



Trane FLEX HSE

Modular air to water chiller with inverter compressors

09-2021

Cooling capacities 48.4 – 232 kW



Summary



Product line-up

Product features

Working limits

Controllers

Main options

In a nutshell *(a single slide recap)*



Product line-up

Chiller: FLEX HSE 48.4 – 232 kW



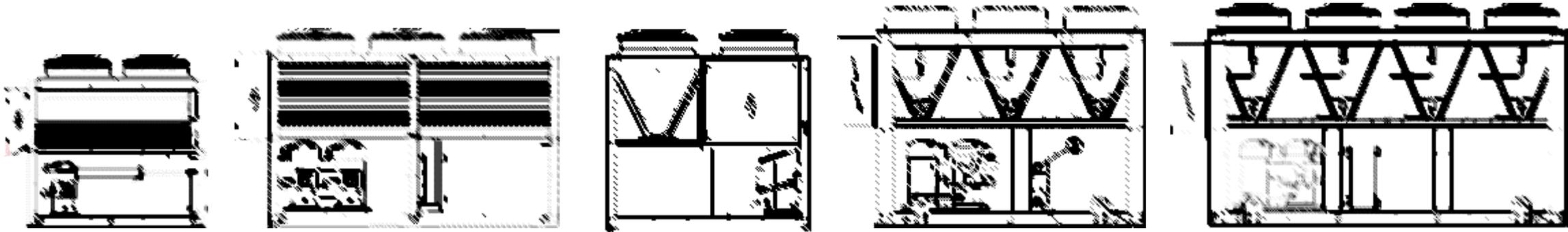
Model		150 ZC	170 ZC	180 ZC	1115 ZC	2135 ZC	2150 ZC	2185 ZC	2215 ZC	2230 ZC
Cooling according to EN 14511:2013 (1)										
Total cooling capacity	(kW)	48.4	67.8	80.9	114	134	151	183	214	232
Compressors power input	(kW)	13	20	22.1	31	39.3	41.4	47.9	59.9	66.4
Total EER		3.02	2.95	3.04	3.08	2.97	2.99	3.05	2.98	2.96
ESEER		4.41	4.47	4.51	4.49	4.27	4.27	4.18	4.11	4.24
EER Class (Eurovent)		B	B	B	B	B	B	B	B	B
Water flow	(m ³ /h)	8.3	11.7	13.9	19.6	23.1	26	31.5	36.8	39.9
Water pressure drop	(kPa)	30.5	26.4	35.9	23.7	29	34.2	29.5	42.4	38.3
Seasonal efficiency in cooling according to EN 14825:2016 (2)										
SEER		4.21	4.34	4.29	4.35	4.11	4.13	4.15	4.12	4.1
η _{s,c}	(%)	165	171	169	171	161	162	163	162	161
Compressors										
Number of compressors		1	1	2	2	2	4	4	4	4
Number of refrigerant circuits		1	1	1	1	2	2	2	2	2
Type of compressor(s) per circuit		1 VSD scroll		1 VSD scroll + 1 fixed speed scroll		1 VSD scroll		1 VSD scroll + 1 fixed speed scroll		
Type of regulation		Stepless								
Minimum capacity step		37%	37%	21%	23%	19%	10%	9%	7%	10%



INVERTER



Product line-up



		Sizes FLEX HSE				
		150 - 170	180	1115 - 2135	2150	2185 - 2215 -2230
Length	mm	2461	3599	2257	3421	4550
Width	mm	1100	1100	2146	2138	2244
Height	mm	2179	2179	2175	2469	2458



Product features



Axial fan(s)
EC type for all unit sizes



Advanced controller iPro



Condenser coil
microchannel aluminum coil

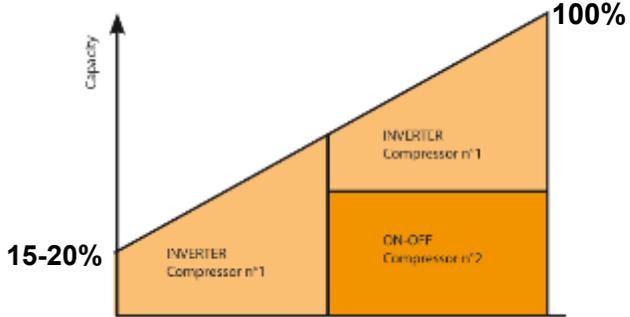


Full inverter chiller!

