TROPICAL

ACT-T
Dryer Series

FRIULAIR Dryers

ALUMINIUM TECHNOLOGIES DIRECT TO ENERGY SAVING

Friulair improves it's range of compressed air dryers with the development of the ACT series (Aluminium Cooling Technology), focused to reduce energy consumption. Main features are:
- low pressure drop even with load variances;
- low power consumption thanks to the ALU-DRY heat exchanger, high efficiency compressors, innovative hot gas by-pass valve and zero loss drain condensate system (from ACT 180 included);
- constant pressure Dew Point with differing load conditions;
- functionally even at maximum working conditions (air inlet 70°C and ambient 50°C).
The components of ACT range, from refrigerant to materials of construction, have been selected with maximum respect for the environment and their ability to be recycled.

TECHNICAL DETAILS [ACT 3...160]

CONTROL PANEL

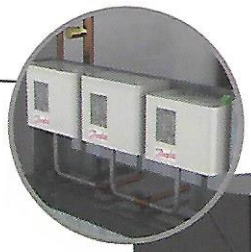
DMC15 CONTROLLER (standard)

Operation of the ACT-T dryer is monitored by DMC15 electronic controller which indicates the DewPoint temperature digitally, controls the condensate drain valve via a timer and the condenser fan via a probe.

DMC14 CONTROLLER (optional)

Operation of the models ACT 3...160 is controlled and monitored by DMC14 digital controller. Features a 3 digit display for the visualization of the Dew Point temperature in °C or °F, an electric contact alert for detection of eventual irregularities concerning the Dew Point, and full management of the condensate drain system.

CONTROL AND PROTECTION DEVICES

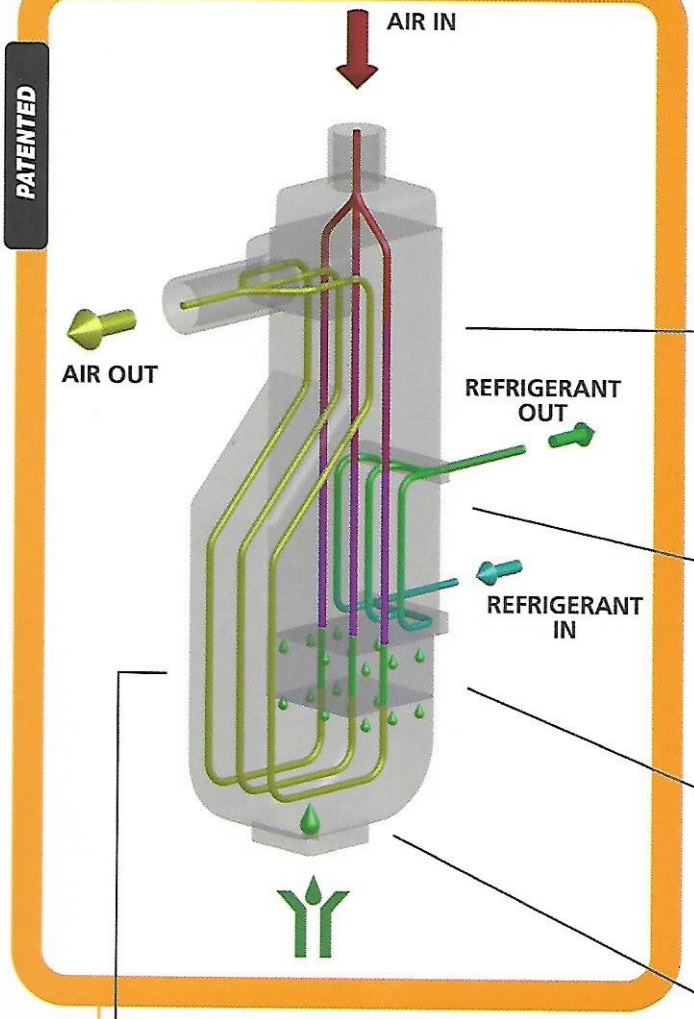


All models are fitted with a fan pressure switch to control the refrigerant condensing.
ACT 30 and largers, come equipped with some specific devices to protect the components of the unit:
- re-set high refrigerant pressure cut-out (for ACT 80...160);
- low refrigerant pressure cut-out (for ACT 80...160);
- re-set high temperature cut-out (for ACT 30...160), which stops the refrigerating compressor when discharge temperature is too high (e.g. clogged or blocked condenser).

CONDENSATE DRAIN

ACT 3...160 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.

