



YOUR AIR, OUR PASSION

DEHUMIDIFIERS

01/2010

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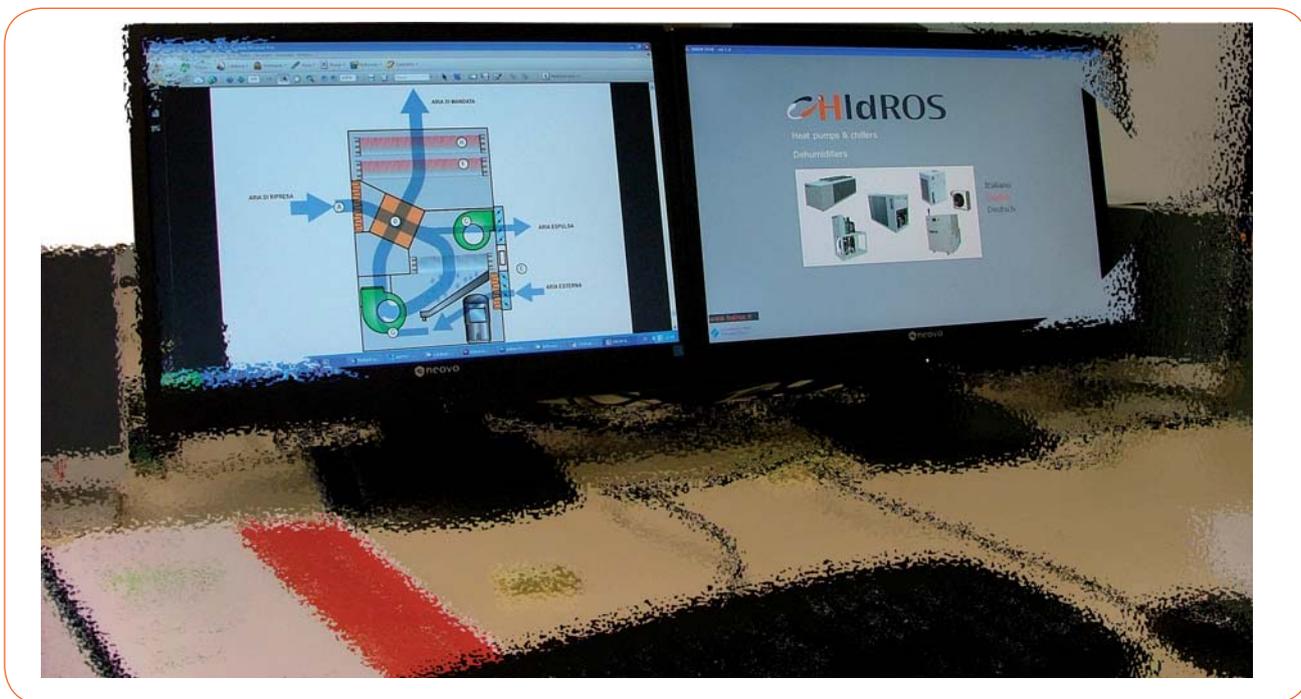
The Company



HIDROS was born in 1993 as a trading company involved in the market of dehumidification and humidification of the air. Quite soon the necessity to satisfy the great demand of special products, in a wide variety of applications and capacities, lead the company in 2001, to develop and produce its own production. Today HIDROS with its qualified staff, designs, develops and tests dehumidifying systems and air handling units based on refrigerant cycle, heat pumps and water chillers.



Hidros catalogue includes standard dehumidifiers with capacities from 25 to 3000 l/24h, heat pumps and water chiller with cooling and heating capacities from 5 to 900 kW. At this range HIDROS adds a wide range of tailor made machines to meet any customer requirement. High competence and enthusiasm are the other essential elements that guarantee quick, flexible and adequate solutions.



Where we are



From Milan airport

take the A4 motorway (in the direction to Venice) - leave the motorway at the Padova Est exit

From Bologna airport

take the A13 motorway (in the direction to Padova), then continue on the A4 (in the direction of Venice) - leave the motorway at the Padova Est exit

From Venice airport

take the A4 motorway (in the direction to Milan) - leave the motorway at the Padova Est exit

From Treviso airport

take the A27 motorway (in the direction to Venice) - at the Venezia-Mestre junction take the A4 motorway (in the direction of Milan) - leave the motorway at the Padova Est exit

From Verona airport

take the A4 motorway (in the direction to Venice) - leave the motorway at the Padova Est exit

From the Padova Est exit, to HIDROS

take the Tangenziale Est (eastern bypass, also called Corso Argentina) and follow the directions for Chioggia, continue along the bypass for around 5 km until reaching the turnoff at via G. Marconi (Statale Piovese, SS516), follow the directions for Piove di Sacco - continue for around 12 km, once having passed through the town of Vigorovea, after around 1 km, turn right and follow the directions for Brugine, after around 800 metres (before the traffic lights), turn right into Via dell'Industria; HIDROS is on your left at number 5.

Applications

HIDROS



The use of the dehumidifiers in the grape drying allows the control of the process (independent from atmospheric conditions) avoiding loss of product and improving final quality.

What's humidity

The air we breath contains water vapour; this is essentially present due to the sun activity that let evaporate huge amount of water from seas and oceans, introducing in the atmosphere variable contents of water at vapour state. That is why commonly we speak about humid air. Humidity is a basic parameter in various sectors of human activities; but it is also an invisible element who can bring serious damages on processes and products.

Why control humidity

The control of humidity, allows the reduction of moulds and consequently healthier environments, reduces corrosion problems; increases reliability of electric and electronic components, increases preservation time of foodstuffs, reduces several type of physical troubles in people, improves environmental comfort and remove bad smells.



Cellar Barrique; the correct value of humidity avoids proliferation of moulds and mildews on the external side of the barrels and keep whole the wooden structure.



Cheese seasoning storage plant, made by dehumidifier with temperature control and remote condenser model FLZ740. Required room temperature 18°C, relative humidity 70%. Date of installation: May 2003.

Applications

- Cellars, fitness centres, Warehouses.
- Archives, Libraries, Museums.
- Radiant cooling systems.
- Building industry, Floor drying.
- Food industry, Cold rooms.
- Grape drying, Cheese seasoning, Sausage factories.
- Indoor swimming pools, Saunas, Spa, Turkish baths.
- Marble industry, Marble resin topping.
- Plastic Industry, Mould drying.
- Water pumping stations.
- Wood industry, Cork productions.
- Electronic industry.
- Stratified glass industry.
- Chemical, Pharmaceutical and cosmetics industry.



Hazelnut preservation cold room, made by eight low ambient version dehumidifiers model FL940BT, capacity 720 l/24h, required indoor conditions: temperature 2°C, humidity 60%. Date of installation: July 2004.



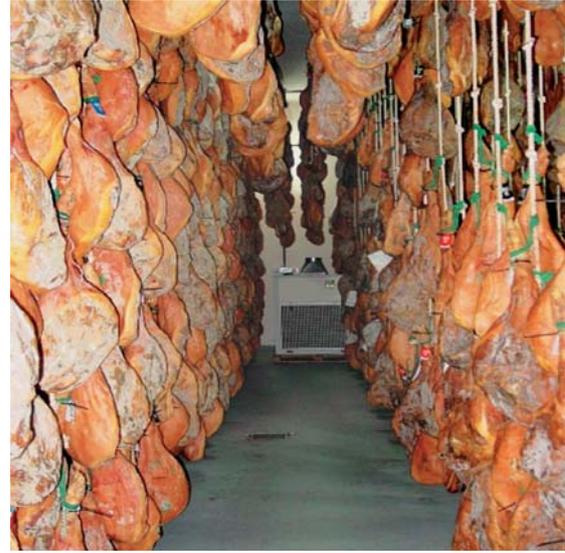
Onion preservation cold room, made by low ambient version dehumidifier model ITM400BT, capacity 60 l/24h, required indoor conditions temperature 2°C, relative humidity 60%. Date of installation: May 2003.

Applications

HIDROS



Salami seasoning plant; humidity control made by a dehumidifier model ITM330S in stainless steel, capacity 90 l/24h, required indoor conditions: temperature 15°C, humidity 60%.
Date of installation: May 2004.



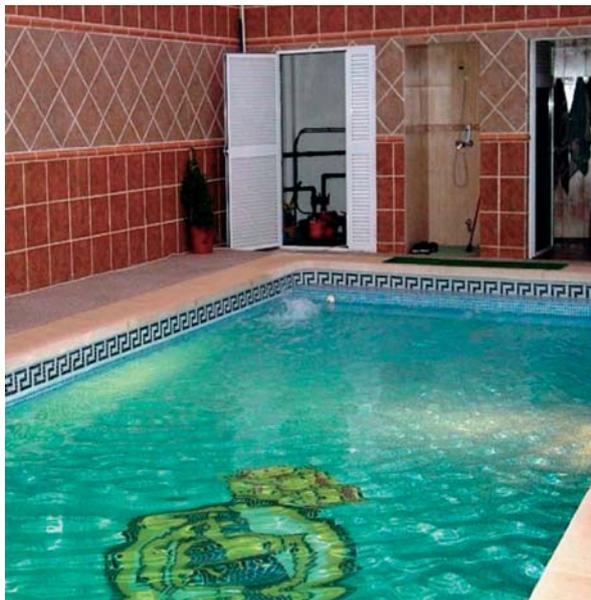
Ham seasoning plant; humidity control made by a dehumidifier model ITM400, capacity 110 l/24h, required indoor condition: temperature 15°C, relative humidity 60%.
Date of installation March 2003.



Indoor swimming pool, surface 35 m2, water temperature 30°C, humidity control made by unit model SHH330, capacity 190 l/24h.
Date of installation: April 2001.



Sauna and Turkish baths; Humidity control made by unit model SEH160, capacity 95 l/24h. Date of installation: May 2003.



Indoor swimming pool, surface 40 m², water temperature 28°C, humidity control made by unit model SHH330, capacity 190 l/24h. Date of installation: March 2004.



Indoor swimming pool, surface 10 m², water temperature 28°C with health spa, humidity control made by dehumidifier model SEH160, capacity 95 l/24h. Date of installation: May 2003.



Sistema di deumidificazione e riscaldamento di una tenso struttura sportiva; effettuato tramite due deumidificatori modello ITM330S, capacità 13 l/h totali, equipaggiati di batteria ad acqua calda da 10 kW. Portata aria totale 7600 m³/h. Data installazione: Febbraio 2002.

Applications

HIDROS



Marble resin topping plant; required process temperature 45°C, relative humidity $\leq 15\%$, made by dehumidifier with temperature control model KSR800. Airflow 8000 m³/h.
Date of installation: April 2003.



Marble resin topping plant; required process temperature 45°C, relative humidity $\leq 15\%$, made by dehumidifier with temperature control model KSR1500. Airflow 15000 m³/h.
Date of installation: January 2002.



Stratified glass production plant; required temperature 18°C, relative humidity 25%, made by dehumidifier with temperature control model DS3000, airflow 3000 m³/h.
Date of installation: March 2004.



Plastic injection plant; required dew point -8°C, dehumidification made by special unit, airflow 1200 m³/h, air outlet conditions 20°C, relative humidity 10%.
Date of installation: May 2004.



Industrial drying plant; required relative humidity $\leq 55\%$, made by two dehumidifiers model FL940, total airflow 16400 m³/h.
Date of installation: June 2002.



Triturating industrial plant; humidity control in CFC's gas recovery, required process temperature 60°C, relative humidity 30%. Dehumidification made by special unit model KSD800.
Date of installation: May 2004.



Paper and carton storage plant; humidity control made by unit model ITM400S.
Date of installation: February 2005.



Triturating industrial plant; Humidity control in CFC's gas recovery, Required process temperature 60°C, relative humidity 30%. Dehumidification made by special unit model KSD800.
Date of installation: October 2003.

Applications

HIDROS



Industrial water base painting process; drying process made by dehumidifier model FL940, required temperature 30°C, airflow 8000 m³/h. Date of installation: January 2005.



Dehumidifiers have a common use in the construction industry when it is necessary apply wooden or resilient floors and to dry plasters and slabs.

Boat drying, made by dehumidifier model EH200.



Refrigeration and dehumidification industrial plant.
Date of installation: January 2005.



Dehumidification in water purification system.
Date of installation: May 2006.



Residential dehumidification plant, combined to radiant cooling system. The dehumidifier (FH GH series) controls the latent load of the room, while the radiant cooling system manages the sensible one.

FH-GH

Dehumidifiers for radiant cooling systems



R134a

R407C

The dehumidifiers FH and GH series are high performance units, equipped with robust galvanised steel frame, properly designed to operate in combination with radiant cooling systems. The FH units have been designed for wall mounting installation while the GH series are suitable for false ceiling and ducted applications. All units are provided with air filter, stainless steel drip tray and built-in microprocessor control. The units are also provided, standard, with pre and post cooling coil to enhance the performances and to control the air supply temperature. FH and GH units, anyway, can operate even without pre and post cooling coils, this option could be very useful in middle seasons when it is necessary to dry but the air conditioning system is not in operation. All the units are fully assembled and wired in the factory, carefully evacuated and dried with after leak tests under pressure and they are charged with environmental friendly refrigerant gases. They are fully tested before shipment; the units are conform to European Directives and are individually marked with CE label and Conformity Declaration.

VERSIONS

- Version suitable for swimming pool installation: Supplied with painted frame and heat exchangers suitable for swimming pool
- WZ version: Units supplied with double condenser (the first is an air condenser, the second is a water one) and of a logic which allows the dehumidification with neutrum air or with cooled air.

ACCESSORIES

- Galvanized steel template (only FH)
- Wood return and supply grill (only FH)
- Remote mechanical hygrostat
- Remote mechanical hygrostat + thermostat (WZ versions only)

FH-GH

Mod.		FH25	FH25WZ
Moisture removed ⁽¹⁾	l/24h	20,1	20,1
Cooling capacity ⁽¹⁾	W	---	1250
Nominal input power ⁽¹⁾	W	340	340
Maximum input power ⁽²⁾	W	450	450
Nominal input current ⁽¹⁾	A	2,5	2,5
Maximum input current ⁽²⁾	A	2,8	2,8
Air flow	m ³ /h	250	250
Refrigerant		R134a	R134a
Cold water coils	l/h	150	---
	kPa	8	---
Condenser waterflow	l/h	---	150
	kPa	---	7,8
Sound pressure ⁽³⁾	dB(A)	35	35
Temperature operating range	°C	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99
Weight	Kg	45	38
Power supply	V/Ph/Hz	230/1~/50	

Mod.		GH25	GH25WZ	GH50	GH50WZ	GH100	GH100WZ	GH200	GH200WZ
Moisture removed ⁽¹⁾	l/24h	20,1	20,1	48,5	48,5	87,2	87,2	164	164
Cooling capacity ⁽¹⁾	W	---	1250	---	3500	---	6000	---	11300
Nominal input power ⁽¹⁾	W	340	340	700	700	1450	1450	2450	2450
Maximum input power ⁽²⁾	W	450	450	800	800	1600	1600	2950	2950
Nominal input current ⁽¹⁾	A	2,5	2,5	4,6	4,6	7	7	13,5	13,5
Maximum input current ⁽²⁾	A	2,8	2,8	4,9	4,9	8,8	8,8	15	15
Cold water coils	l/h	150	---	500	---	600	---	900	---
	kPa	8	---	17	---	32	---	48	---
Condenser waterflow	l/h	---	150	---	500	---	600	---	900
	kPa	---	7,8	---	42	---	39,5	---	64
Air flow	m ³ /h	250	250	600	600	1000	1000	1850	1850
Available static pressure (max. speed)	Pa	35	35	60	60	75	75	120	120
Refrigerant		R134a	R134a	R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	37	37	42	42	49	49	56	56
Temperature operating range	°C	15-35	15-35	15-35	15-35	15-35	15-35	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99	40-99	40-99	40-99	40-99	40-99	40-99
Weight	Kg	35	37	52	55	87	90	115	120
Power supply	V/Ph/Hz	230/1~/50							

¹⁾ Performances refer to the following conditions: Room temperature 26°C; relative humidity 65% with cold water coil water inlet temp. 15°C.

²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.

³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746, minimum fan speed.

FH-GH

FRAME

All units FH-GH series are made from hot-galvanised thick sheet metal, to ensure the best resistance against the corrosions. The frame is self-supporting with removable panels. The drip tray is present standard in all units and is made of plastic material for model 25 and in metal material for models 50-100-200.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R134a for the model 25 and R407C for the models 50-100-200. The refrigerant circuit includes: filter drier, capillary expansion device, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor (for model 25) is alternative or rotative type (for models 50-100-200), equipped with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers to reduce the noise.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe. In all units WZ besides these exchangers, there is a third stainless steel INOX AISI 316 plate exchanger used as condenser in cooling modality.

PRE AND POST WATER COOLING COILS

The pre and post cold water coils are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The pre-cooling coil is used to increase the dehumidification capacity of the unit, while the post-cooling coil is used to keep the outlet air temperature at the same inlet value. In WZ version only the pre cooled water coil is present.

FAN

The supply fan is centrifugal type, double inlet with forwards blades, dynamically and statically balanced and directly connected to a 3 speed fan motor.

AIR FILTER

For the model GH 25-50 it's supplied standard with the unit and it's built in nylon. It can be removed for differential disposal, class G2, according to EN 779:2002.

Regarding the model GH 100-GH 200 instead, it's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

MICROPROCESSOR

All units FH-GH are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit. Ready for the connection to the power and to the consensus control, The terminal board is also supplied with voltage free contacts for remote ON-OFF. The terminal block is also built with a clean contact to allow the operation of single-mode ventilation, while the second for the cooling version (WZ). By closing the first contact, only the fan is able to work, while the dehumidification is disabled.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination (only for GH100-100WZ and GH200-200WZ). Water temperature sensor, that signals to the microprocessor the eventual overcome of the hot water temperature set point in the pre and post water coils during operation. In this condition the compressor is disconnected while the fan always run and, when the water temperature returns within the operation limits, restarts the compressor. The water sensor stops the compressor when the water temperature is above 35°C. The eventual use of the dehumidifier as heating device during winter season requires an additional remote thermostat with seasonal change over (not supplied). In the all WZ version, it's also supplied a high pressure switch which disable the unit operation when the limit is overcome.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with ecologic refrigerant. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

FH-GH

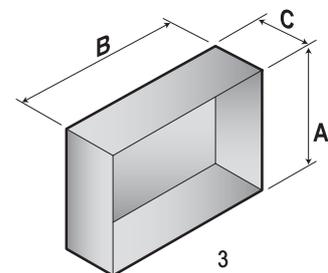
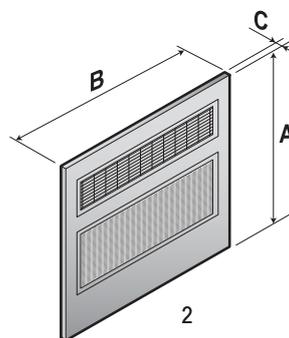
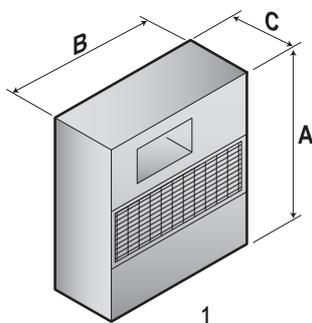
Mod.	Code	FH25	FH25WZ
Limit probe		●	●
High pressure switch		–	●
Galvanized steel template	CTFH	○	○
Wood return and supply grill	GRFH	○	○
Remote mechanical hygrostat	HYGR	○	–
Remote mechanical hygrostat + thermostat	HYGR	–	○
Painted frame + heat exchangers suitable for swimming pool	SWPK	○	○

● Standard, ○ Optional, – Not available.

Mod.	Codice	GH25	GH25WZ	GH50	GH50WZ	GH100	GH100WZ	GH200	GH200WZ
Limit probe		●	●	●	●	●	●	●	●
High pressure switch		–	●	–	●	–	●	–	●
Defrost thermostat		–	–	–	–	●	●	●	●
Remote mechanical hygrostat	HYGR	○	–	○	–	○	–	○	–
Painted frame + heat exchangers suitable for swimming pool	SWPK	○	○	○	○	○	○	○	○
Units supplied without pre and post cooling waters coils	PRPO	–	–	–	–	○	–	○	–
Remote mechanical hygrostat + thermostat	HYGR	–	○	–	○	–	○	–	○

● Standard, ○ Optional, – Not available.

FH

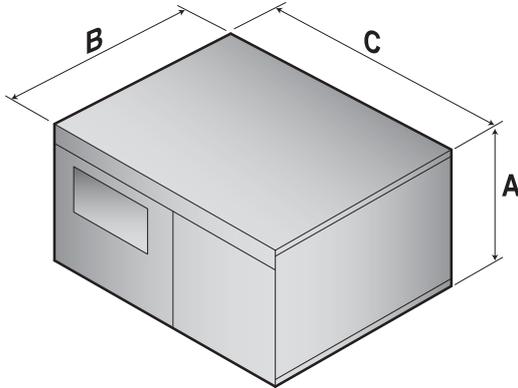


Mod.	A (mm)	B (mm)	C (mm)
1	680	545	221
2	750	660	20
3	703	605	228

FH-GH

GH

FH-GH



Mod.	A (mm)	B (mm)	C (mm)
25	250	580	580
50	350	580	580
100	398	750	795
200	398	890	930
25W	250	580	580
50W	350	580	580
100W	398	750	795
200W	398	890	930

REFRIGERANT CIRCUIT STANDARD VERSION

The functioning of the dehumidifier model FH-GH is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified. The air passes now through the condensing coil (5) where it's post heated (with a constant humidity) and in the post-cooling coil (6) where it's reported to the required conditions.

All the dehumidifiers model FH-GH can work without the help of the pre and post cooling coils. This function is very useful in case there is the request of dehumidification in middle-season or when the chiller is off. Obviously, if the unit works without the help of the cold water, the air in outlet will be hotter than the air in inlet.

REFRIGERANT CIRCUIT WZ VERSION

The operation of the dehumidifier model GH is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified. At this point there are two possible modalities:

Modality with neutrum air.

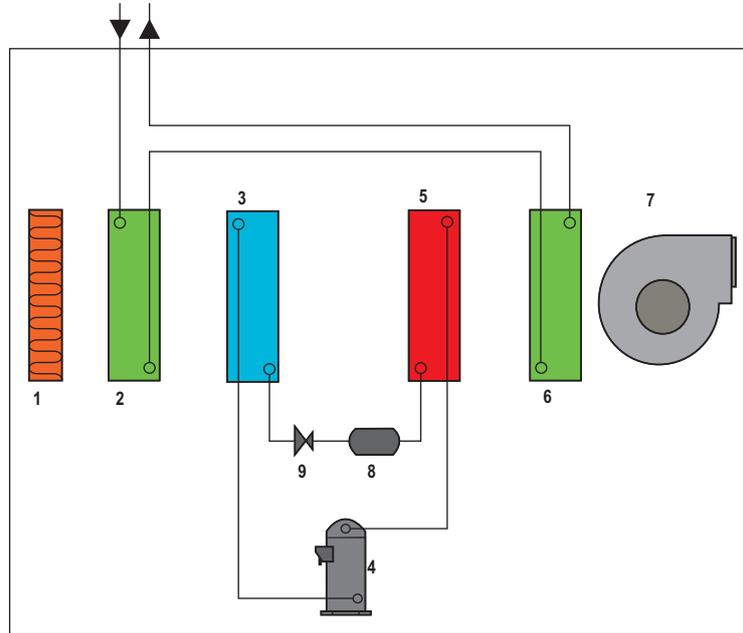
The air passes now through the condensing coil (5) which allows to condensate the 50% of the total gas, (the unit condensate the 50% on air with the heat exchanger (5) and the 50% in water with the heat exchanger (10)) then there is the post-heating so that to avoid to send air in the ambient in neutrum thermic conditions.

Modality with cooled air.

The unit condensates the 100% in water through the heat –exchanger (10). The air, then, go through the condenser (5) (disabled) where does not change its characteristics (temperature and humidity).

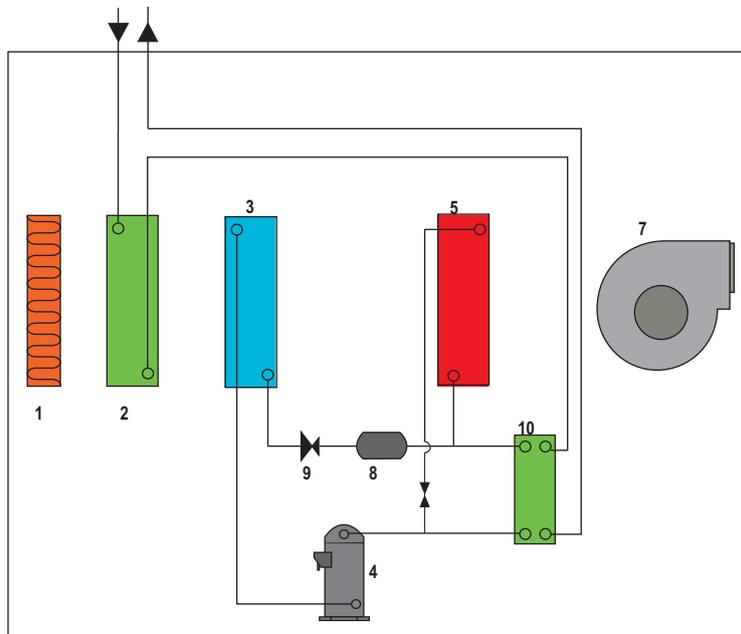
FH-GH

STANDARD VERSION



FH-GH

WZ VERSION



1	Air filter
2	Pre-cooling coil
3	Evaporator
4	Compressor
5	Condenser

6	Post-cooling coil
7	Fan
8	Dry filter
9	Expansion device
10	Condenser water

GHR

Dehumidifiers for radiant cooling systems with heat recovery



R134a

R407C

The units have been designed to dehumidify both in neutrum air, that is at the same temperature at which it's taken, and with cooled air, managing very small air flows and avoiding so the annoying typical air currents of the traditional air conditioning systems.

The dehumidifiers with heat recovery, series GHR, are the best ones for residential building or for small factories. The units can adapt to any kind of ambient since they are very silent and versatile.

VERSIONS

- Version suitable for swimming pool installation: Supplied with painted frame and heat exchangers suitable for swimming pool
- WZ version: Units supplied with double condenser (the first is an air condenser, the second is a water one) and of a logic which allows the dehumidification with neutrum air or with cooled air.

