



## > Refrigeration dryer is the most worldwide used

- Cost-effective technology
- Low pressure loss
- Intelligent control
- Reliable system





## We are make a dry air

Our air dryer plant was established in 1989 in Italy and in just over 10 years became a leading international company in the production of dryers, filters, aftercoolers and accessories for the treatment of compressed air.

Quality, versatility, respect for the environment and reliability are the characteristics of all our products. The wealth of experience found in company departments, and strict intermediate/final inspections carried out with the most advanced equipment, are the company's distinguishing features.

Our designs, develops and sells a wide range of products for the treatment of compressed air and industrial refrigeration with professionalism and commitment.



### Research & Development

The test workshop in the compressed air department was recently modernised and extended, whereas the test workshop in the water treatment department is brand new.

The dryers for compressed air and the water coolers are tested in the workshops under actual design conditions.

It is also possible to test the machines under extreme operating conditions, adjusting capacities, pressure, and fluid inlet temperature in addition to ambient temperature.

Dedicated software and new instrumentation created ad hoc enable automatic data acquisition 24 hours a day, meeting the most demanding technical requirements.

## Quality

### Certifications & Environmental

To supply a high quality product with outstanding reliability is a major objective of us.

At our technical staff ensure that quality standards are maintained and new technologies developed to be applied to our products.

Every day we provide our clients with a modern laboratory and innovative programs for design and planning.

The technical and management procedures applied to all areas of product and production have been certified in accordance with ISO 9001.



CERTIFICATE ISO 9001  
CERTIFICATE CE PED  
CERTIFICATE EAC  
CERTIFICATE 303/2008

Our products are CE marked and in compliance with directive 97/23/CE-PED EAC and other international standards are also available.



# Refrigeration Dryers

## Premium Dry Air

Efficient, Long-term and maintenance-friendly

### | MAC-T

Flow-rate 0.85 to 1.2 m<sup>3</sup>/min [Max. pressure 16 bar]

Flow-rate 1.8 to 300 m<sup>3</sup>/min [Max. pressure 14 bar]

