

## 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.

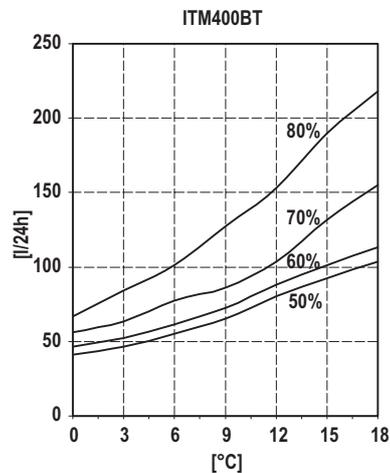
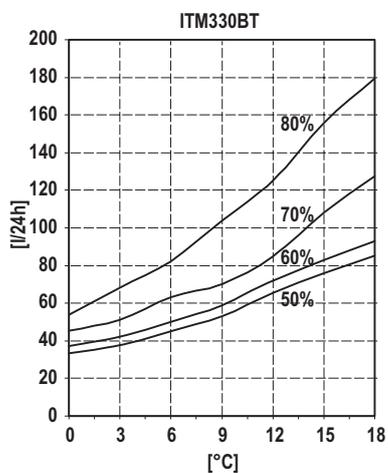
### ACCESSORIES

- 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

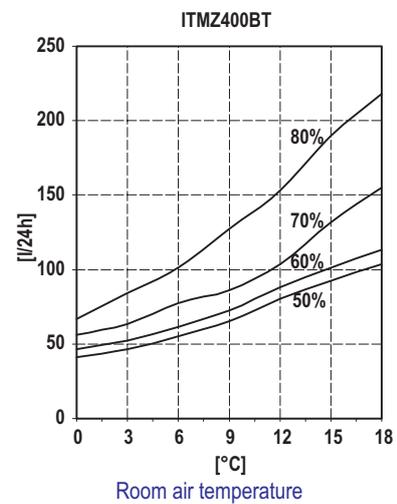
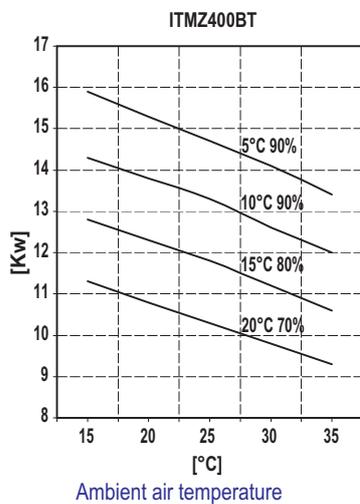
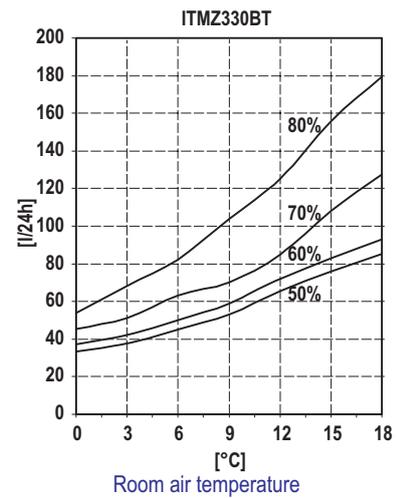
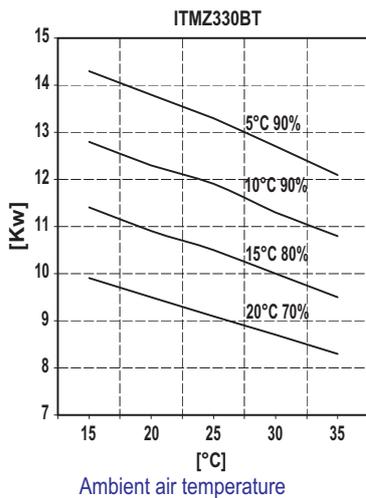
Mod.		ITMBT330	ITMBT400
Moisture removed <sup>(1)</sup>	l/24h	155,8	189,8
Nominal input power <sup>(1)</sup>	kW	5,3	6,6
Max input power <sup>(2)</sup>	kW	7	8
Nominal input current <sup>(1)</sup>	A	16	17,6
Max input current <sup>(2)</sup>	A	18,5	24
Air flow	m <sup>3</sup> /h	3600	4100
Available static pressure	Pa	50	50
Refrigerant		R407C	R407C
Sound pressure <sup>(3)</sup>	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	



<sup>1)</sup> Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.  
<sup>2)</sup> Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.  
<sup>3)</sup> Performances refer to the following conditions: room temperature 15°C; relative humidity 80%; ambient temperature 35°C.  
<sup>4)</sup> Performances refer to the following conditions: room temperature 18°C; relative humidity 80%; ambient temperature 35°C.  
<sup>5)</sup> 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 <sup>(1)</sup>	l/24h	155,8	189,8
Input power <sup>(1)</sup>	kW	6	7
Input current <sup>(1)</sup>	A	18	19
Cooling capacity <sup>(4)</sup>	kW	10,1	12,4
Input power <sup>(4)</sup>	kW	5,8	6,5
Maximum input power <sup>(5)</sup>	kW	7,4	8,3
Maximum input current <sup>(5)</sup>	A	20	24,1
Air flow	m <sup>3</sup> /h	3600	4100
Available static pressure	Pa	50	50
Refrigerant		R407C	R407C
Sound pressure <sup>(3)</sup>	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	



<sup>1)</sup> Performances refer to the following conditions: room temperature 15°C; relative humidity 80%.  
<sup>2)</sup> Performances refer to the following conditions: room temperature 18°C; relative humidity 80%.  
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<sup>5)</sup> 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;

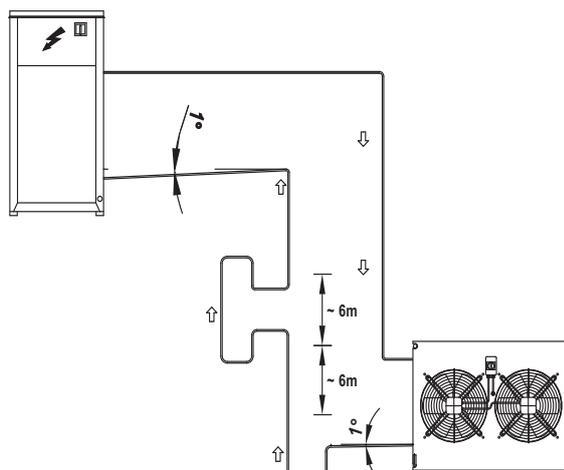
On horizontal suction pipelines a minimum 1% slope should be allowed in order to let the oil easily come back to compressor.

### Dehumidifier higher than the condenser

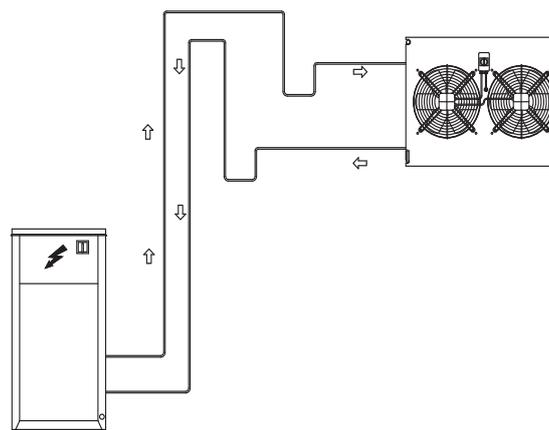
On the rising vertical pipes, oil traps should be fitted every 6 metres to allow oil circulation in the system;

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.

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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.

