



# **TS**

## **AIR CONDITIONING UNITS**

4 sizes for air volumes  
from 700 to 4000 m<sup>3</sup>/h





## **TS AIR CONDITIONING UNITS**

The TS series of air conditioning units is designed for internal horizontal installation. They are available with only the heating coil, only the cooling coil, or with both coils. Flow rates range from 700 to 4000 m<sup>3</sup>/h. These air conditioners are ideally suited for small industrial and retail environments thanks also to the vast range of accessories ensuring excellent application versatility.

### **DESIGN FEATURES**

- Aluminium alloy extruded section frame fitted with die-cast aluminium couplings.
- Twin panel sides (galvanised sheet metal internally / plasticized galvanised sheet metal externally) with 25 mm heat-injected expansion polyurethane sound and heat insulation, density 46 Kg/m<sup>3</sup>, overall transmission coefficient  $K=1.05 \text{ W/}^\circ\text{Cm}^2$ , fire reaction class 1 according to article 8, Ministerial Decree dated 26/06/1984.
- Pleated maintainable cell filters with 48 mm filtering surface area. G3 filtering efficiency according to EN 779 (EU3 according to Eurovent 4/4).
- Heat exchange coils with aluminium fins, copper tubes and threaded plug collectors with air release device.
- A second coil can be inserted.
- Condensate collection and drain tray installed inside the panelling (therefore insulated) and made from AISI 304 stainless steel.

- Twin suction centrifuge fan with forward inclined vanes, coupled directly with a three-speed single phase electric stator motor.
- Side inspection covers.

### **ACCESSORIES**

- Aluminium suction shutter with wing profile vanes, seals and movement mechanics with ABS toothed wheels, motor actuation.
- Return plenum with calliper opening aluminium grill.
- Mixing chamber (external air/recycled air) with two wing profile vane aluminium shutters, seals and movement mechanics with ABS toothed wheels, non-conjugated motor actuation.
- Heating coil (in addition to or instead of the cooling coil).
- Direct expansion cooling coil (instead of the water cooling coil).
- Pleated maintainable cell filters with 48 mm filtering surface area. F5 filtering efficiency according to EN 779, EU5 according to Eurovent 4/4 (instead of standard G3 efficiency filters according to EN 779, EU3 according to Eurovent 4/4).
- Three-speed fan switch + stop.
- Electric cabinet for remote installation (three-way valve with ON/OFF switch) complete with Winter/Summer switch, environment thermometer and three-speed fan switch + stop.



**TABLE OF AIR VOLUMES AND AVAILABLE PRESSURES**

Mod.	Air flow rate m <sup>3</sup> /h	Fan rotation speed giri/min	Total fan head Pa	Noise pressure at 1 m in a free field dB(A)	Noise pressure at 1 m through panels dB(A)
TS 1	1000	1330	230	60	37
	900	1200	180	56	33
	780	1030	130	51	28
TS 2	2000	1245	300	65	42
	1700	1050	210	61	38
	1060	705	100	54	31
TS 3	3000	870	210	62	39
	2800	800	170	60	37
	2220	550	90	55	34
TS 4	4000	845	260	62	39
	3600	750	210	60	39
	2850	650	150	57	36

**COMPONENTS PRESSURE DROPS (\*)**

Mod.	Filters Pa	Heating coil Pa	Cooling coil Pa	Mixing chamber shutter Pa	Plenum with grill Pa
TS 1	30	25	90	2	20
	25	20	70	1	16
	15	15	50	0	10
TS 2	30	25	100	2	20
	25	20	80	1	16
	15	10	30	0	10
TS 3	30	25	90	2	20
	25	20	70	1	16
	15	15	50	0	10
TS 4	30	25	90	2	20
	25	20	70	1	16
	15	15	50	0	10

(\*) The available pressure of the system can be calculated by subtracting the above-indicated values from the fan total static pressure.

