Fandis
colors of engineering

Systems and components for industrial enclosures

Edition ▪ 2020/1

Italian Company

Fandis
colors of engineering

03-15 **FILTER FANS AND ROOF UNITS**
Air filtering solutions for enclosures.

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Axial, centrifugal fans and accessories.

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Most of our products are available in the industrial engineering software:

ePLAN data portal · IGE+XAO GROUP · SPAC AUTOMAZIONE

Protection ratings

ENVIRONMENTAL TYPE RATINGS

	Definition
Type 1	Primarily indoor use to provide protection against contact with the enclosed equipment and against a limited amount of falling dirt.
Type 12	Indoor use to provide a degree of protection against dust, dirt, fiber flying, dripping water, and external condensation of non-corrosive liquids.
Type 3R	Outdoor use to provide a degree of protection against falling rain; undamaged by the formation of ice on the enclosure.
Type 4X	Either indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure. Corrosion resistant.

Description according to UL50E standard

"IP" PROTECTION DEGREE TABLE

Protection degree against solid foreign object and against access to hazardous parts (1st numeral)

IP	Symbol	Description
0		Non - protected
1		Protected against solid foreign objects at 50 mm Ø or greater and against access to hazardous parts with the back of a hand
2		Protected against solid foreign objects of 12.5 mm Ø or greater and against access to hazardous parts with a finger
3		Protected against solid foreign objects of 2.5 mm Ø or greater and against access to hazardous parts with a tool
4		Protected against solid foreign objects of 1.0 mm Ø or greater and against access to hazardous parts with a wire
5		Dust - protected and protected against access to hazardous parts with a wire
6		Dust - tight and protected against access to hazardous parts with a wire

Protection degree against water (2nd numeral)

IP	Symbol	Description
0		Non - protected
1		Protected against vertically falling water drops
2		Protected against vertically falling water drops at any angle up to 15°
3		Protected against spraying water at any angle up to 60° from the vertical
4		Protected against splashing water from any direction
5		Protected against water jets from any direction
6		Protected against powerful water jets from any direction

Description according to rule CEI EN 60529

FILTER FANS

Filter fans are a practical solution for removing heat from the cabinet.
They channel filtered ambient air into the enclosure, expelling warm internal air through an exhaust filter or roof unit to reduce temperatures and protect electronic components from overheating.

Fandis offers two different series of filter fans to better satisfy various cooling and ventilation requirements.

FF SERIES

TIME-SAVING INSTALLATION
Quick tool-less mounting system with clips for 1 to 3.7mm thick plates

QUICK CONNECTION
Cage clamp free-tool wiring system

IP55 AND TYPE 3R (OPTIONAL)
Ideal for indoor or outdoor use in harsh industrial environments

EMC-COMPATIBLE (OPTIONAL)
Metal shielding for electromagnetic protection

SLIDE OPENING
Easy replacement of the filter media without the need of tools

COLORS
Custom RAL colors subject to minimum order

Details that make the difference


Cage clamp system


Sliding mechanism


Water resistance

Air flow management

Increasingly often, the causes behind malfunctions or faults in electrical and electronic equipment housed in control panels or fitted as an integral part of a machine, are due to heat problems. In reality, the life span of components depends on the temperature and level of humidity inside the electrical cabinet. The normal recommended average operating temperature inside a cabinet is 35°C with relative humidity of no more than 60%.

Fandis offers a wide range of solutions for efficiently disposing of dissipated heat from electrical components suitable for different applications.

NATURAL CONVECTION

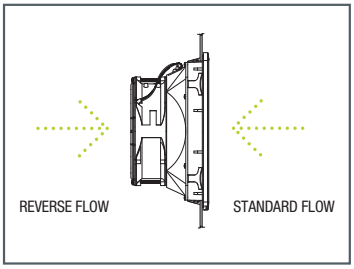
The use of exhaust filter ensures the passage of air and the removal of heat in a natural manner. This solution can be considered for dissipating low level of heat in dusty environments.

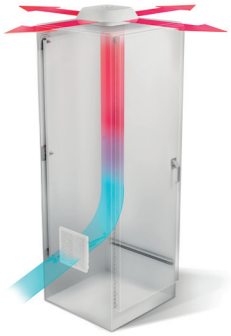
FORCED CONVECTION

Forced ventilation is an inexpensive and efficient solution for preventing the formation of air pockets inside electrical cabinets. The best configuration includes fitting a filter fan to an exhaust filter.
The filter fan positioned at the bottom of the cabinet, conveys filtered cold air from outside (**standard air flow**) while the exhaust filter at the top expels hot air.
The pressure generated inside the enclosure by the ventilation prevents unfiltered air from entering through holes or openings.

An inverted air flow version (**reverse flow**) is also available; filter fan at top and exhaust filter at bottom.

The system can be controlled by a thermostat that turns the fan on when high temperatures are detected.





Hot air can also be expelled from the roof of the cabinet if, for instance, the sides of the cabinet are covered by obstacles, walls or by the sides of other cabinets. In a perfect configuration, an exhaust filter is positioned at the bottom of the cabinet.
The lower pressure generated by the roof unit draws in cold air from outside through the exhaust filter to enhance internal air flow and the dissipation of heat.