Electronic expansion valve as standard



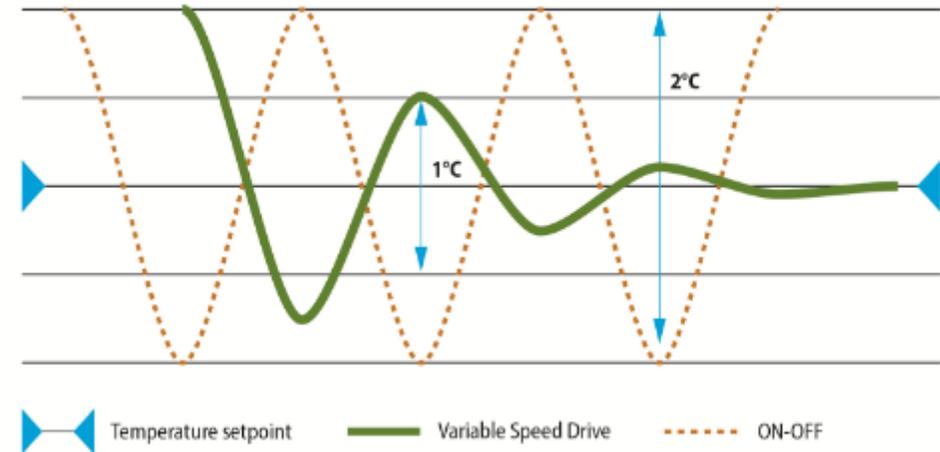
VSD compressors: Continuous modulation of the cooling capacity according to the plant thermal load thanks to Inverter Technology



Product features



- ✓ Cooling capacity: 48 - 232 kW per module
- ✓ Stepless capacity control: 15-100% (depending size)
- ✓ Modular: 9 different sizes available
- ✓ High efficiency at part load
- ✓ Super low noise (optional)
- ✓ WFC technology with inverter water pumps (optional)
- ✓ Hydraulic kit: 1 or 2 pumps. Head pressure: 150/250/450 kPa



