

# ECOTROC® KT-S Compressed Air Refrigeration Dryer



Rev 01\_0324

For a safe, reliable and  
efficient supply of dry compressed air



## Compact and powerful: ECOTROC® KT-S

The new **ECOTROC® KT-S** refrigeration dryer series convinces with its extremely compact design, high performance and reliability. Compressed air treatment is made even more efficient and safe by our new integrated control system. The use of high-quality components and a stainless steel plate heat exchanger ensures an economic efficiency and durability.

### Brand components:

- Refrigerant compressor: Embraco / Copeland
- Fan motor: Lionball
- Condenser: Planer
- Expansion valve: Sanhua
- Control: Easy (CAREL)

## The ECOTROC® KT-S Plus-Effects +++

- + microprocessor control monitors the most important components as well as the quality of the compressed air
- + simple and efficient installation
- + level-controlled condensate drain **KONDRAIN®** N1 included

### The service advantages:

- + practical clip fasteners allow the side panels to be removed without tools; this ensures easy access to the interior of the **ECOTROC® KT-S**
- + clear arrangement of components allows easy repair and maintenance work

## Compressed Air Refrigeration Dryer

### Safe and energy-efficient compressed air treatment

Physically, water is unavoidably present in every compressed air system. In summer considerably more than in winter, because warm air can absorb more moisture than cold air. The refrigeration dryer uses this physical principle to separate water. In order to prevent damage (corrosion), functional problems or even loss of production in pneumatic controls and systems, it is essential to separate water from compressed air systems. The **ECOTROC® KT-S** series treats compressed air in a solution-oriented manner.

KSI refrigeration dryers reliably provide dry compressed air at minimal operating costs. This protects expensive plants, machines and equipment worldwide and effectively increases operational reliability.



### Operating principle

The **ECOTROC® KT-S** refrigeration dryer works on the physical principle that warm air can absorb more moisture than cold air. Warm air entering the refrigeration dryer contains a varying amount of moisture, depending on previous treatment and other influences. To remove this moisture, the temperature of the air is lowered to the desired dew point, at which point all excess moisture condenses and is discharged. Dry compressed air is now released to the downstream compressed air system.

Incoming air is first precooled in an air-to-air heat exchanger before flowing into the air-to-refrigerant heat exchanger. air-to-refrigerant heat exchanges which extracts most of the heat from the air. Condensate is ejected from the air flow by a cyclone separator at the bottom of the heat exchanger and discharged by a level-controlled condensate drain.

In order to maintain the process, a complex refrigerant circuit is integrated in the the **ECOTROC® KT-S** refrigeration dryer.

The refrigerant is fed as a liquid into the heat exchanger. There it partially evaporates due to the heat input from the incoming warm air. The resulting gas is compressed and afterwards liquefied again by an air-cooled condenser. A tank stores the excess refrigerant and balances the system.

Various temperature sensors are installed to increase operational reliability in the refrigerant circuit.

### Control unit

#### Automatic operation control and monitoring

The microprocessor control of the **ECOTROC® KT-S** controls the operation of the refrigeration dryer fully automatically. In addition, it provides information on the current status of the process and, in the event of problems or errors, allows allows easy troubleshooting.

- simple display of pressure dew point
- alarm output in case of a problem in the compressed air refrigeration dryer.
- quick identification of the affected component
- troubleshooting list in the manual often offers quick solutions



**We recommend pre- and post-filtration!**



easy access to the clear structured interior

## Compressed Air Refrigeration Dryer

Fully-automatic unit for compressed air treatment

including:

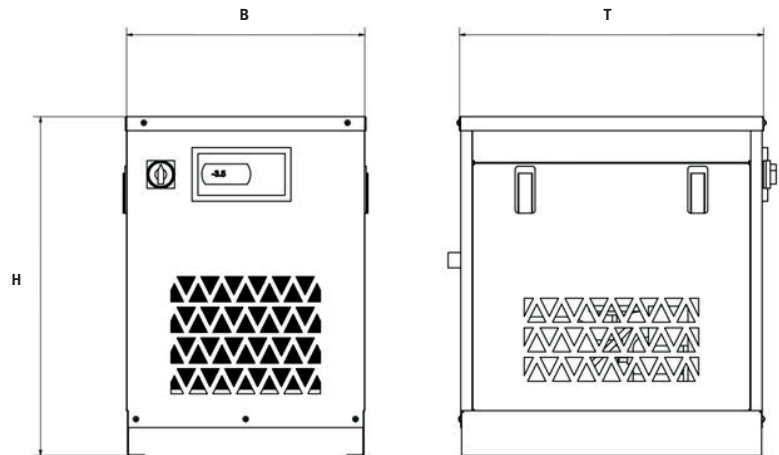
- electronic, level-controlled condensate drain