PATENTED



ALU-DRY HEAT EXCHANGER

The air-to-air and the air-to-refrigerant heat exchangers plus the demister type condensate separator are housed in an 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.

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.

LARGE CAPACITY

The large capacity separator is designed to hold condensate also at high humidity in compressed inlet air.

LOW PRESSURE DROP

The large cross section of flow channels leads to low air velocities and reduced pressure drop.

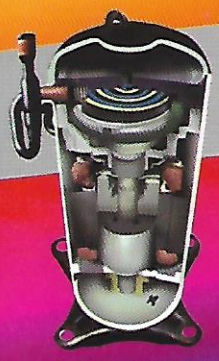
COMPRESSOR

RECIPROCATING TYPE

Models ACT 3...23 are fitted with high efficiency piston compressors sourced from major producers.

ROTARY

For models ACT 30...160. 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 ACT 180 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.

"HOT GAS" BY-PASS VALVE

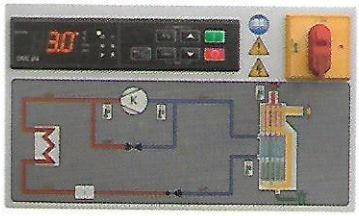
The precise and accurate hot gas by-pass valve, which prevents the formation of ice inside the evaporator at any load condition, is a recent development unavailable in the past. The valve is set during final test and no further adjustments are necessary.

EASY MAINTENANCE

The ACT 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 DETAILS [ACT 180...1500]

CONTROL PANEL



DMC 24 CONTROLLER

In addition to the characteristics already present in the DMC14 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 (Advanced 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 (Advanced 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 phases and the stopping of the compressor in conditions of high or low refrigerant pressure and/or high discharge temperature.

CONDENSATE DRAIN

ACT 180 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.

MAIN STANDARD EQUIPMENTS AND ACCESSORIES

DESCRIPTION	ACT MODELS				
	3...23	30...40	55...60	80...160	180...1500
ALU-DRY aluminium heat exchanger	●	●	●	●	●
High efficiency compressor	●	●	●	●	●
Tropicalised air condenser	●	●	●	●	●
Condenser protection filter					●
High efficiency fan(s)	●	●	●	●	●
Water condenser					○
Enviromental refrigerant	●	●	●	●	●
Automatic hot gas by-pass control device	●	●	●	●	●
Automatic condensing pressure control	●	●	●	●	●
High and low refigerant safety pressure switch				●	●
High discharge temperature switch protection		●	●	●	●
Zero loss drain	○	○	○	○	●
DMC 15 controller	●	●	●	●	
DMC 14 controller	○	○	○	○	
DMC 24 controller					●

● Standard ○ Optional

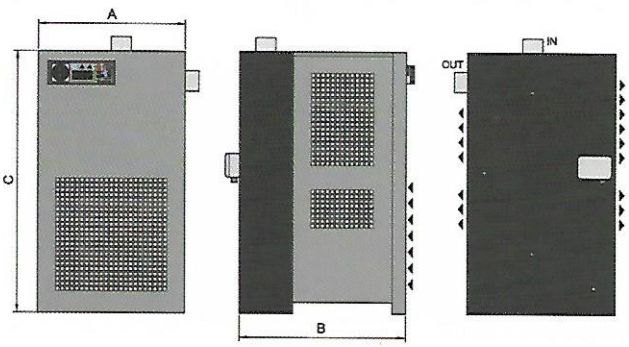
It is mandatory to install a filter of FT or FW series (with filtration grade at least 3 micron) on the dryer inlet side to prevent that rust, scale or other pollutants could clog the ALU-DRY module and the condensate drain.

CONDENSER

Generous sizing of the condeser ensures maximum performance of the refrigerant circuit and the ability to operate with changes in ambient conditions. Access to the condenser for cleaning and maintenance is straightforward. ACT 180...1500 condensers are equipped with a stainless steel protective filter. It can be removed and cleaned. Water cooling option available from ACT 180 model at no charge. Water regulating valve included.

