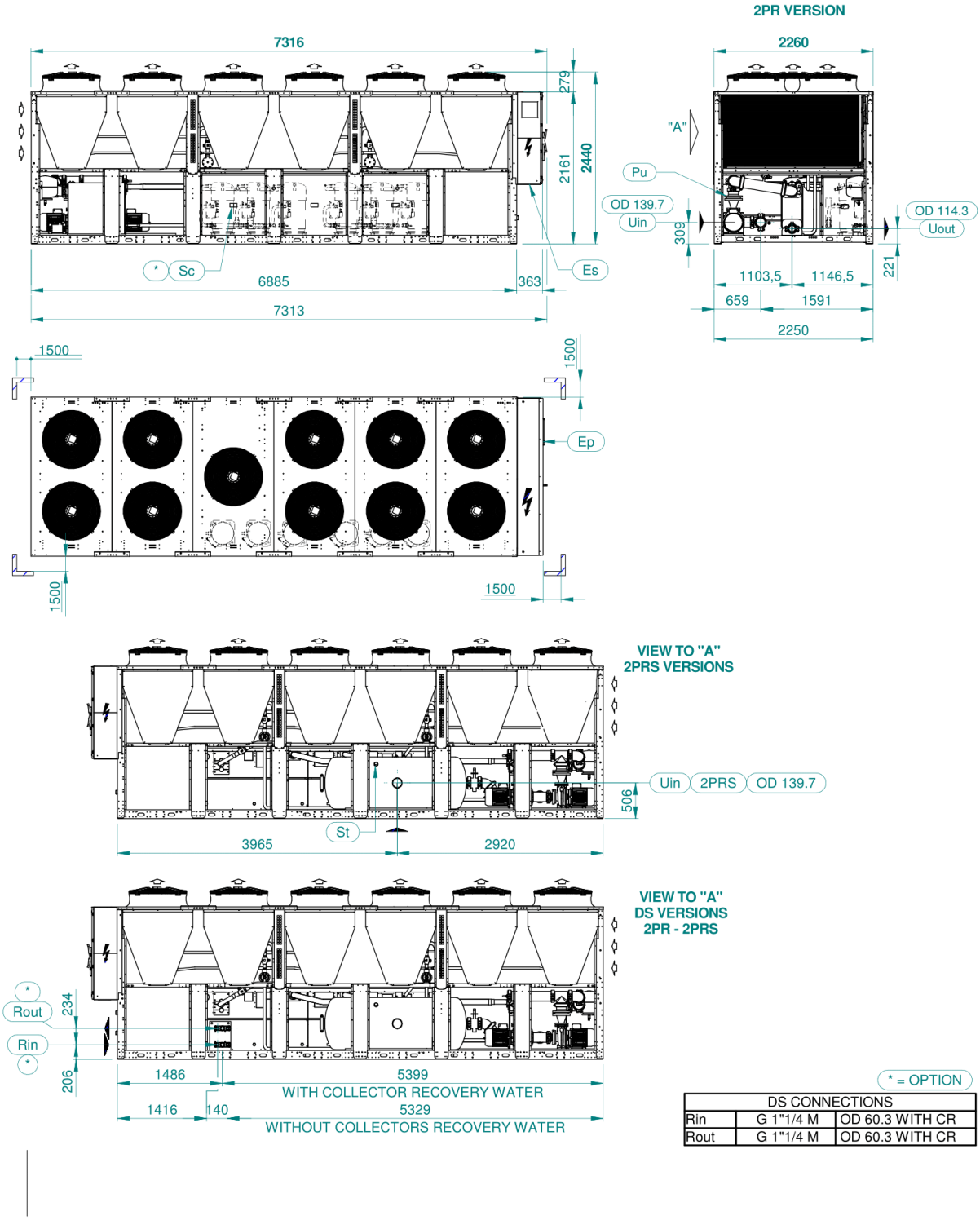
TETRIS 2 A / TETRIS 2 SLN 57.6 2PR-2PRS

DDIM000321A



DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

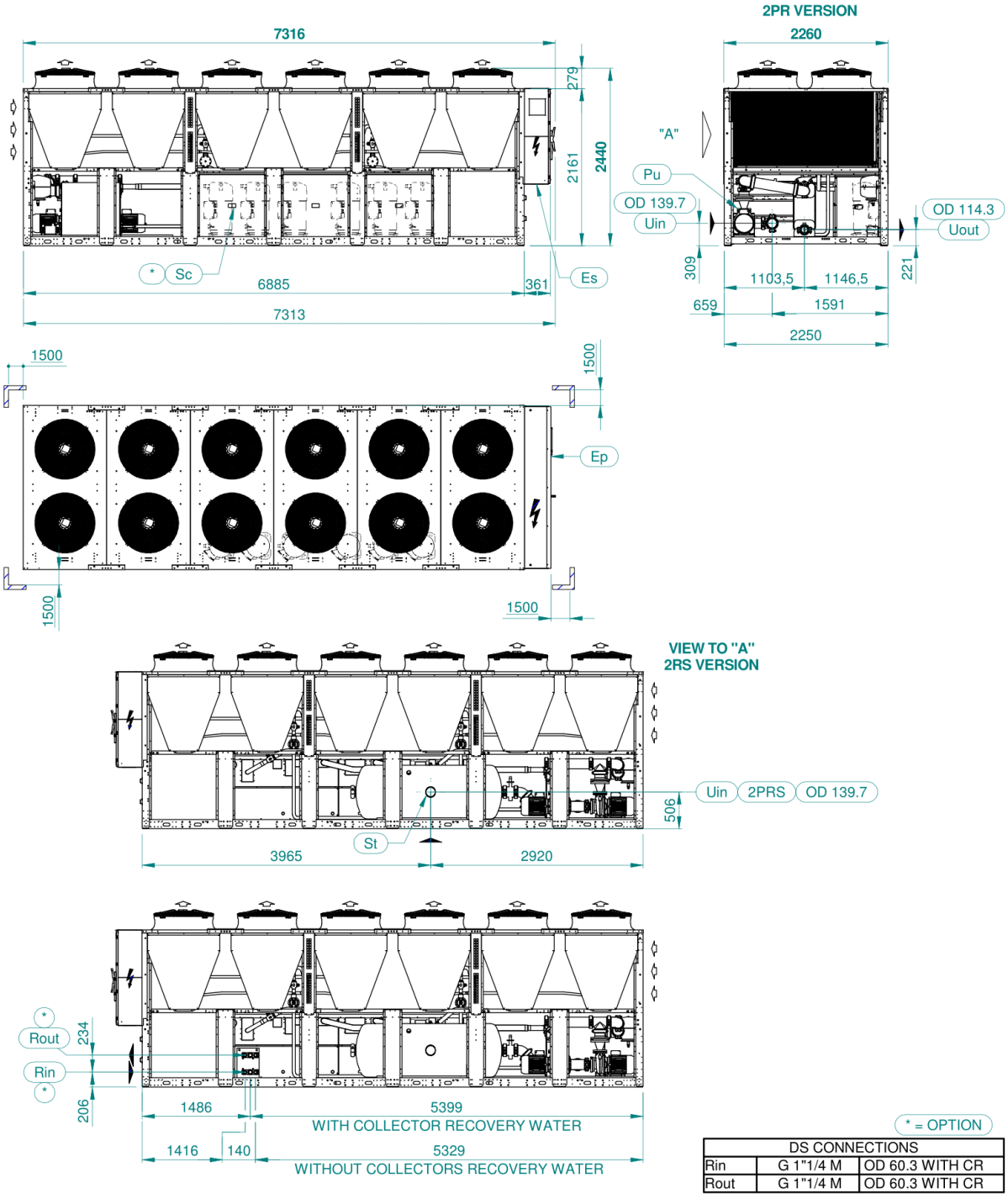


DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A / TETRIS 2 SLN 70.6 2PR-2PRS

DDIM000323A

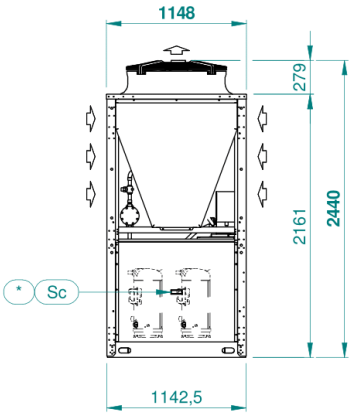


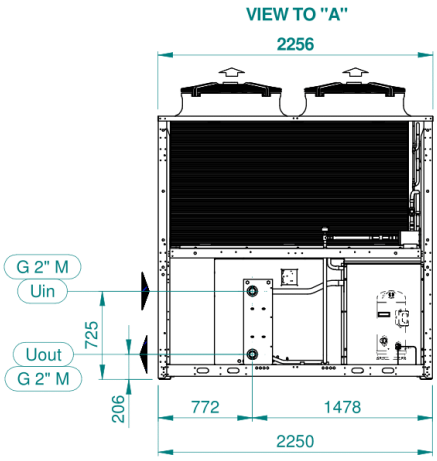
DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

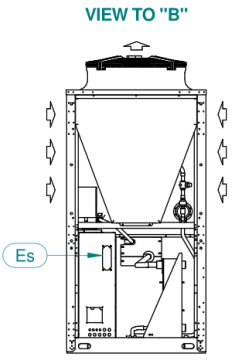
Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