**KONDRAIN®** N1

Capacity Volume Flow: up to 1080 m<sup>3</sup>/h\*

Pressure dew point: +3°C

\* based on 1 bar (abs.) at 7 bar g operating pressure



## Models

Type*	Capacity		Dimensions (mm)			Connection	Weight	Quantity heat exchanger
	m <sup>3</sup> /h	cfm	H	B	T			
KT-S36	36	21	520	410	465	G1/2" female	27	1
KT-S54	54	32	520	410	465	G3/4" female	30	1
KT-S71	71	42	520	410	465	G3/4" female	31	1
KT-S95	95	56	520	410	465	G3/4" female	32	1
KT-S120	120	71	620	430	600	G1" female	43	1
KT-S145	145	85	620	430	600	G1" female	47	1
KT-S175	175	103	620	430	600	G1" female	48	1
KT-S210	210	124	620	430	600	G1" female	52	1
KT-S280	280	165	620	470	650	G1" female	63	1
KT-S320	320	188	620	470	650	G1" female	66	1
KT-S400	400	235	830	700	855	G2 1/2" female	126	1
KT-S540	540	318	830	700	855	G2 1/2" female	129	1
KT-S660	660	388	830	700	855	G2 1/2" female	140	1
KT-S780	780	459	830	700	855	G2 1/2" female	148	1
KT-S1080	1080	636	830	700	855	G2 1/2" female	168	1

## Compressed Air Refrigeration Dryer

### Correction factors

Correction factors							Correction factors						
Inlet temperature							Ambient temperature						
°C	30	35	40	45	50	60	°C	20	25	30	35	40	50
F1	1,29	1	0,92	0,78	0,65	0,45	F2	1,05	1	0,98	0,93	0,84	0,70
Correction factors working pressure													
bar g			4	6	7	8	10	11	12	14	16		
F3			0,80	0,94	1	1,04	1,11	1,14	1,16	1,22	1,25		

Pressure dew-point 3°C calculated to volume flow at a suction condition of 20°C and 1 bar (abs.)

Please divide the maximum volume flow to be expected by the correction factors in the tables above.

Example: 200 m<sup>3</sup>/h maximum volume, at 6 bar, 40°C inlet and 30°C ambient temperature: • Capacity nom (200 m<sup>3</sup>/h) / F<sub>3</sub> (0,94) / F<sub>1</sub> (0,92) / F<sub>2</sub> (0,98) = Capacity calculated (236 m<sup>3</sup>/h)

• You have to choose the dryer that is big enough for at least 236 m<sup>3</sup> / h under normal conditions.

### Electrical Data

Type	Installed power	Operating voltage	Min. fuse protection
	kW	V / Ph / Hz	
KT-S36	0,14	230 /1/ 50	2A
KT-S54	0,15	230 /1/ 50	2A
KT-S71	0,17	230 /1/ 50	2A
KT-S95	0,29	230 /1/ 50	4A
KT-S120	0,32	230 /1/ 50	4A
KT-S145	0,35	230 /1/ 50	4A
KT-S175	0,50	230 /1/ 50	4A
KT-S210	0,61	230 /1/ 50	6A
KT-S280	0,70	230 /1/ 50	6A
KT-S320	0,71	230 /1/ 50	6A
KT-S400	1,16	230 /1/ 50	10A
KT-S540	1,15	230 /1/ 50	10A
KT-S660	1,31	230 /1/ 50	10A
KT-S780	1,75	230 /1/ 50	10A
KT-S1080	2,07	230 /1/ 50	16A

## Compressed Air Refrigeration Dryer

### Specifications

Specifications	
Pressure dew-point	+3°C
Medium	Compressed air and gases
Min. working pressure	4 bar g
Max. working pressure	16 bar g
Ambient temperature max.	50°C
Ambient temperature min.	4°C
Inlet temperature max.	60°C
Voltage	1 Ph / 230 V / 50 Hz (KT-S 36 – KT-S 1080)
Refrigerant	R134a
Colour	powder coated RAL 9005 / 5010

### Technical features

Microprocessor control ensures safe and efficient operation.

Complies with the following standards based on the Machinery Safety Directives 2006/42/EC.

The ECOTROC® KT-S series refrigeration dryers have been subjected to internal quality tests and a final assembly inspection.

The following standards and manufacturing procedures were used as a basis for production:

2006/42/EC Machinery Directives; 2014/35/EU Low Voltage Directives; 2014/30/EC Electromagnetic Compatibility Directives; 2014/68/EU Pressure Equipment Directive, CAT I, Module A; EN ISO 12100:2010; EN 60204-1:2018; EN 378-2:2016

#### Quality assurance

Development/production **DIN EN ISO 9001**

#### Air purity class according to ISO 8573-1:2010

Solid particles -  
 Humidity (gaseous) **class 4 (PDP +3°C); class 5 (PDP +7°C); class 6 (PDP +10°C)**  
 Residual oil -

### Maintenance instructions

The following maintenance rules ensure safe and trouble-free operation. These should be observed by the operator.

<b>weekly</b>	Condensor:	Clean
<b>semi-annual</b>	Strainer <b>KONDRAIN®</b> N1:	Check, clean if necessary