TECHNICAL FEATURES

Data refer to 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). Max. working conditions: Ambient temperature 50°C, inlet air temperature 70°C and inlet air pressure 14barg (16barg for ACT3 ...12-T)



Model	Refrig.	Flow-Rate			Pressure Drop	Connections	Power Supply	Dimensions [mm]			Weight
	[type]	[l/min]	[m³/h]	[scfm]	[bar]	IN-OUT [ø]	[Ph/V/Fr]	A	B	C	[kg]
ACT 3-T	R134.a	350	21	12	0,01	G 1/2"	1/230/50-60	345	420	740	28
ACT 5-T	R134.a	550	33	19	0,02	G 1/2"	1/230/50-60	345	420	740	29
ACT 8-T	R134.a	850	51	30	0,04	G 1/2"	1/230/50-60	345	420	740	31
ACT 12-T	R134.a	1.200	72	42	0,06	G 1/2"	1/230/50-60	345	420	740	34
ACT 18-T	R134.a	1.800	108	64	0,07	G 1"	1/230/50	485	455	825	39
ACT 23-T	R134.a	2.500	150	88	0,10	G 1"	1/230/50	485	455	825	41
ACT 30-T	R407C	3.400	204	120	0,10	G 1.1/4"	1/230/50	485	455	825	46
ACT 40-T	R407C	4.100	246	145	0,19	G 1.1/4"	1/230/50	485	455	825	53
ACT 55-T	R407C	6.100	366	215	0,13	G 1.1/2"	1/230/50	555	580	885	55
ACT 60-T	R407C	6.800	408	240	0,16	G 1.1/2"	1/230/50	555	580	885	63
ACT 80-T	R407C	9.000	540	318	0,08	G 2"	1/230/50	555	625	975	92
ACT 100-T	R407C	10.800	648	382	0.13	G 2"	1/230/50	555	625	975	94
ACT 120-T	R407C	12.500	750	441	0,08	G 2.1/2"	1/230/50	665	725	1.105	141
ACT 140-T	R407C	14.500	870	512	0,11	G 2.1/2"	1/230/50	665	725	1.105	150
ACT 160-T	R407C	16.000	960	565	0,15	G 2.1/2"	1/230/50	665	725	1.105	158
ACT 180-T	R407C	18.000	1.080	636	0,12	DN 80–PN 16	3/400/50	790	1.000	1.465	240
ACT 210-T	R407C	21.000	1.260	742	0,18	DN 80–PN 16	3/400/50	790	1.000	1.465	242
ACT 250-T	R407C	28.000	1.680	990	0,10	DN 80–PN 16	3/400/50	790	1.000	1.465	275
ACT 300-T	R407C	34.000	2.040	1.202	0,17	DN 80–PN 16	3/400/50	790	1.000	1.465	276
ACT 360-T	R407C	39.000	2.340	1.378	0,18	DN 80–PN 16	3/400/50	790	1.000	1.465	311
ACT 400-T	R407C	42.000	2.520	1.484	0,19	DN 100–PN 16	3/400/50	1.135	1.205	1.750	463
ACT 500-T	R407C	52.000	3.120	1.837	0,11	DN 100–PN 16	3/400/50	1.135	1.205	1.750	538
ACT 600-T	R407C	63.000	3.780	2.226	0,19	DN 100–PN 16	3/400/50	1.135	1.205	1.750	540
ACT 720-T	R407C	78.000	4.680	2.755	0,18	DN 100–PN 16	3/400/50	1.135	1.205	1.750	612
ACT 900-T	R407C	90.000	5.400	3.178	0,20	DN 150–PN 16	3/400/50	1.300	1.750	1.810	830
ACT 1100-T	R407C	110.400	6.624	3.900	0,26	DN 150–PN 16	3/400/50	1.300	1.750	1.810	940
ACT 1200-T	R407C	120.000	7.200	4.238	0,20	DN 200–PN 16	3/400/50	1.400	2.200	1.870	1.055
ACT 1500-T	R407C	147.200	8.832	5.200	0,26	DN 200–PN 16	3/400/50	1.400	2.200	1.870	1.200

On request models ACT-T series with 60Hz power supply.

CORRECTION FACTOR FOR OPERATING PRESSURE CHANGES :								
Inlet air pressure barg	4	5	6	7	8	10	12	14
Factor	0.77	0.86	0.93	1.00	1.05	1.14	1.21	1.27

CORRECTION FACTOR FOR AMBIENT TEMPERATURE CHANGES:								
Ambient temperature °C	≤ 25	32	35	38	40	43	45	50
Factor	1.09	1.04	1.00	0.94	0.92	0.87	0.83	0.73

CORRECTION FACTOR FOR INLET AIR TEMPERATURE CHANGES :								
Air temperature °C	≤ 38	42	45	50	55	60	65	70
Factor	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	1.00	1.09	1.19	1.37

"Friulair reserves the right to make technical changes without prior notice, errors and omissions excepted"

FRIULAIR Dryers

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