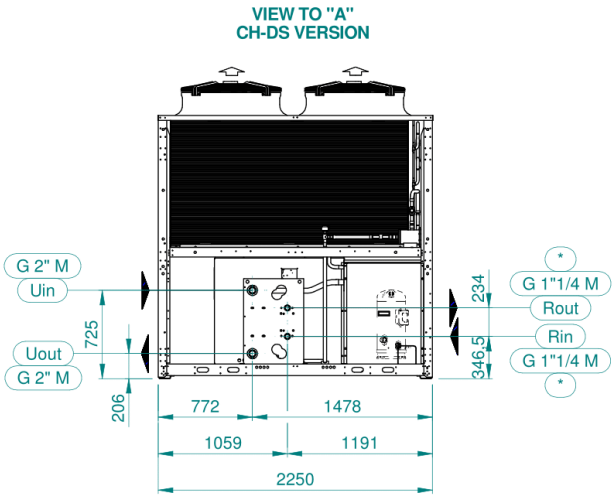
TETRIS 2 A+ / TETRIS 2 A SLN 8.2

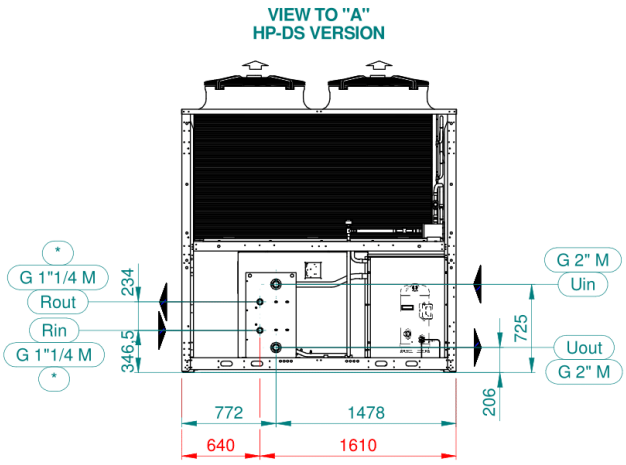
A4F274C

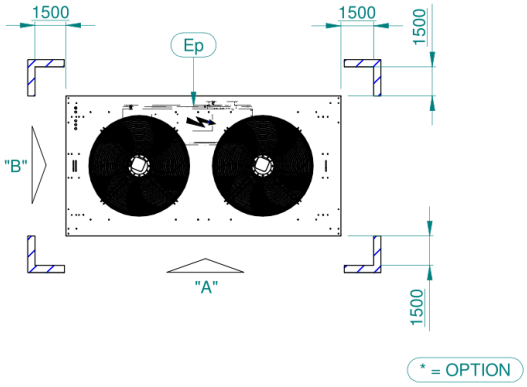








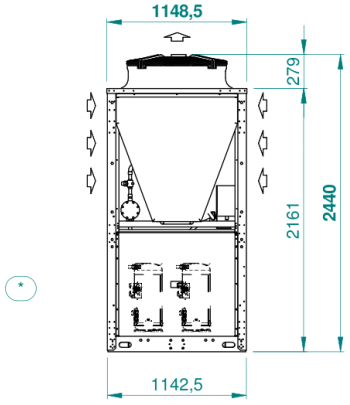


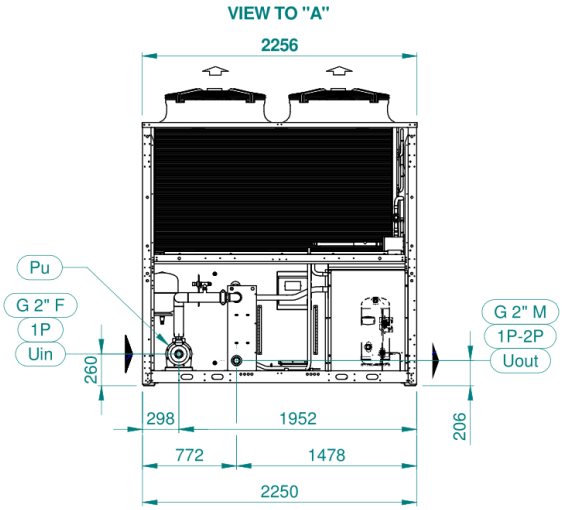


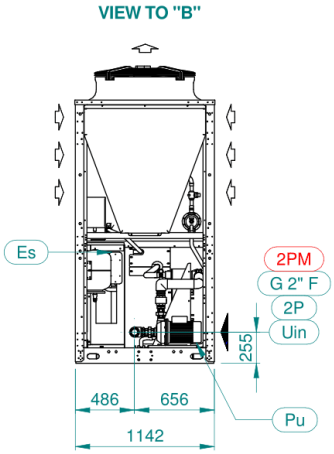
Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

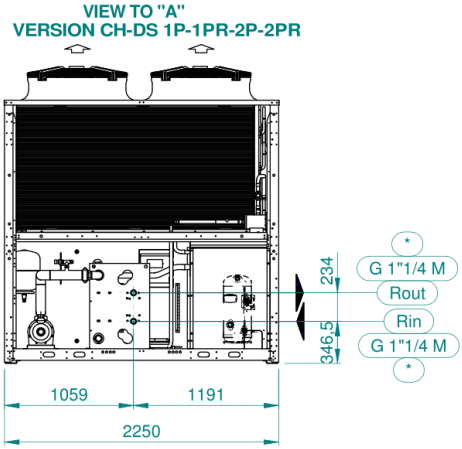
TETRIS 2 A+ / TETRIS 2 A SLN 8.2 1P-1PR-2P-2PR

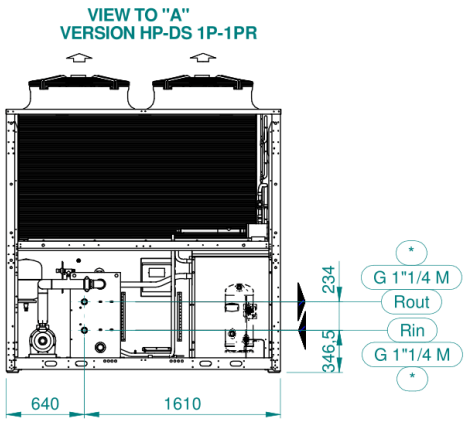
A4F279D

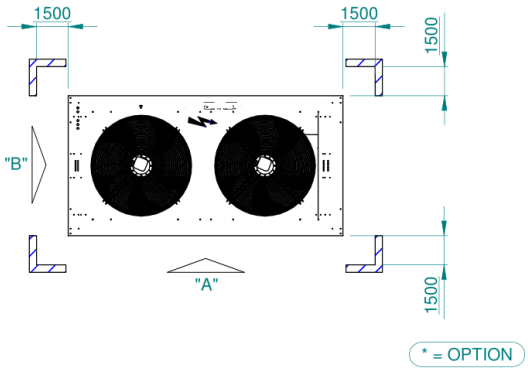








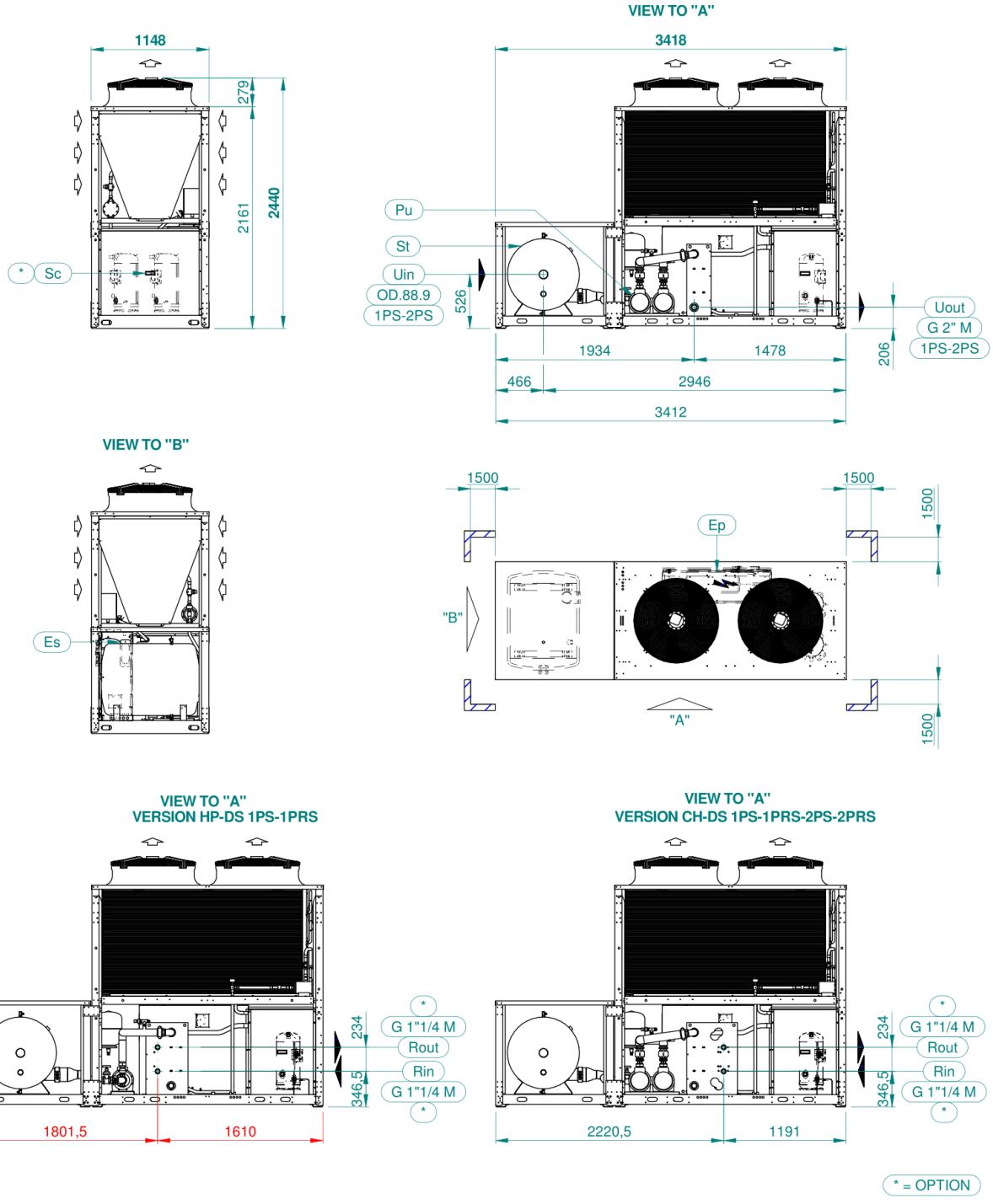




Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+/TETRIS 2ASLN 8.2 1PS-1PRS-2PS-2PRS