ACCESSORIES

- Remote mechanical hygrostat
- Remote mechanical hygrostat + thermostat (WZ versions only)

GHR

Mod.		GHR25	GHR25WZ	GHR50	GHR50WZ
Moisture removed ⁽¹⁾	l/24h	20,1	20,1	48,5	48,5
Cooling capacity ⁽¹⁾	W	---	1250	---	3500
Nominal input power ⁽¹⁾	W	340	340	700	700
Maximum input power ⁽²⁾	W	450	450	800	800
Nominal input current ⁽¹⁾	A	2,5	2,5	4,6	4,6
Maximum input current ⁽²⁾	A	2,8	2,8	4,9	4,9
Cold water coils	l/h	150	---	500	---
	kPa	8	---	17	---
Condenser waterflow	l/h	---	150	---	500
	kPa	---	7,8	---	22
Air flow	m ³ /h	250	250	600	600
Available static pressure (max. speed)	Pa	35	35	60	60
Refrigerant		R134a	R134a	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	39	39	44	44
Temperature operating range	°C	15-35	15-35	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99	40-99	40-99
Weight	Kg	35	37	52	55
Power supply	V/Ph/Hz	230/1~/50			

Mod.		GHR100	GHR100WZ	GHR100	GHR100WZ
Moisture removed ⁽¹⁾	l/24h	87,2	87,2	164	164
Cooling capacity ⁽¹⁾	W	---	6000	---	11300
Nominal input power ⁽¹⁾	W	1450	1450	2450	2450
Maximum input power ⁽²⁾	W	1600	1600	2950	2950
Nominal input current ⁽¹⁾	A	7	7	13,5	13,5
Maximum input current ⁽²⁾	A	8,8	8,8	15	15
Cold water coils	l/h	600	---	900	---
	kPa	32	---	48	---
Condenser waterflow	l/h	---	600	---	900
	kPa	---	39,5	---	64
Air flow	m ³ /h	1000	1000	1850	1850
Available static pressure (max. speed)	Pa	75	75	120	120
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	51	51	58	58
Temperature operating range	°C	15-35	15-35	15-35	15-35
Campo di lavoro umidità	%	40-99	40-99	40-99	40-99
Weight	Kg	87	90	115	120
Power supply	V/Ph/Hz	230/1~/50			

¹⁾ Performances refer to the following conditions: Room temperature 26°C; relative humidity 65% with cold water coil water inlet temp. 15°C.

²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.

³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746, minimum fan speed.

GHR

FRAME

All units GHR series are made from hot-galvanised thick sheet metal, to ensure the best resistance against the corrosions. The frame is self-supporting with removable panels. The drip tray is present standard in all units and is made of plastic material for model 25 and in metal material for models 50-100-200.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R134a for the model 25 and R407C for the models 50-100-200. The refrigerant circuit includes: filter drier, capillary expansion device, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor (for model 25) is alternative or rotative type (for models 50-100-200), equipped with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers to reduce the noise.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe. In all units WZ besides these exchangers, there is a third stainless steel INOX AISI 316 plate exchanger used as condenser in cooling modality.

PRE AND POST WATER COOLING COILS

The pre and post cold water coils are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The pre-cooling coil is used to increase the dehumidification capacity of the unit, while the post-cooling coil is used to keep the outlet air temperature at the same inlet value. In WZ version only the pre cooled water coil is present.

SUPPLY FAN

The supply fan is centrifugal type, double inlet with forwards blades, dynamically and statically balanced and directly connected to a 3 speed fan motor.

RECOVERY

Aluminium crossed flow plate recovery, with efficiency > of 60%, supplied with stainless steel condensate drip tray.

RECOVERY FAN

The recovery fan is centrifugal type, double inlet with forwards blades, dynamically and statically balanced and directly connected to a 3 speed fan motor.

AIR FILTER

For the model GHR 25-50 it's supplied standard with the unit and it's built in nylon. It can be removed for differential disposal, class G2, according to EN 779:2002. Regarding the model GHR 100-GHR 200 instead, it's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

MICROPROCESSOR

All units GHR are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit. Ready for the connection to the power and to the consensus control, The terminal board is also supplied with voltage free contacts for remote ON-OFF. The terminal block is also built with a clean contact to allow the operation of single-mode ventilation, while the second for the cooling version (WZ). By closing the first contact, only the fan is able to work, while the dehumidification is disabled.

GHR

REFRIGERANT CIRCUIT STANDARD VERSION

The functioning of the dehumidifier model GHR is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified. The air passes now through the condensing coil (5) where it's post heated (with a constant humidity) and in the post-cooling coil (6) where it's reported to the required conditions.

All the dehumidifiers model GHR can work without the help of the pre and post cooling coils. This function is very useful in case there is the request of dehumidification in middle-season or when the chiller is off. Obviously, if the unit works without the help of the cold water, the air in outlet will be hot-

ter than the air in inlet.

REFRIGERANT CIRCUIT WZ VERSION

The operation of the dehumidifier model GH is as follows: the fan takes the air from the ambient (7) and it's made go through the filter (1) and the pre-cooling water coil (2) where it's cooled and brought to a condition closed to saturation. Now it passes through the evaporating coil (3) where it's fatherly cooled and dehumidified.

At this point there are two possible modalities:

Dehumidification mode.

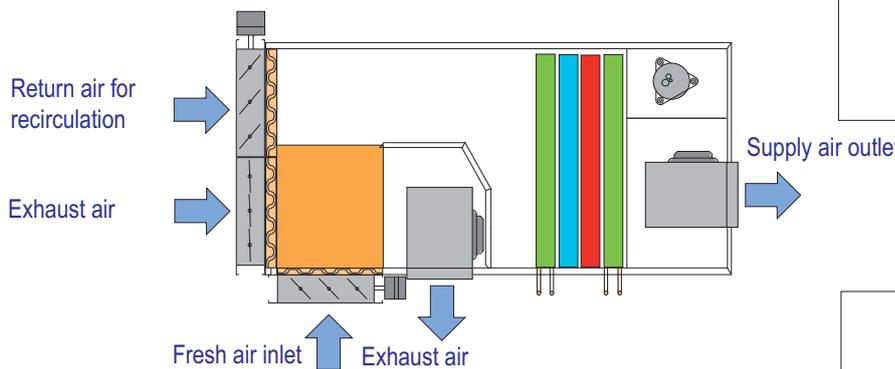
The air passes now through the condensing coil (5) which allows to condensate the 50% of the total gas, (the unit condensate the 50% on air with the heat -exchanger (5) and the 50% in water with the heat exchanger (10)) then there is the post-heating

so that to avoid to send air in the ambient in neutrum thermic conditions.

Dehumidification with cooling mode.

The unit condensates the 100% in water through the heat -exchanger (10). The air, then, go through the condenser (5) (disabled) where does not change its characteristics (temperature and humidity).

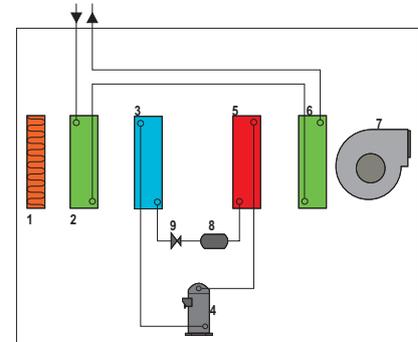
Main Components



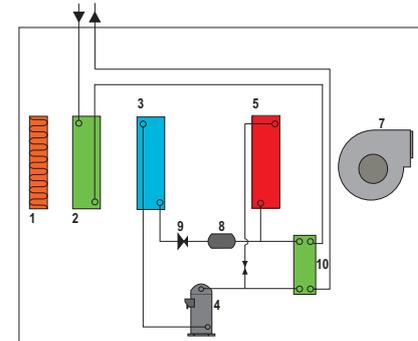
1	Air filter
2	Pre-cooling coil
3	Evaporator
4	Compressor
5	Condenser

6	Post-cooling coil
7	Fan
8	Dry filter
9	Expansion device
10	Water condenser

Refrigerant circuit GHR



Refrigerant circuit GHRWZ



GHR

GHR

RECIRCULATION MODE

Setting this function, the unit will make the ambient air re-circle only through the dehumidifier "part".

This setting allows the following functions:

GHR VERSION

Summer function

Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).

Dehumidification with water on the pre-post treatment coils (dehumidified and neutrum air).

Winter operation

Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).

Dehumidification + integration in heating with hot water on the post-coil (air dehu-

midified and post-heated in the post-coil supplied with hot water).

Only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water).

GHR/WZ VERSION

Summer function

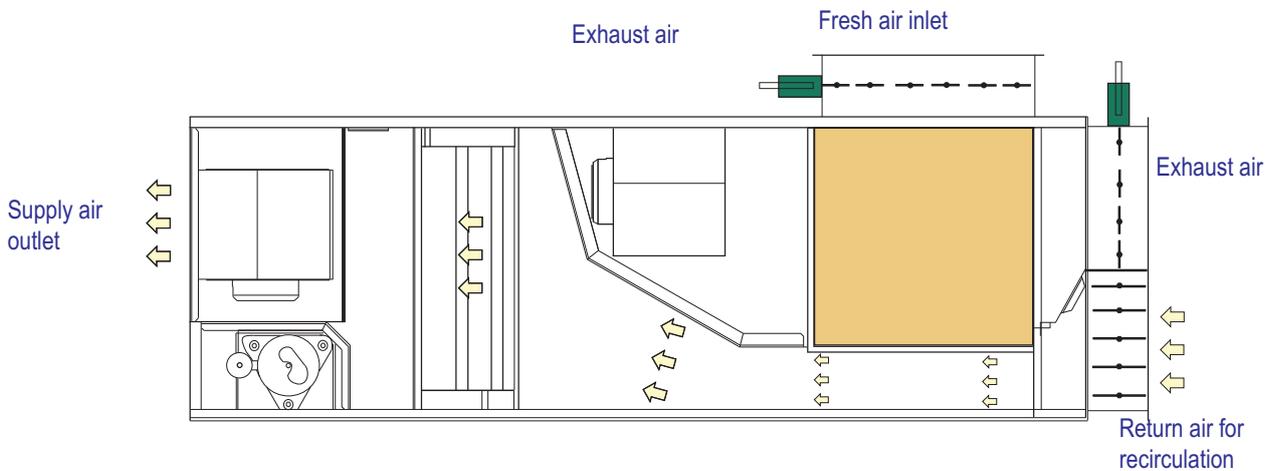
Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air).

Dehumidification with 100% of the condensation in water.

Winter operation

Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air).

Dehumidification + with only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water). Integration in heating.



FRESH AIR MODE

By setting this function, the unit will renew the room air with the ambient air through the heat recovery.

The possible functions are:

GHR VERSION

Summer function

Renew+ Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat).

Renew + Dehumidification with water on the pre-post treatment coils (dehumidified and neutrum air).

Winter operation

Renew - Dehumidification without water on the pre-post treatment coils (air dehumidified and heated by the condensing heat)

Renew-Dehumidification+integration in heating with hot water on the post-coil (air dehumidified and post-heated in the post-coil supplied with hot water).

Dehumidification + with only air heating (by closing the fan contact and supplying the hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water).

GHR/WZ VERSION

Summer function

Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air).

Renew + Dehumidification with 100% of the condensation in water (dehumidified and cooled air).

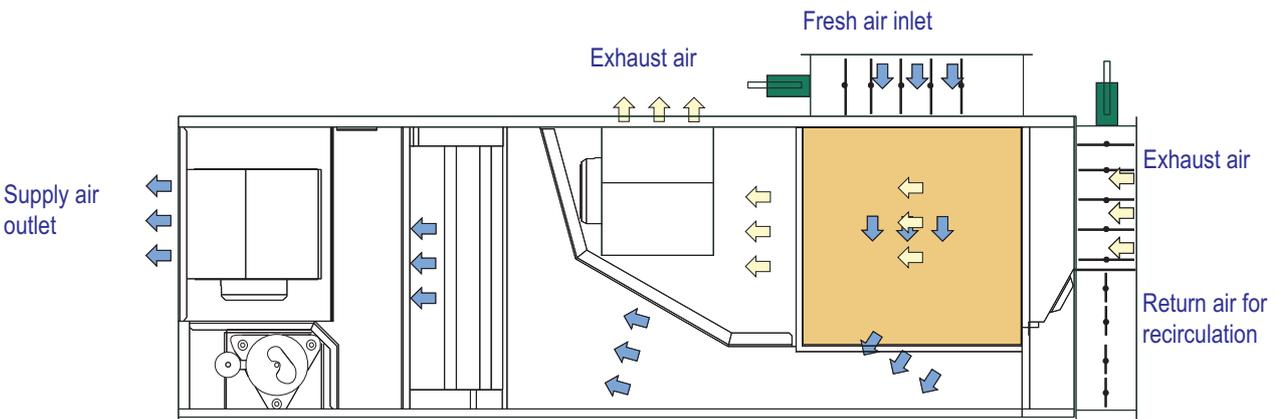
GHR

Winter operation

Renew + Dehumidification with double condensation (a part in the air and part in the water through the plate condenser, dehumidified and neutrum air.

Dehumidification + with only air heating (by closing the fan contact and supplying the

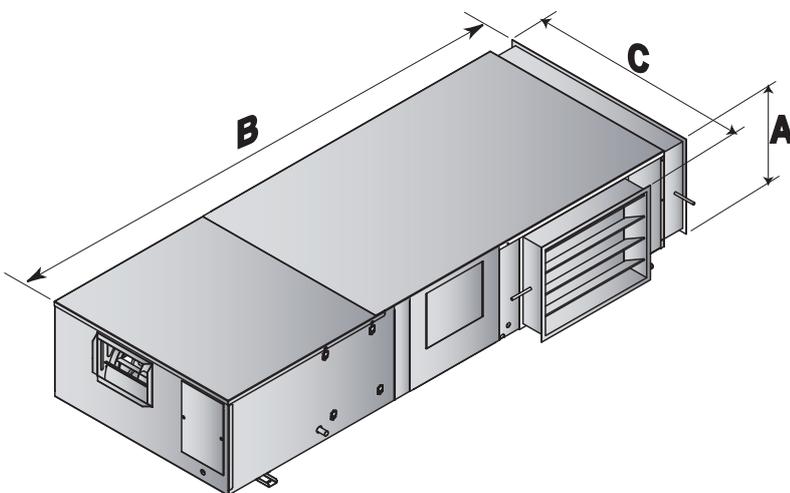
hot water coils, the unit will make the re-circle and the heating of the air through the coils supplied with hot water). Integration in heating.



Mod.	GHR25	GHR25WZ	GHR50	GHR50WZ
Fresh air + recirculation dampers, supplied with on-off servomotor	●	●	●	●
Remote mechanical hygrostat + thermostat	-	○	-	○

Mod.	GHR100	GHR100WZ	GHR200	GHR200WZ
Fresh air + recirculation dampers, supplied with on-off servomotor	●	●	●	●
Remote mechanical hygrostat + thermostat	-	○	-	○

● Standard, ○ Optional, - Not Available.



Mod.	A (mm)	B (mm)	C (mm)
25	253	1546	698
50	353	1821	700
100	394	1991	847
200	469	2444	1094
25WZ	253	1546	698
50WZ	353	1821	700
100WZ	394	1991	847
200WZ	469	2444	1094

CS

Standard Dehumidifiers



R134a

R407C

CS high performance dehumidifiers, suitable for heavy duties like building industry, are equipped with galvanised steel frame painted with epossidic painture, trolley version for easy motion. All the units are supplied with washable filter, drip tray connected, standard, to a 10lt. tank or with possibility of direct condensate discharge. The units are supplied standard with hot gas defrost for low temperature operation. CS units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs. All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R134a (CS38) and R407C (Model CS65).

VERSIONS

- All the models are with hot gas defrost.

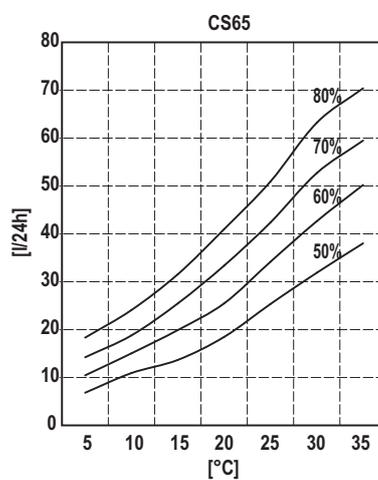
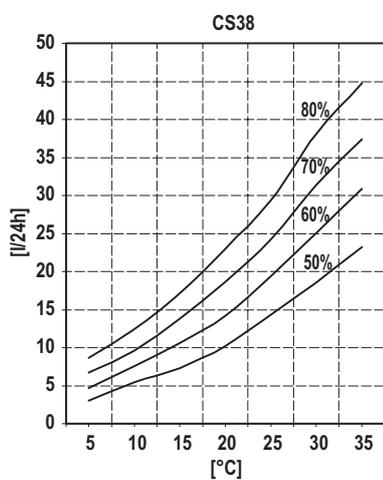
ACCESSORIES

- Integrated mechanical hygostat
- Condensate discharge pump

CS

CS

Mod.		CS38	CS65
Moisture removed ⁽¹⁾	l/24h	38	63
Input power ⁽¹⁾	W	740	920
Input current ⁽¹⁾	A	3,6	4,6
Air flow	m ³ /h	600	870
Refrigerant		R134a	R407C
Sound pressure ⁽²⁾	dB(A)	49	49
Temperature operating range	°C	1-35	1-35
Humidity operating range	%	50-99	50-99
Weight	Kg	40	45
Power supply	V/Ph/Hz	230/1~/50	



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

CS

FRAME

All CS units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all CS units and is in plastic and has a capacity of 10lt. The colour of the units is RAL 7035 and RAL 5010.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R407C for model CS65 and R134a for model CS38. The refrigerant circuit includes:

filter drier, capillary, Schrader valves for maintenance and control, solenoid valve, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is rotative type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

SUPPLY FAN

The fans are axial type with aluminium aerofoil blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. The motors are directly driven with an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

CONDENSATE DRIP TRAY

All CS units are supplied with a 10Lt. condensate drip tray. The condensate drip tray is made with plastic material and is replaced when the condensate discharge pump is required.

MICROPROCESSOR

All CS units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the panel of the board itself. The protection class of the motors is IP 55.

In all units is installed: compressor contact.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination.

TEST

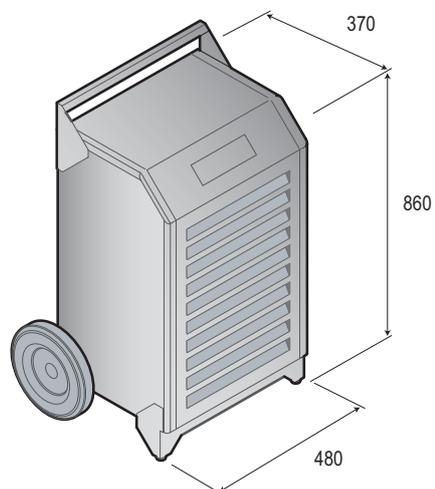
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C for model CS65 and R134a for model CS38. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

CS

Mod.	Codice	CS38	CS65
Hot gas derfost		●	●
10 lt. drip tray		●	●
Built in mechanical hygrostat	HYGR	○	○
Condensate discharge pump	POSC	○	○

● Standard, ○ Optional, – Not available.

CS



DH

Standard Dehumidifiers



DH dehumidifiers series are high-performances units especially designed for industrial or commercial purposes where humidity level should be controlled or water vapour condensation should be prevented. These units are particularly indicated for archives, ironing rooms, bookstores, cheese factories, underground rooms, cellars and industrial sites where high humidity level is present. This series comprises 3 basic models which cover a capacity range from 75 to 124 l/24h. DH units are designed for easy maintenance and service, each part being readily accessible.

VERSIONS

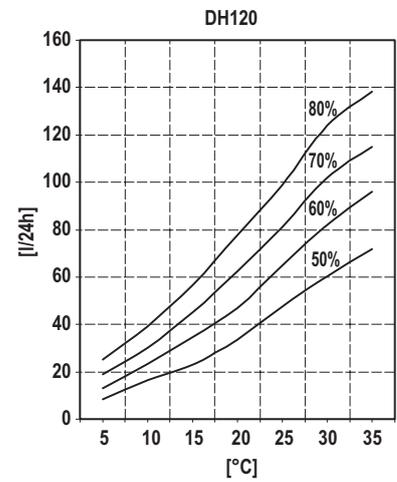
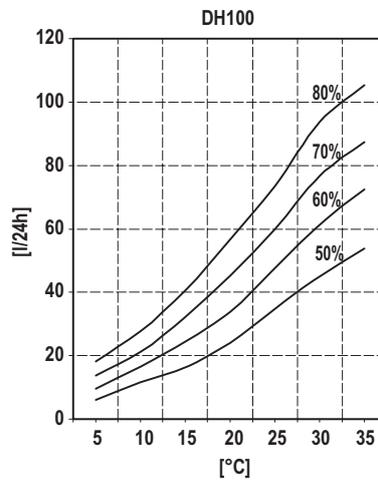
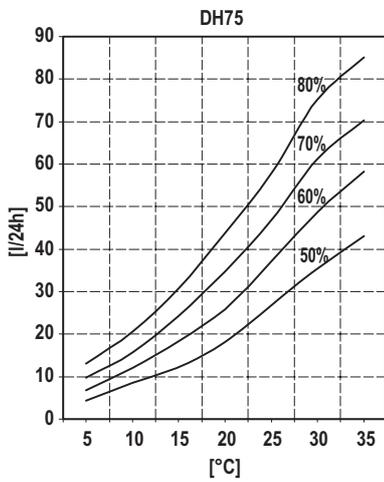
- **Hot gas defrost version (s):** Beside the components of the standard version, the unit is supplied with a solenoid valves set for the hot gas injection used to defrost the evaporator in case of severe working conditions. The hot gas injection allows a faster defrost time and this permits to use this unit in areas with lower temperatures (down to 1°C) compared to the standard version

ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Available static pressure 200Pa
- Floor trolley version
- Stainless steel frame

DH

Mod.		DH75	DH75S	DH100	DH100S	DH120	DH120S
Moisture removed ⁽¹⁾	l/24h	75,1	75,1	93,7	93,7	124,0	124,0
Input power ⁽¹⁾	kW	1,3	1,3	1,6	1,6	1,8	1,8
Input current ⁽¹⁾	A	6,4	6,4	7,9	7,9	8,7	8,7
Air flow	m ³ /h	1000	1000	1000	1000	1200	1200
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C
Available static pressure	Pa	50	50	50	50	50	50
Sound Pressure ⁽²⁾	dB(A)	56	56	58	58	59	59
Temperature operating range	°C	5-35	5-35	5-35	5-35	5-35	5-35
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	68	68	75	75	79	79
Power supply	V/Ph/Hz	230/1~/50					



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

DH

FRAME

All DH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all DH units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: filter drier, thermal expansion valve with external equalizer, Schrader valves form maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is rotative type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory).

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers. The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated

thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

MICROPROCESSOR

All DH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible through the accessories panel. The following components are standard installed: compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

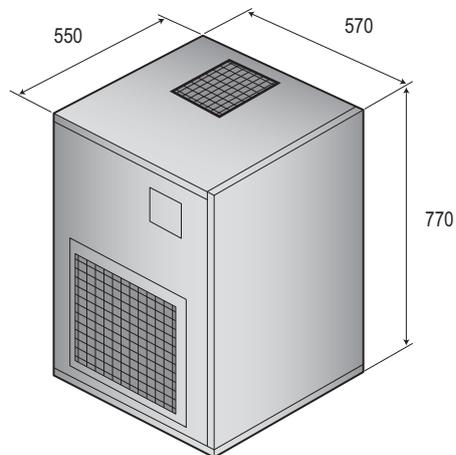
TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

DH

Mod.	DH75	DH75S	DH100	DH100S	DH120	DH120S
Integrated mechanical hygrostat	○	○	○	○	○	○
Remote mechanical hygrostat	○	○	○	○	○	○
Available static pressure 200 Pa	○	○	○	○	○	○
Floor trolley version	○	○	○	○	○	○
Stainless steel frame	○	○	○	○	○	○

● Standard, ○ Optional, – Not available.



DR

Standard Dehumidifiers



DR dehumidifiers series are high-performances units especially designed for industrial or commercial purposes where humidity level should be controlled or water vapour condensation should be prevented. These units are particularly indicated for archives, ironing rooms, bookstores, cheese factories, underground rooms, cellars and industrial sites where high humidity level is present. This series comprises 3 basic models which cover a capacity range from 75 to 124 l/24h. DR units are designed for easy maintenance and service, each part being readily accessible, moreover the specific configuration of the unit allow the air discharge on 4 different directions.

VERSIONS

- Standard version available in 3 sizes.

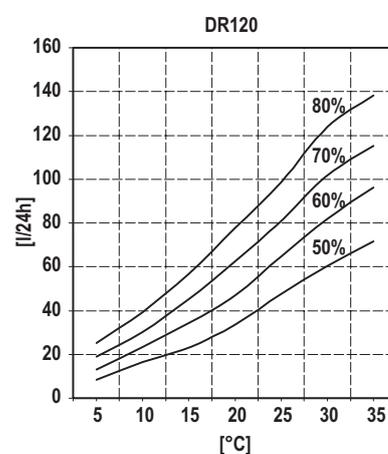
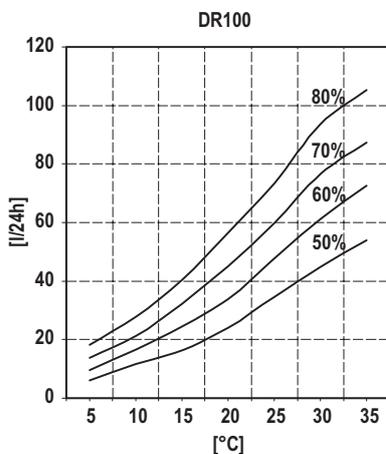
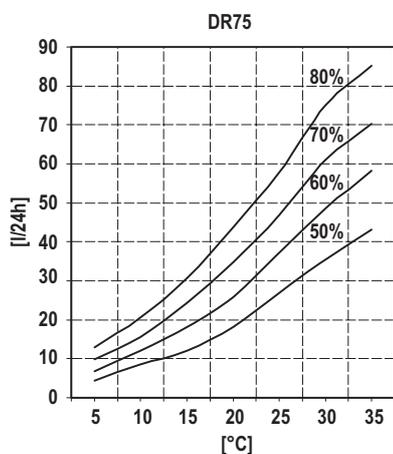
ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat

DR

DR

Mod.		DR75	DR100	DR120
Moisture removed ⁽¹⁾	l/24h	75,1	93,7	124,0
Input power ⁽¹⁾	kW	1,3	1,6	1,8
Input current ⁽¹⁾	A	6,4	7,9	8,7
Air flow	m ³ /h	1000	1000	1200
Refrigerant		R407C	R407C	R407C
Available static pressure	Pa	100	50	50
Sound Pressure ⁽²⁾	dB(A)	56	58	59
Temperature operating range	°C	5-35	5-35	5-35
Humidity operating range	%	50-99	50-99	50-99
Weight	Kg	64	71	75
Power supply	V/Ph/Hz	230/1~/50		



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

DR

FRAME

All DR units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all DR units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is rotative type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory).