The use of a swivelling fan is an alternative solution for a better air circulation inside the electrical cabinet.
This fan distributes heat to reduce the temperature, cools local hot spots and disperses cold air emitted by cooling units.

FF series exhaust filters

- Free-tool clip mounting system
- Plate thickness: FF08 from 1 to 2mm; FF12, FF13 from 1.3 to 3.2mm; FF15, FF20 from 1.3 to 3.7mm (up to 4mm with cut-out max tolerance)
- Standard color RAL 7035, other colors available on request, subject to quantity
- Standard protection ratings: IP54 and Type 12. Optional versions: IP55, Type 1, 3R and EMC

Model	Dimensions HxWxD	Cut-Out	Weight	Approvals
	mm	mm	Kg	
FF08U	107x107x23	91.5X91.5	0.10	CE; cURus; cCSAus; cULus;
FF12U	150x150x29	124X124	0.20	CE; cURus; cCSAus; cULus;
FF13U	204x204x30	177X177	0.36	CE; cURus; cCSAus; cULus;
FF15U	250x250x34	223X223	0.57	CE; cURus; cCSAus; cULus;
FF20U	325x325x34	291X291	0.98	CE; cURus; cCSAus; cULus;

FF series IP55 exhaust filters

- IP protection degree

Model	Dimensions HxWxD	Cut-Out	Weight	Approvals
	mm	mm	Kg	
FF12U5	150x150x29	124X124	0.20	CE; cURus; cCSAus; cULus;
FF13U5	204x204x30	177X177	0.36	CE; cURus; cCSAus; cULus;
FF15U5	250x250x34	223X223	0.58	CE; cURus; cCSAus; cULus;
FF20U5	325x325x34	291X291	0.99	CE; cURus; cCSAus; cULus;

FF series EMC exhaust filters

- Electromagnetic shielding

Modello	Dimensions HxWxD	Cut-Out	Weight	Approvals
	mm	mm	Kg	
FF08UC	107x107x23	91.5X91.5	0.10	CE; cURus; cCSAus; cULus;
FF12UC	150x150x29	124X124	0.21	CE; cURus; cCSAus; cULus;
FF13UC	204x204x30	177X177	0.37	CE; cURus; cCSAus; cULus;
FF15UC	250x250x34	223X223	0.60	CE; cURus; cCSAus; cULus;
FF20UC	325x325x34	291X291	1.03	CE; cURus; cCSAus; cULus;

FF series Type 3R exhaust filters

- Ideal for outdoor applications
- Plastics construction against atmospheric deterioration
- UV resistant
- IP55 protection degree, IP54 for FF08 series

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Model	Dimensions HxLxP	Cut-Out	Weight	Approvals
	mm	mm	Kg	
FF08N3	107x107x23	91.5X91.5	0.13	CE; cURus; cULus;
FF12N53	150x150x29	125X125	0.29	CE; cURus; cULus;
FF13N53	204x204x30	177X177	0.47	CE; cURus; cULus;
FF15N53	250x250x34	223X223	0.89	CE; cURus; cULus;
FF20N53	325x325x34	291X291	1.16	CE; cURus; cULus;

FF series filter fans

- Free-tool clip mounting system
- Plate thickness: FF08 from 1 to 2mm; FF12, FF13 from 1.3 to 3.2mm; FF15, FF20 from 1.3 to 3.7mm (up to 4mm with cut-out max tolerance)
- Quick electrical connection by screwless terminal block
- Standard color RAL 7035, other colors available on request, subject to quantity
- Standard protection ratings: IP54 and Type 12. Optional versions: IP55, Type 1, 3R and EMC
- Reverse airflow version (-R) see page 5
- Frequency: 50/60 Hz