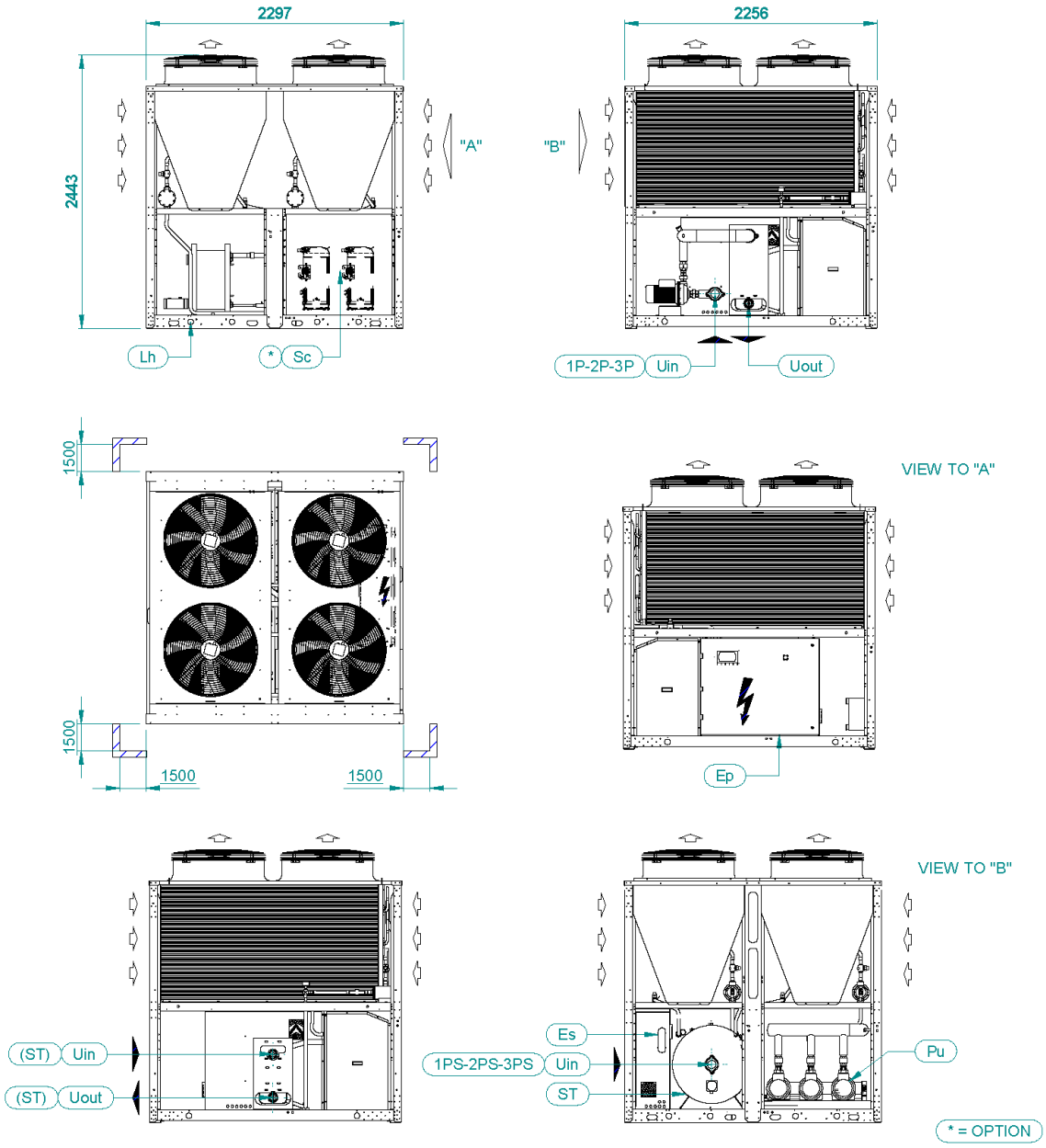
A4F280C



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 13.3-18.4

A4F175B

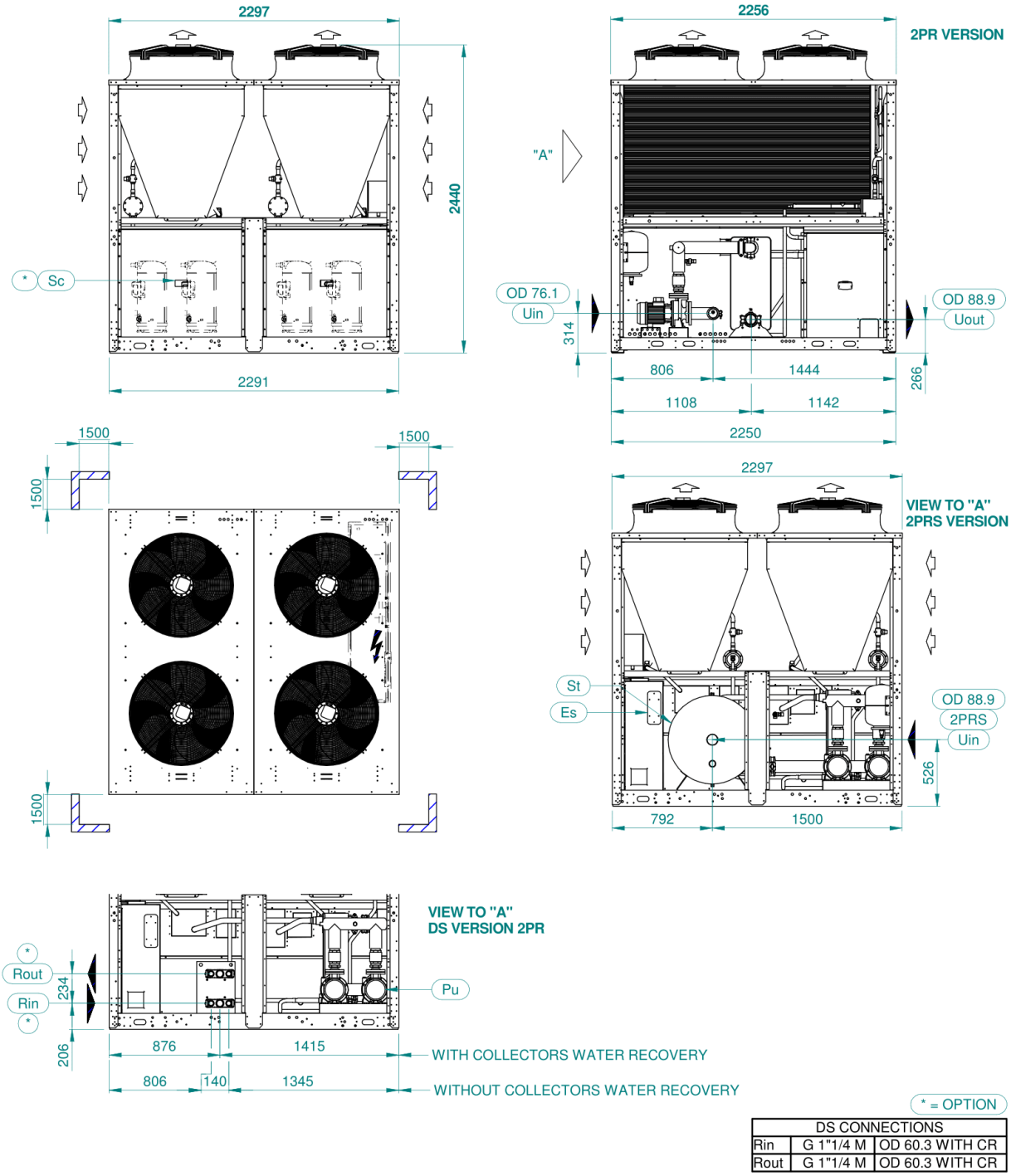


SIZE	Uin (ST)	Uin 1P-2P	Uin 1PS-2PS	Uout
13.3	G 2" M	OD 76.1	OD 88.9	G 2" M
	Uin (ST)	Uin 1P-3P	Uin 1PS-3PS	Uout
18.4	OD 88.9	OD 76.1	OD 88.9	OD 88.9
	OD 76.1 and OD 88.9 ARE Grooved Connections			