**ELECTRIC SPECIFICATIONS**

Mod.	Installed power W	Max current intensity A	Poles No.	Power supply V/f/Hz	Protection level
TS 1	184	1.7	4	230/1/50	IP 55
TS 2	350	3.1	4	230/1/50	IP 55
TS 3	350	3.8	6	230/1/50	IP 55
TS 4	500	4.5	6	230/1/50	IP 55

**DIAMETER OF HYDRAULIC CONNECTIONS**

Mod.	Heating coil	Cooling coil	Condensate drain
TS 1	1"GAS	1"GAS	1"GAS
TS 2	1"GAS	1"GAS	1"GAS
TS 3	1"GAS	1"GAS	1"GAS
TS 4	1"GAS	1"GAS	1"GAS



### COOLING COIL PERFORMANCES

Water inlet/outlet temperature 7/12°C

Mod.	Air flow rate m <sup>3</sup> /h	Infeed air 32°C 50%		Infeed air 29°C 50%		Infeed air 26°C 50%	
		Power kW	Water side load loss kPa	Power kW	Water side load loss kPa	Power kW	Water side load loss kPa
TS 1	1000	10.17	16.00	7.51	9.20	5.29	4.90
	900	9.29	13.50	6.86	7.80	4.85	4.20
	780	8.19	10.80	6.05	6.20	4.32	3.40
TS 2	2000	20.46	31.00	15.76	19.40	11.18	10.40
	1700	18.02	24.60	13.71	15.00	9.69	8.10
	1060	12.00	11.90	8.98	7.00	6.41	3.90
TS 3	3000	30.38	14.90	22.23	8.50	15.30	4.30
	2800	28.61	13.40	20.88	7.60	14.42	3.90
	2220	23.23	9.20	16.90	5.20	11.82	2.70
TS 4	4000	40.05	19.20	29.43	10.90	20.25	5.50
	3600	36.65	16.30	26.74	9.20	18.47	4.70
	2850	29.75	11.10	21.63	6.20	15.11	3.30

### COOLING COIL PERFORMANCES

Water inlet/outlet temperature 8/13°C

Mod.	Air flow rate m <sup>3</sup> /h	Infeed air 32°C 50%		Infeed air 29°C 50%		Infeed air 26°C 50%	
		Power kW	Water side load loss kPa	Power kW	Water side load loss kPa	Power kW	Water side load loss kPa
TS 1	1000	9.48	14.00	6.84	7.70	4.72	3.90
	900	8.65	11.80	6.24	6.50	4.34	3.40
	780	7.63	9.40	5.52	5.20	3.87	2.80
TS 2	2000	19.17	27.40	14.39	16.30	10.01	8.50
	1700	16.88	21.80	12.49	12.70	8.68	6.60
	1060	11.23	10.40	8.19	5.90	5.79	3.20
TS 3	3000	28.29	13.00	20.17	7.10	13.59	3.50
	2800	26.60	11.60	18.94	6.30	12.8	3.10
	2220	21.61	8.00	15.39	4.40	10.52	2.20
TS 4	4000	37.33	16.80	26.68	9.10	17.98	4.50
	3600	34.08	14.20	24.30	7.70	16.39	3.80
	2850	27.64	9.70	19.69	5.20	13.44	2.60

### COOLING COIL PERFORMANCES - HEAT PUMP OPERATION

Water inlet/outlet temperature 45/40°C

Mod.	Air flow rate m <sup>3</sup> /h	Infeed air -5°C		Infeed air 10°C		Infeed air 20°C	
		Power kW	Water side load loss kPa	Power kW	Water side load loss kPa	Power kW	Water side load loss kPa
TS 1	1000	14.76	29.20	10.34	19.80	7.25	10.40
	900	13.48	24.10	9.40	16.70	6.60	8.80
	780	11.88	19.10	8.27	13.20	5.80	7.00
TS 2	2000	27.57	29.10	19.26	24.40	13.41	12.60
	1700	24.16	26.90	16.75	18.90	11.68	9.80
	1060	16.11	25.60	11.04	8.80	7.72	4.60
TS 3	3000	42.18	23.70	28.97	11.90	20.15	6.20
	2800	39.76	21.30	27.34	10.70	18.99	5.50
	2220	32.43	14.60	22.32	7.40	15.54	3.80
TS 4	4000	55.76	31.40	38.29	15.60	26.56	8.00
	3600	50.90	26.50	35.01	13.30	24.33	6.80
	2850	41.48	18.10	28.54	9.10	19.89	4.70