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers. The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated

thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002

MICROPROCESSOR

All DR units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible through the accessories panel. The following components are standard installed: compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection

TEST

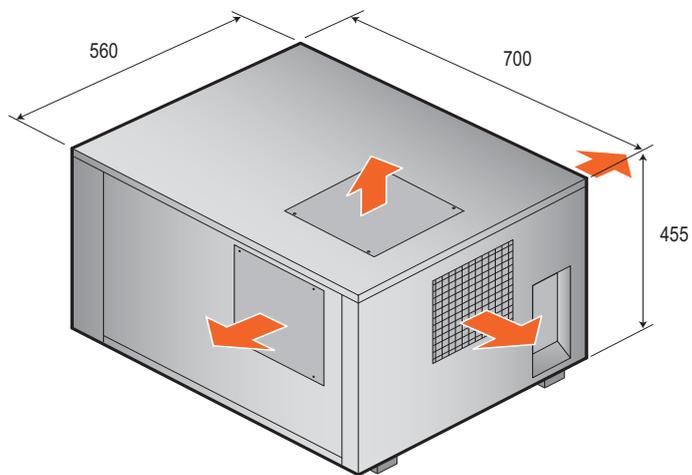
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

DR

Mod.	DR75	DR100	DR120
Integrated mechanical hygrostat	○	○	○
Remote mechanical hygrostat	○	○	○

● Standard, ○ Optional, – Not available.

DR



EH-EHZ

Standard dehumidifiers



EH dehumidifiers series are high-performances units especially designed for industrial or commercial purposes where humidity level should be controlled or water vapor condensation should be prevented. These units are particularly indicated for archives, ironing rooms, bookstores, cheese factories, underground rooms, cellars and industrial sites where high humidity level is present. This series comprises three basic models which cover a capacity range from 128 to 194 l/24h. EH units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

VERSIONS

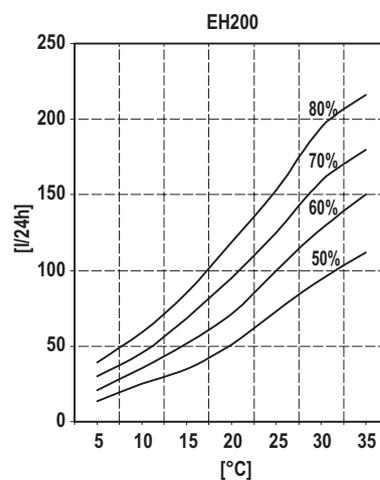
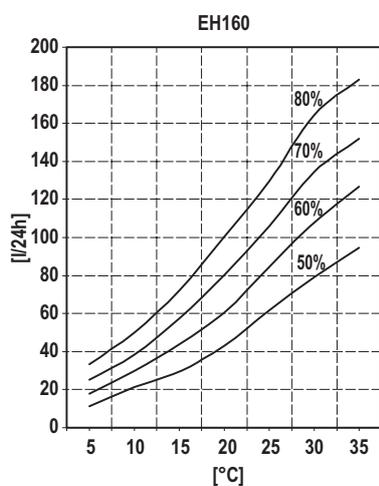
- Hot gas defrost version (s): Beside the components of the standard version, the unit is supplied with a solenoid valves set for the hot gas injection used to defrost the evaporator in case of severe working conditions. The hot gas injection allows a faster defrost time and this permits to use this unit in areas with lower temperatures (down to 1°C) compared to the standard version.
- Version with temperature control EHZ: These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: Dehumidification mode: the internal condenser is activated; the unit dehumidifies and heats up the room temperature; Cooling mode: the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Available static pressure 200 Pa
- Floor trolley version
- Stainless steel frame
- Air filter with frame for ducted installation

EH-EHZ

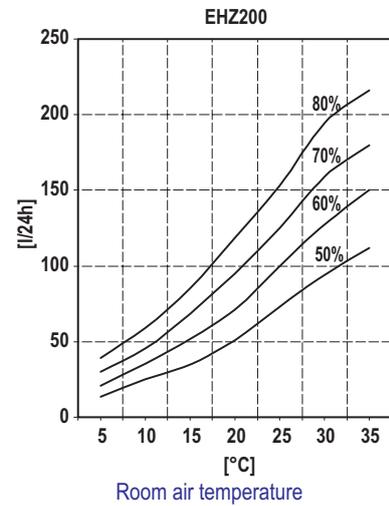
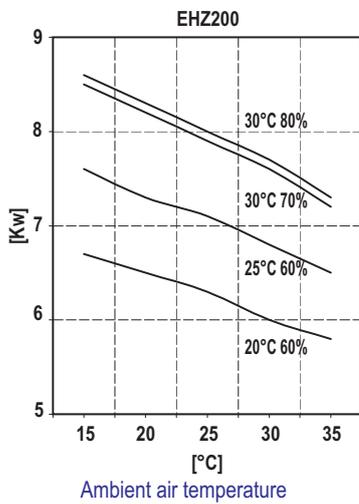
Mod.		EH160	EH160S	EH200	EH200S
Moisture removed ⁽¹⁾	l/24h	164,3	164,3	194,1	194,1
Nominal input power ⁽¹⁾	kW	2,55	2,55	2,95	2,95
Max input power ⁽²⁾	kW	2,85	2,85	3,25	3,25
Nominal input current ⁽¹⁾	A	5,9	5,9	7,6	7,6
Max input current ⁽²⁾	A	6,4	6,4	8,1	8,1
Air flow	m ³ /h	1400	1400	1900	1900
Available static pressure	Pa	50	50	50	50
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	61	61	62	62
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99	50-99	50-99
Weight	Kg	102	102	108	108
Power supply	V/Ph/Hz	400/3~+N/50			



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.
⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
⁶⁾ S versions with hot gas defrost only.

EH-EHZ

Mod.		EHZ200	EHZ200S
Moisture removed ⁽¹⁾	l/24h	194,1	194,1
Input power ⁽¹⁾	kW	2,7	2,7
Input current ⁽¹⁾	A	9,2	9,2
Cooling capacity ⁽⁴⁾	kW	9,1	9,1
Input power ⁽⁴⁾	kW	2,6	2,6
Maximum input power ⁽⁵⁾	kW	3,6	3,6
Maximum input current ⁽⁵⁾	A	9,7	9,7
Air flow	m ³ /h	1900	1900
Available static pressure	Pa	50	50
Refrigerant		R407C	R407C
Sound pressure ⁽³⁾	dB(A)	62	62
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99
Weight	Kg	108	108
Power supply	V/Ph/Hz	400/3~+N/50	



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746
⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
⁶⁾ S versions with hot gas defrost only.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the

charge lacks and reduce the quantity of refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

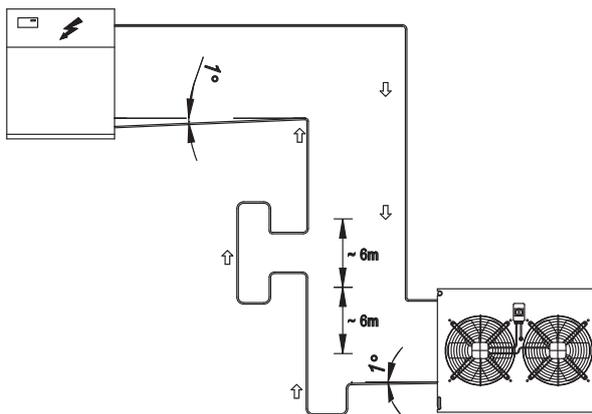
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

Dehumidifier higher than the condenser

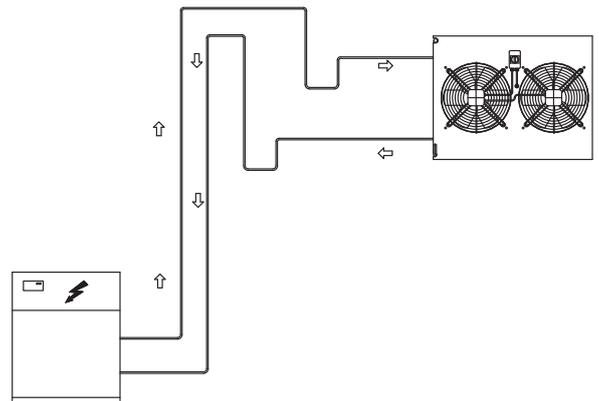
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version EH200						
Distance [m]	10		20		30	
Mod.	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
200	12,7	7,94	12,7	7,94	12,7	7,94

Liquid line refrigerant charge			
Liquid line diameter	Refrigerant charge g/m	Liquid line diameter	Refrigerant charge g/m
7,94 (mm)	30	---	---

Cooling capacity correction factors				
Mod.	Refr. Line = 0 (m)	Refr. Line = 10 (m)	Refr. Line 20 (m)	Refr. Line 30 (m)
EH200	1	0,98	0,96	0,95

EH-EHZ

FRAME

All EH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all EH units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All EH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all EH units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

REMOTE CONDENSER

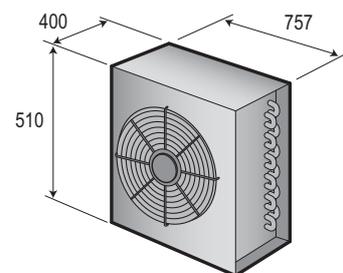
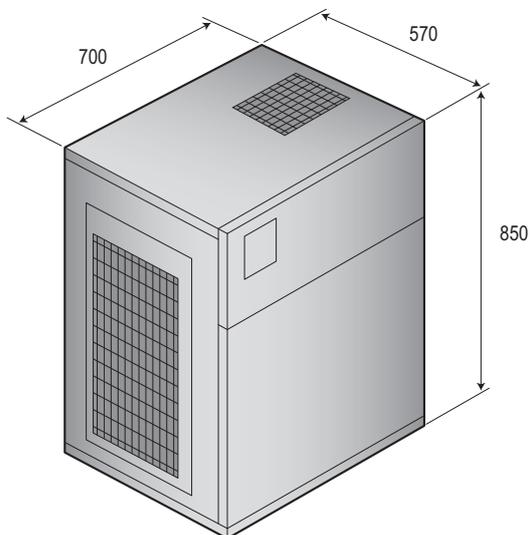
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

EH-EHZ

EH-EHZ

Mod.	EH160	EH200	EHZ160	EHZ200
Integrated mechanical hygrostat	○	○	-	-
Remote mechanical hygrostat	○	○	-	-
Remote mechanical hygrastat + thermostat	-	-	○	○
Available static pressure 200 Pa	○	○	○	○
Floor trolley version	○	○	-	-
Stainless steel frame	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○

● Standard, ○ Optional, – Not available.



ITM-ITMZ

Standard dehumidifiers



ITM dehumidifiers series are high-performances units especially designed for industrial or commercial purposes where humidity level should be controlled or water vapour condensation should be prevented. These units are particularly indicated for archives, ironing rooms, bookstores, cheese factories, underground rooms, cellars and industrial sites where high humidity level is present. This series comprises 2 basic models which cover a capacity range from 330 to 415 l/24h. ITM units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

VERSIONS

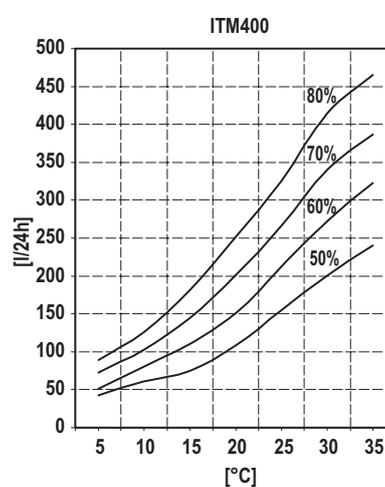
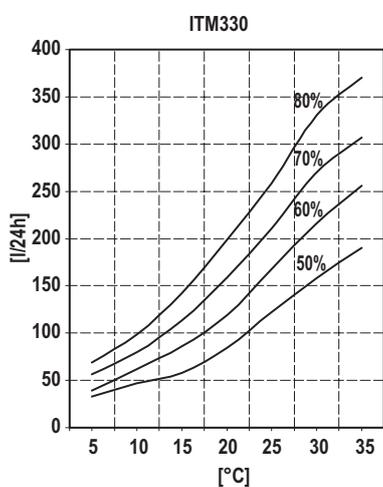
- Hot gas defrost version (s): Beside the components of the standard version, the unit is supplied with a solenoid valves set for the hot gas injection used to defrost the evaporator in case of severe working conditions. The hot gas injection allows a faster defrost time and this permits to use this unit in areas with lower temperatures (down to 1°C) compared to the standard version.
- Version with temperature control ITMZ: These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: Dehumidification mode: the internal condenser is activated; the unit dehumidifies and heats up the room temperature; Cooling mode: the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Available static pressure 200 Pa
- Floor trolley version
- Stainless steel frame
- Air filter with frame for ducted installation

ITM-ITMZ

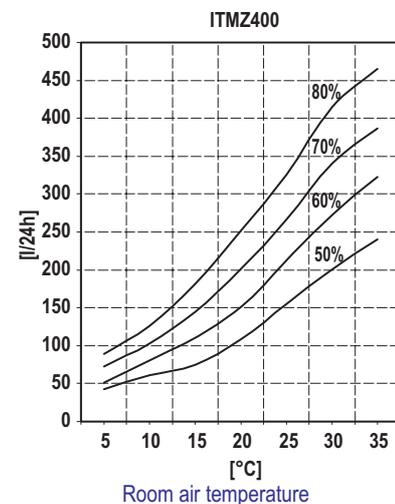
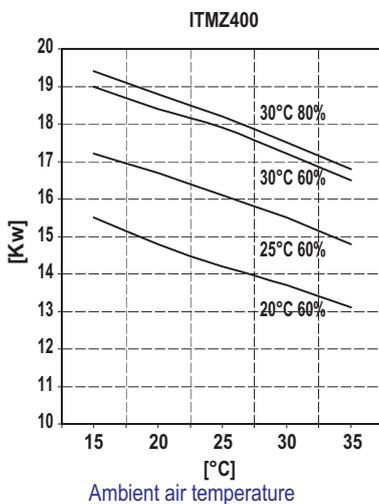
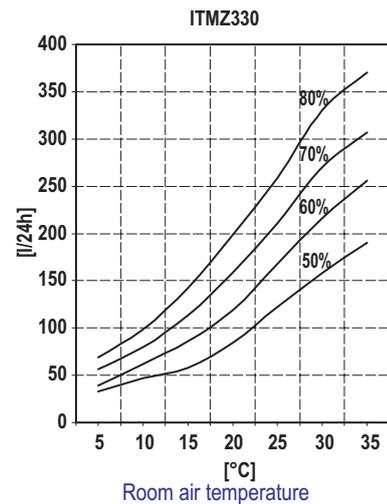
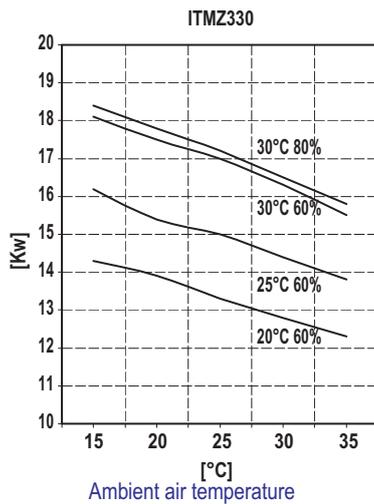
Mod.		ITM330	ITM330S	ITM400	ITM400S
Moisture removed ⁽¹⁾	l/24h	329,9	414,8	414,8	414,8
Nominal input power ⁽¹⁾	kW	5,3	6,6	6,6	6,6
Max input power ⁽²⁾	kW	5,8	7,3	7,3	7,3
Nominal input current ⁽¹⁾	A	17	18,5	18,5	18,5
Max input current ⁽²⁾	A	19,5	25	25	25
Air flow	m ³ /h	3800	4000	4000	4000
Available static pressure	Pa	50	50	50	50
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	66	68	68	68
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99	50-99	50-99
Weight	Kg	175	205	205	205
Power supply	V/Ph/Hz	400/3~+N/50			



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746
⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
⁶⁾ S versions with hot gas defrost only.

ITM-ITMZ

Mod.		ITMZ330	ITMZ330S	ITMZ400	ITMZ400S
Moisture removed ⁽¹⁾	l/24h	329,9	329,9	414,8	414,8
Input power ⁽¹⁾	kW	5,9	5,9	6,6	6,6
Input current ⁽¹⁾	A	18,8	18,8	20	20
Cooling capacity ⁽⁴⁾	kW	15,5	15,5	19,4	19,4
Input power ⁽⁴⁾	kW	5,8	5,8	6,5	6,5
Maximum input power ⁽⁵⁾	kW	6	6	7,6	7,6
Maximum input current ⁽⁵⁾	A	21	21	26,6	26,6
Air flow	m ³ /h	3800	3800	4000	4000
Available static pressure	Pa	50	50	50	50
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	66	66	68	68
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99	50-99	50-99
Weight	Kg	175	175	205	205
Power supply	V/Ph/Hz	400/3~+N/50			



- ¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
- ²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
- ³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746
- ⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
- ⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
- ⁶⁾ S versions with hot gas defrost only.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the

charge lacks and reduce the quantity of refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

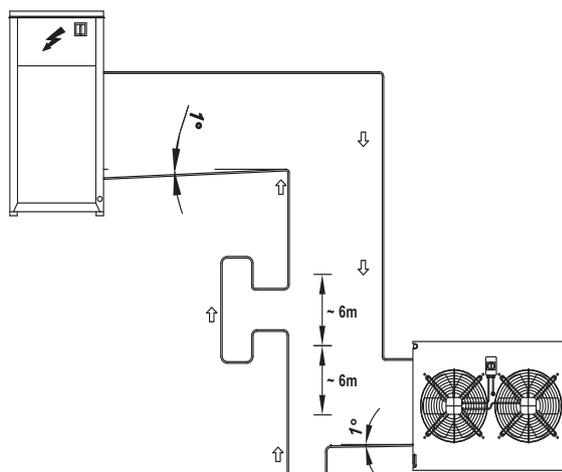
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

Dehumidifier higher than the condenser

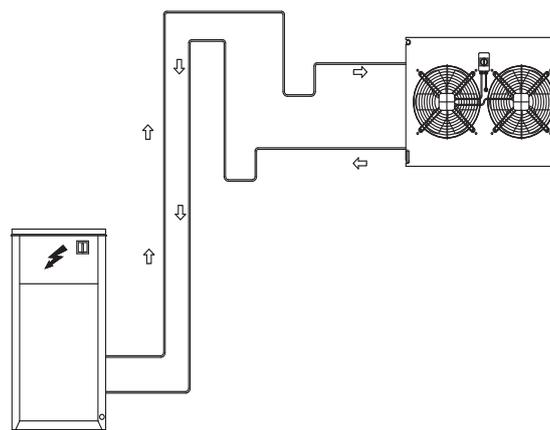
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version ITMZ

Distance (m)	10		20		30		
	Mod.	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
330		15,8	7,94	15,8	7,94	15,8	7,94
400		15,8	7,94	18	9,52	18	9,52

Liquid line refrigerant charge

Liquid line diameter	Refrigerant charge g/m	Liquid line diameter	Refrigerant charge g/m
7,94 (mm)	30	9,52	50

Cooling capacity correction factors

Mod.	Refr. Line 0 (m)	Refr. Line 10 (m)	Refr. Line 20 (m)	Refr. Line 30 (m)
ITMZ	1	0,98	0,96	0,95

ITM-ITMZ

FRAME

All ITM units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all ITM units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All ITM units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP55. In all ITM units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

REMOTE CONDENSER

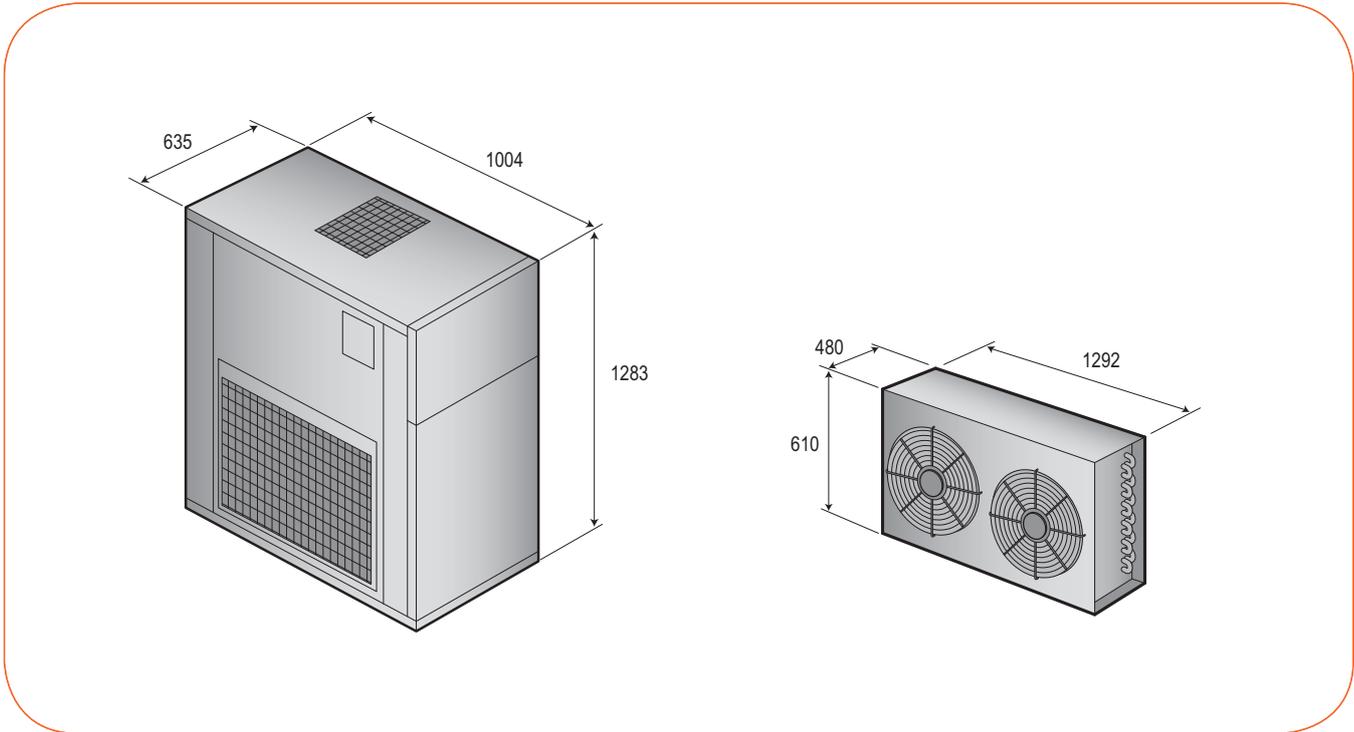
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

ITM-ITMZ

ITM-ITMZ

Mod.	ITM330	ITM400	ITMZ330	ITMZ400
Integrated mechanical hygrostat	○	○	-	-
Remoto mechanical hygrostat	○	○	-	-
Remoto mechanical hygrostat + thermostat	-	-	○	○
Available static pressure 200 Pa	○	○	○	○
Floor trolley version	○	○	-	-
Stainless steel frame	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○

● Standard, ○ Optional, - Not available.



FL-FLZ

Standard dehumidifiers



FL dehumidifiers series are high-performances units especially designed for industrial or commercial purposes where humidity level should be controlled or water vapour condensation should be prevented. These units are particularly indicated for archives, ironing rooms, bookstores, cheese factories, underground rooms, cellars and industrial sites where high humidity level is present. This series comprises 3 basic models which cover a capacity range from 564 to 940 l/24h. FL units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

VERSIONS

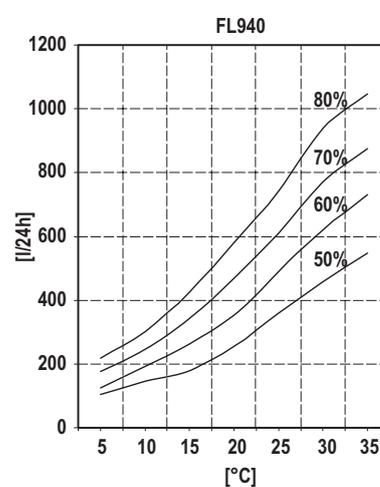
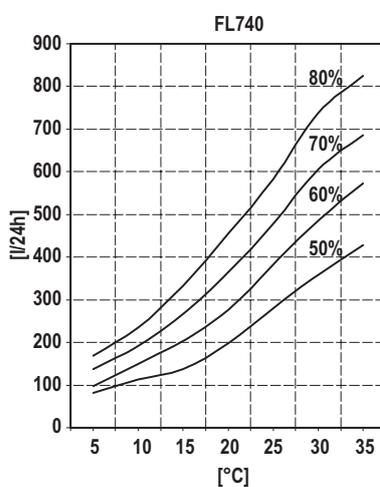
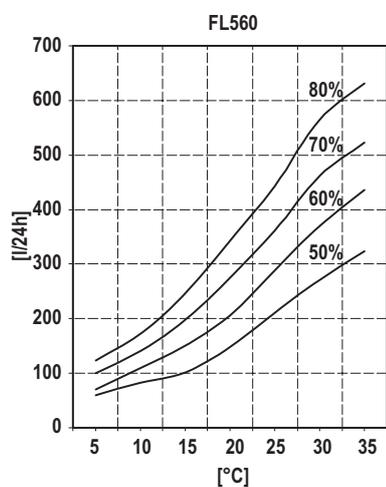
- Hot gas defrost version (s): Beside the components of the standard version, the unit is supplied with a solenoid valves set for the hot gas injection used to defrost the evaporator in case of severe working conditions. The hot gas injection allows a faster defrost time and this permits to use this unit in areas with lower temperatures (down to 1°C) compared to the standard version.
- Version with temperature control FLZ: These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: Dehumidification mode: the internal condenser is activated; the unit dehumidifies and heats up the room temperature; Cooling mode: the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Available static pressure 200 Pa
- Floor trolley version
- Stainless steel frame
- Air filter with frame for ducted installation

FL-FLZ

Mod.		FL560	FL560S	FL740	FL740S	FL940	FL940S
Moisture removed ⁽¹⁾	l/24h	564,1	564,1	738,5	738,5	937,3	937,3
Nominal input power ⁽¹⁾	kW	8,7	8,7	11,3	738,5	14,9	14,9
Max input power ⁽²⁾	kW	9,5	9,5	12,4	12,4	16,4	16,4
Nominal input current ⁽¹⁾	A	15,5	15,5	18,7	18,7	24,7	24,7
Max input current ⁽²⁾	A	17	17	20,5	20,5	27,4	27,4
Air flow	m ³ /h	5150	5150	6850	6850	8200	8200
Available static pressure	Pa	50	50	50	50	50	50
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	72	72	73	73	74	74
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	390	390	412	412	439	439
Power supply	V/Ph/Hz	400/3~+N/50					

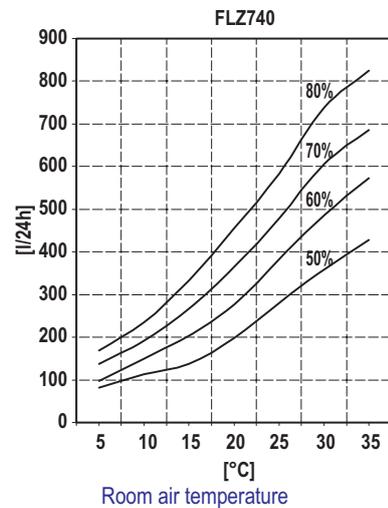
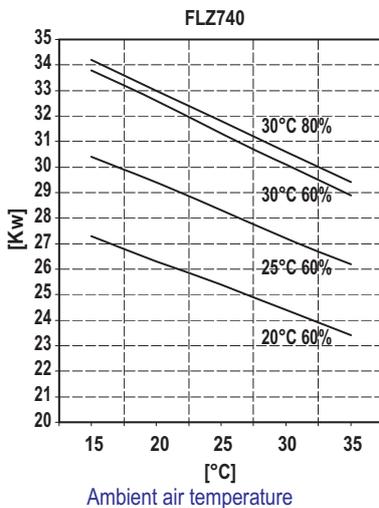
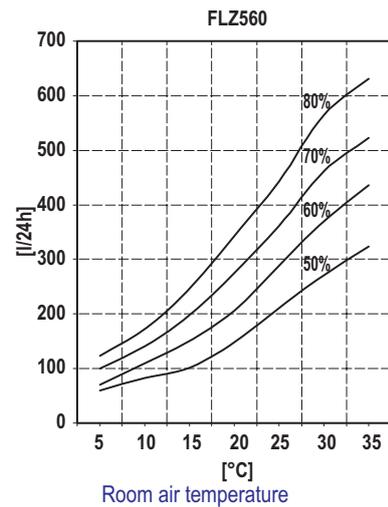
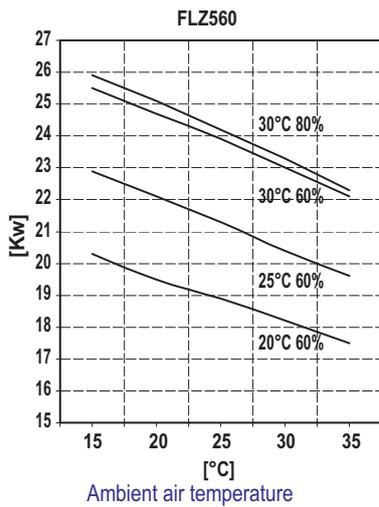


¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.
⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
⁶⁾ S versions with hot gas defrost only.