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 18.4 2PR-2PRS

DDIM000298A



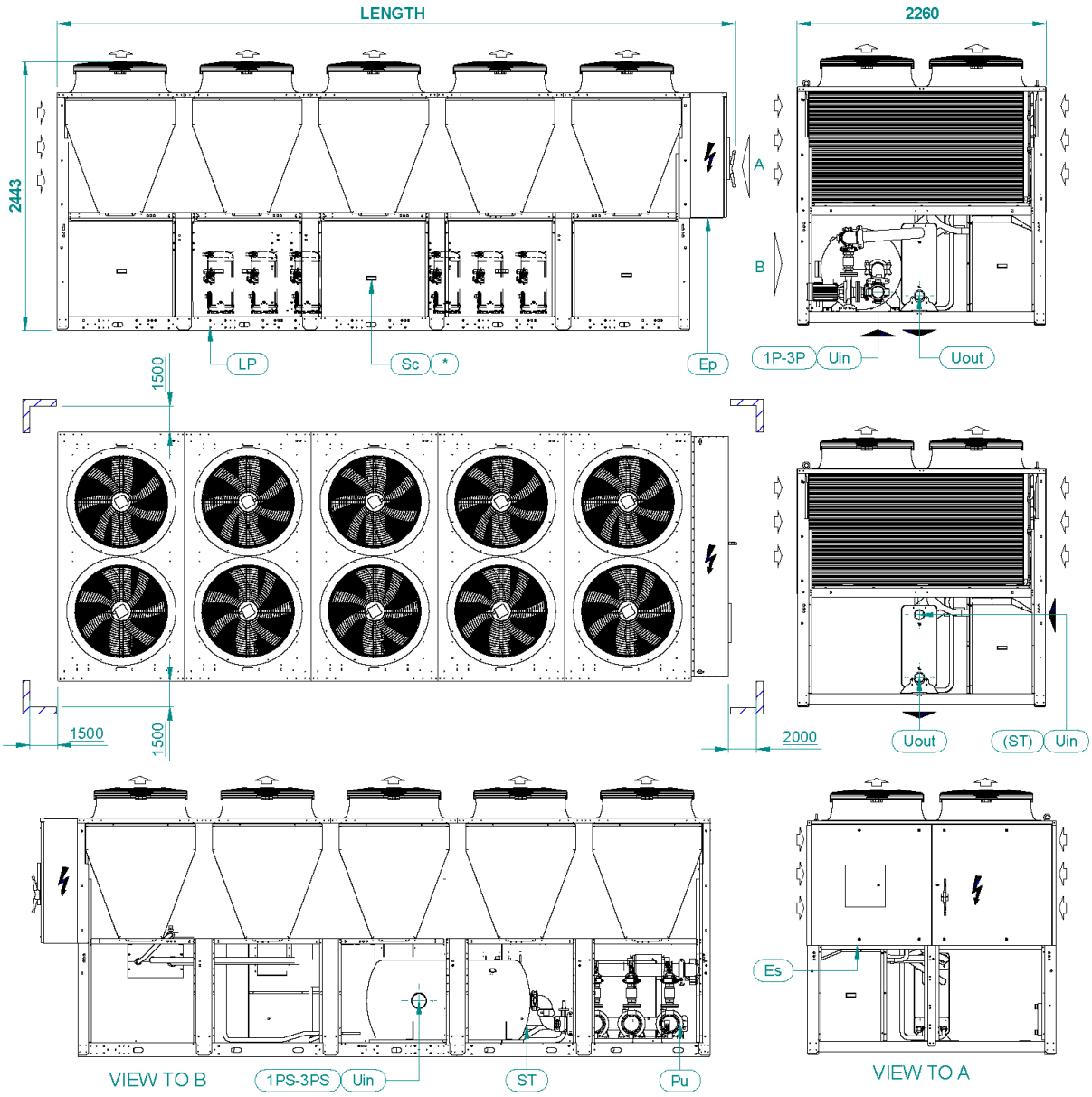
* = OPTION

DS CONNECTIONS		
Rin	G 1"1/4 M	OD 60.3 WITH CR
Rout	G 1"1/4 M	OD 60.3 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 23.5 - 54.6

A4F176A

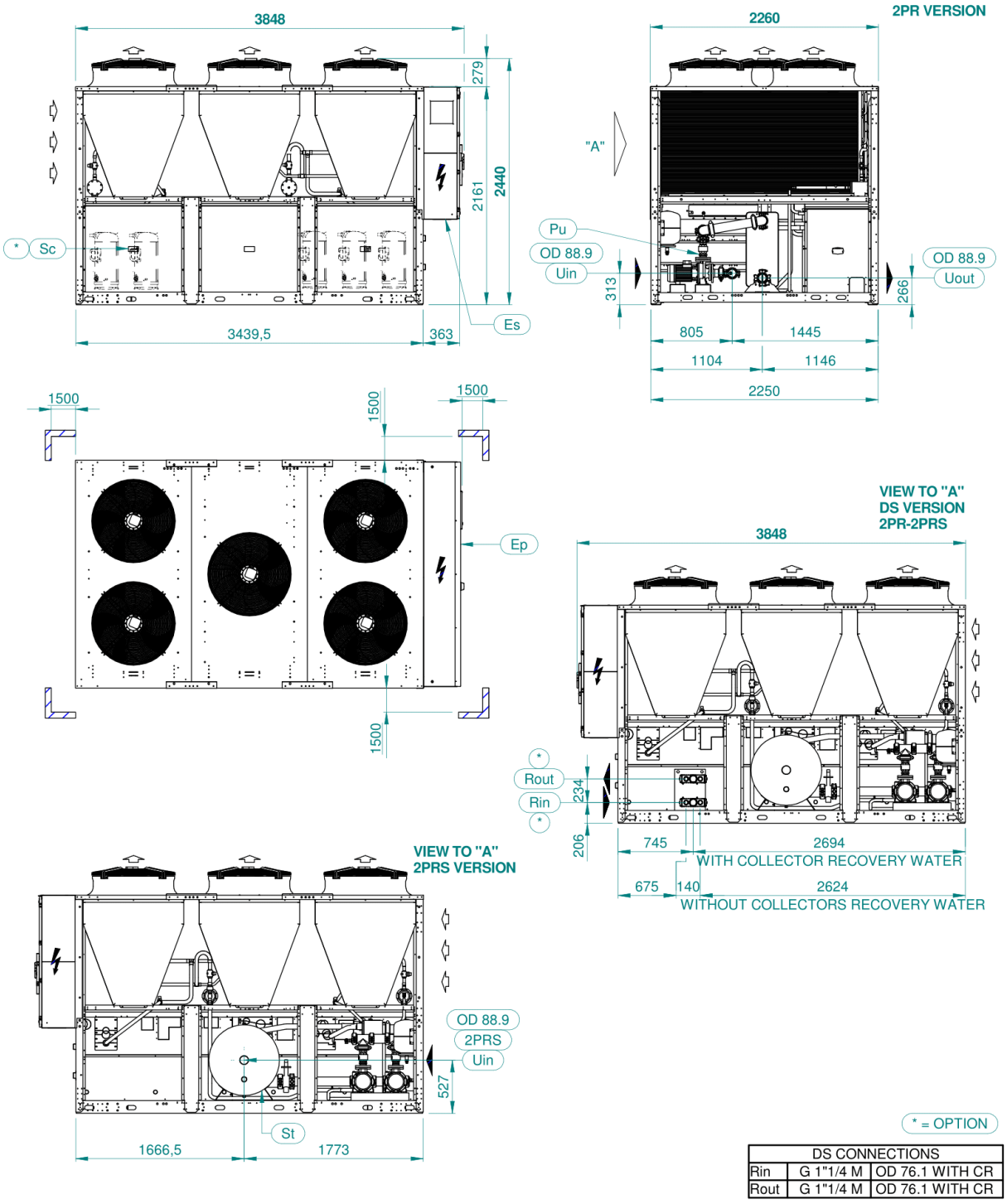


SIZE	23.5	27.6	31.4	36.4	41.5	44.6	49.6	54.6
LENGTH (mm)	3856	3856	5022	5022	6153	6153	7302	7302
Uin (ST)	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3
Uin 1P-3P	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3
Uin 1PS-3PS	OD 88.9	OD 88.9	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7	OD 139.7
Uout	OD 88.9	OD 88.9	OD 88.9	OD 88.9	OD 114.3	OD 114.3	OD 114.3	OD 114.3