**HEATING COIL PERFORMANCES**

**Water inlet/outlet temperature 80/70°C**

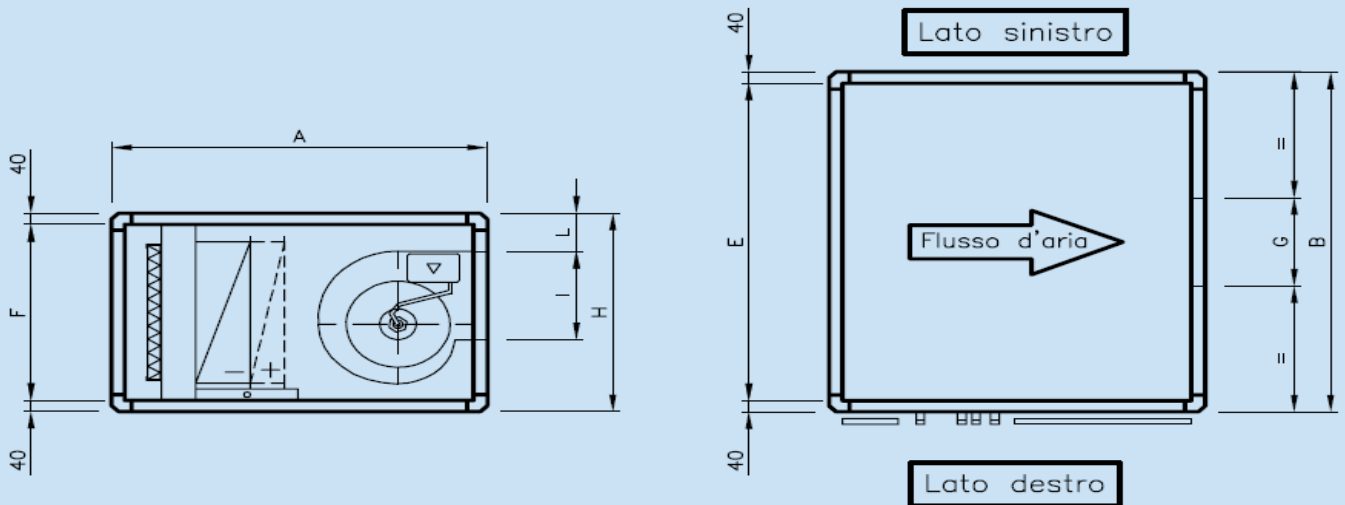
Mod.	Air flow rate m <sup>3</sup> /h	Infeed air -5°C		Infeed air 10°C		Infeed air 20°C	
		Power kW	Water side load loss kPa	Power kW	Water side load loss kPa	Power kW	Water side load loss kPa
TS 1	1000	13.62	15.20	11.06	10.30	9.34	7.50
	900	12.64	13.20	10.28	9.00	8.68	6.60
	780	11.41	10.90	9.28	7.40	7.84	5.40
TS 2	2000	26.35	7.80	21.35	5.30	17.98	3.80
	1700	23.52	6.30	19.07	4.30	16.06	3.10
	1060	16.69	3.30	13.54	2.30	11.42	1.70
TS 3	3000	40.80	15.40	33.14	10.50	27.97	7.70
	2800	38.86	14.10	31.57	9.60	26.65	7.00
	2220	32.92	10.40	26.76	7.10	22.59	5.20
TS 4	4000	53.46	21.30	43.44	14.50	36.69	10.60
	3600	49.68	18.60	40.37	12.70	34.09	9.30
	2850	42.06	13.70	34.19	9.30	28.90	6.80