FL-FLZ

FL-FLZ

Mod.		FLZ560	FLZ560S	FLZ740	FLZ740S	FLZ940	FLZ740S
Moisture removed ⁽¹⁾	l/24h	564,1	564,1	738,5	738,5	937,3	937,3
Input power ⁽¹⁾	kW	9,1	9,1	11,7	11,7	15,3	15,3
Input current ⁽¹⁾	A	19,1	19,1	22,3	22,3	28,5	28,5
Cooling capacity ⁽⁴⁾	kW	26,5	26,5	34,6	34,6	43,8	43,8
Input power ⁽⁴⁾	kW	8,9	8,9	11,4	11,4	15	15
Maximum input power ⁽⁵⁾	kW	9,9	9,9	12,8	12,8	16,8	16,8
Maximum input current ⁽⁵⁾	A	20,5	20,5	24,1	24,1	31	31
Air flow	m ³ /h	5150	5150	6850	6850	8200	8200
Available static pressure	Pa	50	50	50	50	50	50
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	72	72	73	73	74	74
Temperature operating range	°C	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾	5-35	1-35 ⁽⁶⁾
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	390	390	412	412	439	439
Power supply	V/Ph/Hz	400/3~+N/50					



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746
⁴⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%; ambient temperature 35°C.
⁶⁾ S versions with hot gas defrost only.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the charge lacks and reduce the quantity of

refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

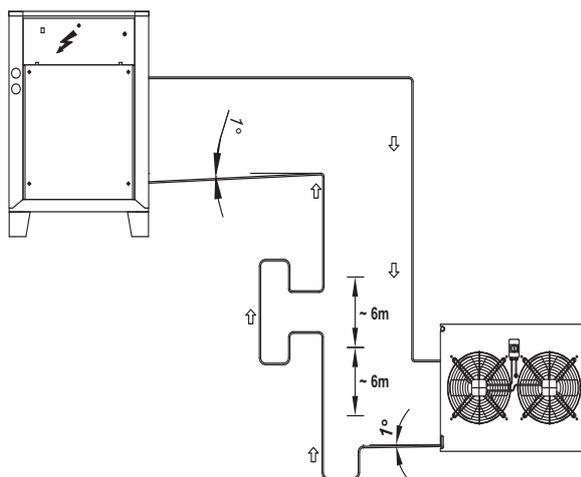
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

Dehumidifier higher than the condenser

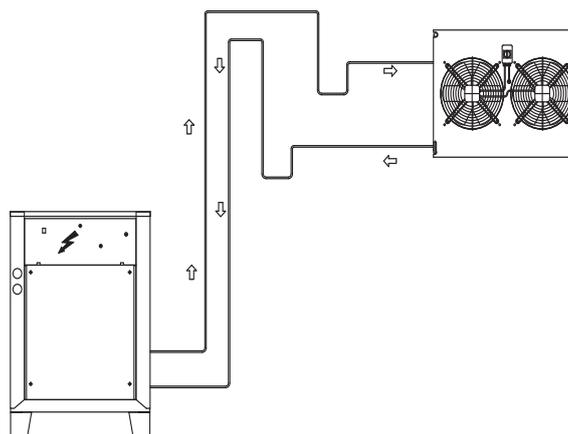
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version FLZ						
Distance (m)	10		20		30	
	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
560	22	15,88	22	18	28	18
740	28	15,88	28	18	28	22
940	35	15,88	35	18	35	22

Liquid line refrigerant charge			
Liquid line diameter	Refrigerant charge g/m	Liquid line diameter	Refrigerant charge g/m
15,88 (mm)	175	22 (mm)	360
18 (mm)	220	---	---

Cooling capacity correction factors				
Mod.	Refr. Line 0 (m)	Refr. Line 10 (m)	Refr. Line 20 (m)	Refr. Line 30 (m)
FLZ	1	0,98	0,96	0,95

FL-FLZ

FRAME

All FL units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all FL units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FANS

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All FL units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, the management of fresh and exhaust air, post heating valve and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all FL units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of the fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration

REMOTE CONDENSER

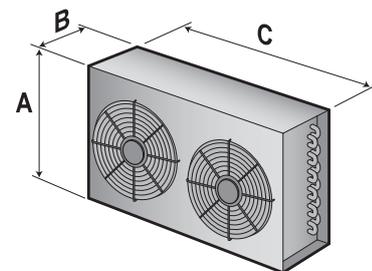
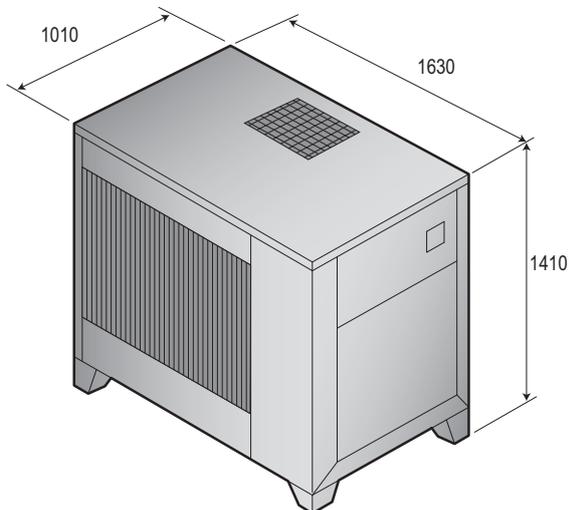
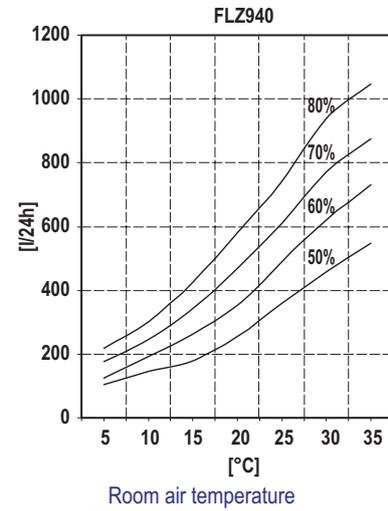
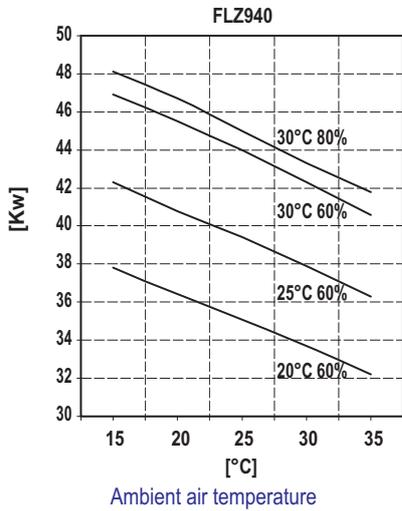
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

FL-FLZ

FL-FLZ

Mod.	FL560	FL740	FL940	FLZ560	FLZ740	FLZ940
Integrated mechanical hygrostat	○	○	○	–	–	–
Remote mechanical hygrostat	○	○	○	–	–	–
Remote mechanical hygrostat + thermostat	–	–	–	○	○	○
Available static pressure 200 Pa	○	○	○	○	○	○
Floor trolley version	○	○	○	–	–	–
Stainless steel frame	○	○	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○	○	○
Condensate discharge pump	○	○	○	○	○	○
Horizontal air discharge	○	○	○	○	○	○

● Standard, ○ Optional, – Not available.



Mod.	A (mm)	B (mm)	C (mm)	Kg
560	810	480	1292	65
740	810	480	1292	65
940	1010	480	1292	90

EHBT-EHZBT

Cold rooms dehumidifiers



EHBT low temperature dehumidifiers series are high-performances units especially designed for low temperature cold rooms rooms where the humidity level should be controlled during product storage treatment.

This series comprises 1 model which cover a capacity range of 84 l/24h.

EHBT units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

All units are supplied with hot gas defrost system and antifreeze heater on condensate drip tray, they are fully assembled and wired at the factory.

VERSIONS

- Version with temperature control EHZBT: These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: Dehumidification mode: the internal condenser is activated; the unit dehumidifies and heats up the room temperature; Cooling mode: the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

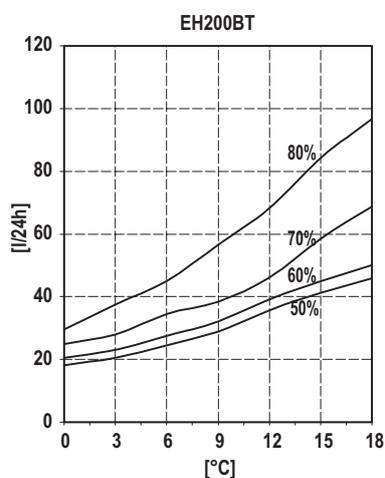
ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Available static pressure 200 Pa
- Floor trolley version
- Stainless steel frame
- Air filter with frame for ducted installation

EHBT-EHZBT

EH-EHZ

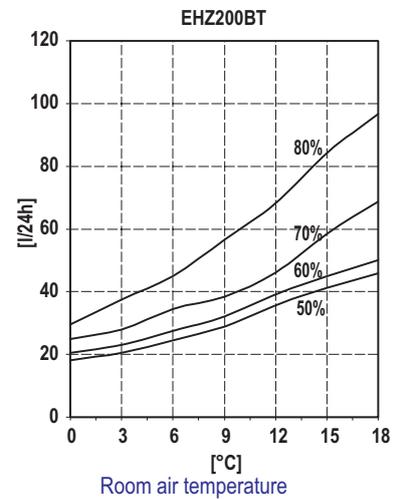
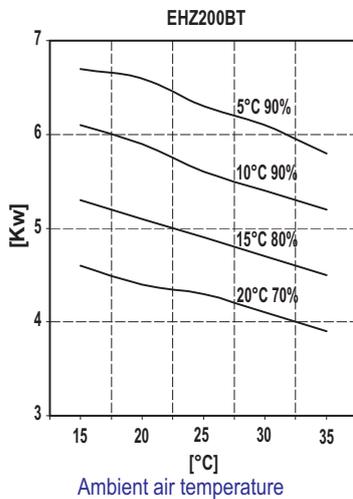
Mod.		EHB200
Moisture removed ⁽¹⁾	l/24h	84,4
Nominal input power ⁽¹⁾	kW	2,5
Max input power ⁽²⁾	kW	2,7
Nominal input current ⁽¹⁾	A	5,4
Max input current ⁽²⁾	A	5,9
Air flow	m ³ /h	1900
Available static pressure	Pa	50
Refrigerant		R407C
Sound pressure ⁽³⁾	dB(A)	62
Temperature operating range	°C	-1 +18
Humidity operating range	%	50-99
Weight	Kg	112
Power supply	V/Ph/Hz	400/3~+N/50



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

EHBT-EHZBT

Mod.		EHZBT200
Moisture removed ⁽¹⁾	l/24h	84,4
Input power ⁽¹⁾	kW	2,2
Input current ⁽¹⁾	A	7
Cooling capacity ⁽⁴⁾	kW	5,5
Input power ⁽⁴⁾	kW	2,3
Maximum input power ⁽⁵⁾	kW	2,9
Maximum input current ⁽⁵⁾	A	7,5
Air flow	m ³ /h	1900
Available static pressure	Pa	50
Refrigerant		R407C
Sound pressure ⁽³⁾	dB(A)	62
Temperature operating range	°C	-1 +18
Humidity operating range	%	50-99
Weight	Kg	112
Power supply	V/Ph/Hz	400/3~+N/50



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the charge lacks and reduce the quantity of

refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

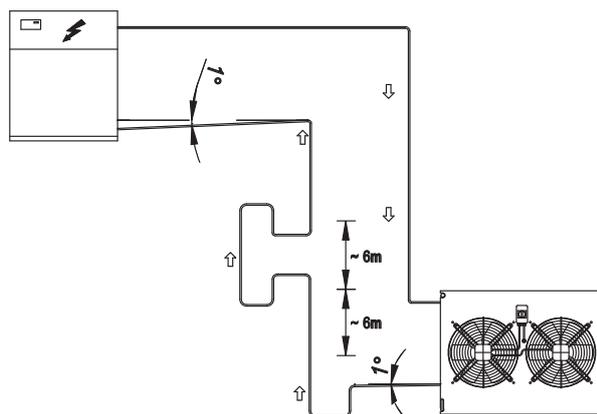
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

Dehumidifier higher than the condenser

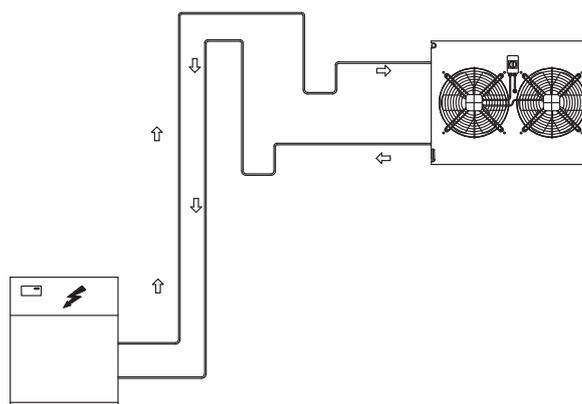
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version EHZBT200						
Distance (m)	10		20		30	
Mod.	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
200	12,7	7,94	12,7	7,94	12,7	7,94

Liquid line refrigerant charge			
Line liquid diameter	Refrigerant charge g/m	Line liquid diameter	Refrigerant charge g/m
7,94 (mm)	30	---	---

Cooling capacity correction factors				
Mod.	Refr. line 0 (m)	Refr. line 10 (m)	Refr. line 20 (m)	Refr. line 30 (m)
EHZBT200	1	0,98	0,96	0,95

EHBt-EHZBT

FRAME

All EH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all EH units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All EH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP55. In all EH units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

REMOTE CONDENSER

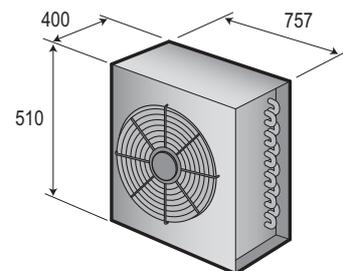
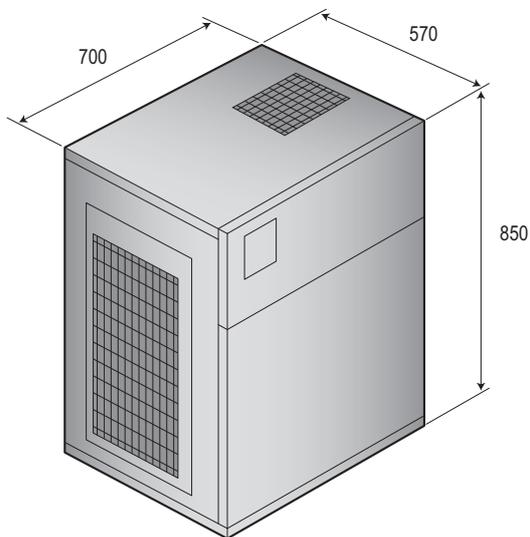
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

EHBT-EHZBT

EHBT-EHZBT

Mod.	EHBT200	EHZBT200
Integrated mechanical hygrostat	○	-
Remote mechanical hygrostat	○	-
Remote mechanical hygrostat + thermostat	-	○
Availabile static pressure 200 Pa	○	○
Floor trolley version	○	-
Stainless steel frame	○	○
Air filter with frame for ducted installation	○	○

● Standard, ○ Optional, – Not available.



ITMBT-ITMZBT

Cold rooms dehumidifiers



ITMBT low temperature dehumidifiers series are high-performances units especially designed for low temperature cold rooms rooms where the humidity level should be controlled during product storage treatment.

This series comprises 2 model which cover a capacity range from 155 to 190 l/24h. ITMBT units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

All units are supplied with hot gas defrost system and antifreeze heater on condensate drip tray, they are fully assembled and wired at the factory.

VERSIONS

- **Version with temperature control ITMZBT:** These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: **Dehumidification mode:** the internal condenser is activated; the unit dehumidifies and heats up the room temperature; **Cooling mode:** the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

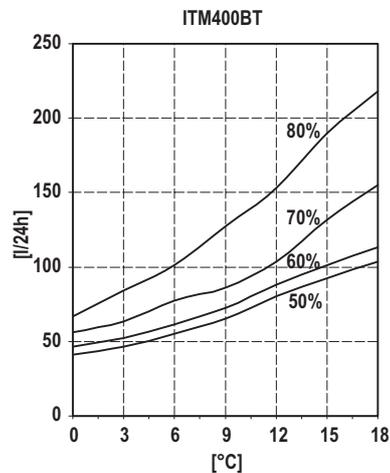
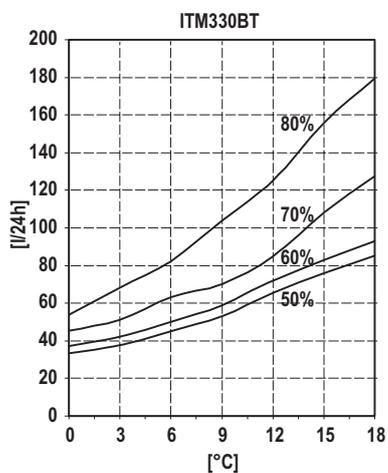
ACCESSORIES

- Integrated mechanical hygrostat
- Remote mechanical hygrostat
- Remote mechanical hygrostat + thermostat
- Floor trolley version
- Air filter with frame for ducted installation
- Available static pressure 200 Pa
- Stainless steel frame

ITMBT-ITMZBT

ITMBT-ITMZBT

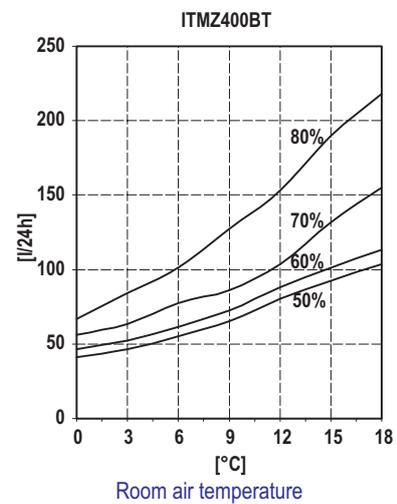
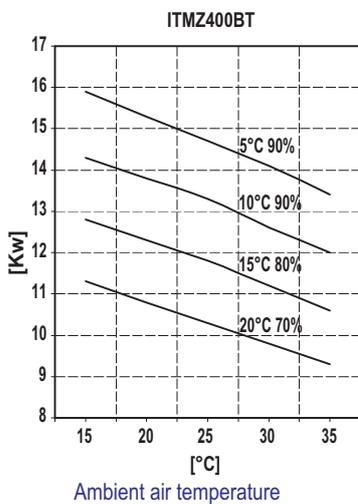
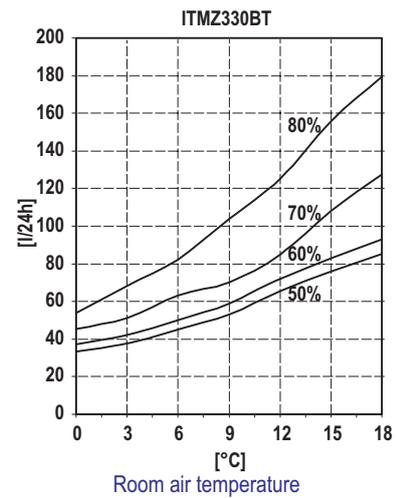
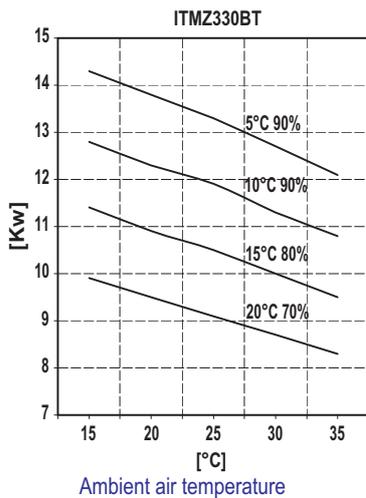
Mod.		ITMBT330	ITMBT400
Moisture removed ⁽¹⁾	l/24h	155,8	189,8
Nominal input power ⁽¹⁾	kW	5,3	6,6
Max input power ⁽²⁾	kW	7	8
Nominal input current ⁽¹⁾	A	16	17,6
Max input current ⁽²⁾	A	18,5	24
Air flow	m ³ /h	3600	4100
Available static pressure	Pa	50	50
Refrigerant		R407C	R407C
Sound pressure ⁽³⁾	dB(A)	66	67
Temperature operating range	°C	-1 +18	-1 +18
Humidity operating range	%	50-99	50-99
Weight	Kg	184	188
Power supply	V/Ph/Hz	400/3~+N/50	



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

ITMBT-ITMZBT

Mod.		ITMZBT330	ITMZBT400
Moisture removed ⁽¹⁾	l/24h	155,8	189,8
Input power ⁽¹⁾	kW	6	7
Input current ⁽¹⁾	A	18	19
Cooling capacity ⁽⁴⁾	kW	10,1	12,4
Input power ⁽⁴⁾	kW	5,8	6,5
Maximum input power ⁽⁵⁾	kW	7,4	8,3
Maximum input current ⁽⁵⁾	A	20	24,1
Air flow	m ³ /h	3600	4100
Available static pressure	Pa	50	50
Refrigerant		R407C	R407C
Sound pressure ⁽³⁾	dB(A)	66	67
Temperature operating range	°C	-1 +18	-1 +18
Humidity operating range	%	50-99	50-99
Weight	Kg	184	220
Power supply	V/Ph/Hz	400/3~+N/50	



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the charge lacks and reduce the quantity of

refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

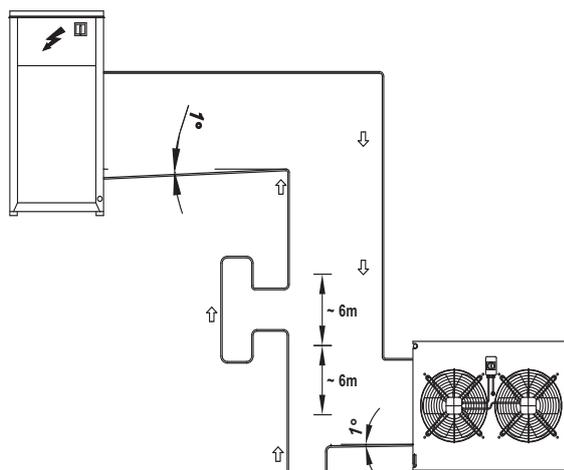
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

Dehumidifier higher than the condenser

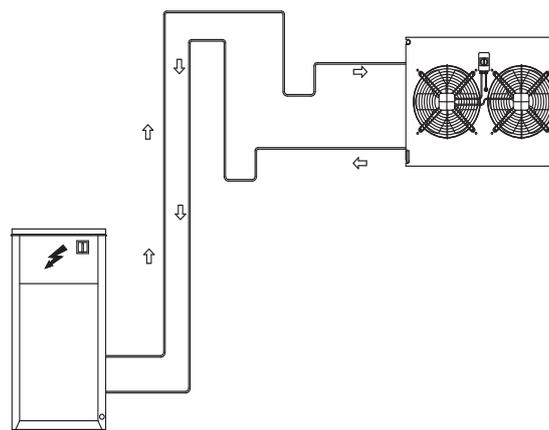
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version ITMZBT						
Distance (m)	10		20		30	
Mod.	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
330	15,8	7,94	15,8	7,94	15,8	7,94
400	15,8	7,94	18	9,52	18	9,52

Liquid line refrigerant charge			
Liquid line diameter	Refrigerant charge g/m	Liquid line diameter	Refrigerant charge g/m
7,94 (mm)	30	9,52	50

Cooling capacity correction factors				
Mod.	Refr. Line 0 (m)	Refr. Line 10 (m)	Refr. Line 20 (m)	Refr. Line 30 (m)
ITMZBT	1	0,98	0,96	0,95

ITMBT-ITMZBT

FRAME

All ITM units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all ITM units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All ITM units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all ITM units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, who signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

REMOTE CONDENSER

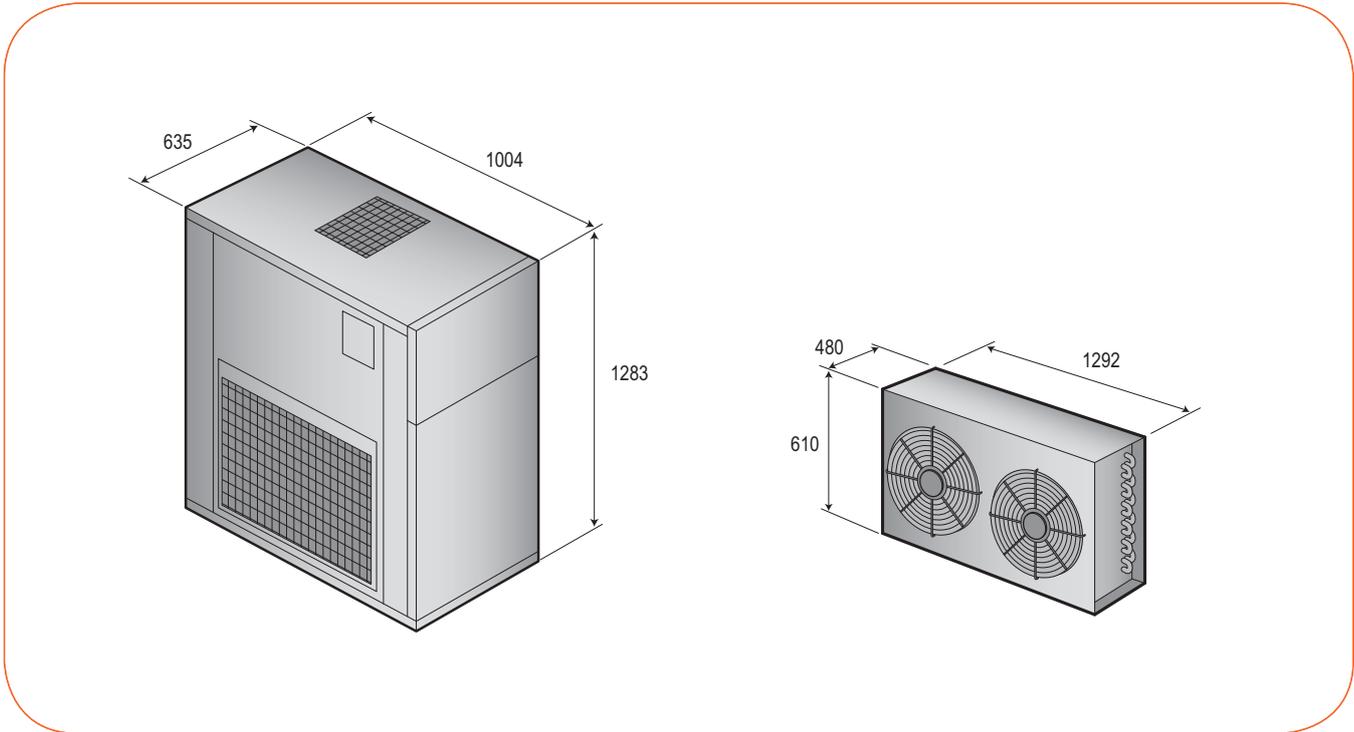
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

ITMBT-ITMZBT

ITMBT-ITMZBT

Mod.	ITMBT330	ITMBT400	ITMZBT330	ITMZBT400
Integrated mechanical hygrostat	○	○	-	-
Remote mechanical hygrostat	○	○	-	-
Remote mechanical hygrostat + thermostat	-	-	○	○
Available static pressure 200 Pa	○	○	○	○
Floor trolley version	○	○	-	-
Stainless steel frame	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○

● Standard, ○ Optional, - Not available.