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 23.5 2PR-2PRS

DDIM000299A

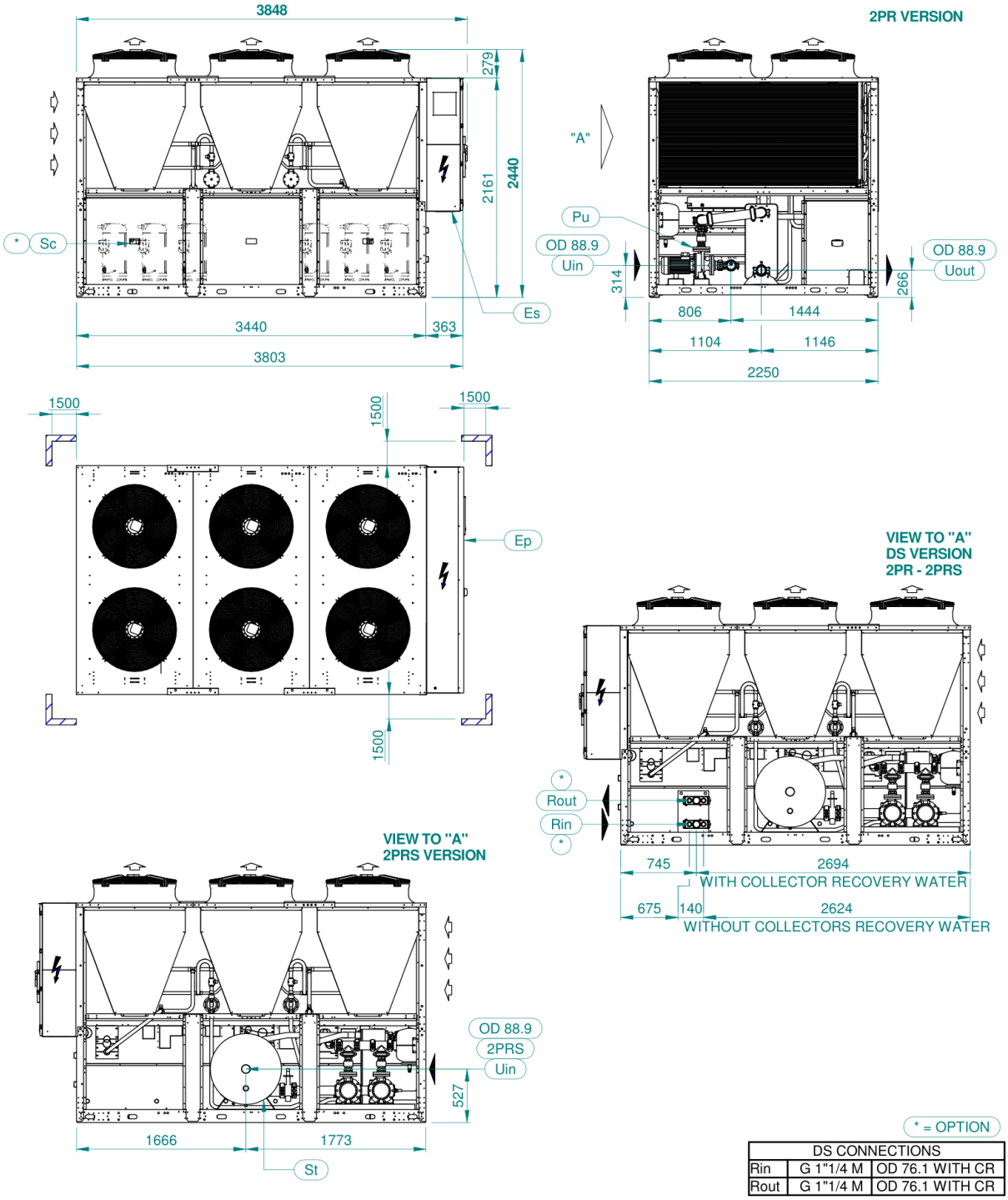


DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 27.6 2PR-2PRS

DDIM000302A



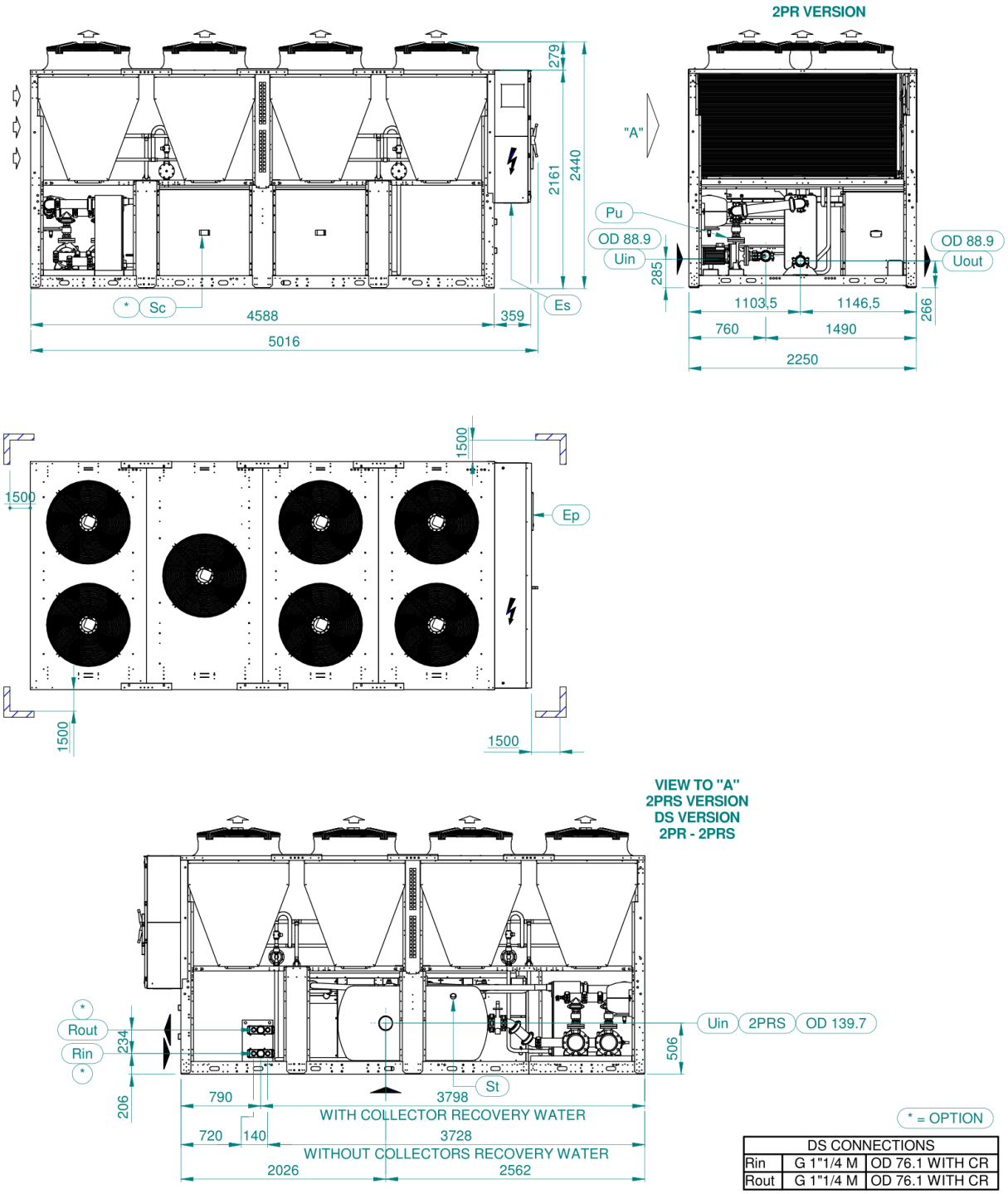
* = OPTION

DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 31.4 2PR-2PRS

DDIM000303A

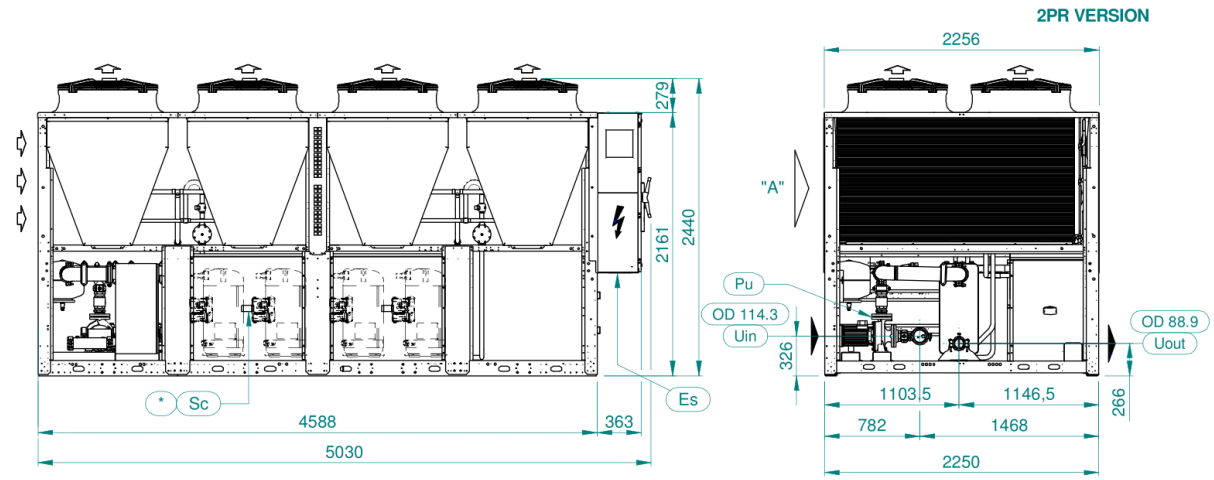


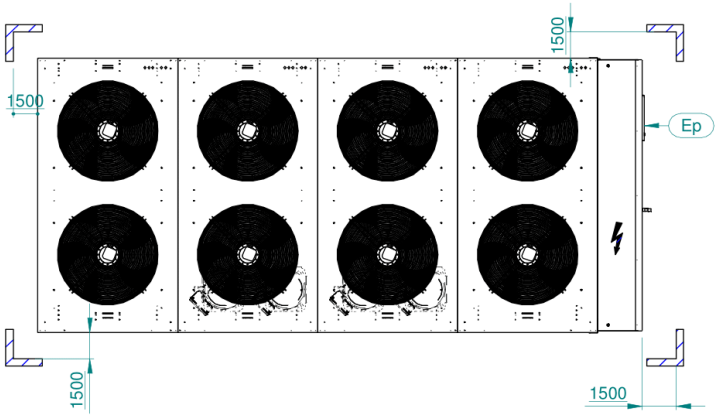
DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

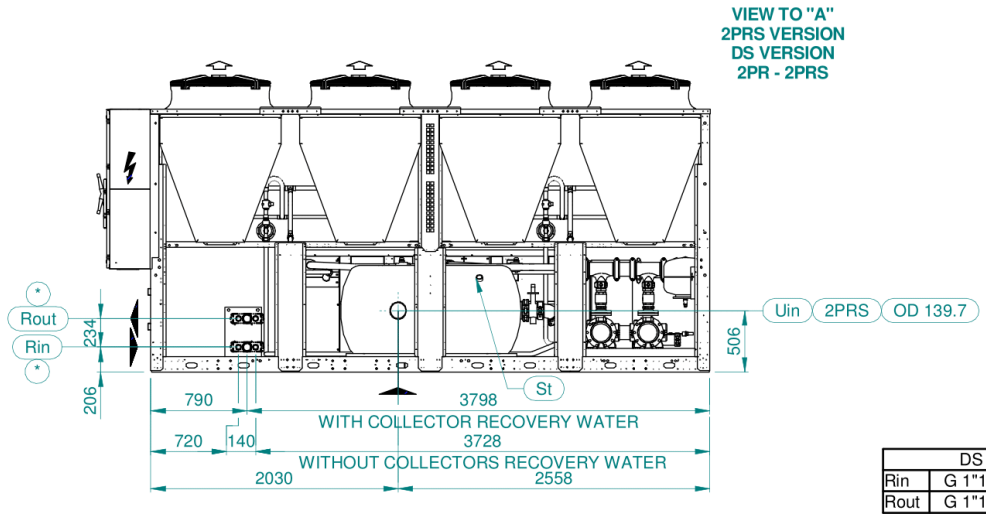
Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 36.4 2PR-2PRS