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power (50/60Hz)	Max air flow (50/60Hz)	Static Pressure (50/60Hz)	Approvals
	mm	mm	V	W	m^3/h	Pa	
FF08A115UN	107x107x67	91.5X91.5	115 V a.c.	9.0/7.0	12/15	23/33	CE; cURus; cCSAus; cULus;
FF08A115UNR	107x107x67	91.5X91.5	115 V a.c.	9.0/7.5	16/21	45/64	CE; cURus; cCSAus; cULus;
FF08A230UF	107x107x67	91.5X91.5	230 V a.c.	14/11	10/13	16/25	CE;
FF08A230UN	107x107x67	91.5X91.5	230 V a.c.	10/8.0	12/15	23/33	CE; cURus; cCSAus; cULus;
FF08A230UNR	107x107x67	91.5X91.5	230 V a.c.	10/8.0	16/21	45/64	CE; cURus; cCSAus; cULus;
FF08D12UN	107x107x54	91.5X91.5	12 V d.c.	2.0	16	28	CE; cURus; cCSAus; cULus;
FF08D12UNR	107x107x54	91.5X91.5	12 V d.c.	2.2	23	44	CE; cURus; cCSAus; cULus;
FF08D24UN	107x107x54	91.5X91.5	24 V d.c.	2.0	16	28	CE; cURus; cCSAus; cULus;
FF08D24UNR	107x107x54	91.5X91.5	24 V d.c.	2.2	23	44	CE; cURus; cCSAus; cULus;
FF08D48UF	107x107x61	91.5X91.5	48 V d.c.	3.0	12	19	CE;
FF08GA115UF	107x107x80	92.5x92.5	115 V a.c.	12/10	21/26	40/55	CE; cURus; cCSAus; cULus;
FF08GA115UNR	107x107x64	92.5x92.5	115 V a.c.	12/9.0	16/20	40/60	CE; cURus; cCSAus; cULus;
FF08GA230UF	107x107x80	92.5x92.5	230 V a.c.	12/11	21/26	40/55	CE; cURus; cCSAus; cULus;
FF08GA230UNR	107x107x64	92.5x92.5	230 V a.c.	12/10	16/20	40/60	CE; cURus; cCSAus; cULus;
FF08GD24UN	107x107x77	92.5x92.5	24 V d.c.	15	50	160	CE; cURus; cCSAus; cULus;
FF08GD24UNR	107x107x77	92.5x92.5	24 V d.c.	17	60	200	CE; cURus; cCSAus; cULus;
FF08GD48UF	107x107x77	92.5x92.5	48 V d.c.	17	48	144	CE;
FF12A115UF	150x150x73	124X124	115 V a.c.	16/15	45/50	55/62	CE; cURus; cCSAus; cULus;
FF12A115UFR	150x150x73	124X124	115 V a.c.	16/15	47/52	72/82	CE; cURus; cCSAus; cULus;
FF12A115UN	150x150x73	124X124	115 V a.c.	19/17	67/79	73/86	CE; cURus; cCSAus; cULus;
FF12A115UNR	150x150x73	124X124	115 V a.c.	19/17	60/70	86/115	CE; cURus; cCSAus; cULus;
FF12A230UF	150x150x73	124X124	230 V a.c.	18/17	45/50	55/62	CE; cURus; cCSAus; cULus;
FF12A230UFR	150x150x73	124X124	230 V a.c.	18/17	47/52	72/82	CE; cURus; cCSAus; cULus;
FF12A230UN	150x150x73	124X124	230 V a.c.	18/16	67/79	73/86	CE; cURus; cCSAus; cULus;
FF12A230UNR	150x150x73	124X124	230 V a.c.	18/16	60/70	86/115	CE; cURus; cCSAus; cULus;
FF12A24UF	150x150x73	124X124	24 V a.c.	15/15	39/44	43/41	CE;
FF12A24UFR	150x150x73	124X124	24 V a.c.	15/15	50/52	59/40	CE;
FF12D24UN	150x150x73	124X124	24 V d.c.	7.4	47	56	CE; UR; cCSAus; cULus;
FF12D24UN4	150x150x73	124X124	24 V d.c.	23	107	164	CE;
FF12D24UNR	150x150x73	124X124	24 V d.c.	7.4	64	79	CE; UR; cCSAus; cULus;
FF12D48UN	150x150x73	124X124	48 V d.c.	8.6	47	56	CE; UR; cCSAus; cULus;
FF12D48UNR	150x150x73	124X124	48 V d.c.	8.6	64	79	CE; UR; cCSAus; cULus;
FF13PA115UF	204x204x96	177X177	115 V a.c.	19/18	100/110	55/60	CE; cURus; cCSAus; cULus;
FF13PA115UFR	204x204x96	177X177	115 V a.c.	18/18	100/110	70/80	CE; cURus; cCSAus; cULus;
FF13PA115UN	204x204x96	177X177	115 V a.c.	16/15	110/130	80/100	CE; cURus; cCSAus; cULus;
FF13PA115UNR	204x204x96	177X177	115 V a.c.	20/18	110/135	100/120	CE; cURus; cCSAus; cULus;
FF13PA230UF	204x204x96	177X177	230 V a.c.	18/18	100/110	55/60	CE; cURus; cCSAus; cULus;
FF13PA230UFR	204x204x96	177X177	230 V a.c.	18/18	100/110	70/80	CE; cURus; cCSAus; cULus;
FF13PA230UN	204x204x96	177X177	230 V a.c.	19/17	110/130	80/100	CE; cURus; cCSAus; cULus;