FLBT-FLZBT

Cold rooms dehumidifiers



FLBT low temperature dehumidifiers series are high-performances units especially designed for low temperature cold rooms rooms where the humidity level should be controlled during product storage treatment.

This series comprises 3 model which cover a capacity range from 270 to 460 l/24h.

FLBT units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

All units are supplied with hot gas defrost system and antifreeze heater on condensate drip tray, they are fully assembled and wired at the factory.

VERSIONS

- **Version with temperature control FLZBT:** These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: **Dehumidification mode:** the internal condenser is activated; the unit dehumidifies and heats up the room temperature; **Cooling mode:** the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

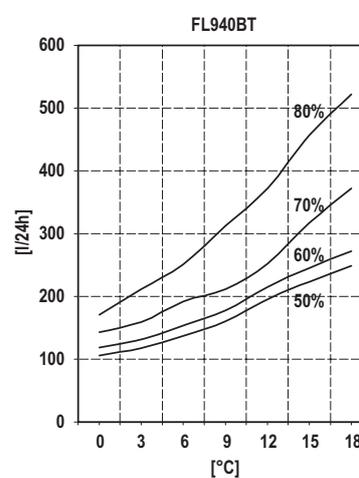
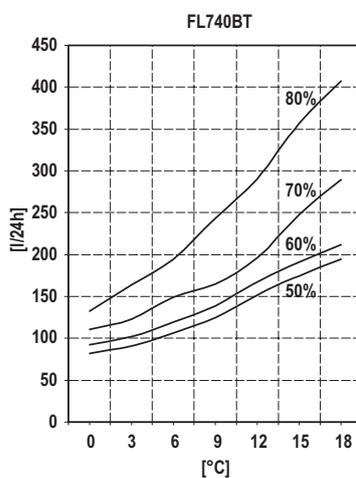
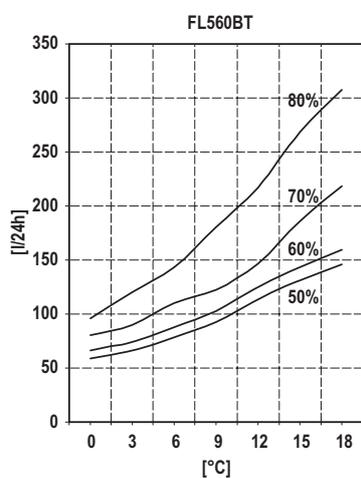
ACCESSORIES

- Integrated mechanical hygostat
- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Floor trolley version
- Air filter with frame for ducted installation
- Available static pressure 200 Pa
- Stainless steel frame

FLBT-FLZBT

FLBT-FLZBT

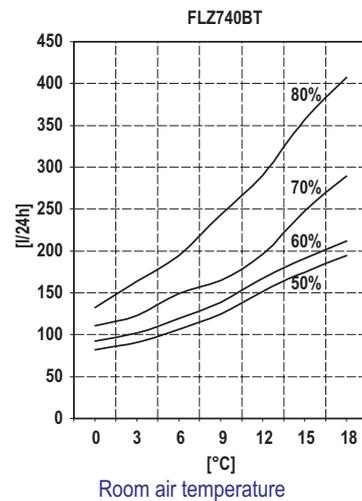
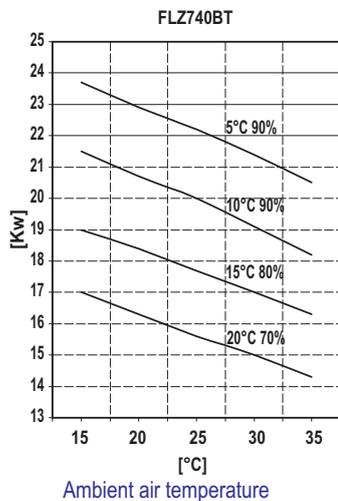
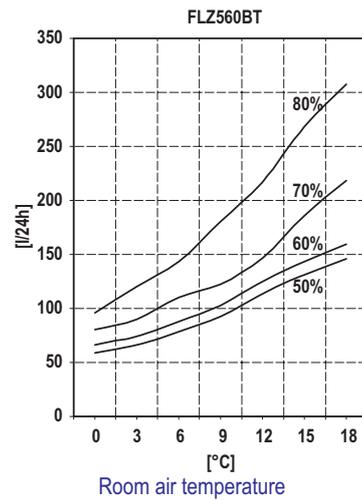
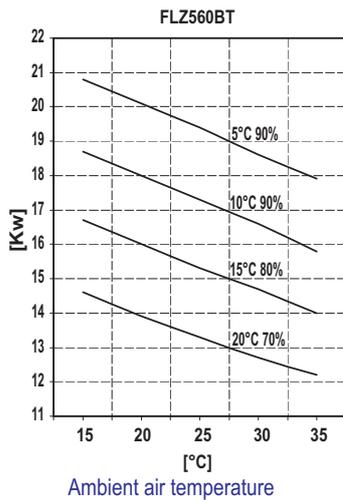
Mod.		FLBT560	FLBT740	FLBT940
Moisture removed ⁽¹⁾	l/24h	268,3	356,8	456,9
Nominal input power ⁽¹⁾	kW	6,6	8,4	11,1
Max input power ⁽²⁾	kW	7,2	9,3	12,2
Nominal input current ⁽¹⁾	A	16	17,4	22,4
Max input current ⁽²⁾	A	17,5	20,3	26,1
Air flow	m ³ /h	5150	6850	8200
Available static pressure	Pa	50	50	50
Refrigerant		R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	72	73	74
Temperature operating range	°C	-1 +18	-1 +18	-1 +18
Humidity operating range	%	50-99	50-99	50-99
Weight	Kg	398	424	451
Power supply	V/Ph/Hz	400/3~+N/50		



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

FLBT-FLZBT

Mod.		FLZBT560	FLZBT740	FLZBT940
Moisture removed ⁽¹⁾	l/24h	268,3	356,8	456,9
Input power ⁽¹⁾	kW	6,6	8,4	11,1
Input current ⁽¹⁾	A	22,8	24,2	29,2
Cooling capacity ⁽⁴⁾	kW	17,4	23,2	29,9
Input power ⁽⁴⁾	kW	6,9	8,8	11,5
Maximum input power ⁽⁵⁾	kW	8	10,1	13
Maximum input current ⁽⁵⁾	A	24,3	27,1	32,9
Air flow	m ³ /h	5150	6850	8200
Available static pressure	Pa	50	50	50
Refrigerant		R407C	R407C	R407C
Sound pressure ⁽³⁾	dB(A)	72	73	74
Temperature operating range	°C	-1 +18	-1 +18	-1 +18
Humidity operating range	%	50-99	50-99	50-99
Weight	Kg	398	424	451
Power supply	V/Ph/Hz		400/3~+N/50	



¹⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.
⁴⁾ Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO3746.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that can contain the charge lacks and reduce the quantity of

refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

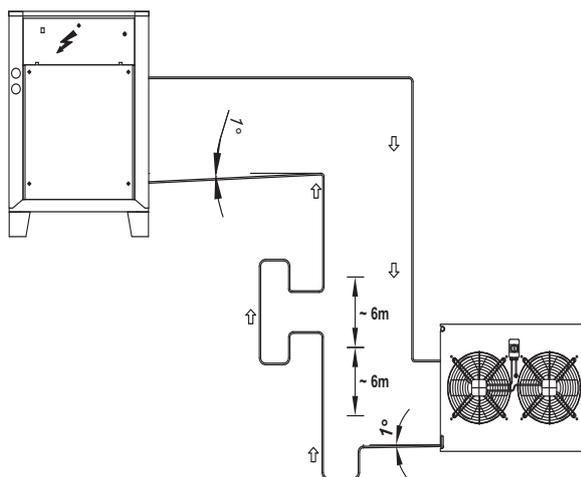
Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

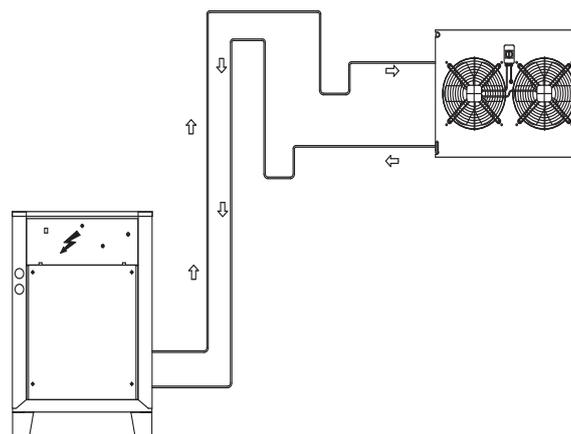
Dehumidifier higher than the condenser

On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;
Install a collection pit immediately downstream from the bulb of the thermostatic valve;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version FLZ						
Distance (m)	10		20		30	
	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
560	22	15,88	22	18	28	18
740	28	15,88	28	18	28	22
940	35	15,88	35	18	35	22

Liquid line refrigerant charge			
Line liquid diameter	Refrigerant charge g/m	Line liquid diameter	Refrigerant charge g/m
15,88 (mm)	175	22 (mm)	360
18 (mm)	220	---	---

Cooling capacity correction factors				
Mod.	Refr. line 0 (m)	Refr. line 10 (m)	Refr. line 20 (m)	Refr. line 30 (m)
FLZ	1	0,98	0,96	0,95

FLBT-FLZBT

FRAME

All FL units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all FL units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

FANS

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers.

The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All FL units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, the management of fresh and exhaust air, post heating valve and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all FL units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of the fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration

REMOTE CONDENSER

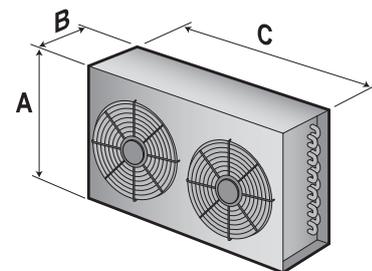
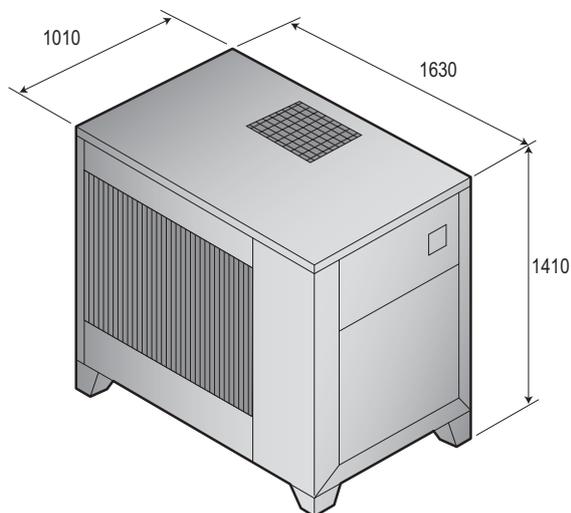
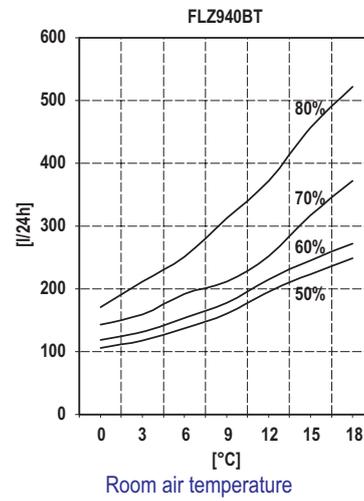
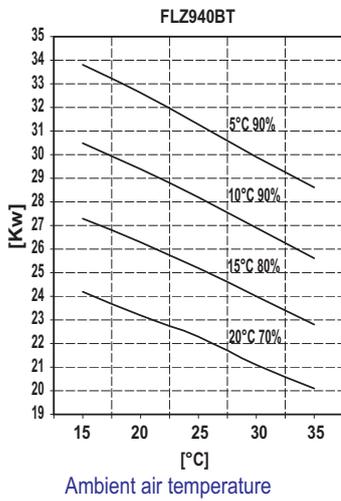
The remote condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The fans are axial type with aluminium aerofoil blades complete of the safety fan guard. The protection class of the motors is IP 54. Furthermore the remote condenser is supplied of the low ambient condensing pressure control. This device controls the cooling circuit condensing pressure at different ambient temperatures, to keep it correct.

FLBT-FLZBT

FLBT-FLZBT

Mod.	FLBT560	FLBT740	FLBT940	FLZBT560	FLZBT740	FLZBT940
Integrated mechanical hygrostat	○	○	○	–	–	–
Remote mechanical hygrostat	○	○	○	–	–	–
Remote mechanical hygrostat + thermostat	–	–	–	○	○	○
Available static pressure 200 Pa	○	○	○	○	○	○
Floor trolley version	○	○	○	–	–	–
Stainless steel frame	○	○	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○	○	○
Condensate discharge pump	○	○	○	○	○	○
Horizontal air discharge	○	○	○	○	○	○

● Standard, ○ Optional, – Not available.



Mod.	A (mm)	B (mm)	C (mm)	Kg
560	810	480	1292	65
740	810	480	1292	65
940	1010	480	1292	90

DL

Low dew point industrial dehumidifiers



**Dew point
- 5°C**

**100%
Fresh air**

The Low dew point industrial dehumidifiers DL series are designed to grant very high performances and energy efficiencies, able to guarantee the humidity control in all industrial processes in which the required dew point is constant and below 0°C (units are able to perform down to -5°C dew point). The peculiarity of such units is, infact, to guarantee a constant dew point air discharge temperature, without the air humidity fluctuations created by the inevitables defrost cycles performed by the units.

VERSIONS

- The series includes 8 models with air flows from 800 to 5000 m³/h.

ACCESSORIES

- Rubber vibration dampers
- Oversized condenser fan motors

DL

DL

Mod.		800	1000	1200	1800	2400	3000	4000	5000
Total air flow	m ³ /h	800	1000	1200	1800	2400	3300	4000	5000
Water chiller cooling capacity ⁽¹⁾	kW	6,8	7,1	10,1	17,5	21,2	22,8	37,2	46,2
Water flow ⁽¹⁾	l/h	1165	1230	1730	3000	3700	4000	6400	8000
Pressure drops ⁽¹⁾	kPa	9	8	9	10	7	9	10	11
Moisture removed ⁽¹⁾	l/h	6,1	7,7	9,2	13,8	18,4	25,3	30,7	38,4
Water chiller cooling capacity ⁽²⁾	kW	10,8	12,1	16,1	26,5	33,3	39,3	57,3	71,3
Water flow ⁽²⁾	l/h	1860	2100	2800	4600	5800	6800	9900	12500
Pressure drops ⁽²⁾	kPa	22,8	23,3	23	23	17,2	29,9	23,7	26,2
Moisture removed ⁽²⁾	l/h	10,8	13,4	16,1	24,2	32,3	44,4	53,8	67,2
Water chiller cooling capacity ⁽³⁾	kW	13,2	15,2	19,7	32	40,5	49,3	69,4	86,4
Water flow ⁽³⁾	l/h	2280	2600	3400	5500	7000	8500	12000	15000
Pressure drops ⁽³⁾	kPa	34,3	36	34	33,4	25,6	42,3	34,8	38,5
Moisture removed ⁽³⁾	l/h	12,2	15,2	18,3	27,4	36,6	50,3	61	76,2
Water chiller cooling capacity ⁽⁴⁾	kW	16	18,7	23,9	38,3	49	60,8	83,3	104
Water flow ⁽⁴⁾	l/h	2760	3200	4100	6600	8400	10500	14400	18000
Pressure drops ⁽⁴⁾	kPa	50	55	51	47,9	37,2	64,3	50,3	55,7
Moisture removed ⁽⁴⁾	l/h	15	19	22,5	33,7	44,9	61,8	74,9	93,6
Available static pressure	kPa	250	250	250	270	270	350	350	350
Compressors input power	kW	5,1	5,9	6,6	10,3	9,3	9,9	17,7	18,9
Fan input power	kW	0,78	1,2	1,2	1,5	2,4	2,4	2,9	3,5
Power supply	V/Ph/Hz	400/3~+N/50							
Sound pressure level ⁽⁵⁾	dB(A)	70	71	73	74	75	75	76	76
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
Weight	Kg	310	330	360	450	480	510	580	610

Air outlet dew temperature -5°C.

⁽¹⁾ Ambient air temperature 20°C; relative humidity 60%.

⁽²⁾ Ambient air temperature 27°C; relative humidity 60%.

⁽³⁾ Ambient air temperature 32°C; relative humidity 50%.

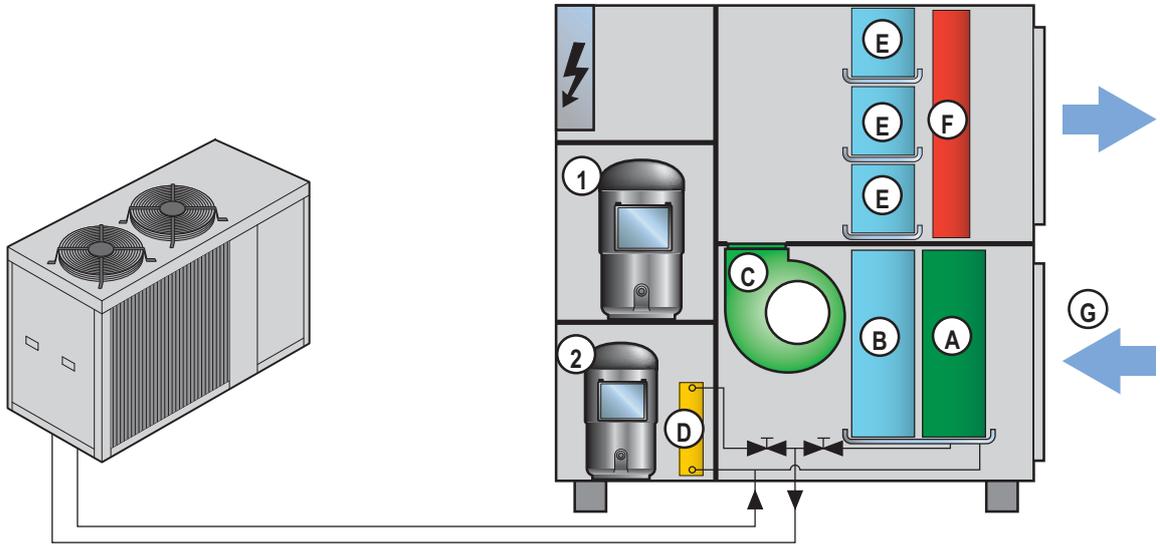
⁽⁴⁾ Ambient air temperature 35°C; relative humidity 50%.

⁽⁵⁾ Sound pressure level at 1 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

DL

DL

Working Principle

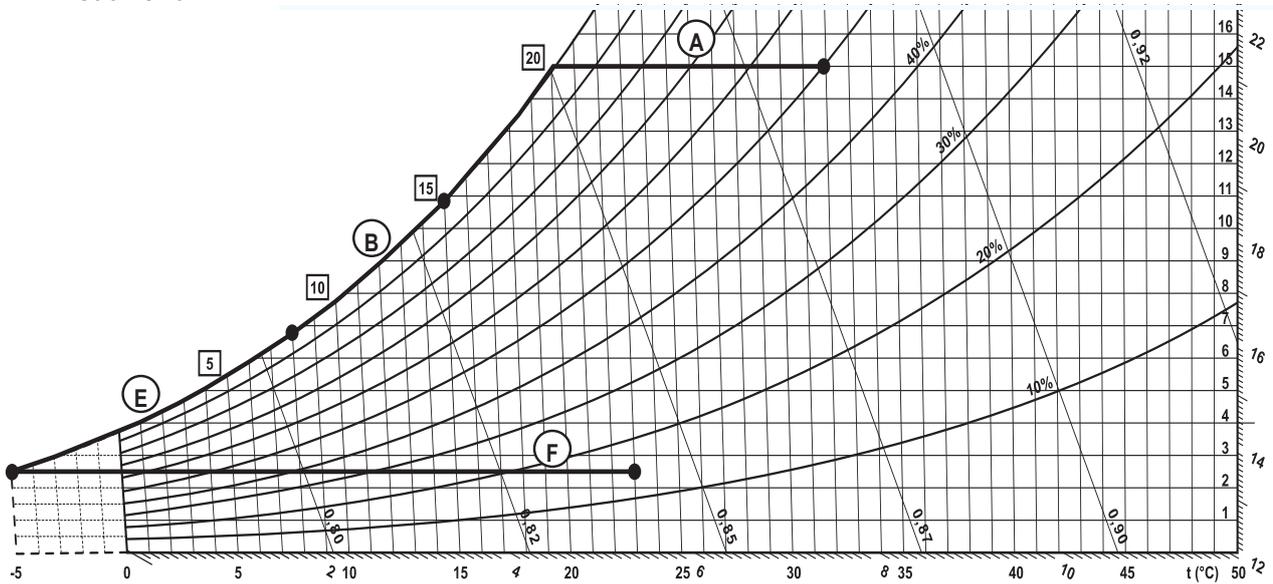


The DL units are equipped with 2 compressors, 2 independent circuits and a pre-cooling water circuit. The first refrigerant circuit is water cooled (by mean of cold water refrigerated by a water chiller always necessary for the correct operation of the DL units), the second refrigerant circuit is air cooled. The humid airflow, moved by the fan C, passes first through the suction filter G, then through the pre-cooling water coil A where it is cooled down (depending from the room and water conditions) down to its saturation dew point temperature. The saturated air passes then through the DX cooling coil B of the first refrigerant circuit (water cooled D), where the dehumidification

is done at a positive dewpoint temperature. Passing now through a second step of DX cooling coils E, the air is furtherly dried down to the required conditions. (minimum dew point obtainable -5°C). The DX cooling coils E (which are part of the second refrigerant circuit) are designed to guarantee a costant dew point air outlet temperature (caused by the inevitable defrost cycles). The second refrigerant circuit, is in fact, designed with 3 DX cooling coils placed in parallel one with the other. Each one is controlled by an independent thermostatic valve, and operates in order to have 2 DX coils always in operation and 1 DX coil always defrosting. The logic of the defrosts in the DX coils is

managed by a specific software installed in the microprocessor control. After all these treatments the air, that is extremely cold to be sent to the user, it is then heated up in the DX condensing coil F, where the temperature is increased up to approx. 23°C , suitable temperature for the user applications.

Air Treatment



In the enclosed diagram we notice the typical treatment of the airflow in the DL units in case of 100% fresh air (32°C, 50%). In the water pre-cooling coil (Part A) the air is cooled down to approx 15°C-100%, necessary inlet condition to the first DX cooling circuit (tratto B) where we have a dehumidification down to 7°C – 100% (in this first refrigerant circuit the defrost is never activated since the evaporation pressure is managed by an evaporation pressure control valve). After the first DX circuit, the air is furtherly cooled down in the second DX circuit (E) where, having a proper management the defrost cycles, the discharge dew point temperature of -5°C is

kept constant. The cold and dried air, then passes into the condensing coil F where it is increased up to 23°C with a relative humidity of 13%. The above described cycle shows the maximum obtainable performances from the unit that, clearly, with different waterflows in the pre-cooling coil, can have different performances and energy consumptions. In case of 100% recirculation airflow, for example, it is quite evident that keeping constant the -5°C dew point air outlet conditions, the cooling capacity of the water coil can be highly reduced and then consequently, the cooling capacity of the dedicated water chiller.

DL

FRAME

All DL units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all DL units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Evaporating control valve, Hot gas injection valve, Liquid line solenoid valve, Manometers, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klaxon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSERS AND EVAPORATORS

The condensers and evaporators are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All the units have a stainless steel drip tray. Besides this, each evaporator is supplied of a temperature probe used as automatic antifreeze probe.