DDIM000304A







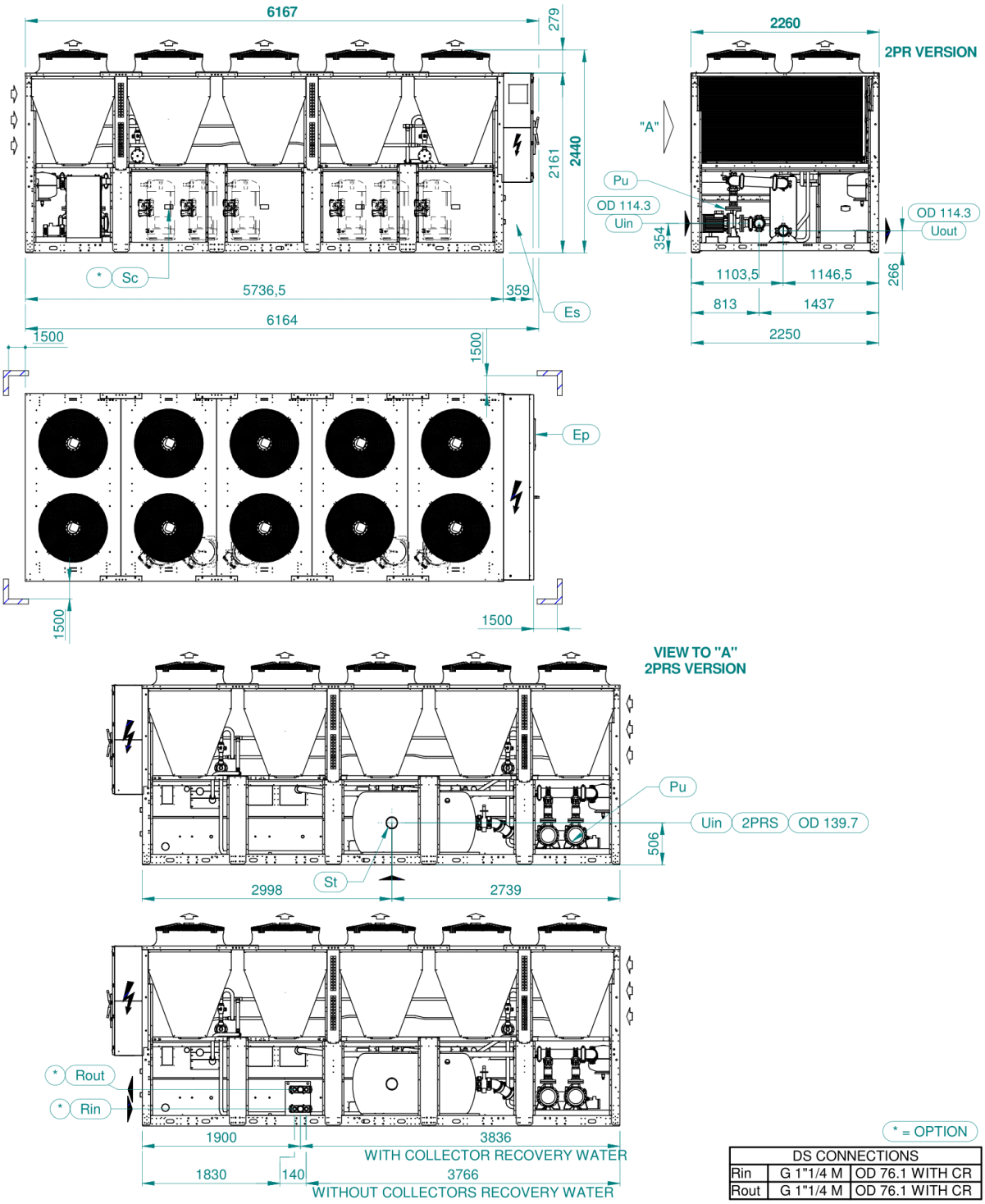
* = OPTION

DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 44.6 2PR-2PRS

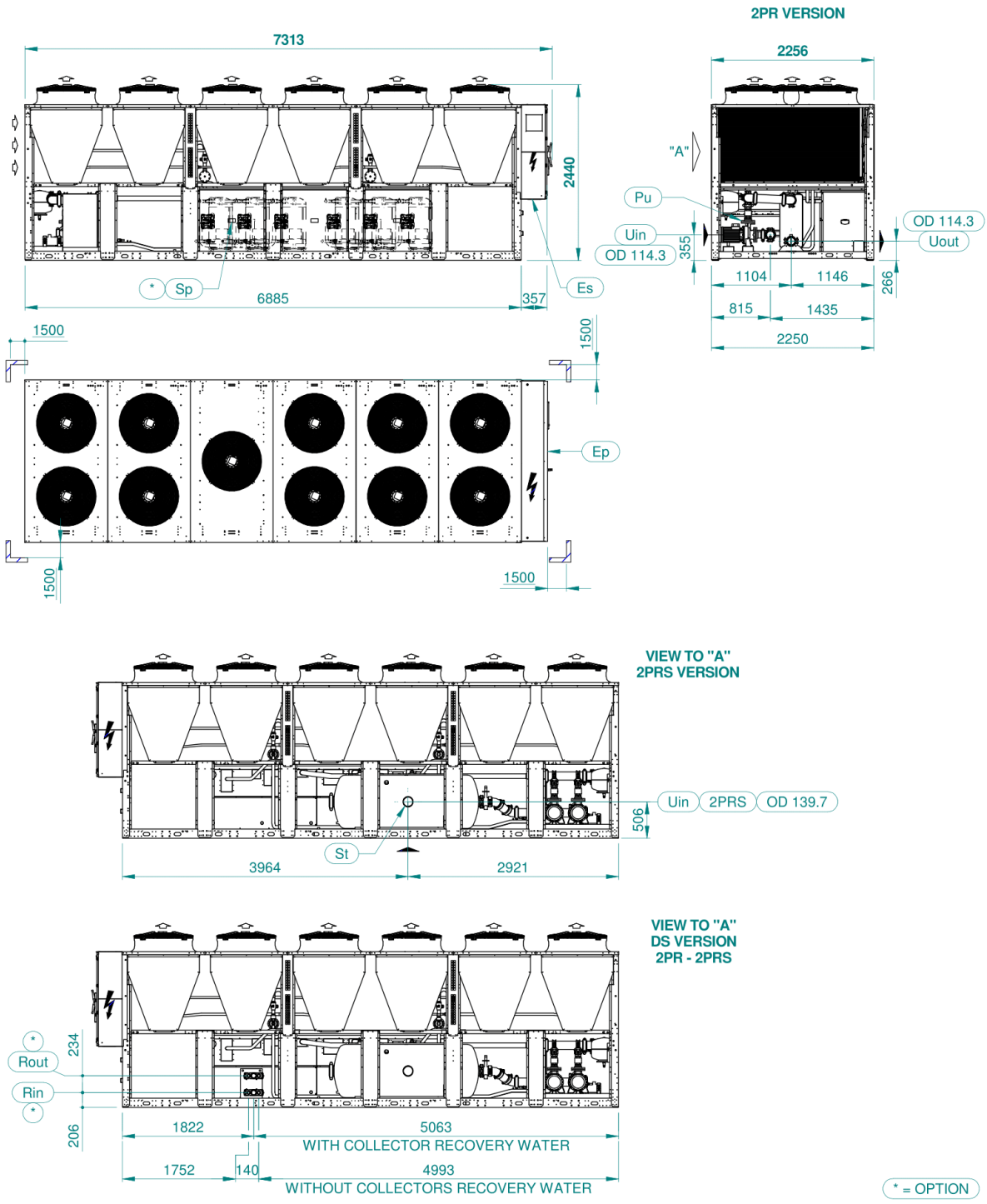
DDIM000306A



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 49.6 2PR-2PRS

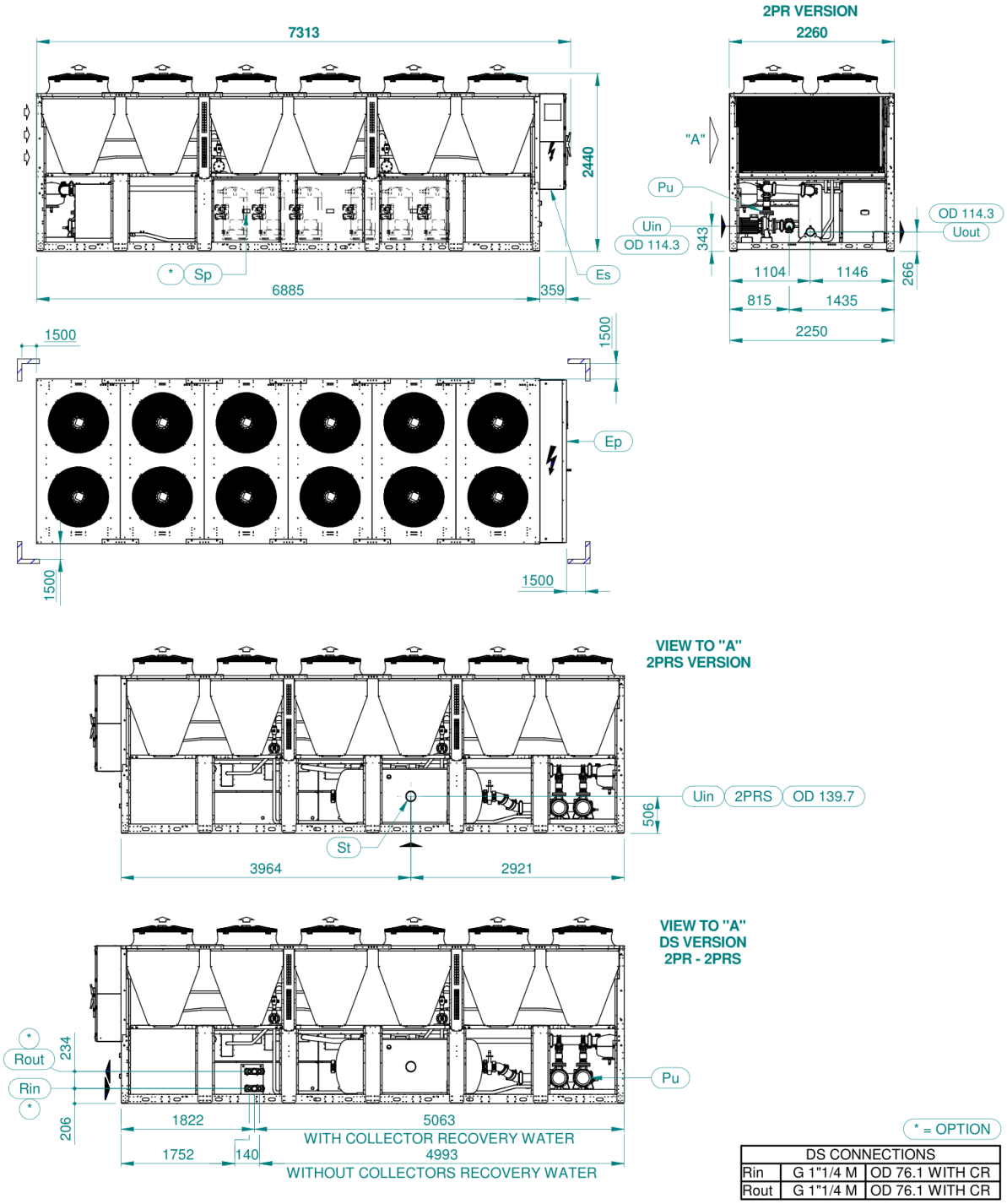
DDIM000307A



Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 54.6 2PR-2PRS

DDIM000308A

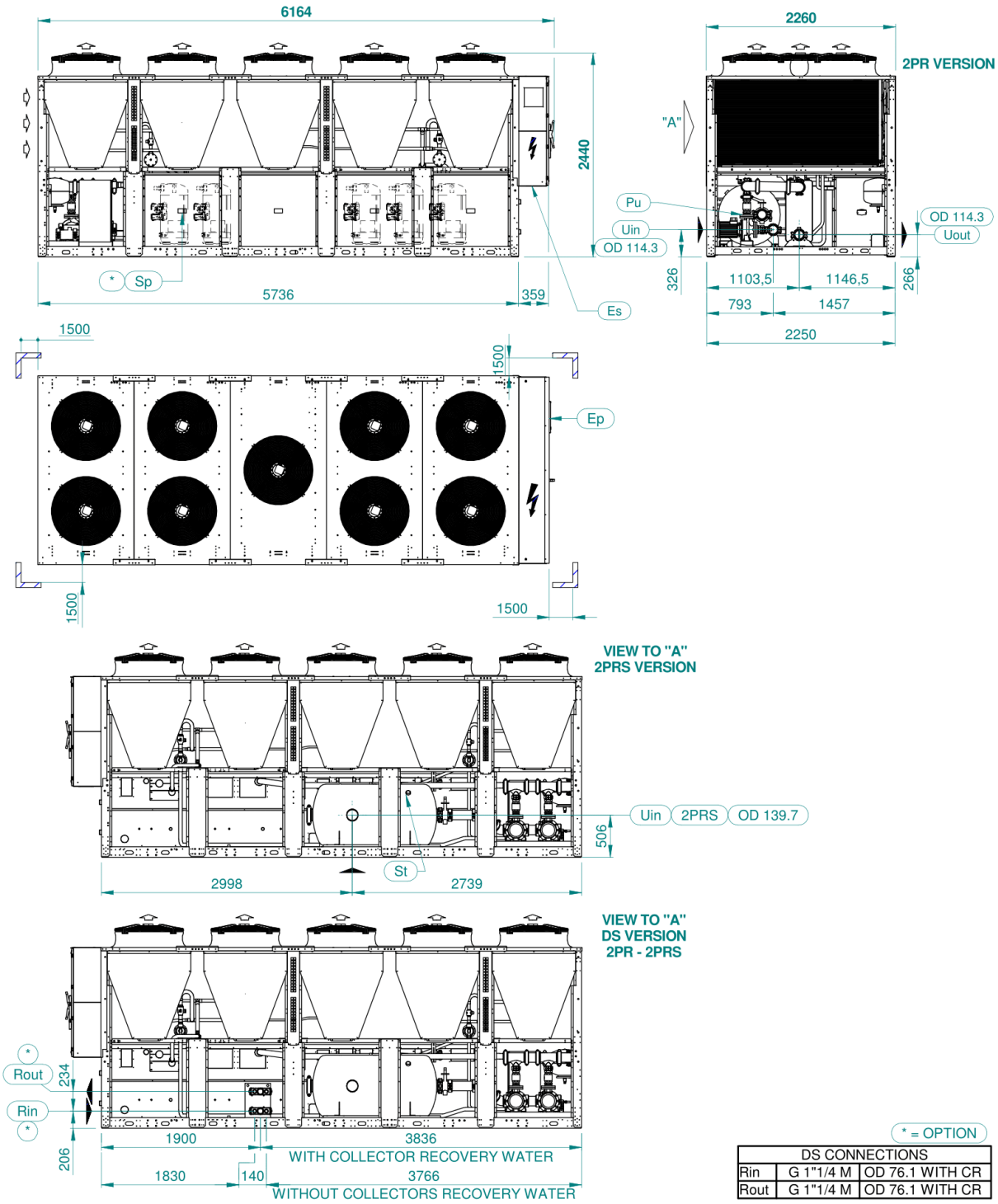


DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

TETRIS 2 A+ / TETRIS 2 A SLN 41.5 2PR-2PRS

DDIM000310A



DS CONNECTIONS		
Rin	G 1"1/4 M	OD 76.1 WITH CR
Rout	G 1"1/4 M	OD 76.1 WITH CR

Note: These drawings are not contractually binding. For the installation design, refer to the specific dimensional drawing available on request.

INSTALLATION ADVICE

The units described in this document are, by nature, strongly affected by the characteristics of the system, the working conditions and the installation site.

Remember that the unit must be installed by a qualified and skilled technician, and in compliance with the national legislation in force in the destination country.

The installation must be done in such a way that it will be possible to carry out all routine and non-routine maintenance operations.

Before starting any work, you must carefully read the "Installation, operation and maintenance manual" of the machine and do the necessary safety checks to prevent any malfunctioning or hazards.

We give some advice below that will allow you to increase the efficiency and reliability of the unit and therefore of the system into which it is inserted.

Water characteristics

To preserve the life of the exchangers, the water is required to comply with some quality parameters and it is therefore necessary to make sure its values fall within the ranges indicated in the following table:

Total hardness	2,0 ÷ 6,0 °f
Langelier index	- 0,4 ÷ 0,4
pH	7,5 ÷ 8,5
Electrical conductivity	10÷500 µS/cm
Organic elements	-
Hydrogen carbonate (HCO_3^-)	70 ÷ 300 ppm