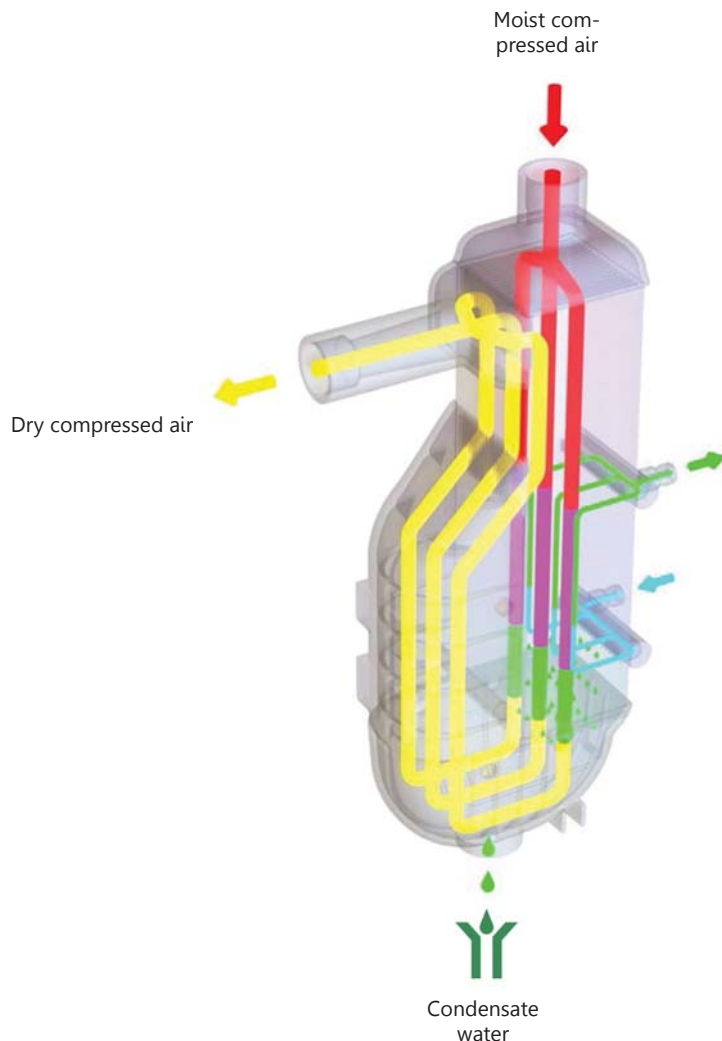
# LARGE CAPACITY | LOW PRESSURE DROP



The air-to-air and the air-to-refrigerant heat exchangers plus the demister type condensate separator are housed in a unique module. The vertical arrangement ensures the wet compressed air flows down to the automatic drain. The counter flows of compressed air ensure maximum heat transfer.

The large capacity separator is designed to hold condensate also at high humidity in compressed inlet air. And the large cross section of flow channels leads to low air velocities and reduced pressure drop.

## ALU-DRY HEAT EXCHANGER



### AIR/AIR HEAT EXCHANGER

Or economizer, pre-cools the air entered into the dryer, in order to reduce the cooling power required when the air subsequently passes into the evaporator. The air exiting the dryer is heated in the same way in order to prevent condensation from forming in the factory pipes.

### EVAPORATOR

The generous dimensions of the air-to-refrigerant heat exchanger plus the counter flow gas streams allow full and complete evaporation of the refrigerant (preventing liquid returning to the compressor).

### DEMISTER TYPE CONDENSATE SEPARATOR

The high efficiency condensate separator is located within the heat exchanger module. No maintenance is required and the coalescing effect results in a high degree of moisture separation.



# TECHNICAL DETAILS



## CONTROL AND PROTECTION DEVICES

All models are fitted with a fan pressure switch to control the refrigerant condensing. MAC30-T and larger, come equipped with some specific devices to protect the components of the unit:

- re-set high refrigerant pressure cut-out (for MAC 80...160-T);
- low refrigerant pressure cut-out (for MAC 80...160-T);
- re-set high temperature cut-out (for MAC 30...160-T), which stops the refrigerating compressor when discharge temperature is too high (e.g. clogged or blocked condenser).

## HOT GAS BY-PASS VALVE

The precise and accurate hot gas by-pass valve, which prevents the formation of ice inside the evaporator at any load condition, is a recent development unavailable in the past. The valve is set during final test and no further adjustments are necessary.



## CONTROL PANEL



### DMC35 CONTROLLER (Standard)

Operation of the MAC8...160 dryer are monitored by DMC35 electronic controller which indicates the DewPoint temperature digitally, controls the condensate drain valve via a timer and the condenser fan via a probe.