**HEATING COIL PERFORMANCES**

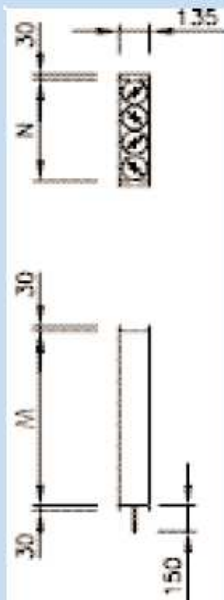
**Water inlet/outlet temperature 70/60°C**

Mod.	Air flow rate m <sup>3</sup> /h	Infeed air -5°C		Infeed air 10°C		Infeed air 20°C	
		Power kW	Water side load loss kPa	Power kW	Water side load loss kPa	Power kW	Water side load loss kPa
TS 1	1000	11.82	11.80	9.26	7.50	7.53	5.10
	900	10.98	10.30	8.60	6.50	7.00	4.50
	780	9.91	8.50	7.77	5.40	6.33	3.70
TS 2	2000	22.80	6.10	17.80	3.80	14.43	2.60
	1700	20.37	4.90	15.90	3.10	12.90	2.10
	1060	14.47	2.60	11.31	1.70	9.19	1.10
TS 3	3000	35.39	12.00	27.71	7.70	22.55	5.30
	2800	33.72	11.00	26.41	7.00	21.49	4.80
	2220	28.59	8.10	22.39	5.20	18.23	3.60
TS 4	4000	46.41	16.60	36.36	10.60	29.59	7.30
	3600	43.14	14.50	33.81	9.30	27.51	6.40
	2850	36.54	10.70	28.65	6.80	23.34	4.70

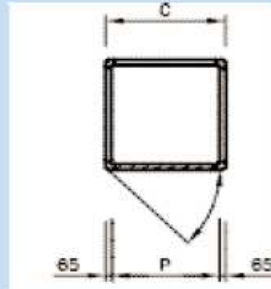
## DIMENSIONS AND WEIGHTS



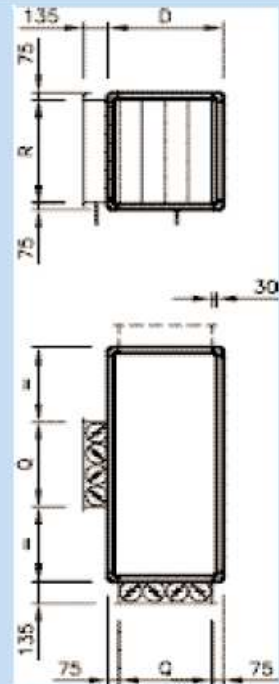
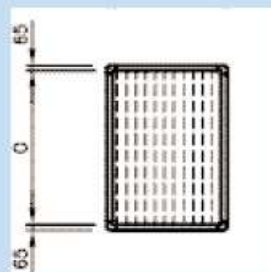
## ACCESSORIES



Shutter



Plenum with grill



Mixing chamber

### Dimensions (mm)

Mod.	A	B	H	C	D	E	F	G	I	L	M	N	O	P	Q	R
TS 1	1150	800	450	370	450	720	370	230	230	40	650	300	670	240	300	300
TS 2	1200	1050	500	450	590	970	420	230	280	40	900	300	920	320	440	350
TS 3	1250	1300	550	490	590	1220	470	330	310	40	1150	300	1170	360	440	400
TS 4	1350	1300	650	610	590	1220	570	400	360	40	1150	440	1170	480	440	500

### Weights (kg)

Mod.	Basic TS	Heating coil	Cooling coil	Shutter	Mixing chamber	Plenum with grill
TS 1	69	9	14	8	19	18
TS 2	92	11	21	11	31	27
TS 3	115	14	30	14	33	32
TS 4	138	16	35	17	37	38



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