

# PURESTREAM ACT DRYERS



BY FRIULAIR



Phasing In  
New Refrigerant

ULTIMATE  
ENERGY SAVING  
TECHNOLOGY



# ALUMINUM COOLING TECHNOLOGY (ACT)

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Purestream dryers by Friulair reduce the energy consumption of its range of compressed air dryers with the development of the ACT series (Aluminum Cooling Technology).

## Main features include:

- 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 condensate drains
- constant pressure Dew Point with differing load conditions
- functional even at maximum working conditions (air inlet 70°C and ambient 50°C)

The components of the ACT dryers including the refrigerant and materials of construction, have been selected with maximum respect for the environment and their ability to be recycled.



## CONTROL PANEL TECHNICAL DETAILS



### DMC34 CONTROLLER

Operation of the ACT 20-500 model dryers are controlled and monitored by the **DMC34** controller. The controller incorporates a digital dew point read out selectable in degrees F or degrees C scale. As a standard feature the controller also displays a visual alarm condition with the built-in capability to send a remote alarm signal and controls the fan.



Pressure Probe (BP2)

### CONTROL AND PROTECTION DEVICES

All models are fitted with a Pressure Probe (BP2)

#### ACT 200 and larger models come equipped with devices designed to protect the unit components:

- high refrigerant pressure cut-out with re-set is standard on models ACT 300 - 500
- low refrigerant pressure cut-out with re-set is standard on models ACT 300 - 500
- high temperature cut-out c/w with reset is standard on models ACT 200 - 500. Designed to stop the refrigerant compressor when discharge temperature is too high (e.g. clogged or blocked condenser).

### KEY DRYER FEATURES

Conforms to TSSA and ASME standards, CRN approved and electrically certified for Canada, environmentally friendly, energy saving design, low pressure drop heat exchanger, compact design, powder paint coated finish, npt connections on small models and flanges on larger models, power cord on 115 volt models, no air-loss drains, illuminated on/off switch on smaller models and disconnect switch on larger models, thermally protected fans and compressors and oversized air-cooled condensers.



## **ALU-DRY** **HEAT EXCHANGER**

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 that moisture removed flows down to the automatic drain. The counter flows of compressed air ensures maximum heat transfer.

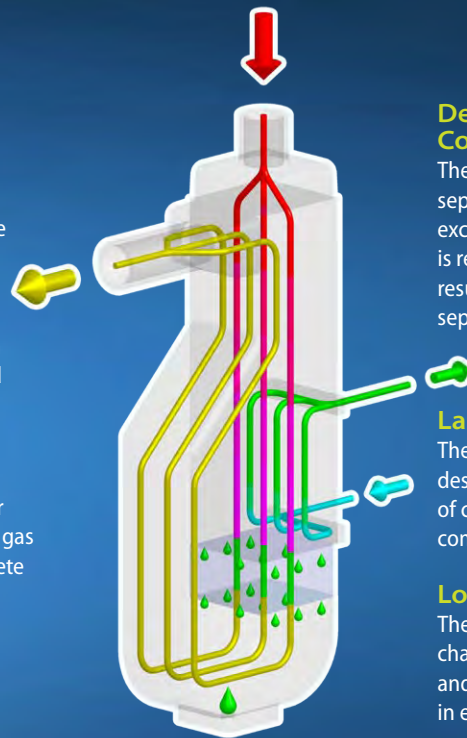
**CRN APPROVED**

### **Air/Air Heat Exchanger**

The air-to-air heat exchanger pre-cools the air entering 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 on the compressed air piping.

### **Evaporator**

The generous dimensions of the air-to-refrigerant heat exchanger combined with the counter flow gas streams allow for full and complete evaporation of the refrigerant, therefore preventing liquid from 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 capture large volumes of condensate in high humidity compressed air environments.

### **Low Pressure Drop**

The large cross section of flow channels lead to low air velocities and reduced pressure drop resulting in energy savings.

## COMPRESSORS

### **PISTON COMPRESSOR**

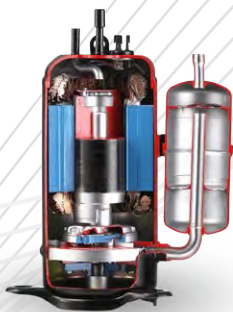
Models **ACT 20 - 150** are fitted with high efficiency piston compressors.

### **ROTARY COMPRESSOR**

For models **ACT 200 - 500** (with single phase power supply). This new technology for compressing refrigerants is an alternative to the traditional piston compressor. Compression of refrigerant is achieved by way of interaction between a cylindrical stator and a rotating eccentric nucleus. Due to this method of operation, the parts which come into contact with one another are wear resistant and therefore more reliable.

### **SCROLL COMPRESSOR**

From model **ACT 600** and larger, the scroll compressor is the standard refrigerant compressor used for this range. The scroll compressor is widely used in the air conditioning and refrigeration market sectors due to its reliable performance and low energy consumption. Compression of the refrigerant is achieved by way of concentric coils, one moving and one fixed. The scroll is wear resistant, highly reliable and guarantees a high level of noise reduction.