### DMC34 CONTROLLER (Optional)

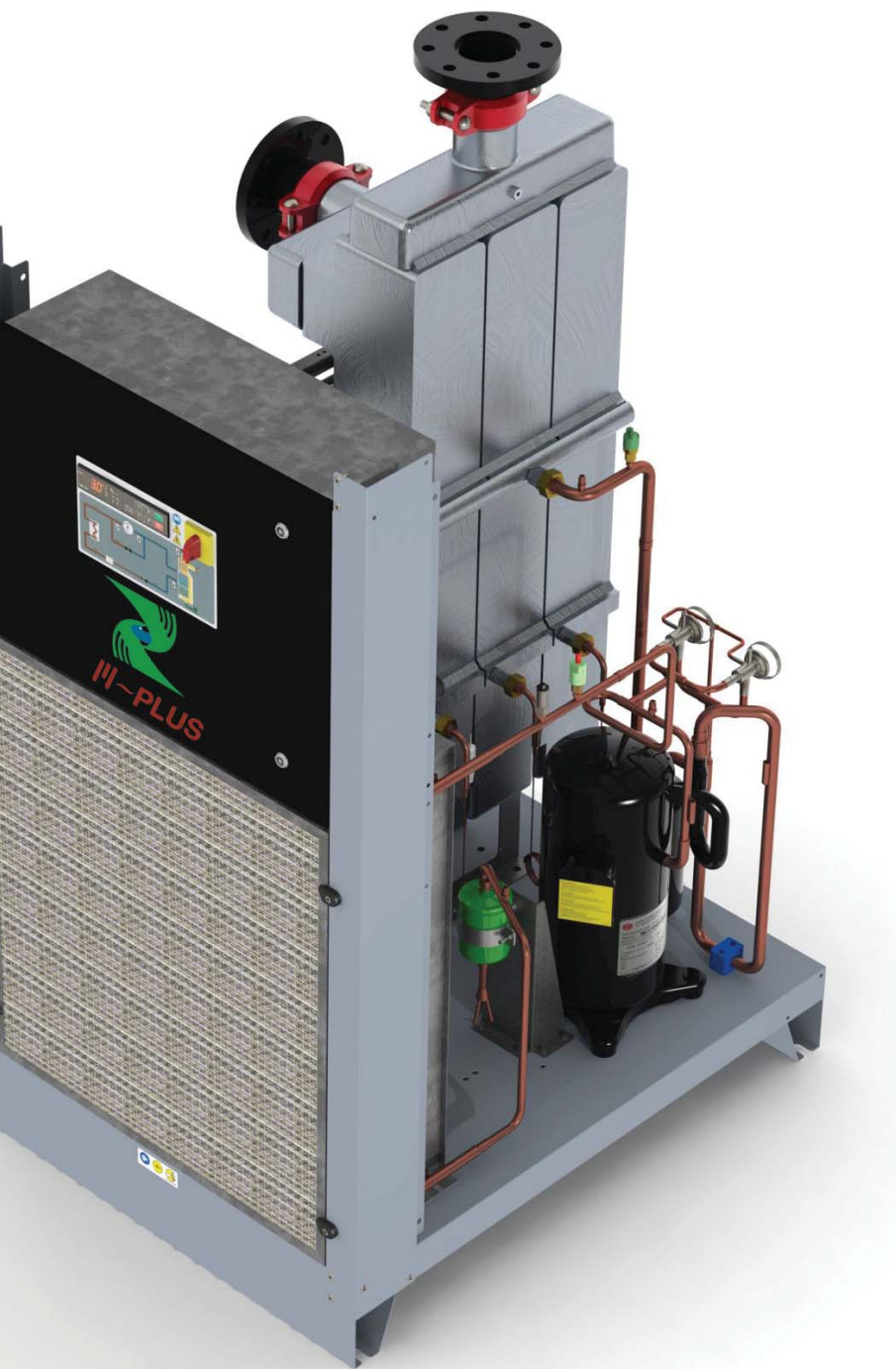
Operation of the MAC8...160-T are controlled and monitored by DMC34 digital controller. Featuring a 3-digit display for the visualization of the Dew-Point temperature (in °C or °F) and the dryer total operating hours. DMC34 includes as well the condenser fan control, scheduled maintenance reminder, timer for the condensate drain valve and detection of any dryer malfunction (also reported on the potential free alarm contact)



### DMC 24 CONTROLLER

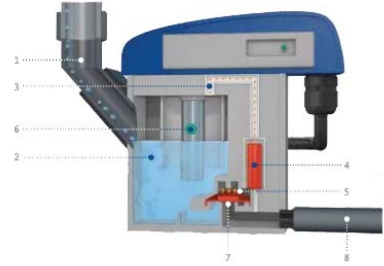
In addition to the characteristics already present in the DMC24 model, this new controller features a new client-protection function, which allows the user to plan maintenance operations, a working meter and a RS485 interface for connection to a PC.