Working limits



EC

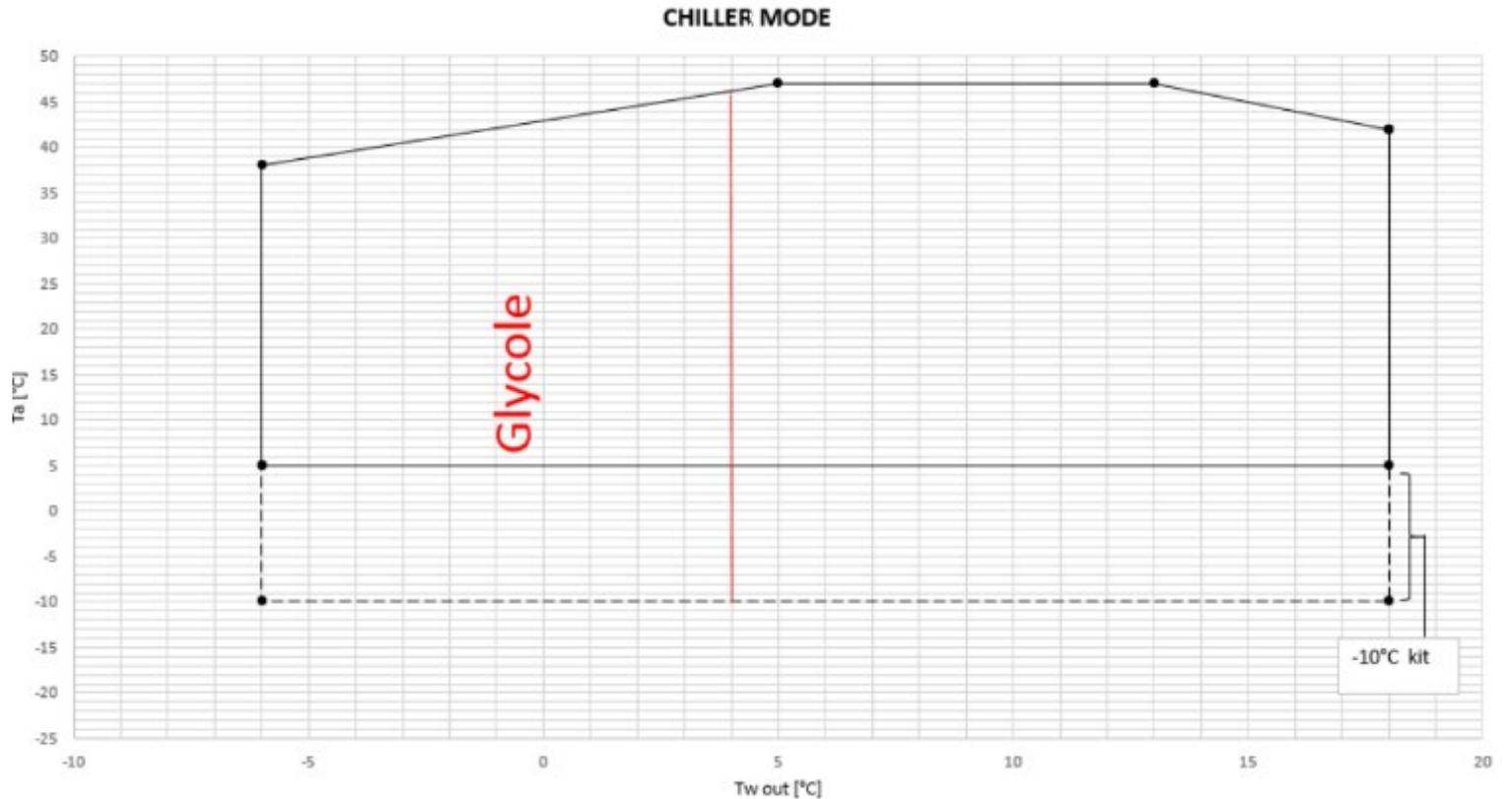
INVERTER

Standard ambient air temperature down to 5°C

- ✓ Single insulation and single electric heater on Plate Heat Exchanger (PHE)

Low ambient air kit down to -10°C (optional)

- ✓ Double insulation on Plate Heat Exchanger + additional electric heater
- ✓ Control panel with electric heater with thermostat
- ✓ Extended operating map



Controller

Advanced controller *iPro*



- Compatibility with the main BMS systems: ModBus RS485, Bacnet TCP/IP e MS/TP, Lontalk
- Remote control by digital input
- **Energy saving**
- **DSP (Dynamic Set Point)**
- **Digital Defrost**
- Auto ON-OFF
- **Domestic hot water management** (only for heat pump version)
- Compatibility with **FLEX MASTER**



Remote Control Display available as optional



- The hydronic terminals can work with a variable water temperature according to outdoor temperature, following a climatic curve.
- It allows to adjust the outlet water temperature (SET POINT) maximizing the efficiency.

Energy saving & Auto on-off

Thanks to:

- Possibility to fix different set points according to the time of the day;
- Up to 3 time-bands;
- Optimization of energy consumption;
- Auto on-off: starts and stop according to time bands;

Digital defrost

It's a sophisticated algorithm that allows to minimize:

- time of each defrost cycle;
 - number of defrost cycles.
- It also prevents rapid ice formation, that leads to:
- Damages on outdoor coils;
 - Suddenly low-pressure alarms.

Main options

Hydraulic kit

Flex HSE units are available in **two hydraulic versions** characterized by complete kits of all major hydraulic components for an easier installation, with reduced time, cost and space.

- Stand-alone version with single pump
- Stand-alone version with double pump and stand-by pump

Those versions are available with different head pressures and with or without inverter for pumps. Water pumps automatic changeover available on request.