### **EASY MAINTENANCE**

The **ACT** series has been designed and built to allow for ease of inspection and necessary maintenance. The metal access panels are easily removed and offer immediate access to all parts of the system. The layout of the components, the simple composition of the refrigerant circuit and the numbering of the wires in the electrical system, facilitate the technician when servicing the dryer.

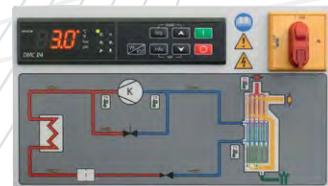


## TECHNICAL DETAILS

ACT 600 - ACT 5000

### DMC 24 CONTROLLER

The **DMC 24** controls all the unit operations, alarms and dryer set-up. The display includes LEDs which show all the operating conditions and includes a RS485 interface for connection to a PC. The controller receives information from four temperature probes and the pressure transducers record and display the parameters of the dryer when in use. This enables the function of the **AFC (Advanced Fan(s) Control)** which controls the condensing of refrigerant and also controls the **ASW (Advanced Service Warning)** in order to receive advance warning of defects or maintenance requirements. The **DMC 24** is now interfaced to the **ADS (Advanced Draining System)** which allows the controller to test the no air-loss drain(s) and signal drain alarm and maintenance requirements. The **DMC 24** also includes an **AAL (Advanced Alarm Log)** feature which provides a history of alarm conditions allowing for easier troubleshooting for maintenance staff. The **DMC 24** includes added protection for monitoring the sequence of voltage supply phases and auto shut-down of the compressor in conditions of high and low refrigerant pressure and/or high discharge temperature. The controller also has an added feature which includes a built-in timer to advise service interval requirements.



### TAC-ANTI CORROSION TREATMENT

For harsh environments, as an option the **ACT dryers** can be supplied with a anti corrosion paint treatment. The **TAC** consists of covering the refrigerant circuit components surface exposed to ambient air. The treatment, combined with the characteristics of the **ALU-DRY** heat exchanger, enables the **ACT dryer** to to operate in adverse conditions.

### CONDENSER

Generous sizing of the condenser ensures maximum performance of the refrigerant circuit and the ability to operate in high ambient conditions. Access to the condenser for cleaning and maintenance is easily achieved. **ACT 600 to 5000** model dryers are equipped with a stainless steel protective filter designed to be removed and cleaned as required. Water-cooled condenser versions are available upon request at no extra cost.



### CONDENSATE DRAIN

All **ACT dryers** are equipped with energy saving zero-loss drain(s), that are designed to ensure that condensate is discharged without the loss of compressed air. This drain enhances an already energy saving dryer design.



### HOT GAS BY-PASS VALVE

All model dryers are fitted with a stainless steel hot gas by-pass valve designed to prevent freezing and provide a constant dew point. This diaphragm valve is controlled by both temperature and pressure making the accuracy of operation unmatched in the industry. This valve is set during final factory testing and no further adjustments are required.



# STANDARD FEATURES & OPTIONAL ACCESSORIES

Description	ACT MODELS				
	20-75	100-150	200-250	300-500	600-5000
ALU-DRY ALUMINIUM HEAT EXCHANGER	•	•	•	•	•
HIGH EFFICIENCY REFRIGERANT COMPRESSORS	•	•	•	•	•
TROPICALISED AIR CONDENSER	•	•	•	•	•
AIR-COOLED CONDENSER PROTECTION FILTER					•
HIGH EFFICIENCY FAN(S)	•	•	•	•	•
WATER-COOLED CONDENSER			‡	‡	‡
ENVIRONMENTALLY FRIENDLY REFRIGERANT	•	•	•	•	•
HOT-GAS BY-PASS VALVE	•	•	•	•	•
AUTOMATIC CONDENSING PRESSURE CONTROL	•	•	•	•	•
HIGH AND LOW REFRIGERANT SAFETY PRESSURE SWITCH				•	•
HIGH REFRIGERANT TEMPERATURE SWITCH PROTECTION	‡	‡	•	•	•
ZERO LOSS DRAIN	•	•	•	•	•
DMC14 CONTROLLER	•	•	•	•	
DMC24 CONTROLLER					•
• Standard ‡ Optional					

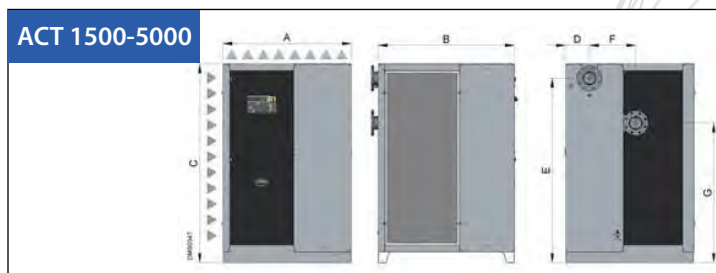
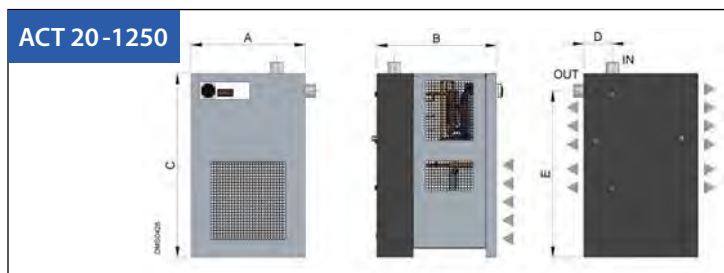
Correction factor for operating pressure changes:									
Inlet air pressure	psig	60	80	100	120	140	160	180	203
	barg	4	5.5	7	8	10	11	12	14
	Factor (F1)	0.79	0.91	1	1.07	1.13	1.18	1.23	1.27