The four temperature probes and pressure transducer record and display the parameters of the dryer when in use and enable the functions AFC (Advanced Fan(s) Control) for the control of refrigerant condensing, and the ASW (Advance Service Warning) to receive advance warning of defects. Control and protective devices are now included in the DMC24 controller and interfaced to the operator through the functions ADS (Advance Draining System) for the control of the zero loss drain and AAL (Advanced Alarm Log). The DMC24 includes the protection for monitoring the sequence of the supply phase and the stopping of the compressor in conditions of high or low refrigerant pressure and/or high discharge temperature.



## CONDENSATE DRAIN

MAC8...160-T models are fitted with an electronic system to drain the condensate interfaced to the controller. Discharge and pause times are adjustable. Drainage group includes also a ball isolation valve and a strainer. A zero loss drain is available as an option.



MAC180-T dryer and largers are equipped with a zero loss drain system, interfaced to the DMC24, to assure the drainage of the condensed water only with no air loss.

## CONDENSER

Generous sizing of the condenser ensures maximum performance of the refrigerant circuit and the ability to operate with changes in ambient conditions. Access to the condenser for leaning and maintenance is straightforward. MAC180...3000-T condensers are equipped with a stainless steel protective filter. It can be removed and cleaned. Water cooling option available from MAC180-T model at no charge. Water regulating valve included.

## COMPRESSOR

**RECIPROCATING TYPE** - Models MAC8...23-T are fitted with high efficiency piston compressors sourced from major producers.

**ROTARY** - For models MAC30...160-T (with single-phase power supply). This is a new technology applied to refrigerants as an alternative to the traditional piston compressor. Compression of the refrigerant is achieved by way of interaction between a cylindrical stator and a rotating eccentric nucleus. In this method, the parts which come into contact with one another are wear-resistant and therefore more reliable.

**SCROLL** - From model MAC180-T on, the type of compressor used is the scroll. Widely used in the air conditioning and refrigeration sectors, the scroll compressor performs well and has low energy consumption. Compression of the refrigerant is achieved by way of two concentric coils: one fixed and the other mobile. The scrolls are wear-resistant, highly reliable and guarantee a high level of noise reduction.



## EASY MAINTENANCE

The MAC series has been designed and built to facilitate any inspection and maintenance operations that may prove necessary. The hoods are easily removed and offer immediate access to all parts of the system. The clear layout of the components, the simple composition of the refrigerant circuit and the numbering of the wires in the electrical system, facilitate the operator when carrying out standard controls.



# Technical Specifications

Flow-rate are based on the following nominal conditions:  
 Ambient temperature of 35°C, with inlet air at 7barg and 42°C and 3°C pressure Dew Point  
 (-22°C atmospheric pressure Dew Point).  
 Maximum working conditions: Ambient temperature 50°C, inlet air temperature 70°C and  
 inlet air pressure 14barg (16barg for MAC3 - 12)