To help completing the hydraulic circuit, loose accessories are available in the price list



Flow switch



Automatic water filling



Water gauges



Water strainer
(threaded or
Victaulic one
according to unit
size)

The installation is at customer care

Main options

Low noise option

Basic unit is provided with compressors jacket to reduce noise produced.
This solution led to an overall noise reduction by 2 dB(A)

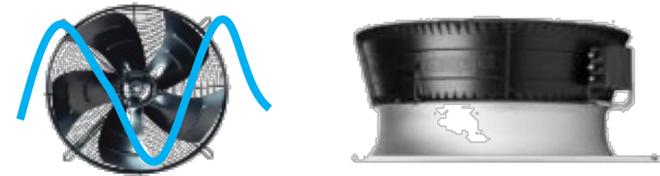


Super Low noise option

This solution led to an overall noise reduction by 5 dB(A)

It includes:

- Fan speed reduction by 30%
- Sound proof box for compressors
- Axitop diffuser for axial fans



Main options



Rubber or spring antivibration mounts

They reduce the dynamic stresses on the structure on which the unit is mounted
→ less vibrations, less noise



Victaulic kit

Victaulic KIT includes:

- ✓ Victaulic Adapter (from Threaded to Victaulic)
- ✓ Clamp and pipe



Anti intrusion grills

To protect coils and internal components.



Anti intrusion grills applied on ready to be shipped units



Main options



Soft starter

To reduce compressor inrush current (only for on-off compressors, if present)



Over/under voltage + phase failure protection relay

To protect unit from power supply instability issues (only for on-off compressors, if present)



Automatic circuit breakers

Automatic circuit breaker can be reset while fuses (standard) cannot, it must be replaced, in case of intervention. Fuses are standard only for on-off compressors if present.



Power factor correction to $\cos. \phi = 0,91$

To reduce the reactive power and therefore the electrical current (only for on-off compressors, if present)

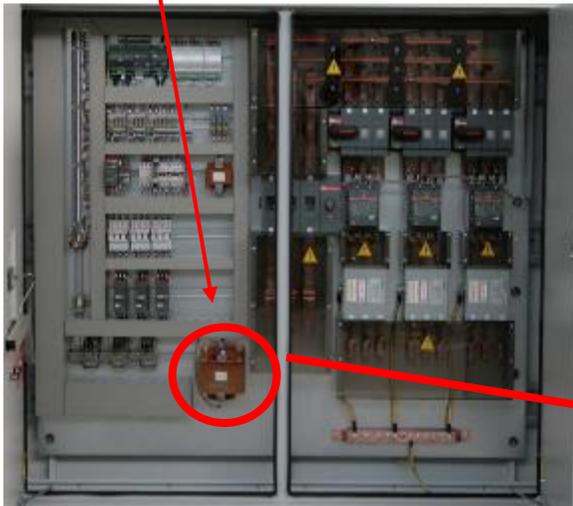


Main options

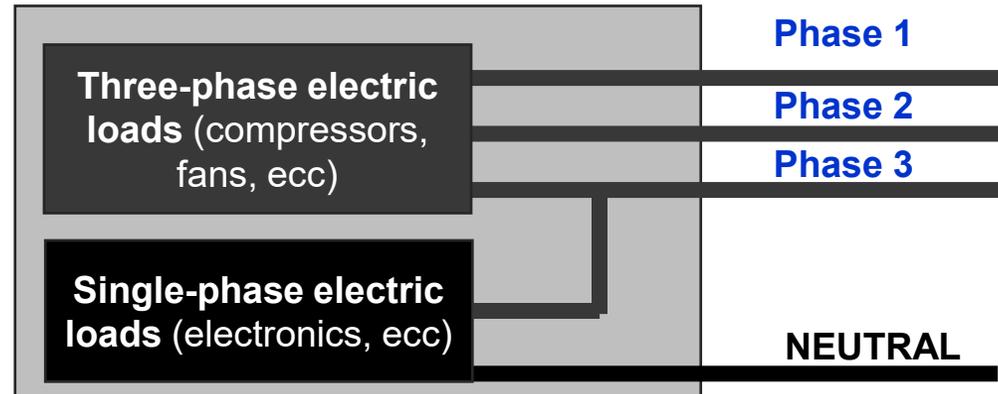
Without Neutral and with transformer

Unit as standard has Neutral. As an option, it can be provided without.