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power (50/60Hz)	Max air flow (50/60Hz)	Static Pressure (50/60Hz)	Approvals
	mm	mm	V	W	m^3/h	Pa	
FF13PA230UNR	204x204x96	177X177	230 V a.c.	19/18	110/135	100/120	CE; cURus; cCSAus; cULus;
FF13PD24UN	204x204x96	177X177	24 V d.c.	8.2	100	60	CE; UR; cCSAus; cULus;
FF13PD24UNR	204x204x96	177X177	24 V d.c.	8.5	113	83	CE; UR; cCSAus; cULus;
FF15A115UF	250x250x124	223X223	115 V a.c.	31/31	230/270	115/155	CE; cURus; cCSAus; cULus;
FF15A115UFR	250x250x124	223X223	115 V a.c.	31/31	245/290	165/210	CE; cURus; cCSAus; cULus;
FF15A115UN2	250x250x112	223X223	115 V a.c.	39/41	230/270	150/195	CE; cURus; cCSAus; cULus;
FF15A115UNR2	250x250x112	223X223	115 V a.c.	39/41	238/283	195/252	CE; cURus; cCSAus; cULus;
FF15A230UF	250x250x124	223X223	230 V a.c.	32/36	230/270	115/155	CE; cURus; cCSAus; cULus;
FF15A230UFR	250x250x124	223X223	230 V a.c.	32/36	245/290	165/210	CE; cURus; cCSAus; cULus;
FF15A230UN2	250x250x112	223X223	230 V a.c.	42/45	230/272	150/195	CE; cURus; cCSAus; cULus;
FF15A230UNR2	250x250x112	223X223	230 V a.c.	42/45	238/283	195/252	CE; cURus; cCSAus; cULus;
FF15D24UF	250x250x125	223X223	24 V d.c.	31	275	150	CE; cURus; cCSAus; cULus;
FF15D24UFR	250x250x125	223X223	24 V d.c.	31	295	205	CE; cURus; cCSAus; cULus;
FF15D24UN	250x250x125	223X223	24 V d.c.	17	245	100	CE; UR; cCSAus; cULus;
FF15D24UNR	250x250x125	223X223	24 V d.c.	17	285	148	CE; UR; cCSAus; cULus;
FF15D48UF	250x250x125	223X223	48 V d.c.	43	295	175	CE;
FF15D48UFR	250x250x125	223X223	48 V d.c.	43	310	250	CE;
FF15MA115UF	250x250x111	223X223	115 V a.c.	16/15	130/145	63/39	CE;
FF15MA115UFR	250x250x111	223X223	115 V a.c.	16/15	140/155	80/55	CE;
FF15MA230UF	250x250x111	223X223	230 V a.c.	21/20	130/145	63/39	CE;
FF15MA230UFR	250x250x111	223X223	230 V a.c.	21/20	140/155	80/55	CE;
FF15PA115UF	250x250x112	223X223	115 V a.c.	17/16	105/120	54/57	CE; cURus; cCSAus; cULus;
FF15PA115UFR	250x250x112	223X223	115 V a.c.	17/16	110/120	66/70	CE; cURus; cCSAus; cULus;
FF15PA115UN	250x250x112	223X223	115 V a.c.	20/19	125/145	80/100	CE; cURus; cCSAus; cULus;
FF15PA115UNR	250x250x112	223X223	115 V a.c.	20/19	130/150	100/120	CE; cURus; cCSAus; cULus;
FF15PA230UF	250x250x112	223X223	230 V a.c.	18/17	105/120	54/57	CE; cURus; cCSAus; cULus;
FF15PA230UFR	250x250x112	223X223	230 V a.c.	18/17	110/120	66/70	CE; cURus; cCSAus; cULus;
FF15PA230UN	250x250x112	223X223	230 V a.c.	19/17	125/145	80/100	CE; cURus; cCSAus; cULus;
FF15PA230UNR	250x250x112	223X223	230 V a.c.	19/18	130/150	100/120	CE; cURus; cCSAus; cULus;
FF15PD24UN	250x250x112	223X223	24 V d.c.	7.6	140	62	CE; UR; cCSAus; cULus;
FF15PD24UNR	250x250x112	223X223	24 V d.c.	7.6	150	84	CE; UR; cCSAus; cULus;
FF15PD48UN	250x250x112	223X223	48 V d.c.	8.6	140	62	CE; UR; cCSAus; cULus;
FF15PD48UNR	250x250x112	223X223	48 V d.c.	8.6	150	84	CE; UR; cCSAus; cULus;
FF20A115UE	325x325x160	291X291	115 V a.c.	77/92	445/490	131/141	CE;
FF20A115UE1	325x325x160	291X291	115 V a.c.	74/83	445/485	129/140	CE; cURus; cCSAus; cULus;
FF20A115UER	325x325x160	291X291	115 V a.c.	77/92	530/577	206/216	CE;
FF20A115UER1	325x325x160	291X291	115 V a.c.	74/83	530/575	195/207	CE; cURus; cCSAus; cULus;
FF20A230UE	325x325x160	291X291	230 V a.c.	79/96	460/510	136/148	CE;
FF20A230UE1	325x325x160	291X291	230 V a.c.	70/85	455/503	134/146	CE; cURus; cCSAus; cULus;
FF20A230UER	325x325x160	291X291	230 V a.c.	79/96	540/595	204/219	CE;
FF20A230UER1	325x325x160	291X291	230 V a.c.	70/85	540/590	207/221	CE; cURus; cCSAus; cULus;
FF20A400TUE	325x325x160	291X291	400 V 3 ~	99/124	537/632	186/236	CE;
FF20GA115UE	325x325x159	291X291	115 V a.c.	143/177	708/775	188/181	CE;
FF20GA115UE1	325x325x159	291X291	115 V a.c.	110/156	675/738	183/170	CE; cURus; cCSAus; cULus;
FF20GA115UEA	325x325x159	291X291	115 V a.c.	146/179	875/960	200/189	CE;
FF20GA115UEA1	325x325x159	291X291	115 V a.c.	110/156	893/960	200/176	CE; cURus; cCSAus; cULus;
FF20GA115UER	325x325x159	291X291	115 V a.c.	124/192	760/845	282/258	CE;
FF20GA115UER1	325x325x159	291X291	115 V a.c.	102/145	760/850	280/254	CE; cURus; cCSAus; cULus;
FF20GA115UERA	325x325x159	291X291	115 V a.c.	124/124	820/920	279/255	CE;