Correction factor for ambient temperature changes (Air-Cooled):									
Ambient temperature	°F	80	90	95	100	105	110	115	122
	°C	27	32	35	38	40	43	45	50
	Factor (F1)	1.11	1.09	1.06	1	0.94	0.87	0.78	0.69

Correction factor for inlet air temperature changes:									
Inlet air temperature	°F	90	100	110	122	130	140	150	158
	°C	32	38	43	50	55	60	65	70
	Factor (F1)	1.16	1	0.82	0.68	0.61	0.52	0.45	0.40

Correction factor for Dew Point changes:									
Dew Point	°F	38	41	45	50				
	°C	3	5	7	10				
	Factor (F1)	1.00	1.08	1.20	1.36				

# TECHNICAL DATA



MODEL	FLOW RATE SCFM	VOLTAGE							DIMENSIONS IN INCHES						
		115/1/60	230/1/60	460/3/60	575/3/60	REFRIG.	PIPE SIZE	WEIGHT (lbs)	A	B	C	D	E	F	G
ACT20	20	115/1/60	230/1/60	-	-	R513A	1/2"NPT	64	13.58	16.54	29.13	6.22	27.56	-	-
ACT30	30	115/1/60	230/1/60	-	-	R513A	1/2"NPT	68	13.58	16.54	29.13	6.22	27.56	-	-
ACT50	50	115/1/60	230/1/60	-	-	R513A	1/2"NPT	71	13.58	16.54	29.13	6.22	27.56	-	-
ACT75	75	115/1/60	230/1/60	-	-	R513A	1"NPT	79	13.58	16.54	29.13	5.12	25.87	-	-
ACT100	100	115/1/60	230/1/60	-	-	R513A	1 1/4"NPT	101	19.09	17.91	32.48	5.12	29.33	-	-
ACT125	125	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	106	19.09	17.91	32.48	5.12	29.33	-	-
ACT150	150	115/1/60	230/1/60	-	-	R407C	1 1/4"NPT	110	19.09	17.91	32.48	5.12	29.33	-	-
ACT200	200	115/1/60	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	121	21.85	22.83	34.84	5.31	31.50	-	-
ACT250	250	-	230/1/60	460/3/60	575/3/60	R407C	1 1/2"NPT	139	21.85	22.83	34.84	5.31	31.50	-	-
ACT300	300	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	227	21.85	24.61	38.39	9.45	34.06	-	-
ACT350	350	-	230/1/60	460/3/60	575/3/60	R407C	2"NPT	236	21.85	24.61	38.39	9.45	34.06	-	-
ACT400	400	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	331	26.18	28.54	43.50	14.76	36.61	-	-
ACT500	500	-	230/1/60	460/3/60	575/3/60	R407C	2 1/2"NPT	375	26.18	28.54	43.50	14.76	36.61	-	-
ACT600	600	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	529	31.10	39.37	57.68	19.88	48.43	-	-
ACT800	800	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	534	31.10	39.37	57.68	19.88	48.43	-	-
ACT1000	1000	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	606	31.10	39.37	57.68	19.88	48.43	-	-
ACT1250	1250	-	-	460/3/60	575/3/60	R407C	3" 150# FL.	686	31.10	39.37	57.68	19.88	48.43	-	-
ACT1500	1500	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1168	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT1750	1750	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1283	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2000	2000	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1312	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT2500	2500	-	-	460/3/60	575/3/60	R407C	4" 150# FL.	1567	44.68	47.44	68.70	8.27	63.78	16.14	48.43
ACT3000	3000	-	-	460/3/60	575/3/60	R407C	6" 150# FL.	2000	51.18	68.90	71.26	10.24	64.57	17.13	48.23
ACT3750	3750	-	-	460/3/60	575/3/60	R407C	6" 150# FL.	2070	51.18	68.90	71.26	10.24	64.57	17.13	48.23
ACT4000	4000	-	-	460/3/60	575/3/60	R407C	8" 150# FL.	2469	55.12	86.61	73.62	10.24	66.34	18.31	48.23
ACT5000	5000	-	-	460/3/60	575/3/60	R407C	8" 150# FL.	3090	55.12	86.61	73.62	10.24	66.34	18.31	48.23

Flow rates are based on the following nominal conditions: Ambient temperature of 37.8°C, 7 barg inlet air pressure, entering air temperature of 37.8°C and 3°C pressure Dew Point. Maximum working conditions: Ambient temperature 50°C, inlet air temperature 70°C and inlet air pressure 14barg (16barg for ACT 20 to ACT50).