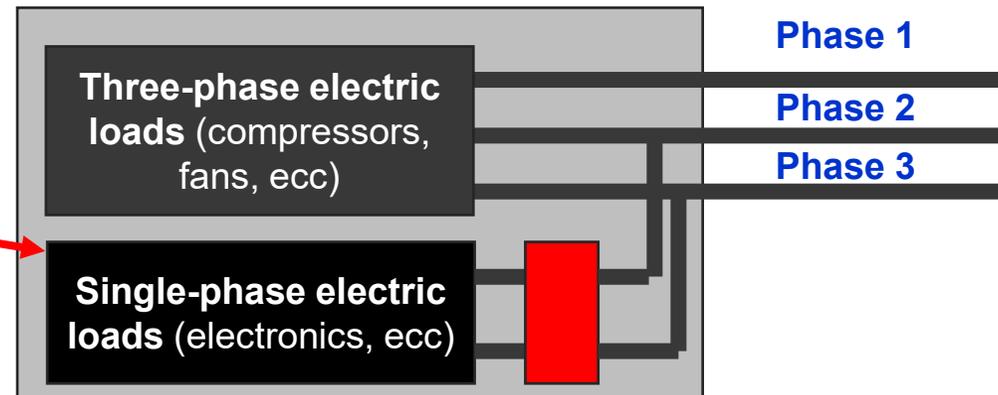
Double isolation network transformer



Electrical power supply standard (with NEUTRAL)



Electrical power supply with OPTIONAL (without NEUTRAL)



Main options



Remote display



EC axial fans with high ESP

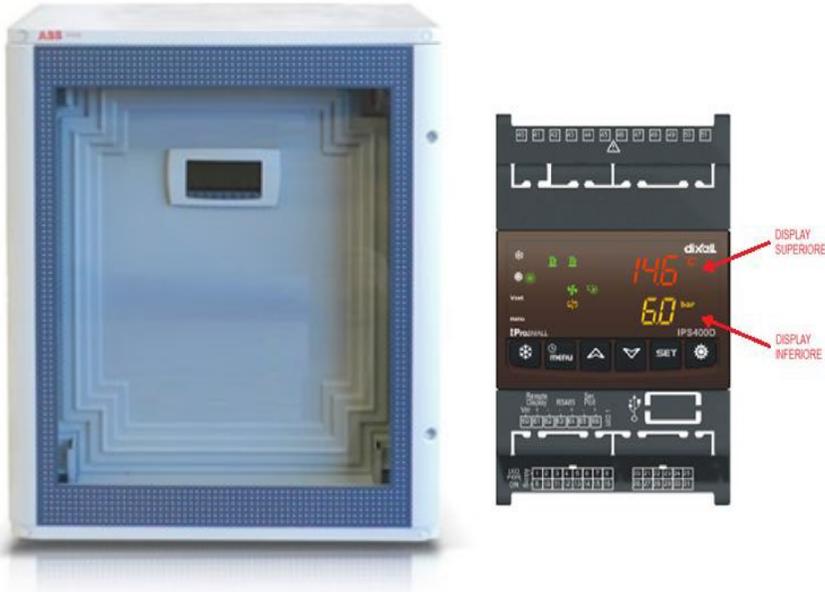
In case external head pressure is needed, this option grants **100 Pa ESP**.
It's also suitable for low air temperature kit.