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power (50/60Hz)	Max air flow (50/60Hz)	Static Pressure (50/60Hz)	Approvals
	mm	mm	V	W	m^3/h	Pa	
FF20GA115UERA1	325x325x159	291X291	115 V a.c.	102/145	820/925	279/251	CE; cURus; cCSAus; cULus;
FF20GA230UE	325x325x159	291X291	230 V a.c.	155/194	705/790	200/206	CE;
FF20GA230UE1	325x325x159	291X291	230 V a.c.	120/158	680/765	200/210	CE; cURus; cCSAus; cULus;
FF20GA230UEA	325x325x159	291X291	230 V a.c.	158/198	850/960	213/216	CE;
FF20GA230UEA1	325x325x159	291X291	230 V a.c.	120/158	895/998	220/222	CE; cURus; cCSAus; cULus;
FF20GA230UER	325x325x159	291X291	230 V a.c.	170/208	773/870	306/291	CE;
FF20GA230UER1	325x325x159	291X291	230 V a.c.	120/157	760/860	308/304	CE; cURus; cCSAus; cULus;
FF20GA230UERA	325x325x159	291X291	230 V a.c.	171/210	840/958	302/289	CE;
FF20GA230UERA1	325x325x159	291X291	230 V a.c.	120/157	825/930	305/295	CE; cURus; cCSAus; cULus;
FF20GEA400TUE	325x325x149	291X291	400 V 3 ~	137	485	180	CE;
FF20GEA400TUER	325x325x149	291X291	400 V 3 ~	137/173	645/695	240/255	CE;
FF20PA115UF	325x325x164	291X291	115 V a.c.	45/45	310/350	107/111	CE; cURus; cULus;
FF20PA115UFR	325x325x164	291X291	115 V a.c.	45/45	339/374	141/135	CE; cURus; cULus;
FF20PA230UF	325x325x164	291X291	230 V a.c.	45/45	315/345	106/108	CE; cURus; cULus;
FF20PA230UFR	325x325x164	291X291	230 V a.c.	45/45	334/367	135/125	CE; cURus; cULus;

FF series filter fans - Type 3R

- Free-tool clip mounting system
- Plate thickness: FF08 from 1 to 2mm; FF12, FF13 from 1.3 to 3.2mm; FF15, FF20 from 1.3 to 3.7mm (up to 4mm with cut-out max tolerance)
- Quick electrical connection by screwless terminal block
- Standard color RAL 9005
- Standard protection ratings: Type 3R and IP55 (IP54 for FF08 series). Optional versions: IP54
- Frequency: 50/60 Hz
- UV resistant
- Plastic construction against atmospheric deterioration, ideal for outdoor applications
- Other voltages available on request

new

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power (50/60Hz)	Max Air flow (50/60Hz)	Static Pressure (50/60Hz)	Approvals
	mm	mm	V	W	m^3/h	Pa	
FF08A115NN3	107x107x67	91.5X91.5	115 V a.c.	9.0/7.0	12/15	23/33	CE; cURus; cULus;
FF08A230NN3	107x107x67	91.5X91.5	230 V a.c.	10/8.0	12/15	23/33	CE; cURus; cULus;
FF08D12NN3	107x107x54	91.5X91.5	12 V d.c.	2.0	16	28	CE; cURus; cULus;
FF08D24NN3	107x107x54	91.5X91.5	24 V d.c.	2.0	16	28	CE; cURus; cULus;
FF08GA115NF3	107x107x80	92.5X92.5	115 V a.c.	12/10	21/26	40/55	CE; cURus; cULus;
FF08GA230NF3	107x107x80	92.5X92.5	230 V a.c.	12/11	21/26	40/55	CE; cURus; cULus;
FF08GD24NN3	107x107x77	92.5X92.5	24 V d.c.	15	50	160	CE; cURus; cULus;
FF12A115NF53	150x150x73	125X125	115 V a.c.	16/15	33/39	49/55	CE; cURus; cULus;
FF12A115NN53	150x150x73	125X125	115 V a.c.	19/17	50/59	67/82	CE; cURus; cULus;
FF12A230NF53	150x150x73	125X125	230 V a.c.	18/17	33/39	49/55	CE; cURus; cULus;
FF12A230NN53	150x150x73	125X125	230 V a.c.	18/16	50/59	67/82	CE; cURus; cULus;
FF12D24NN53	150x150x73	125X125	24 V d.c.	7.4	35	53	CE; UR; cULus;
FF12D48NN53	150x150x73	125X125	48 V d.c.	8.6	35	53	CE; UR; cULus;
FF13PA115NF53	204x204x96	177X177	115 V a.c.	18/18	75/87	50/50	CE; cURus; cULus;
FF13PA115NN53	204x204x96	177X177	115 V a.c.	16/15	90/110	75/95	CE; cURus; cULus;
FF13PA230NF53	204x204x96	177X177	230 V a.c.	18/18	75/87	50/50	CE; cURus; cULus;
FF13PA230NN53	204x204x96	177X177	230 V a.c.	19/17	90/110	75/95	CE; cURus; cULus;
FF13PD24NN53	204x204x96	177X177	24 V d.c.	8.2	85	52	CE; UR; cULus;