SUPPLY FAN

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according

to EN 294. The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All DL units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms. All DL units are supplied standard with an electronic probe for humidity indication which allows its indications in the display with a working range 0/90%.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all DL units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of the fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection

TEST

All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

HYDRAULIC CIRCUIT

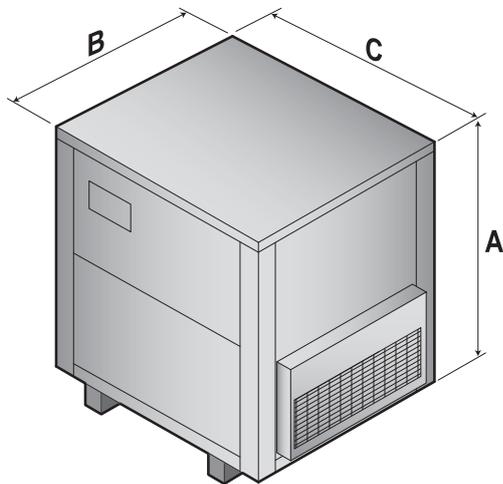
The hydraulic circuit is made by using international primary brands components. The hydraulic circuit includes: water flow manual valve, evaporator made of AISI 316 stainless steel braze-welded plates type.

DL

DL

Mod.	800	1000	1200	1800	2400	3000	4000	5000
Main switch	●	●	●	●	●	●	●	●
Microprocessor control	●	●	●	●	●	●	●	●
Free contacts on/off	●	●	●	●	●	●	●	●
Compressors Magnetic-Thermal	●	●	●	●	●	●	●	●
Fans Magnetic-Thermal	●	●	●	●	●	●	●	●
Rubber vibration dampers	○	○	○	○	○	○	○	○
Oversized condenser fan motors	○	○	○	○	○	○	○	○

● Standard, ○ Optional, – Not available.



Mod.	A (mm)	B (mm)	C (mm)
800	1200	1000	1000
1000	1200	1000	1000
1200	1200	1000	1000
1800	1329	1300	1000
2400	1329	1300	1000
3000	1329	1300	1000
4000	1320	1600	1400
5000	1320	1600	1400

SBH

Swimming pool dehumidifiers



Series SBH dehumidifier are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. This series comprises four models which cover a capacity range from 75 to 200 l/24h. SBH units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

VERSIONS

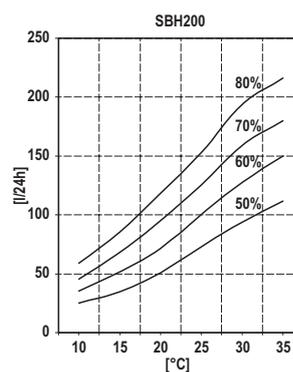
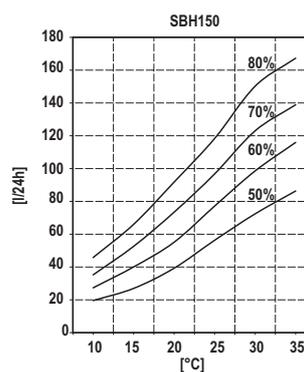
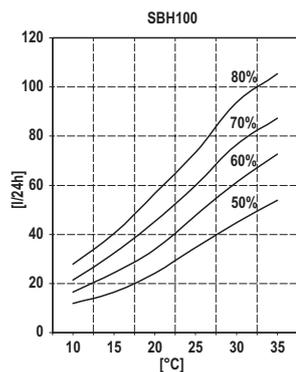
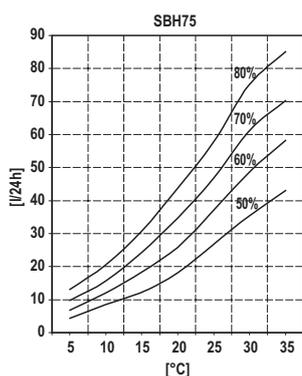
- Version with cabinet (A).
- Ductable units (P).

ACCESSORIES

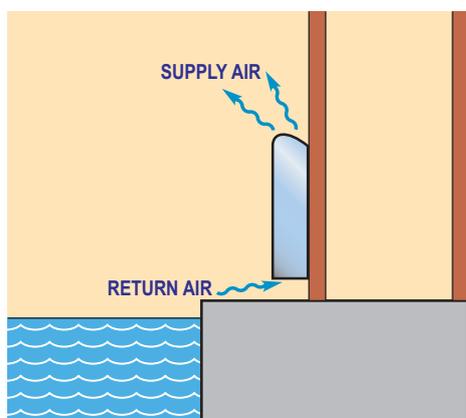
- Hot water coil
- Electric heater kit
- Built-in electronic hygrostat with display
- Remote mechanical hygrostat
- Remote mechanical hygrostat + thermostat
- On/Off 3 way valve kit installed
- Delivery and return plenum 90° (2 pieces)
- Louver kit and case for ducted version
- Feet

SBH

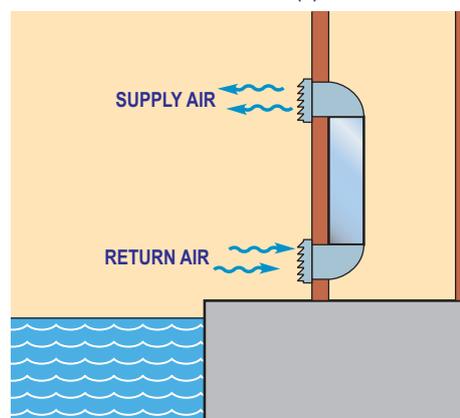
Mod.		SBH75	SBH100	SBH150	SBH200
Moisture removed ⁽¹⁾	l/24h	77	104	151	192
nominal input power ⁽¹⁾	kW	1,5	1,8	2,9	3,2
Maximum input power ⁽²⁾	kW	1,7	2	3,2	3,5
Nominal input power ⁽¹⁾	A	5,9	8,4	13,7	15,2
Maximum input power ⁽²⁾	A	7,4	9,1	15,2	16,2
Hot water coil ⁽³⁾	kW	8,6	8,6	15	15
Air flow	m ³ /h	1000	1000	1800	1800
Available static pressure	Pa	40	40	40	40
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽⁴⁾	dB(A)	50	50	52	54
Temperature operating range	°C	10-36	10-36	10-36	10-36
Humidity operating range	%	50-99	50-99	50-99	50-99
Weight	Kg	49	55	72	78
Power supply	V/Ph/Hz	230/1~/50			



STANDARD VERSION (A)



DUCTED VERSION (P)



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.
⁴⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

SBH

FRAME

All SBH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents and to operate in aggressive environments. The frame is self-supporting with removable panels. A PVC drip tray is installed on all units. The colour of the unit is RAL 9010 both for the base and for the frontal panel.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R407C. The refrigerant circuit includes: capillary tube, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressors are rotative type, with thermal overload protection by a klixon embedded in the motor winding. The compressor is mounted on rubber vibration dampers and it is supplied, standard, with sound-proof cover to reduce noise emission. The inspection is possible through the frontal panel of the unit that allows the maintenance of the compressor.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,15 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a PVC drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FAN

The fans are made of galvanized steel, centrifugal type. It is statically and dynamically balanced and supplied. The electric motors

are directly connected to the fan; they are all at 3 speeds, with integrated thermal protection. The protection class of the motors is IP 54.

AIR FILTER

It is made of synthetic filtering media, ondulated type, without electro-static charge; they are all removable for differential disposal. Efficiency class G2, according to EN 779:2002.

MICROPROCESSOR

All SBH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation leds.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. If the unit is endow of cabinet, after its removal.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with automatic reset, compressor thermal overload protection, fans thermal overload protection.

TEST

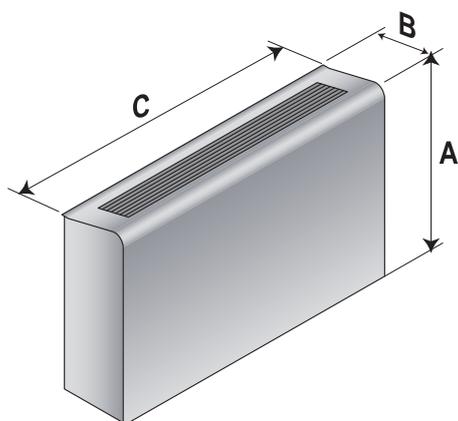
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

SBH

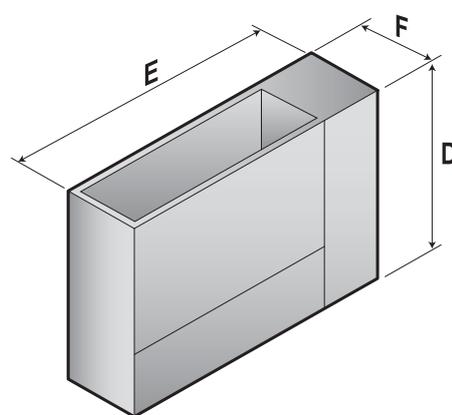
SBH

Mod.	SBH75A	SBH75P	SBH100A	SBH100P	SBH150A	SBH150P	SBH200A	SBH200P
Hot water coil	○	○	○	○	○	○	○	○
Electric heater kit	○	○	○	○	○	○	○	○
Built-in electronic hygrostat with display	○	○	○	○	○	○	○	○
Remote mechanical hygrostat	○	○	○	○	○	○	○	○
Remote mechanical hygrostat + thermostat	○	○	○	○	○	○	○	○
On/Off 3 way valve kit installed	○	○	○	○	○	○	○	○
Delivery and return plenum 90° (2 pieces)	-	○	-	○	-	○	-	○
Louver kit and case for ducted version	-	○	-	○	-	○	-	○
Feet	○	-	○	-	○	-	○	-

● Standard, ○ Optional, - Not available.



Mod.	A (mm)	B (mm)	C (mm)
75	750	260	1060
100	750	260	1060
150	750	310	1310
200	750	310	1310



Mod.	D (mm)	E (mm)	F (mm)
75	680	1006	250
100	680	1006	250
150	770	1255	300
200	770	1255	300

SCH

Swimming pool dehumidifiers



Series SCH dehumidifier are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. This series comprises four models which cover a capacity range from 57 to 124 l/24h. SCH units are designed for easy maintenance and service, each part being readily accessible and, when required, easily replaceable thus reducing service and maintenance costs.

VERSIONS

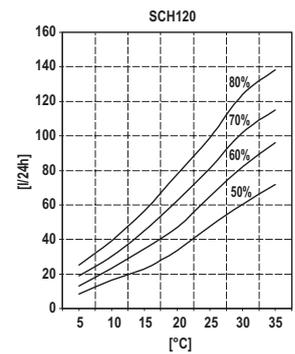
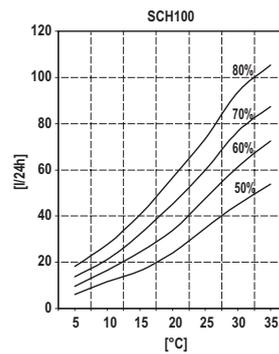
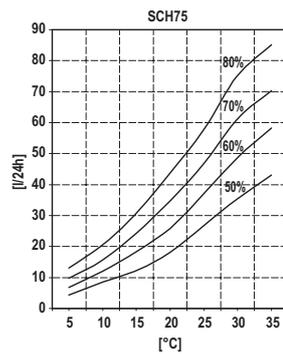
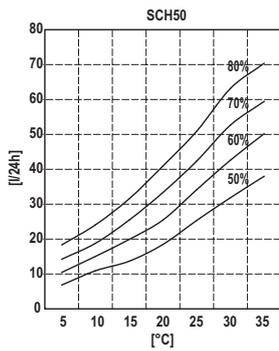
- The series includes 4 models with air flows from 600 to 850 m³/h.

ACCESSORIES

- Built in mechanical hygostat
- Remote mechanical hygostat
- Hot water coil
- Feet

SCH

Mod.		SCH50	SCH75	SCH100	SCH120
Moisture removed ⁽¹⁾	l/24h	57	75,1	93,7	124
Nominal input power ⁽¹⁾	kW	0,9	1,45	1,7	2,2
Maximum input power ⁽²⁾	kW	1	1,6	2	2,4
Nominal input current ⁽¹⁾	A	4,9	7,3	8,5	11,3
Maximum inout current ⁽²⁾	A	5,4	7,9	9,2	12,2
Hot water coil ⁽³⁾	kW	5,4	5,4	8,6	8,6
Air flow	m ³ /h	600	600	850	850
Available static pressure	Pa	-	-	-	-
Refrigerant		R407C	R407C	R407C	R407C
Sound pressure ⁽⁴⁾	dB(A)	48	49	51	51
Temperature operating range	°C	5-36	5-36	5-36	5-36
Humidity operating range	%	50-99	50-99	50-99	50-99
Weight	Kg	52	56	78	84
Power supply	V/Ph/Hz	230/1~/50			



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.
⁴⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

SCH

FRAME

All SCH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents and to operate in aggressive environments. The frame is self-supporting with removable panels. A PVC drip tray is installed on all units. The colour of the unit is RAL 7035 both for the base and for the frontal panel.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R407C. The refrigerant circuit includes: filter drier, capillary tube, Schrader valves form maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is rotative type, with thermal overload protection by a klixon embedded in the motor winding. The compressor is mounted on rubber vibration dampers and it is supplied, standard, with sound-proof cover to reduce noise emission. The inspection is possible through the frontal panel of the unit that allows the maintenance of the compressor.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a PVC drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FAN

The exhaust fan is made of galvanized steel, centrifugal type, double inlet with forward curved blades. It is statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It is mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are directly connected to the fan; they are all at 3 speeds, with integrated thermal protection. The protection class of the motors is IP 54.

AIR FILTER

It is made of synthetic filtering media, ondulated type, without electro-static charge; they are all removable for differential disposal. Efficiency class G3, according to EN 779:2002.

MICROPROCESSOR

All SCH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation leds. Upon request any microprocessor can be connected to a BMS system for the remote control and management.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP55. The following components are also standard installed: main switch, compressor fuses, compressor contactors, fan contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with automatic reset, compressor thermal overload protection, fans thermal overload protection.

TEST

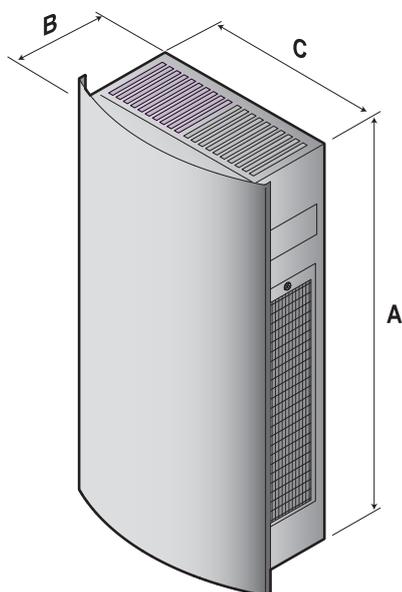
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

SCH

Mod.	SCH50	SCH75	SCH100	SCH120
Integrated mechanical hygrostat	○	○	○	○
Remote mechanical hygrostat	○	○	○	○
Hot water coil	○	○	○	○
Feet	○	○	○	○

● Standard, ○ Optional, – Not available.

SCH



Mod.	A (mm)	B (mm)	C (mm)
50	970	354	698
75	970	354	698
100	1350	354	698
120	1350	354	698

SDH

Swimming pool dehumidifiers



Series SDH dehumidifier are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. These units are intended to be installed in a technical room close to the swimming pool. A centrifugal fan with high available static pressure allows unit connection to ductworks, both for air suction and discharge. This series comprises 2 basic models which cover a capacity range from 94 to 124 l/24h.

VERSION

- The series includes 2 models with air flows from 1000 to 1200 m³/h.

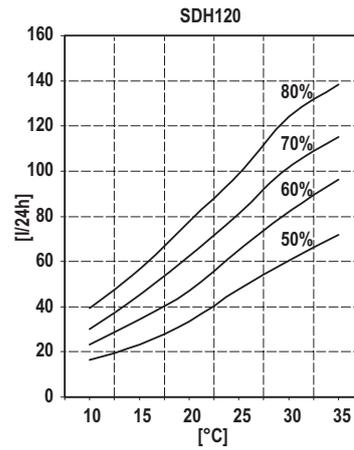
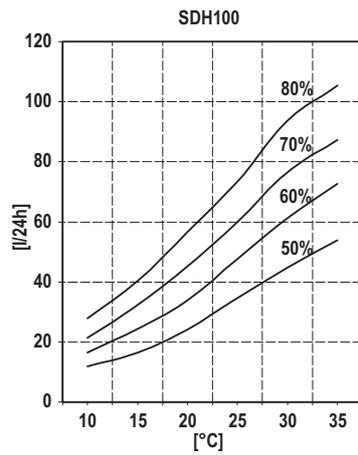
ACCESSORIES

- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Partial heat recovery
- Hot water coil
- On/Off 3 way valve kit installed
- Electric heater kit (3kW, 4,5kW, 6kW)
- Low noise version (with insulation of the compressor vane)

SDH

SDH

Mod.		SDH100	SDH120
Moisture removed ⁽¹⁾	l/24h	93,7	124
Power input ⁽¹⁾	kW	1,7	2,2
Current input ⁽¹⁾	A	8,5	11,3
Partial heat recovery ⁽²⁾	kW	1,35	1,35
Hot water coil ⁽³⁾	kW	8,6	8,6
Air flow	m ³ /h	1000	1200
Available static pressure	Pa	200	200
Refrigerant		R407C	R407C
Sound pressure ⁽⁴⁾	dB(A)	61	62
Temperature operating range	°C	5-35	5-35
Humidity operating range	%	50-99	50-99
Weight	Kg	133	147
Power Supply	V/Ph/Hz	230/1~/50	



¹⁾ Room temperature 30°C; relative humidity 80%.

²⁾ Water temperature in / out 25-30°C.

³⁾ Room temperature 32°C; water temperature 80/70°C.

⁴⁾ At 1 mt from the unit in free field conditions according to ISO 3746.

SDH

FRAME

All SDH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. All screws and rivets are in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves form maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressors are rotary with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. The compressors are mounted on rubber vibration dampers and they can be supplied with sound attenuation jacket to reduce the noise emission (option). The inspection on the compressors is possible only through the unit front panel.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FAN

The fans are made of galvanized steel, centrifugal type, double inlet with forward curved blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are 4 poles (about 1500 rpm), three-phase power supply. The motors are connected to the fans by pulleys and belts. The protection class of the motors is IP 54.

AIR FILTER

It is made of synthetic filtering media, undulated type, without electro-static charge; they are all removable for differential disposal. Efficiency class G1, according to EN 779:2002.

MICROPROCESSOR

All SDH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation led.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The following components are also standard installed: main switch, magnetic-thermal switches (as a protection fans and compressors), control circuit automatic breakers, compressor contactors, fan contactors. The terminal board is supplied with voltage free contacts for remote ON-OFF and general alarm.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: antifreeze protection sensor, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

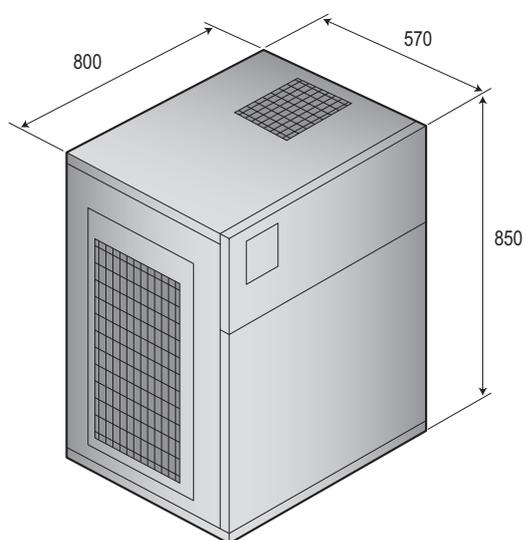
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conforms to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

SDH

SDH

Mod.	SDH100	SDH120
Remote mechanical hygrostat	○	○
Remote mechanical hygrostat + thermostat	○	○
Partial heat recovery	○	○
Hot water coil	○	○
On/Off 3 way valve kit installed	○	○
Electric heater kit 3 kW (230/1~/50)	○	○
Electric heater kit 4,5 kW (230/1~/50)	○	○
Electric heater kit 6 kW (230/1~/50)	○	○
Low noise version with insulation of the compressor vane	○	○

● Standard, ○ Optional, – Not Available.



SEH

Swimming pool dehumidifiers



Series SEH dehumidifiers are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. These units are intended to be installed in a technical room close to the swimming pool. A centrifugal fan with high available static pressure allows unit connection to ductworks, both for air suction and discharge. This series comprises 2 basic models which cover a capacity range from 164 to 194 l/24h.

VERSIONS

- The series includes 2 models with air flows from 1400 to 1900 m³/h.

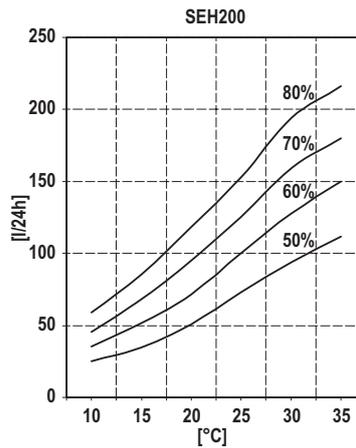
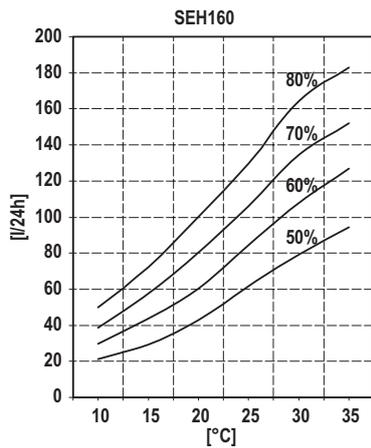
ACCESSORIES

- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Partial heat recovery
- Hot water coil
- On/Off 3 way valve kit installed
- Electric heater kit (3kW, 4,5kW, 6kW, 12kW)
- Low noise version with insulation of the compressor vane
- Air filter with frame for ducted installation

SEH

SEH

Mod.		SEH160	SEH200
Moisture removed ⁽¹⁾	l/24h	164,3	194,1
Power input ⁽¹⁾	kW	2,6	3
Current input ⁽¹⁾	A	5,9	7,6
Partial heat recovery ⁽²⁾	kW	2	2,6
Hot water coil ⁽³⁾	kW	11,2	14,4
Air flow	m³/h	1400	1900
Available static pressure	Pa	180	180
Refrigerant		R407C	R407C
Sound pressure ⁽⁴⁾	dB(A)	63	64
Temperature operating range	°C	5-35	5-35
Humidity operating range	%	50-99	50-99
Weight	Kg	159	169
Power Supply	V/Ph/Hz	400/3~+N/50	



¹⁾ Room temperature 30°C; relative humidity 80%.

²⁾ Water temperature in / out 25-30°C.

³⁾ Room temperature 32°C; water temperature 80/70°C.

⁴⁾ At 1 mt from the unit in free field conditions according to ISO 3746.

SEH

FRAME

All SEH units are made from hot-galvanized thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. All screws and rivets are in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressors are scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. The compressors are mounted on rubber vibration dampers and they can be supplied with sound attenuation jacket to reduce the noise emission (option). The inspection on the compressors is possible only through the unit front panel.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a Stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FAN

The fans are made of galvanized steel, centrifugal type, double inlet with forward curved blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are 4 poles (about 1500 rpm), three-phase power supply. The motors are connected to the fans by pulleys and belts. The protection class of the motors is IP 54.

AIR FILTER

It is made of synthetic filtering media, undulated type, without electro-static charge; they are all removable for differential disposal. Efficiency class G1, according to EN 779:2002.

MICROPROCESSOR

All SEH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation led.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP55. In all SEH (not on SDH) units are installed, standard, the compressors sequence relay who disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection fans and compressors), control circuit automatic breakers, compressor contactors, fan contactors. The terminal board is supplied with voltage free contacts for remote ON-OFF and general alarm.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: antifreeze protection sensor, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

TEST

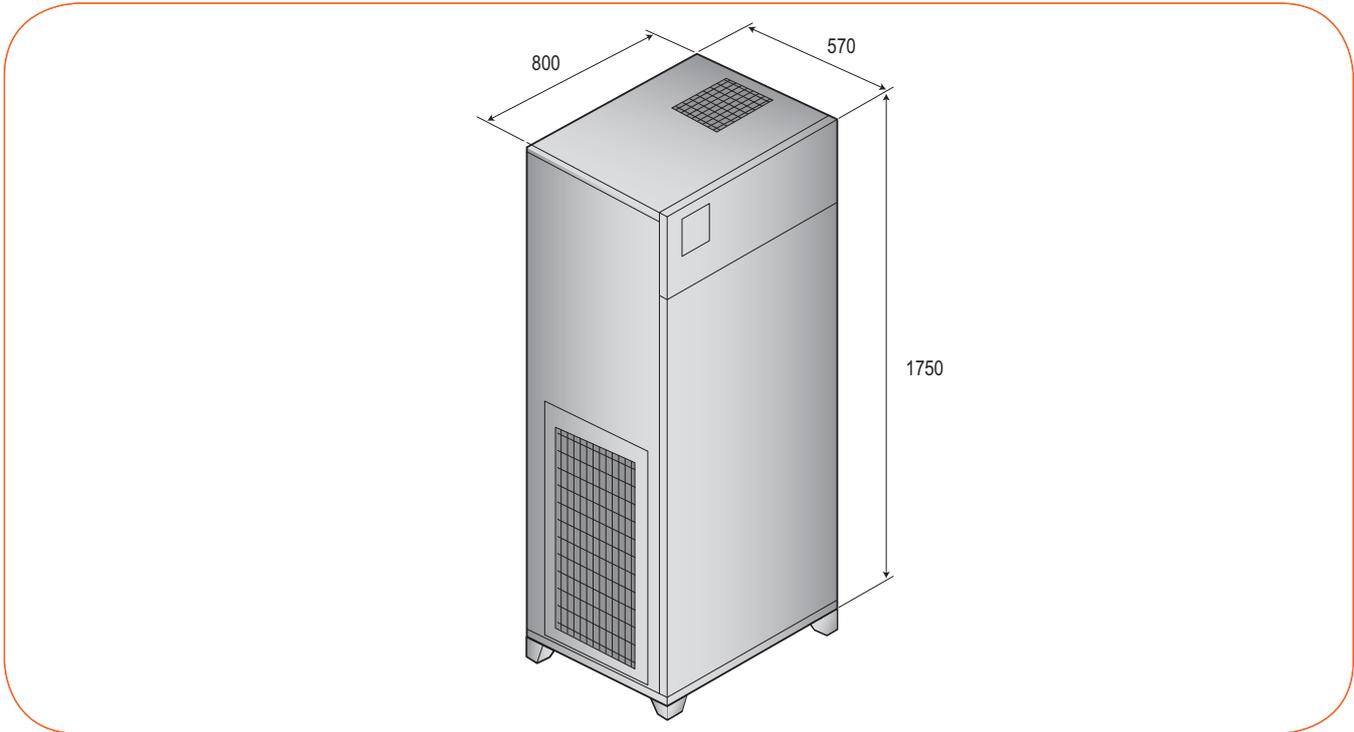
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

SEH

SEH

Mod.	SEH160	SEH200
Remote mechanical hygrostat	○	○
Remote mechanical hygrostat + thermostat	○	○
Partial heat recovery	○	○
Hot water coil	○	○
On/Off 3 way valve kit installed	○	○
Electric heater kit 3 kW (230/1~/50)	○	○
Electric heater kit 4,5 kW (230/1~/50)	○	○
Electric heater kit 6 kW (230/1~/50)	○	○
Electric heater kit 6 kW (400/3~+N/50)	○	○
Electric heater kit 12 kW (400/3~+N/50)	○	○
Low noise version with insulation of the compressor vane	○	○
Air filter with frame for ducted installation	○	○

● Standard, ○ Optional, – Not available.