Main options

FLEX Master Controller

For unit provided with advanced controller iPro



It includes Controller & User Interface

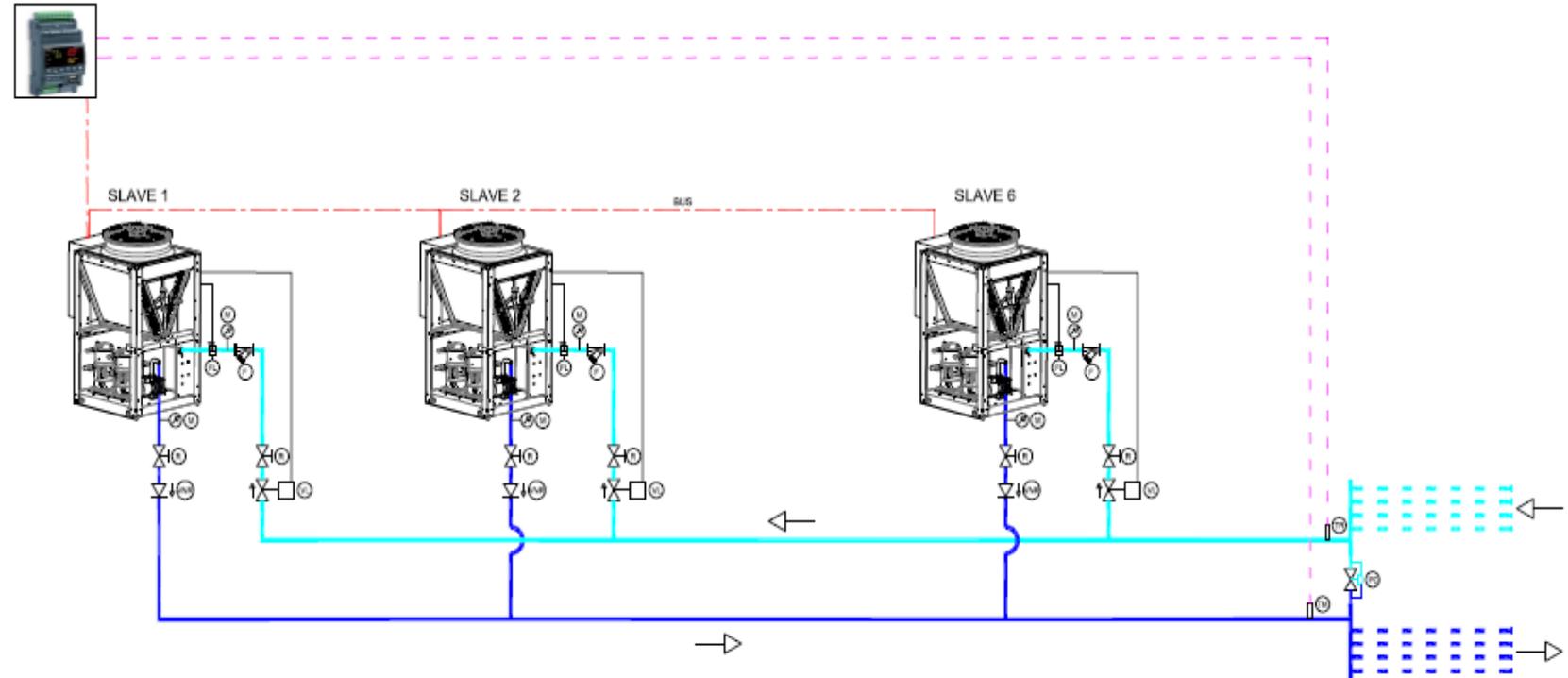


- ✓ PVC box with transparent door, UV resistant & IP Class 66
- ✓ Potential free contacts for:
 - *Activation of the system*
 - *Water pump(s) activation*
 - *Seasonal setting adjustments with external signal*
 - *Generic alarm signals*
 - *Possible alarm state of external water pump(s)*
 - *Double set point management*
- ✓ BMS connection via Modbus protocol / RS485
- ✓ Input & output probes for the main user
- ✓ External air probe
- ✓ Probes for secondary user temperature control like total or partial recovery and Domestic Hot Water (DHW) production (only if required)

Main options

FLEX Master Controller

- Different plant configuration can be managed thanks to Flex master controller, even with different type of units (all with iPro controller)
- **Flex Master** controller provides various options for activating the sequence of the capacity steps between the different units (up to 6 units can be controlled by a unique Flex Master)
- For deeper details, consult the documentation in the Litweb!



In a nutshell



RANGE

Cooling: 48 – 232 kW

WORKING LIMITS

Cooling



-6 ↔ 18°C



-10 ↔ 47°C

CONTROLLER



Advanced controller iPro

MAIN ACCESSORIES

- Low noise version down to -5 dB
- Water pump(s) with or without inverter
- Flex master controller to manage up to 6 units
- Phase inversion, anti-freeze kits...

APPLICATIONS

COMFORT



Hospitality



Healthcare



Entertainment



Office buildings



Education

INDUSTRY



Pharmaceutical industry



Plastic industry



Food and beverage industry

SELLING POINTS

- **Full inverter unit** (both fans and compressor)
- Perfect to tight water temperature control (process, mission critical applications)
- **Cutting-edge technology**
- **Easy to access** to all components
- **SEER** = up to 4.35





TRANE[®]