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power (50/60Hz)	Max Air flow (50/60Hz)	Static Pressure (50/60Hz)	Approvals
	mm	mm	V	W	m^3/h	Pa	
FF15A115NF53	250x250x124	223X223	115 V a.c.	31/31	160/195	97/130	CE; cURus; cULus;
FF15A115NN532	250x250x112	223X223	115 V a.c.	39/41	187/225	94/121	CE; cURus; cULus;
FF15A230NF53	250x250x124	223X223	230 V a.c.	32/36	160/195	97/130	CE; cURus; cULus;
FF15A230NN532	250x250x112	223X223	230 V a.c.	42/45	187/225	105/139	CE; cURus; cULus;
FF15D24NF53	250x250x125	223X223	24 V d.c.	31	230	150	CE; cURus; cULus;
FF15D24NN53	250x250x125	223X223	24 V d.c.	17	205	97	CE; UR; cULus;
FF15PA115NF53	250x250x112	223X223	115 V a.c.	17/16	96/110	49/52	CE; cURus; cULus;
FF15PA230NF53	250x250x112	223X223	230 V a.c.	18/17	96/110	49/52	CE; cURus; cULus;
FF15PD24NN53	250x250x112	223X223	24 V d.c.	7.6	110	50	CE; UR; cULus;
FF15PD48NN53	250x250x112	223X223	48 V d.c.	8.6	110	50	CE; UR; cULus;
FF20A115NE531	325x325x160	291X291	115 V a.c.	74/83	338/378	98/107	CE; cURus; cULus;
FF20A230NE531	325x325x160	291X291	230 V a.c.	70/85	360/400	112/126	CE; cURus; cULus;
FF20GA115NE31	325x325x159	291X291	115 V a.c.	110/156	675/738	183/170	CE; cURus; cULus;
FF20GA230NE31	325x325x159	291X291	230 V a.c.	120/158	680/765	200/210	CE; cURus; cULus;

GF series exhaust filters

- Mounting system with jacks for plastic or plate enclosures
- Plate thickness: up to 8mm and by cutting the jacks up to 16mm
- Standard color RAL 7035, other colors available on request, subject to quantity
- IP54 protection degree

Model	Dimensions HxWxD	Cut-Out	Weight	Approvals
	mm	mm	Kg	
GF12KUG	150x150x31	125X125	0.17	CE;
GF15KUG	250x250x32	223X223	0.33	CE;
GF20KUG	325x325x33	290X290	0.74	CE;

GF series filter fans

- Mounting system with jacks for plastic or plate enclosures
- Plate thickness: up to 8mm and by cutting the jacks up to 16mm
- Standard color RAL 7035, other colors available on request, subject to quantity
- IP54 protection degree
- Reverse airflow version (-R) see page 5
- Frequency: 50/60 Hz

Model	Dimensions HxWxD	Cut-Out	Rated Voltage	Rated power	Max air flow	Static Pressure	Approvals
	mm	mm	V	W	m^3/h	Pa	
GF12KU230BE	150x150x76	125X125	230 V a.c.	17/16	46/53	52/58	CE;
GF12KU230BER	150x150x76	125X125	230 V a.c.	17/16	42/47	59/70	CE;
GF12KUD24B	150x150x76	125X125	24 V d.c.	7.0	46	54	CE;
GF12KUD24BR	150x150x76	125X125	24 V d.c.	7.0	55	71	CE;
GF15KPU230BE	250x250x105	223X223	230 V a.c.	18/18	118/132	56/57	CE;
GF15KU115BE	250x250x118	223X223	115 V a.c.	32/35	224/270	110/148	CE;
GF15KU230BE	250x250x118	223X223	230 V a.c.	32/34	224/270	110/148	CE;
GF15KU230BER	250x250x118	223X223	230 V a.c.	32/35	248/290	158/202	CE;
GF20KGU230B	325x325x142	290X290	230 V a.c.	159/125	583/680	214/216	CE;
GF20KU230BE	325x325x153	290X290	230 V a.c.	76/92	475/535	140/156	CE;

TP series roof exhaust units without fan

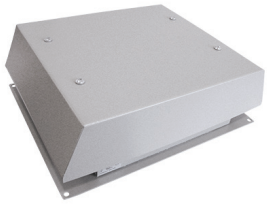
- Plastic structure with aluminum top
- Plate thickness: any
- Available in 3 protection degree: IP24, IP54 and IP55
- Standard color RAL 7035, other colors available on request, subject to quantity

Model	Protection Degree	Approvals
	IP	
TP19U1	IP24	CE; cURus; cCSAus; cULus;
TP19U541	IP54	CE; cURus; cCSAus; cULus;
TP19U551	IP55	CE; cURus; cCSAus; cULus;

TP series roof exhaust units

- Plastic structure with aluminum top
- Plate thickness: any
- Available in 4 protection degree: IP24, IP44, IP54 and IP55
- Standard color RAL 7035, other colors available on request, subject to quantity
- Frequency: 50/60 Hz