SHH

Swimming pool dehumidifiers



Series SHH dehumidifier are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. These units are intended to be installed in a technical room close to the swimming pool. A centrifugal fan with high available static pressure allows unit connection to ductworks, both for air suction and discharge. This series comprises 5 basic models which cover a capacity range from 330 to 937 l/24h.

VERSIONS

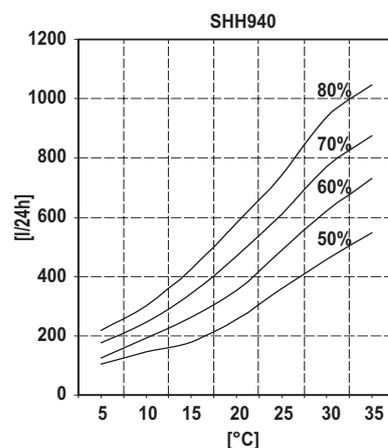
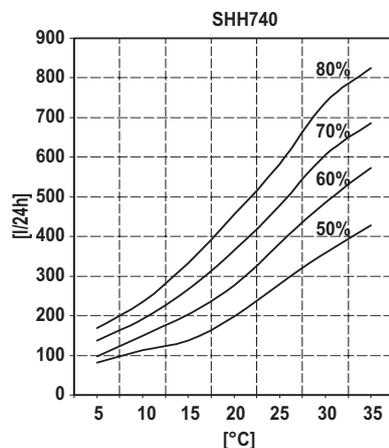
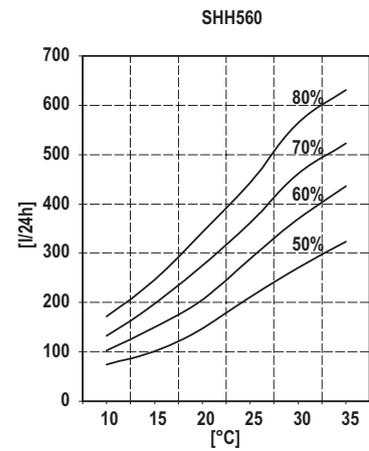
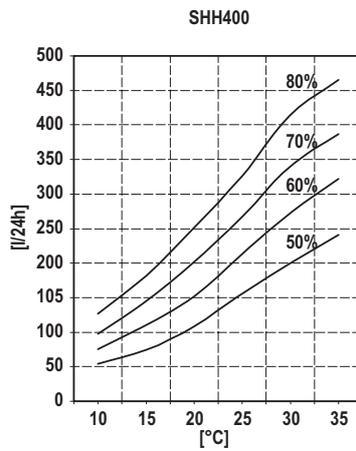
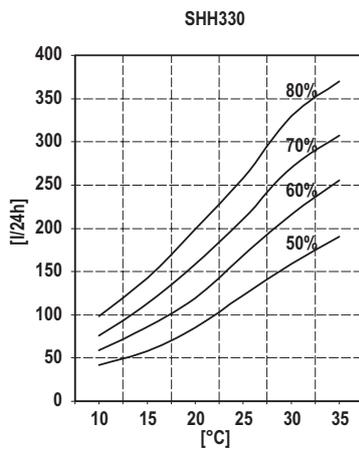
- The series includes 5 models with air flows from 3800 to 8200 m³/h.

ACCESSORIES

- Remote mechanical hygostat
- Remote mechanical hygostat + thermostat
- Condensate discharge pump
- Partial heat recovery
- Hot water coil
- On/Off 3 way valve kit installed
- Electric heater kit (3kW, 4,5kW, 6kW, 12kW)
- Low noise version with insulation of the compressor vane
- Air filter with frame for ducted installation

SHH

Mod.		SHH330	SHH400	SHH560	SHH740	SHH940
Moisture removed ⁽¹⁾	l/24h	329,9	414,8	564,1	738,5	937,3
Nominal input power ⁽¹⁾	kW	5,3	6,6	8,7	11,7	15,6
Maximum input power ⁽²⁾	kW	5,8	7,3	9,5	12,8	17,1
Nominal input current ⁽¹⁾	A	13,5	15,3	16	19,4	25,2
Maximum input current ⁽²⁾	A	14,2	16,5	18,4	21,2	24,7
Partial heat recovery ⁽³⁾	kW	4,8	5,8	8	10,5	13,5
Hot water coil ⁽⁴⁾	kW	21,8	21,8	36,2	46	55,7
Air flow	m³/h	3800	3800	5150	6850	8200
Available static pressure	Pa	230	230	250	250	250
Refrigerant		R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽⁵⁾	dB(A)	67	69	72	73	74
Temperature operating range	°C	10-36	10-36	10-36	10-36	10-36
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99
Weight	Kg	195	209	405	421	450
Power supply	V/Ph/Hz	400/3~+N/50				



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: water temperature in / out 25-30°C.
⁴⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

SHH

FRAME

All SHH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. The drip tray is present standard in all SHH units and it's in stainless steel. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant circuit includes: sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves form maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. It's mounted on rubber vibration dampers and, by request, it can be supplied with some jackets to reduce the noise (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FANS

The fan is centrifugal type. It's statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It's mounted on the unit frame by interposition of rubber vibration dampers. The electric motor is at 4 poles (about 1500 rpm). Connected to the fan by belts and pulleys and it's equipped of an integrated thermal overload protection. The protection class of the motors is IP 54.

AIR FILTER

It's supplied standard with the unit. It's made of filtering material in synthetic fibre without electrostatic charge. It can be removed for differential disposal, class G3, according to EN 779:2002.

MICROPROCESSOR

All SHH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, the management of fresh and exhaust air, post heating valve and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all SHH units are installed, standard, the compressors sequence relay who disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of the fans), compressors fuses, control circuit automatic breakers, compressor contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the microprocessor control that a defrost cycle is needed and controls its termination, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection

TEST

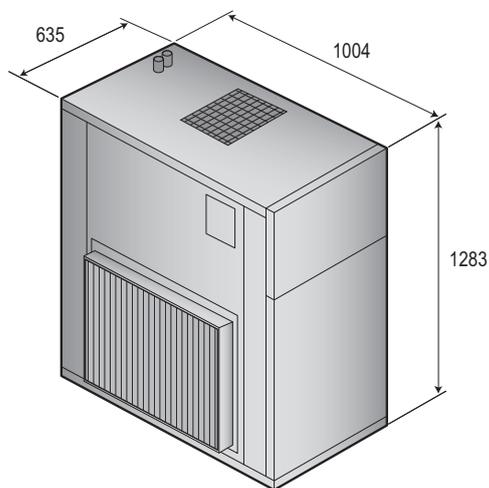
All the units are fully assembled and wired at the factory, carefully evacuated and dried after leak tests under pressure and then charged with refrigerant R407C. They are all fully operational tested before shipment. They all conform to European Directives and are individually marked with the CE label and provided with Conformity Declaration.

SHH

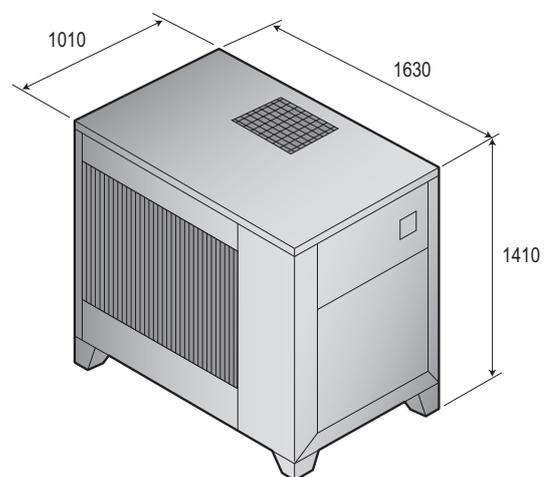
SHH

Mod.	SHH330	SHH400	SHH560	SHH740	SHH940
Remote mechanical hygrostat	○	○	○	○	○
Remote mechanical hygrostat + thermostat	○	○	○	○	○
Condensate discharge pump	–	–	○	○	○
Partial heat recovery	○	○	○	○	○
Hot water coil	○	○	○	○	○
On/Off 3 way valve kit installed	○	○	○	○	○
Electric heater kit 6 kW (400/3~+N/50)	○	○	○	○	○
Electric heater kit 12 kW (400/3~+N/50)	○	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○	○
Low noise version with insulation of the compressor vane	○	○	○	○	○
Horizontal air discharge	–	–	○	○	○

● Standard, ○ Optional, – Not Available.



SHH330 / SHH400



SHH560 / SHH740 / SHH940

SRH

Swimming pool dehumidifiers



R407C

Series SRH dehumidifier are expressly designed for use in swimming pools where humidity should be closely controlled in order to guarantee optimal comfort. These units are intended to be installed in a technical room close to the swimming pool. A centrifugal fan with high available static pressure allows unit connection to ductworks, both for air suction and discharge. This series comprises 6 basic models which cover a capacity range from 1150 to 3000 l/24h. All the units are fully assembled and wired at the factory.

VERSIONS

SRH/WZ unit with heat recovery: The unit is designed to have one refrigerant circuit condensed by air, the other one condensed both by water and air. If the unit is supplied with the advanced control panel it is possible to set operation priorities (air or water). In the SRH/WZ versions the heat recovery is designed to reject on the water about 50% of the total thermal load generated by the unit. When the heat recovery is activated, the supply air temperature of the unit is, basically, the same of the return air, so, in this case, the dehumidification is performed without air temperature increase. This operation mode is suitable during intermediate seasons when the humidity in the swimming pool has to be controlled but also the room air temperature overheating has to be avoided.

ACCESSORIES

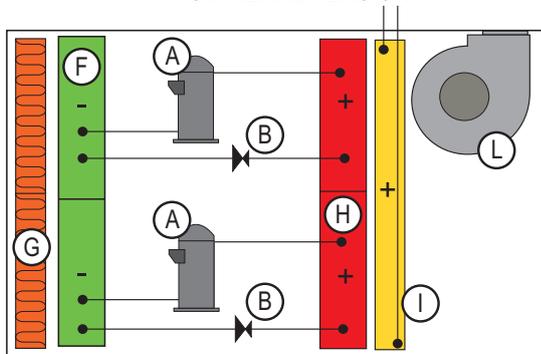
- Basic control panel (Humidity control only)
- Basic control panel (Humidity + Temperature control)
- Advanced control panel (Humidity + Temperature control)
- LS Low noise version
- Hot water coil
- On/Off 3 way valve kit installed
- Modulating 3 way valve kit installed
- Oversized static pressure 400 Pa
- Horizontal air discharge (Opposite side coils)
- Manometers
- Air filter with frame for ducted installation

SRH

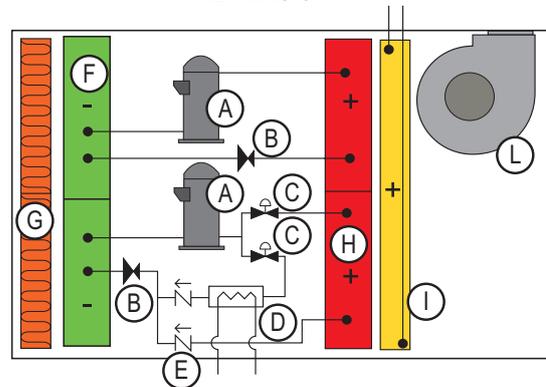
SRH

Mod.		SRH1100	SRH1300	SRH1500	SRH1800	SRH2200	SRH3000
Moisture removed ⁽¹⁾	l/24h	1130	1300	1480	1875	2311	3050
Moisture removed ⁽²⁾	l/24h	739	860	973	1240	1537	2025
Nominal input power ⁽¹⁾	kW	14,1	16,5	19,3	23,6	27,6	37
Maximum input power ⁽²⁾	kW	19,6	22,6	26,2	32,4	38,4	51,2
Nominal input current ⁽¹⁾	A	32	38	40	45	55	69
Maximum input current ⁽²⁾	A	36	43	49	58	63	88
Partial heat recovery ⁽³⁾	kW	19	24	25	32	40	50
Hot water coil ⁽⁴⁾	kW	72	88	94	112	125	155
Air flow	m³/h	9500	10500	13000	15000	17000	26000
Available static pressure	Pa	250	250	250	250	250	250
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽⁶⁾	dB(A)	71	72	74	74	75	76
Temperature operating range	°C	10-36	10-36	10-36	10-36	10-36	10-36
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	580	710	770	830	940	1290
Power supply	V/Ph/Hz	400/3~+N/50					

STANDARD VERSION



WZ VERSION



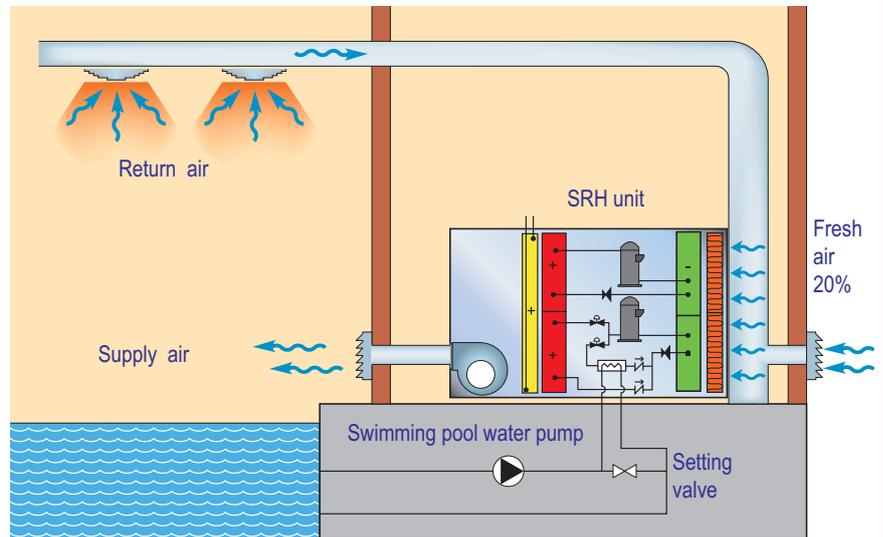
A	Compressor	F	Evaporator
B	Expansion valve	G	Air filter
C	Solenoid valve	H	Condenser
D	Heat recovery	I	Hot watercoil (accessory)
E	One way valve	L	Fan

¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%.
²⁾ Performances refer to the following conditions: room temperature 35°C; relative humidity 80%.
³⁾ Performances refer to the following conditions: water temperature in / out 25-30°C.
⁴⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.
⁵⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.
⁶⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 60%.

SRH

Typical Installation

The picture on the right shows a typical installation of the SRH units; Normally, the unit is installed in the technical room and ducted on both sides (supply and return). In many installations it is installed a fresh air duct designed for 15-20% airflow. Clearly, in this application also an exhaust fan has to be installed in order to avoid over pressure in the swimming pool. The water valve present in the heat recovery hydraulic circuit has to be set in order to guarantee the nominal water flow in the heat recovery.



FRAME

All SRH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. All screws and rivets are in stainless steel. The colour of the units is RAL 7035.

CIRCUITO FRIGORIFERO

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. All units are supplied with two circuits, each refrigerant circuit is totally independent from the other. Any incorrect operation of one circuit does not influence the other circuit. The refrigerant circuit includes: SRH liquid line manual shut-off valve, sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device (according to PED regulation). SRH/WZ. These versions are supplied with one refrigerant circuit identical to the SRH version, the second circuit includes: one way valves, solenoid valves, liquid receiver, water heat recovery, liquid line shut-off valve, sight glass, filter drier, thermal expansion valve with external equalizer, Schrader valves for maintenance and control, pressure safety device.

COMPRESSOR

The compressors are scroll type with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. The compressors are mounted on rubber vibration dampers and they can be supplied with sound attenuation jacket to reduce the noise emission (option). The compressor crankcase heater is always powered when the unit is in stand-by. The inspection on the compressors is possible only through the unit front panel.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All evaporators are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these heat exchangers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a Stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

FANS

The fans are made of galvanized steel, centrifugal type, double inlet with forward curved blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are 4 poles (about 1500 rpm), three-phase power supply. The motors are connected to the fans by pulleys and belts. The protection class of the motors is IP 54.

AIR FILTER

Supplied as standard with the unit, it is made of G3 class synthetic fibre filtering media (efficiency 85% by weight), 48 mm thickness.

MICROPROCESSOR

All SRH units can be supplied with 2 kind of controls:

Basic control

it manages the following features: antifreeze protection, compressor timing, compressor automatic starting sequence, defrost cycle, alarm reset, potential free contact for remote general alarm.

Advanced control

in addition to the basic control it manages a wider range of features as: setting the priority operation mode (SRH/WZ only), managing of the main and the secondary set points, display of the alarms with histo-

SRH

rical list, time band operation, integration with hot water coil and modulating valve. Upon request the advanced control can be connected to a BMS system for the remote control and management. The technical department is available to study, together with the customer, different solutions using MODBUS; LONWORKS; BACNET or TREND protocols.

ELECTRONIC PROBE TEMPERATURE-HUMIDITY

This sensor is supplied standard on the SRH/WZ versions supplied with advanced control.

It can be installed either in the room or in the return duct (to be specified before order) and allow the operation of the unit in

the following modes:

Dehumidification
Heating (by hot water coil)
Dehumidification + heating
Dehumidification + heat recovery

ELECTRIC BOX

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all SRH units are installed, standard, the compressors sequence relay who disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged

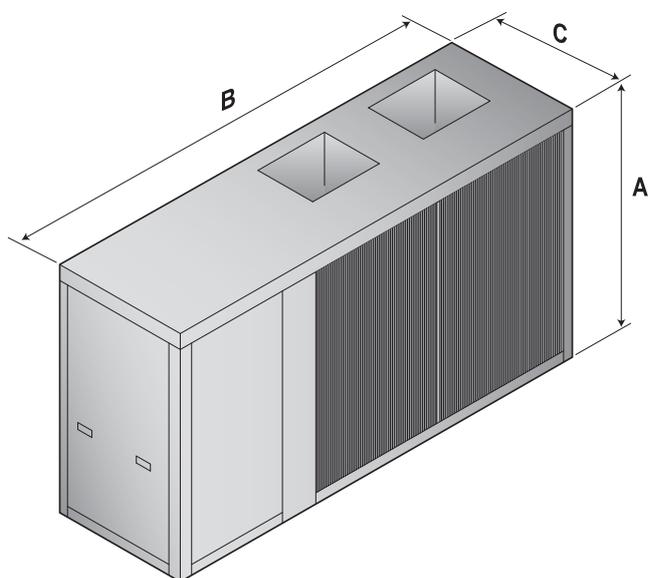
if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection fans and compressors), control circuit automatic breakers, compressor contactors, fan contactors. The terminal board is supplied with voltage free contacts for remote ON-OFF and general alarm.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: antifreeze protection sensor, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

Mod.	SRH1100	SRH1300	SRH1500	SRH1800	SRH2200	SRH3000
Basic control (Humidity control only)	○	○	○	○	○	○
Basic control (Humidity + temperature control)	○	○	○	○	○	○
Advanced control panel (Humidity + temperature control)	○	○	○	○	○	○
Low noise version (LS)	○	○	○	○	○	○
Hot water coil	○	○	○	○	○	○
On/Off 3 way valve kit installed	○	○	○	○	○	○
Modulating 3 way valve kit installed	○	○	○	○	○	○
Available static pressure 400 Pa	○	○	○	○	○	○
Horizontal air discharge (opposite side coils)	○	○	○	○	○	○
Manometers	○	○	○	○	○	○
Air filter with frame for ducted installation	○	○	○	○	○	○

● Standard, ○ Optional, – Not Available.



Mod.	A (mm)	B (mm)	C (mm)
1100	1250	1870	850
1300	1250	1870	850
1500	1566	2608	1105
1800	1566	2608	1105
2200	1566	2608	1105
3000	1566	3608	1105

UTH-UTHZ

Energy recovery high efficiency dehumidifiers



The energy recovery high efficiency dehumidifiers UTH range have been designed to grant the complete control of temperature, humidity, the energy recovery and the fresh air treatment in the covered swimming pools or in other applications with very high internal loads. The UTH units can operate in environments up to 36°C and are able to manage up to 30% of fresh air.

The range includes 7 models, which covers airflows range from 1500 to 6000 m³/h.

The use of double-passage-cross-flow energy recovery allows to increase up to 20% the dehumidification capacity in comparison to the traditional dehumidifiers.

The use of the double passage in the energy recovery, in fact, allows the free sensible pre-cooling of the air near to the saturation point, giving so the possibility to the unit to work, basically, in latent load.

VERSIONS

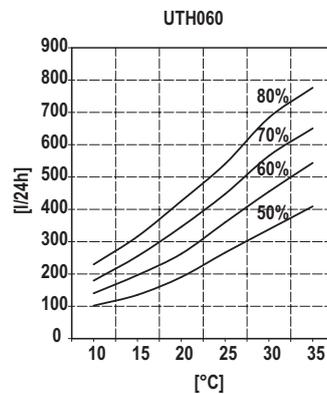
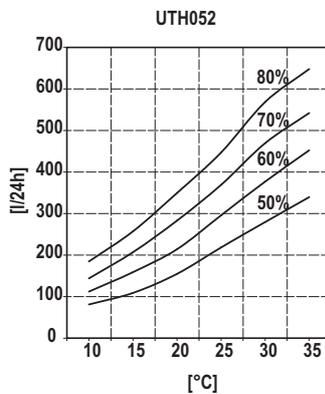
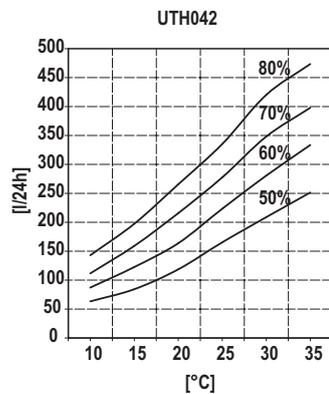
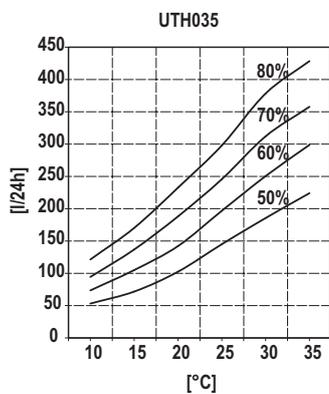
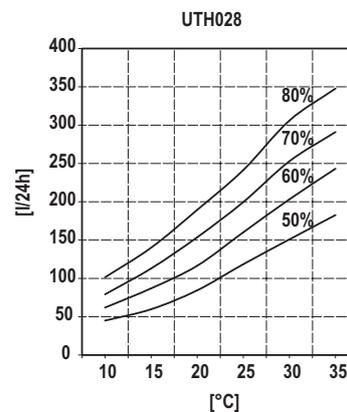
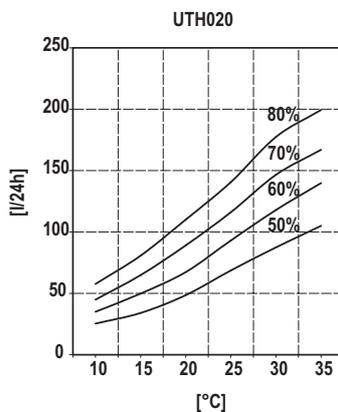
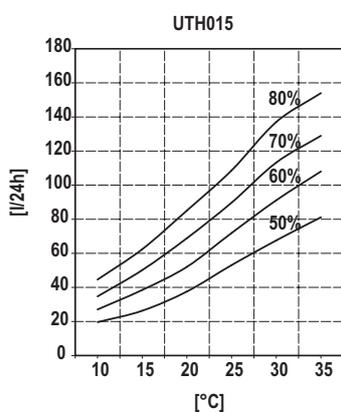
- **Version with temperature control UTHZ:** These versions are supplied with a remote condenser and are used in those applications where it is necessary the simultaneous control of temperature and humidity: **Dehumidification mode:** the internal condenser is activated; the unit dehumidifies and heats up the room temperature; **Cooling mode:** the remote condenser is activated; the unit dehumidifies and cools down the room temperature.

ACCESSORIES

- Partial heat recovery
- Low ambient temperature device with heat recovery

UTH-UTHZ

Mod.		UTH015	UTH020	UTH028	UTH035	UTH042	UTH052	UTH060
Moisture removed ⁽¹⁾	l/24h	137	178,1	306	378,4	440,1	568,5	683,5
Moisture removed ⁽²⁾	l/24h	91,1	117,9	203,2	250,5	294,1	376,9	454,8
Moisture removed ⁽³⁾	l/24h	182,3	235,2	406,1	501	588,2	753,8	909,6
Compressor input power ⁽¹⁾	kW	1,6	2,1	3,6	4,5	5,1	6,6	7,9
Nominal input power ⁽¹⁾	kW	2,5	3	4,8	6,1	7	9,1	10,4
Nominal input current ⁽¹⁾	A	6,2	7	10,4	13,6	15,3	20,4	22,8
*Partial heat recovery ⁽⁴⁾ (accessory)	kW	2,2	2,2	3,7	4,5	5,8	6,7	8,1
Hot water coil ⁽⁵⁾	kW	15	18,3	28,4	33	44	50,8	55,8
Total air flow	m ³ /h	1500	2000	2800	3500	4200	5200	6000
Available static pressure	Pa	200	200	200	200	200	200	200
Maximum fresh air flow	m ³ /h	450	600	845	1050	1260	1560	1800
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽⁶⁾	dB (A)	63	63	66	66	68	69	69
Temperature operating range	°C	10-36	10-36	10-36	10-36	10-36	10-36	10-36
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	290	305	400	420	570	590	620
Power supply	V/Ph/Hz	400/3~+N/50						



¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%, fresh air 0%.
²⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 60%, fresh air 0%.
³⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 60%, fresh air 30% (5°C-80%).
⁴⁾ Performances refer to the following conditions: water temperature in / out 25-30°C.
⁵⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.
⁶⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

UTH-UTHZ

Mod.		UTHZ015	UTHZ020	UTHZ028	UTHZ035	UTHZ042	UTHZ052	UTHZ060
Moisture removed ⁽¹⁾	l/24h	137	178,1	306	378,4	440,1	568,5	683,5
Moisture removed ⁽²⁾	l/24h	91,1	117,9	203,2	250,5	294,1	376,9	454,8
Moisture removed ⁽³⁾	l/24h	182,3	235,2	406,1	501	588,2	753,8	909,6
Cooling capacity ⁽¹⁾	kW	6,10	7,70	13,10	15,30	19,20	23,90	27,80
Compressor input power ⁽¹⁾	kW	1,6	2,1	3,6	4,5	5,1	6,6	7,9
Nominal input power ⁽¹⁾	kW	2,5	3	4,8	6,1	7	9,1	10,4
Nominal input current ⁽¹⁾	A	6,2	7	10,4	13,6	15,3	20,4	22,8
*Partial heat recovery ⁽⁴⁾ (accessory)	kW	2,2	2,2	3,7	4,5	5,8	6,7	8,1
Hot water coil ⁽⁵⁾	kW	15	18,3	28,4	33	44	50,8	55,8
Total air flow	m ³ /h	1500	2000	2800	3500	4200	5200	6000
Available static pressure	Pa	200	200	200	200	200	200	200
Maximum fresh air flow	m ³ /h	450	600	845	1050	1260	1560	1800
Refrigerant		R407C	R407C	R407C	R407C	R407C	R407C	R407C
Sound pressure ⁽⁶⁾	dB (A)	63	63	66	66	68	69	69
Temperature operating range	°C	10-36	10-36	10-36	10-36	10-36	10-36	10-36
Humidity operating range	%	50-99	50-99	50-99	50-99	50-99	50-99	50-99
Weight	Kg	290	305	400	420	570	590	620
Power supply	V/Ph/Hz	400/3~+N/50						

¹⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 80%, fresh air 0%.

²⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 60%, fresh air 0%.

³⁾ Performances refer to the following conditions: room temperature 30°C; relative humidity 60%, fresh air 30% (5°C-80%).

⁴⁾ Performances refer to the following conditions: water temperature in / out 25-30°C.

⁵⁾ Performances refer to the following conditions: room temperature 32°C; water temperature 80/70°C.

⁶⁾ Sound pressure level measured at 1 mt from the unit in free field conditions according to ISO 3746.

REFRIGERANT CONNECTIONS FOR Z VERSIONS

The Z version units are supplied of a remote condenser and they need to be connected with the dehumidifier through refrigerant lines.

The remote condenser is equipped of a main switch and a fan speed control. Please refer to the following paragraphs for the refrigerant connections and to the next chapter for the electrical ones.

Line path and max. distance between the sections.

For the units in Z version with separate sections, the course of the refrigerant pipes is influenced by the location of the sections themselves and by the structure of the building. The pipes have to be in any case as short as possible, so that they can contain the charge lacks and reduce the quantity of

refrigerant present in the refrigerant circuit. The connections must be isolated and their length must not exceed 30 m. Our Company is available for any information even in case of applications not included in the limits indicated above.

Dehumidifier lower than the condenser

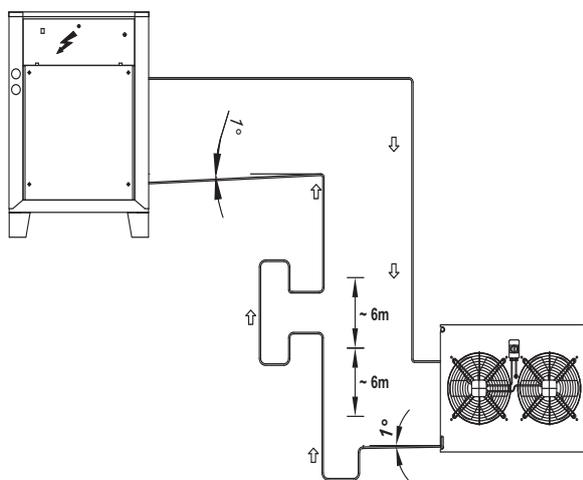
Install a liquid trap on suction line at the evaporator outlet with the same height of the evaporator so that liquid refrigerant, when the system is not running, will not fall into compressor;

On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

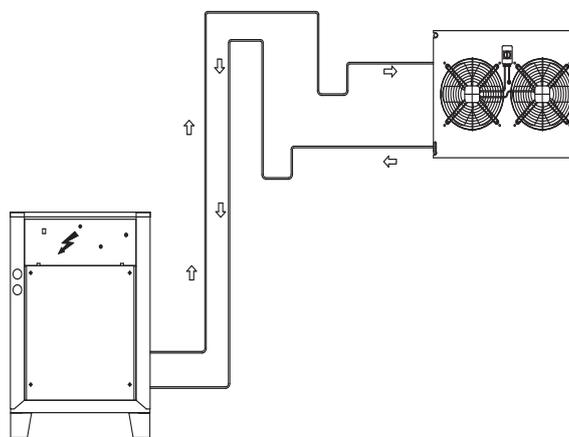
Dehumidifier higher than the condenser

On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

Install a collection pit immediately downstream from the bulb of the thermostatic valve; On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor. Pipelines diameter can be read in Table II depending on the unit size and the length of refrigerant pipelines.all'1%.



Dehumidifier higher than the condenser



Dehumidifier lower than the condenser

Refrigerant diameters lines for version UTHZ						
Distace (m)	10		20		30	
Mod.	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)	Gas (mm)	Liquid (mm)
015	15,8	7,94	15,8	7,94	---	---
020	15,8	7,94	15,8	7,94	---	---
028	15,8	7,94	15,8	7,94	15,8	7,94
035	15,8	7,94	15,8	7,94	15,8	7,94
042	15,8	7,94	18	9,52	18	9,52
052	22	15,88	22	18	28	18
062	28	15,88	28	18	28	22

UTH-UTHZ

UTH-UTHZ

Liquid line refrigerant charge			
Line liquid diameter	Refrigerant charge g/m	Line liquid diameter	Refrigerant charge g/m
7,94 (mm)	30	9,52	50
15,88 (mm)	175	18 (mm)	220
22 (mm)	360	---	---

Cooling capacity correction factors				
Mod.	Refr. line 0 (m)	Refr. line 10 (m)	Refr. line 20 (m)	Refr. line 30 (m)
UTHZ	1	0,98	0,96	0,95

Water temperature	Room temperature / Relative Humidity											
	27 °C		28 °C		29 °C		30 °C		31 °C		32 °C	
	50 %	60 %	50 %	60 %	50 %	60 %	50 %	60 %	50 %	60 %	50 %	60 %
22 °C	0,108	0,057	0,092	0,041	0,075	0,023	0,059	0,008				
23 °C	0,134	0,080	0,117	0,062	0,099	0,044	0,083	0,026	0,065			
24 °C	0,161	0,105	0,144	0,086	0,126	0,068	0,108	0,048	0,090	0,029		
25 °C	0,191	0,134	0,173	0,114	0,155	0,093	0,135	0,074	0,117	0,053	0,098	
26 °C	0,222	0,164	0,204	0,143	0,186	0,122	0,167	0,101	0,147	0,080	0,126	0,057
27 °C	0,258	0,197	0,239	0,176	0,219	0,155	0,200	0,132	0,180	0,110	0,158	0,086
28 °C	0,296	0,233	0,276	0,212	0,257	0,189	0,236	0,165	0,215	0,143	0,194	0,117
29 °C	0,336	0,272	0,317	0,249	0,296	0,227	0,275	0,203	0,254	0,179	0,231	0,153
30 °C	0,378	0,314	0,359	0,291	0,339	0,267	0,317	0,243	0,296	0,218	0,272	0,191

The table reported here above, calculates the quantity of water for m² of pool. It's possible to estimate approximately the total pool evaporation multiplying this value

for the surface of the pool. The values reported here are to be intended as pure indicative. In case of use in ambient with hydromassage, it's advisable to multiply the

values obtained for 2,5-3.

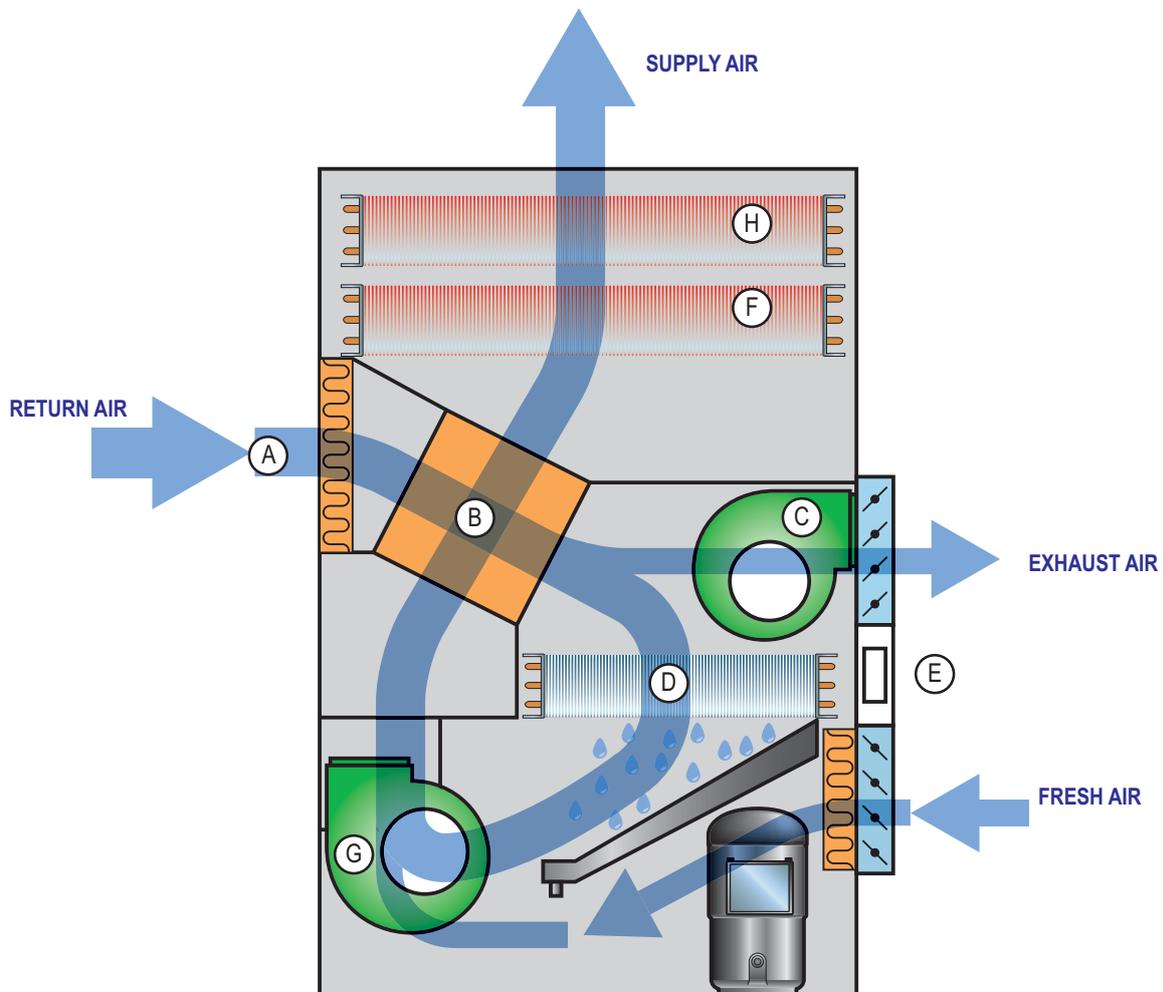
UTH-UTHZ

OPERATION PRINCIPLE

The hot and humid return airflow, moved by the fan (G), passes in the return filter (A), then across the first side of the energy recovery (B) where, crossing the cold air present on the other side, leaves part of its enthalpy. At this point part of the treated air (from 0% to 30%) is removed by the exhaust fan (C), while the remaining part passes across the cold evaporating coil (D) where it is dried at the required level.

After the evaporator the cold and dried airflow is mixed with fresh air (from 0% to 30%) entered through the fresh air damper (E) and returned into the energy recovery for the second passage where, crossing the hot air present on the other side, it is warmed up. The airflow then passes across the condensing coil (F) where it is post heated and finally sent into the swimming pool. In case the air discharge temperature

is still too cold, the hot water temperature coil H (accessory) will provide to increase it up to the required level.



UTH-UTHZ

UTH-UTHZ

FRESH AIR TRATMENT

UTH-UTHZ

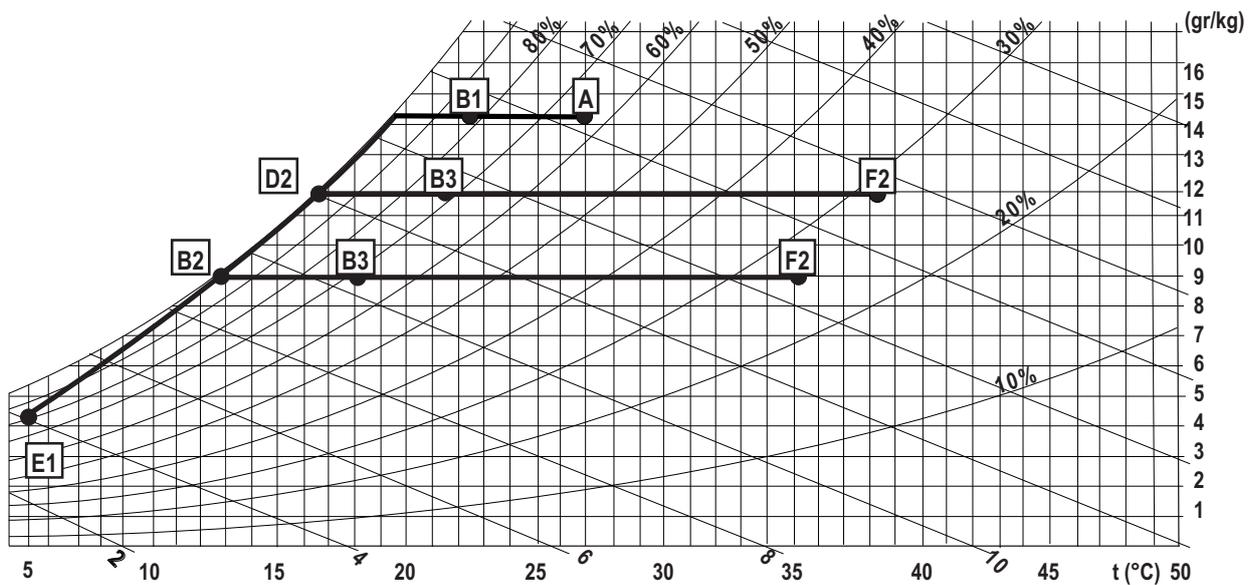
All units can operate with fresh air up to 30% of the total nominal airflow managed by the unit. The fresh air, winter season, has a humidity content that is extremely lower than the indoor air and its use can increase the dehumidification of the unit using the same airflow.

In the below diagram you may note that using fresh air we can supply in the room air with a lower dew point but, obviously, in this case the fresh air will have to be heated before to be supplied in the room with consequent higher thermal load of the heating coil.

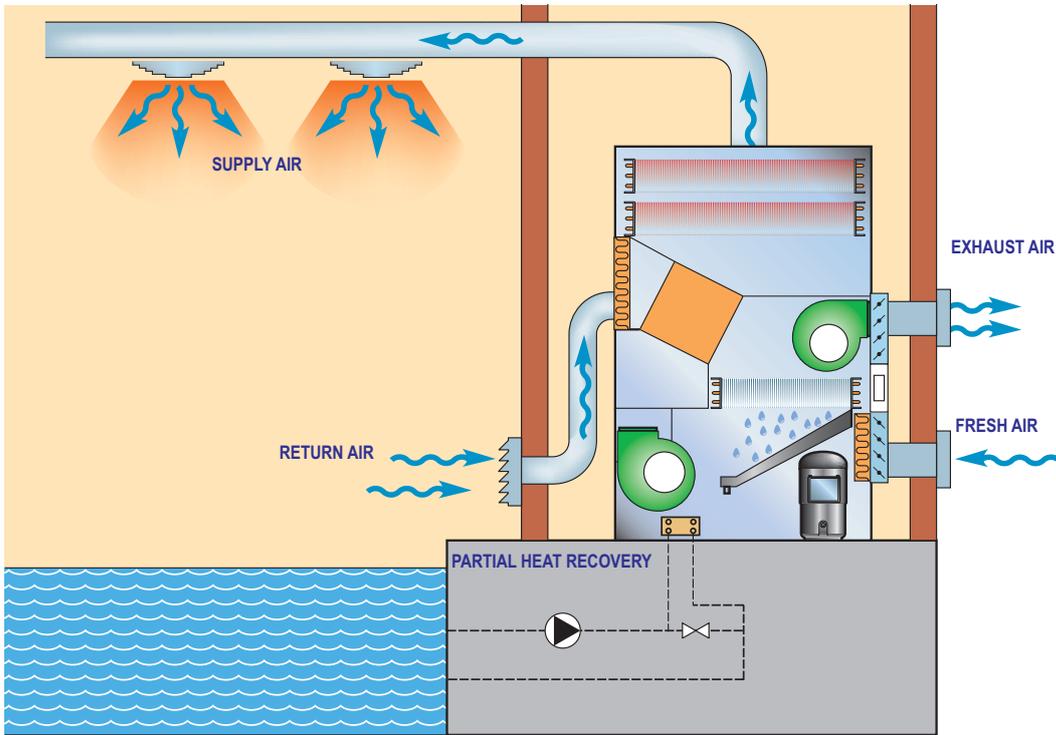
- A-B1 Sensible cooling made in the cross flow heat recovery (27-65% / 23-80%)
- B1-D2 Cooling with dehumidification in the evaporator of the unit (23-80% / 17-95%)
- D2-B3 Heating in the cross flow heat recovery (without fresh air) (17-95% / 22-75%)
- B3-F2 Post-heating in the condenser of the unit (without fresh air) (22-75% / 38-28%)
- D2-B2 Mixing with 30% fresh air (17-95% / 13-100%)
- B2-B3 Heating in the cross flow heat recovery (with 30% fresh air) (13-100% / 18,5-70%)
- B3-F2 Post-heating in the condenser of the unit (with 30% fresh air) (18,5-70% / 35-26%)

The specific dehumidification capacity of the UTH, in total air recirculation (internal conditions 27°C, 65% R.H.) is about 2.5 gr/kg of treated air. In case of using 30% fresh air, at 5°C and 80% R.H., the specific dehumidification capacity of the unit will increase of about 3 gr/kg, doubling practically, the specific dehumidification capacity (5,5 gr/kg).

It is clear that, in case of use of fresh air, the air discharge temperature will be lower (35°C instead of 38°C) and will have to be heated before to be supplied in the room.

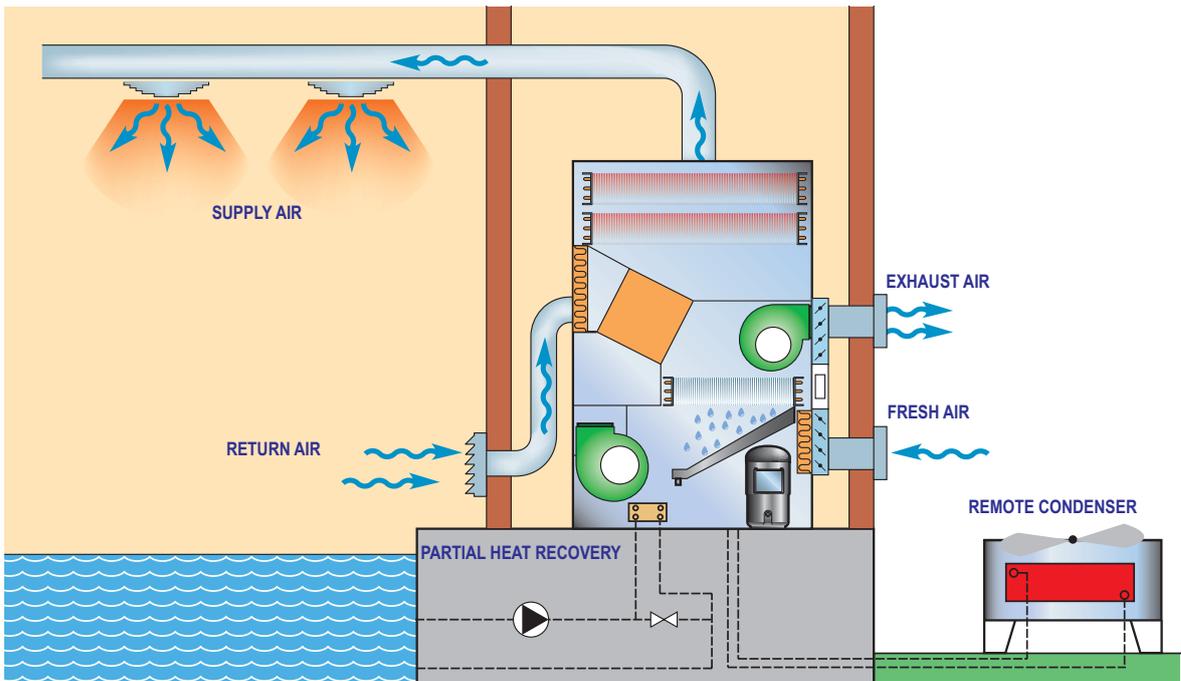


PLANT SCHEME WITH UTH



UTH-UTHZ

PLANT SCHEME WITH UTHZ



UTH-UTHZ

FRAME

All UTH units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents and to operate in aggressive environments. The frame is self-supporting with removable panels. A stainless steel drip tray is installed on all units. The colour of the units is RAL 7035.

REFRIGERANT CIRCUIT

The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. The refrigerant gas used in these units is R407C. The refrigerant circuit includes:

sight glass, filter drier, thermal expansion valve with external equalizer, liquid line manual shut-off valve, Schrader valves for maintenance and control, pressure safety device (according to PED regulation).

COMPRESSOR

The compressor is scroll type, with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. The compressor is mounted on rubber vibration dampers and, upon request, can be supplied with sound-proof cover to reduce noise emission (accessory). The crankcase heater, when present, is always powered when the compressor is in stand-by. The inspection is possible through the frontal panel of the unit that allows the maintenance of the compressor.

CONDENSER AND EVAPORATOR

Condensers and evaporators are made of copper pipes and aluminium fins. All coils are painted with epoxy powders to prevent corrosion problem due to their use in aggressive environments. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. All units are supplied, standard, with a stainless steel drip tray and all evaporators are supplied with a temperature sensor used as automatic defrost probe.

HAET RECOVERY

The heat recovery is cross flow heat exchanger type, with painted aluminium plates; painted galvanised steel frame with additional tightening of the heat exchange pack, in order to operate in aggressive environments; it has a low pressure drop value and it is always supplied with stainless steel drip tray.

HOT WATER COIL

The hot water coil is made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. All coils are supplied with a built-in 3 way modulating valve, directly managed by the microprocessor of the unit.

SUPPLY FAN

The supply fan is made of galvanized steel, centrifugal type, double inlet with forward curved blades. It is statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It is mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are 4 poles (about 1500 rpm), three-phase power supply. The motors are connected to the fans by pulleys and belts. The protection class of the motors is IP 54.

EXHAUST FAN

The exhaust fan is made of galvanized steel, centrifugal type, double inlet with forward curved blades. It is statically and dynamically balanced and supplied complete of the safety fan guard according to EN 294. It is mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are directly connected to the fan; they are all at 3 speeds, with integrated thermal protection. The protection class of the motors is IP 54.

EXHAUST AND FRESH AIR DAMPERS

The exhaust and fresh air dampers are made of aluminium frame and fins, distance between the fins 150 mm. The BOCCOLE are in nylon; exhaust and fresh air dampers are connected each other and supplied already with servomotor managed by the microprocessor of the unit.

AIR FILTER

It is made of synthetic filtering media, ondulated type, without electro-static charge; they are all removable for differential disposal. Efficiency class G3, according to EN 779:2002.

MICROPROCESSOR

All UTH units are supplied standard with microprocessor controls. The microprocessor controls the following functions: compressor timing, automatic defrost cycles, the management of fresh and exhaust air, post heating valve and alarms. An appropriate LCD display shows the operation mode of the unit, set point and alarms.

TEMPERATURE / HUMIDITY ELECTRONIC PROBE

It is installed, standard, on all UTH units. It is installed on the return air side and allows the unit to operate in dehumidification or heating depending on the required parameters. The electronic probe allows the showing of temperature and humidity values with an operating range from 0-50°C, humidity from 10-90%.

UTH-UTHZ

Mod.	UTHZ015	UTHZ020	UTHZ028	UTHZ035	UTHZ042	UTHZ052	UTHZ060
Partial heat recovery	○	○	○	○	○	○	○
Low ambient temperature device with heat recovery	○	○	○	○	○	○	○

● Standard, ○ Optional, – Not Available.

Mod.	UTHZ015	UTHZ020	UTHZ028	UTHZ035	UTHZ042	UTHZ052	UTHZ060
Partial heat recovery	○	○	○	○	○	○	○
Low ambient temperature device with heat recovery	–	–	–	–	–	–	–

● Standard, ○ Optional, – Not Available.

ELECTRIC BOX

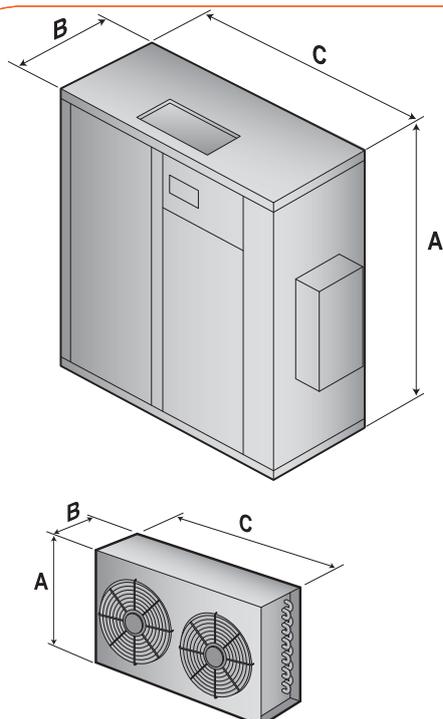
The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. In all UTH units are installed, standard, the compressors sequence relay which disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard

installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors, fan contactors, pump contactors. The terminal board is also supplied with voltage free contacts for remote ON-OFF.

pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: defrost thermostat, which signals to the micro-processor control that a defrost cycle is needed and controls its termination, high



Mod.	A (mm)	B (mm)	C (mm)
015	1770	640	1000
020	1770	640	1000
028	1850	750	1500
035	1850	750	1500
042	1950	1250	1950
052	1950	1250	1950
060	1950	1250	1950

Mod.	A (mm)	B (mm)	C (mm)
015	510	400	757
020	510	400	757
028	610	480	1292
035	610	480	1292
042	610	480	1292
052	810	480	1292
060	810	480	1292

- DEHUMIDIFIERS
- HEAT PUMPS
- CHILLERS



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