Sulphates (SO_4^{2-})	< 50 ppm
Hydrogen carbonate / Sulphates (HCO_3^-/SO_4^{2-})	> 1
Chlorides (Cl^-)	< 50 ppm
Nitrates (NO_3^-)	< 50 ppm
Hydrogen sulphide (H_2S)	< 0,05 ppm
Ammonia (NH_3)	< 0,05 ppm
Sulphites (SO_3), free chlorine (Cl_2)	< 1 ppm
Carbon dioxide (CO_2)	< 5 ppm
Metal cations	< 0,2 ppm
Manganese ions (Mn^{++})	< 0,2 ppm
Iron ions (Fe^{2+} , Fe^{3+})	< 0,2 ppm
Iron + Manganese	< 0,4 ppm
Phosphates (PO_4^{3-})	< 2 ppm
Oxygen	< 0,1 ppm

Installation of water filters on all the hydraulic circuits is obligatory.

The supply of the most suitable filters for the unit can be requested as accessory. In this case, the filters are supplied loose and must be installed by the customer following the instructions given in the installation, operation and maintenance manual.

Glycol mixtures

With temperatures below 5°C, it is mandatory to work with water and anti-freeze mixtures, and also change the safety devices (anti-freeze, etc.), which must be carried out by qualified authorised personnel or by the manufacturer.

Liquid outlet temperature or minimum ambient temperature	°C	0	-5	-10	-15	-20	-25	-30	-35	-40
Freezing point	°C	-5	-10	-15	-20	-25	-30	-35	-40	-45
Ethylene glycol	%	6	22	30	36	41	46	50	53	56
Propylene glycol	%	15	25	33	39	44	48	51	54	57

The quantity of antifreeze should be considered as % on weight

Minimum water content in the system

For correct operation of the unit, it is necessary to ensure a buffering on the system such as to comply with the minimum operating time considering the greater between the minimum OFF time and the minimum ON time. In short, these contribute to limiting the number of times the compressors are switched on per hour and to preventing undesired deviations from the set point of the delivered water temperature.

Larger amounts of water are in any case always preferable, because they allow a smaller number of starts and switch-offs of the compressors, less wear of them and an increase in the efficiency of the system as a consequence of a reduction in the number of transients.