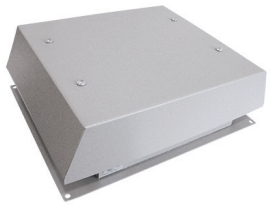
Model	Rated Voltage	Rated power	Max air flow	Static Pressure	Protection Degree	Approvals
	V	W	m^3/h	Pa	IP	
TP19U115B	115 V a.c.	62/75	500/575	335/465	IP24	CE;
TP19U115B1	115 V a.c.	97	575	465	IP24	CE; cURus; cCSAus; cULus;
TP19U115B441	115 V a.c.	97	560	470	IP44	CE; cURus; cCSAus; cULus;
TP19U115B54	115 V a.c.	66/74	420/490	340/480	IP54	CE;
TP19U115B541	115 V a.c.	97	490	480	IP54	CE; cURus; cCSAus; cULus;
TP19U115B55	115 V a.c.	66/74	420/490	340/480	IP55	CE;
TP19U115B551	115 V a.c.	97	490	480	IP55	CE; cURus; cCSAus; cULus;
TP19U230B	230 V a.c.	67/83	500/575	335/465	IP24	CE;
TP19U230B1	230 V a.c.	70/81	500/575	335/465	IP24	CE; cURus; cCSAus; cULus;
TP19U230B44	230 V a.c.	69/81	485/560	330/470	IP44	CE;
TP19U230B441	230 V a.c.	70/81	485/560	330/470	IP44	CE; cURus; cCSAus; cULus;
TP19U230B54	230 V a.c.	70/83	420/490	340/480	IP54	CE;
TP19U230B541	230 V a.c.	70/81	420/490	340/480	IP54	CE; cURus; cCSAus; cULus;
TP19U230B55	230 V a.c.	70/83	420/490	340/480	IP55	CE;
TP19U230B551	230 V a.c.	70/81	420/490	340/480	IP55	CE; cURus; cCSAus; cULus;



T series roof exhaust unit without fan

- Metal structure
- Plate thickness: any
- IP23 protection degree
- Standard color RAL 7035 and RAL 7032

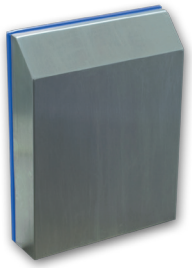
Model	Approvals
T19UK	CE;



T series roof exhaust units

- Metal structure
- Plate thickness: any
- IP23 protection degree
- Standard color RAL 7035 and RAL 7032
- Frequency: 50/60 Hz

Model	Rated Voltage	Rated power	Max air flow	Static Pressure	Approvals
	V	W	m^3/h	Pa	
T19R115B	115 V a.c.	58/71	550/590	370/510	CE;
T19R230B	230 V a.c.	62/78	550/590	370/510	CE;
T19U115B	115 V a.c.	58/71	550/590	370/510	CE;
T19U230B	230 V a.c.	62/78	550/590	370/510	CE;
T22R115B	115 V a.c.	130/170	800/850	520/650	CE;
T22R230B	230 V a.c.	125/161	800/850	520/650	CE;
T22U115B	115 V a.c.	130/170	800/850	520/650	CE;
T22U230B	230 V a.c.	125/161	800/850	520/650	CE;



Accessories - Hose-proof protection hood Type 4X

- Particularly suitable for outdoor applications or in food&beverage industry
- Available for FF and GF series
- AISI 304 stainless steel brushed finish
- Sanitary FDA compliant gaskets to detect contamination
- Slide mounting system on bracket
- Type 4X protection degree
- UL approved only using FF filter fans

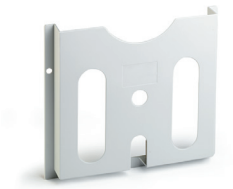
new

Model	Description
SSC-08A	FF08
SSC-12A	FF12, GF12
SSC-13A	FF13
SSC-15A	FF15, GF15
SSC-20A	FF20, GF20

Accessories - Hose-proof protection hood

- Particularly suitable for outdoors applications
- Available for FF and GF series in all sizes
- AISI 304 stainless steel cover of 1mm thickness
- Slide mounting system on bracket
- IP56 protection degree in combination with an IP54 filter

Model	Description
SSC-08	FF08
SSC-12	FF12, GF12
SSC-13	FF13
SSC-15	FF15, GF15
SSC-20	FF20, GF20



Accessories - Document holder

- Holds documents in A4 format
- Fixing through a pre-arranged double side adhesive tape
- Standard color RAL 7035

Model
TPD-A4

Accessories - Adapters

- Allow fan filter installation in a semi built-in position in the electric cabinet, reducing the internal dimensions
- Available for FF and GF series in 150x150mm, 204x204mm and 325x325mm sizes
- Standard color RAL 7035 and RAL 7032

Model	Description
FPFA12-7032G	FF12, GF12
FPFA12-7035G	FF12, GF12
FPFA12-9005G	FF12, GF12
FPFA15-7032G	FF15, GF15
FPFA15-7035G	FF15, GF15
FPFA20-7011G	FF20, GF20
FPFA20-7032G	FF20, GF20
FPFA20-7035G	FF20, GF20

Accessories - Filter media

- Filter media can be cleaned, up to 10 times, by careful washing, blowing dry and lightly beating
- Available for FF and GF series in all sizes
- G4 not available for FF08 models
- 6 pcs. per kit