Model	Refrig.	Flow-rate at Nominal conditions			Pressure Drop	Connections IN-OUT	Power Supply	Dimensions [mm]			Weight
	Type	L/min	m³/h	SCFM	bar	[Ø]	[Ph/V/Fr]	A	B	C	[+kg]
MAC8-T	R134.a	850	51	30	0.04	G 1/2"	1/230/50-60	345	420	740	31
MAC12-T	R134.a	1,200	72	42	0.06	G 1/2"	1/230/50-60	345	420	740	34
MAC18-T	R134.a	1,800	108	64	0.07	G 1"	1/230/50	485	455	825	39
MAC23-T	R134.a	2,500	150	88	0.10	G 1"	1/230/50	485	455	825	41
MAC30-T	R407C	3,400	204	120	0.10	G 1.1/4"	1/230/50	485	455	825	46
MAC40-T	R407C	4,100	246	145	0.19	G 1.1/4"	1/230/50	485	455	825	53
MAC55-T	R407C	6,100	366	215	0.13	G 1.1/2"	1/230/50	555	580	885	55
MAC60-T	R407C	6,800	408	240	0.16	G 1.1/2"	1/230/50	555	580	885	63
MAC80-T	R407C	9,000	540	318	0.08	G 2"	1/230/50	555	625	975	92
MAC100-T	R407C	10,800	648	382	0.13	G 2"	1/230/50	555	625	975	94
MAC120-T	R407C	12,500	750	441	0.08	G 2.1/2"	1/230/50	665	725	1,105	141
MAC140-T	R407C	14,500	870	512	0.11	G 2.1/2"	1/230/50	665	725	1,105	150
MAC160-T	R407C	16,000	960	565	0.15	G 2.1/2"	1/230/50	665	725	1,105	158
MAC180-T	R407C	18,000	1,080	636	0.12	DN80-PN16	3/400/50	790	1,000	1,465	240
MAC210-T	R407C	21,000	1,260	742	0.18	DN80-PN16	3/400/50	790	1,000	1,465	242
MAC250-T	R407C	28,000	1,680	990	0.10	DN80-PN16	3/400/50	790	1,000	1,465	275
MAC300-T	R407C	34,000	2,040	1,202	0.17	DN80-PN16	3/400/50	790	1,000	1,465	276
MAC360-T	R407C	39,000	2,340	1,378	0.18	DN80-PN16	3/400/50	790	1,000	1,465	311
MAC400-T	R407C	42,000	2,520	1,484	0.19	DN100-PN16	3/400/50	1,135	1,205	1,750	463
MAC500-T	R407C	52,000	3,120	1,837	0.11	DN100-PN16	3/400/50	1,135	1,205	1,750	538
MAC600-T	R407C	63,000	3,780	2,226	0.19	DN100-PN16	3/400/50	1,135	1,205	1,750	540
MAC720-T	R407C	78,000	4,680	2,755	0.18	DN100-PN16	3/400/50	1,135	1,205	1,750	612
MAC900-T	R407C	90,000	5,400	3,178	0.20	DN150-PN16	3/400/50	1,300	1,750	1,810	830
MAC1100-T	R407C	110,400	6,624	3,900	0.26	DN150-PN16	3/400/50	1,300	1,750	1,810	940
MAC1200-T	R407C	120,000	7,200	4,238	0.20	DN200-PN16	3/400/50	1,400	2,200	1,870	1,055
MAC1500-T	R407C	147,200	8,832	5,200	0.26	DN200-PN16	3/400/50	1,400	2,200	1,870	1,200
MAC1800-T	R407C	180,000	10,800	6,537	0.20	DN200-PN16	3/400/50	1,450	2,165	2,430	1,650
MAC2200-T	R407C	220,000	13,200	7,769	0.26	DN200-PN16	3/400/50	1,450	2,165	2,430	1,750
MAC2400-T	R407C	240,000	14,400	8,476	0.20	DN250-PN16	3/400/50	1,450	2,455	2,455	1,950
MAC3000-T	R407C	300,000	18,000	10,594	0.26	DN250-PN16	3/400/50	1,450	2,455	2,455	2,100

On request with 60Hz power supply.

Correction factor for operating pressure changes:										
Inlet air pressure	barg	4	5	6	7	8	10	12	14	
	Factor (F1)	0.77	0.86	0.93	1.00	1.05	1.14	1.21	1.30	

Correction factor for ambient temperature changes:										
Ambient temperature	°C	4	5	6	7	8	10	12	14	
	Factor (F2)	0.77	0.86	0.93	1.00	1.05	1.14	1.21	1.30	

Correction factor for inlet air temperature changes:										
Air temperature	°C	38	42	45	50	55	60	65	70	
	Factor (F3)	1.11	1.00	0.92	0.80	0.70	0.61	0.53	0.46	

Correction factor for Dew Point changes:										
Dew Point	°C	3	5	7	10					
	Factor (F4)	1.00	1.09	1.19	1.37					





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