It should also be pointed out that, for air-water units working in heat pump mode, the minimum amount of water must consider the need of the unit to carry out defrosting. Having an adequate buffering volume will allow prevention of too high drifts of the delivered water temperature at the end of the defrost cycle.

The following experimental formula allows the minimum water volume of the system to be calculated:

$$V_{min} = \frac{P_{tot} \cdot 1.000}{N} \cdot \frac{300}{\Delta T \cdot \rho \cdot c_p} + P_{tot} \cdot 0{,}25$$

where

V_{min} is the minimum water content of the system measured in l

P_{tot} is the total cooling capacity of the machine measured in kW

N is the number of capacity reduction steps

ΔT is the differential allowed on the water temperature. Unless otherwise specified, this value is considered to be 2.5K

ρ is the density of the heat-carrying fluid. Unless otherwise specified, the density of water is considered and therefore 1000kg/m³

c_p is the specific heat of the heat-carrying fluid. Unless otherwise specified, the specific heat of water is considered and therefore 4.186kJ/(kgK)

Considering the use of water and grouping together some terms, the formula can be re-written as follows:

$$V_{min} = \frac{P_{tot}}{N} \cdot 17{,}2 + P_{tot} \cdot 0{,}25$$

N is equal to the number of compressors installed in the unit.

Installation site

To determine the best installation site for the unit and its orientation, you should pay attention to the following points:

- compliance with the clearance spaces indicated in the official dimensional drawing of the unit must be guaranteed so as to ensure accessibility for routine and non-routine maintenance operations
- you should consider the origin of the hydraulic pipes and their diameters because these affect the radiuses of curvature and therefore the spaces needed for installing them
- you should consider the position of the cable inlet on the electrical control panel of the unit as regards the origin of the power supply
- if the installation includes several units side by side, you should consider the position and dimensions of the manifolds of the user-side exchangers and of any recovery exchangers
- if the installation includes several units side by side, you should consider that the minimum distance between units is 3 metres
- you should avoid all obstructions that can limit air circulation to the source-side exchanger or that can cause recirculation between air supply and intake
- you should consider the orientation of the unit to limit, as far as possible, exposure of the source-side exchanger to solar radiation
- if the installation area is particularly windy, the orientation and positioning of the unit must be such as to avoid air recirculation on the coils. If necessary, we advise making windbreak barriers in order to prevent malfunctioning.

Once the best position for the unit has been identified, you must check that the support slab has the following characteristics:

- its dimensions must be proportionate to those of the unit: if possible, longer and wider than the unit by at least 30 cm and 15/20cm higher than the surrounding surface
- it must be able to bear at least 4 times the operating weight of the unit
- it must allow level installation of the unit: although the unit is installed on a horizontal base, make slopes in the support surface to convey rain water or defrost water to drains, wells or in any case to places where it cannot generate an accident hazard due to ice formation. All heat pump version units are equipped with discharge manifolds for the condensed water; these can be manifolded to facilitate condensate discharge.

The units are designed and built to reduce to a minimum the level of vibration transmitted to the ground, but it is in any case advisable to use rubber or spring anti-vibration mounts, which are available as accessory and should be requested when ordering.

The anti-vibration mounts must be fixed on before positioning the unit on the ground.

In the event of installation on roofs or intermediate floors, the pipes must be isolated from the walls and ceilings.

It is advisable to avoid installation in cramped places, to prevent reverberations, reflections, resonances and acoustic interactions with elements outside the unit.

It is essential that any work done to soundproof the unit does not affect its correct installation or correct operation and, in particular, does not reduce the air flow rate to the source-side exchanger.

Installations that require the use of treated coils

If the unit has to be installed in an environment with a particularly aggressive atmosphere, coils with special treatments are available as options.

The type of coil treatment should be chosen with regard to the environment in which the unit is to be installed, through observation of other structures and machinery with exposed metal surfaces present in the destination environment.

The cross observation criterion is the most valid method of selection currently available without having to carry out preliminary tests or measurements with instruments. The identified reference environments are:

- coastal/marine
- industrial
- urban with a high housing density
- rural

Please note that in cases where different conditions co-exist, even for short periods, the choice must be suitable for preserving the exchanger in the harsher environmental conditions and not in conditions between the worst and best situation.

Particular attention must be given in cases where an environment that is not particularly aggressive becomes aggressive as a consequence of a concomitant cause, for example, the presence of a flue outlet or an extraction fan.

We strongly suggest choosing one of the treatment options if at least one of the points listed below is verified:

- there are obvious signs of corrosion of the exposed metal surfaces in the installation area
- the prevailing winds come from the sea towards the unit
- the environment is industrial with a significant concentration of pollutants
- the environment is urban with a high population density
- the environment is rural with the presence of organic discharges and effluents

In particular, for installations near the coast, the following instructions apply:

for installations between 1 and 20 km from the coast of reversible units or units with Cu/Al coils, we strongly recommend using the accessory "Coil treated with anti-corrosion paints"

for distances within a kilometre of the coast, we strongly recommend using the accessory "Coil treated with anti-corrosion paints" for all units.

To protect the exchangers from corrosion and ensure optimal operation of the unit, we advise following the recommendations given in the user, installation and maintenance manual for cleaning the coils.

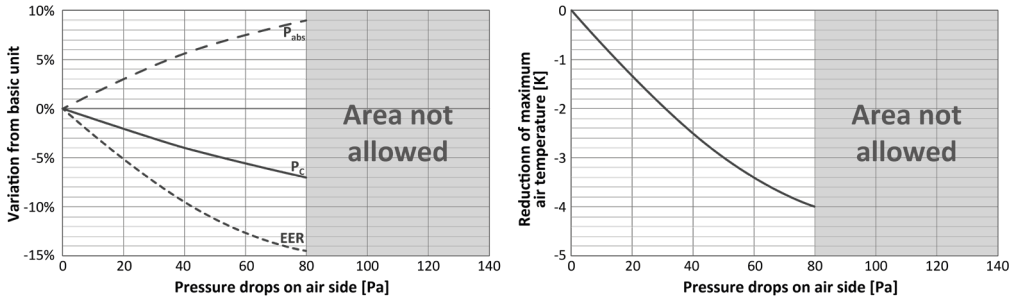
Aeraulic head losses and options available for the ventilating section

With the exception of units for which oversize fans are required, as standard, the units are designed considering that, at the nominal air flow rate, the fans work with null available pressure.

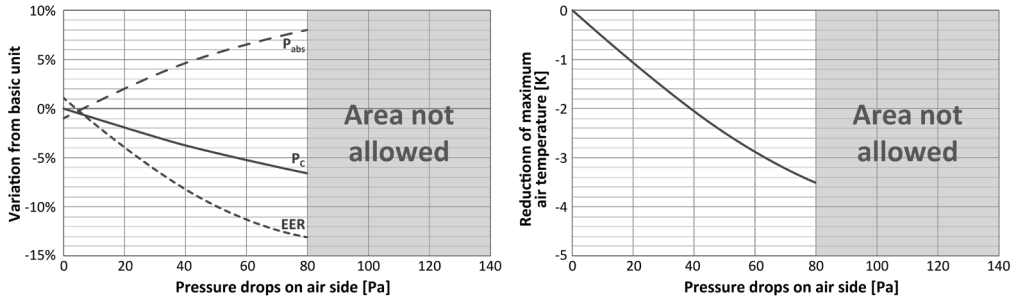
If there are obstacles to free air flow, you should consider the additional aeraulic head losses that will cause a reduction of the air flow rate and a consequent deterioration of performance.

The following diagrams show the trend of cooling capacity (P_C), EER, total absorbed power (P_{abs}) and reduction of the maximum external air temperature in chiller operating mode, depending on the aeraulic head losses that the fans will have to overcome.

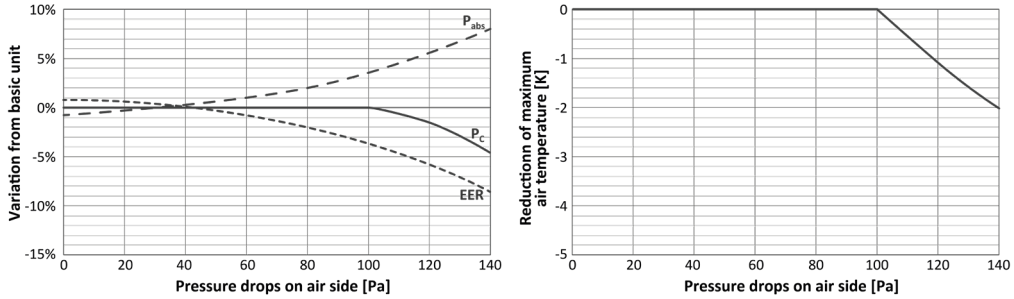
AC fans (Ø 800)



EC fans (Ø 800)



Oversize EC fans (Ø 800)



The indicated values are for the standard machine, without accessories, with AC fans and in any case in the absence of air recirculation.

Example: supposing you expect there to be obstacles that will generate an estimated aeraulic head loss of 60Pa. In this case, there are 3 possibilities:

- use the unit with standard AC fans: compared to ideal conditions, the output power will be reduced by about 5.5%, the total absorbed power will increase by about 7.5%, the EER will be reduced by about 12.5% and the maximum allowed external air temperature for operation at 100% will be reduced by about 3.4K compared to the nominal limit
- use the unit with EC fans: compared to the unit with AC fans working in ideal conditions, the output power will be reduced by about 5%, the total absorbed power will increase by about 6.5%, the EER will be reduced by about 11.5% and the maximum allowed external air temperature for operation at 100% will be reduced by about 2.8K compared to the nominal limit
- use the unit with oversize EC fans: compared to the unit with AC fans working in ideal conditions, the output power of the unit will be unchanged, the total absorbed power will increase by about 1%, the EER will be reduced by about 2% and the maximum external air temperature will remain the one shown in the diagram of the operating limits.

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