Model	Description	Filtration Class
M08FPFK	FF08	G3
M12FPF5K	FF12	G4
M12FPFK	FF12	G3
M12GFK	GF12	G3
M13FPF5K	FF13	G4
M13FPFK	FF13	G3
M15FPF5K	FF15	G4
M15FPFK	FF15	G3
M15GFK	GF15	G3
M20FPF5K	FF20	G4
M20FPFK	FF20	G3
M20GFK	GF20	G3

Accessories - Pressure compensation device

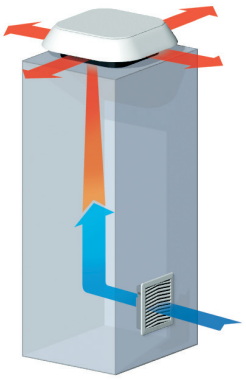
- Avoids the pressure compensation for temperature fluctuations across the seal. Air pressure changes are compensated and the ingress of dirt and water is prevented
- Easy installation to any cabinet, even retrospectively
- Standard color RAL 7035
- IP55 protection degree

Model
CP-U55-00

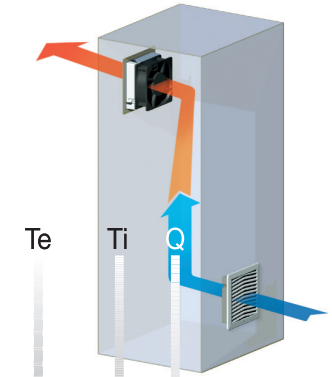
Orientable fan

- Prevents hot spots inside the cabinet
- Vertical/horizontal adjustable positioning
- Quick electrical connection with screwless terminal
- Metal protection guards on both sides
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Approvals
	mm	V	W	m^3/h	Pa	
OF-A12B23SWBAQ130	119x119x38	230 V a.c.	21/21	163/182	60/62	CE;



Ti > Te



ex: 20 °C ex: 30 °C

ΔT=Ti-Te

ex: 30-20=10 °C ex: 500W

$$\text{AIR FLOW} = f \cdot \frac{Q}{\Delta T}$$

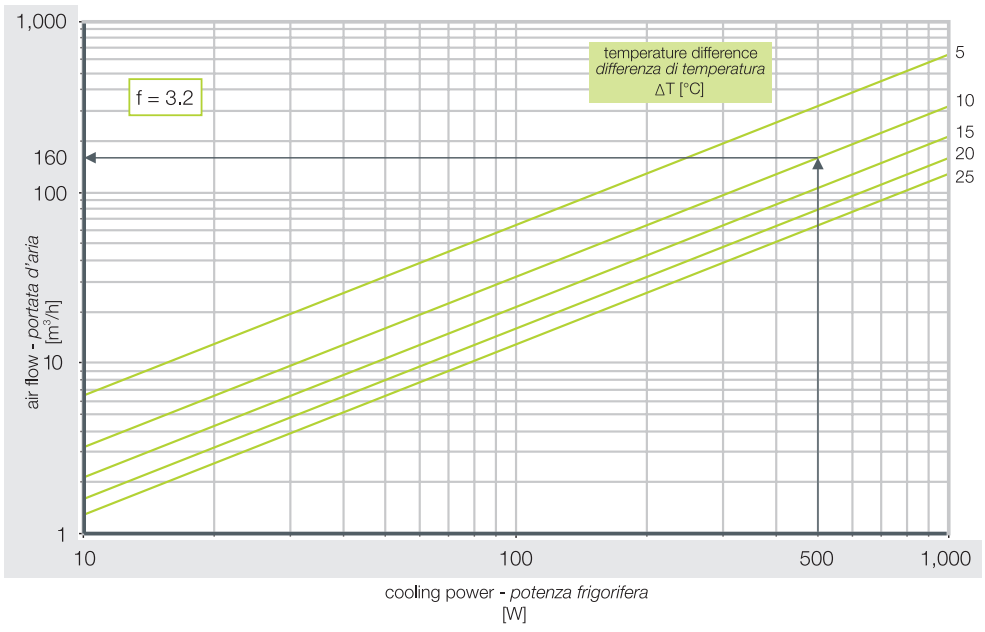
$$\text{ex: } 3.2 \cdot \frac{500}{10} = 160 \cdot \frac{m^3}{h}$$

ex: 3.2

ALTITUDE [m over sea level]	f [m³ °C/Wh]
0 ~ 100	3.1
100 ~ 250	3.2
250 ~ 500	3.3
500 ~ 750	3.4
750 ~ 1,000	3.5

Sizing

When we use filter fans, we must accept a target temperature inside the cabinet greater than ambient temperature outside the cabinet. So the difference ΔT between inside and outside temperature is always positive. We can calculate the filter fan air flow by the ratio between the thermal power Q and the difference of temperature ΔT and multiplying by a coefficient of heat transfer (f) which consider the physical properties of the air such as the specific heat and density which changes with the altitude.



Nomenclature:
Ti = target temperature inside the cabinet
Te = ambient temperature outside the cabinet
ΔT = temperature difference between inside and outside the cabinet
Q = active thermal load inside the cabinet
f = coefficient of heat transfer

AC axial frame fans - Costech

- AC shaded pole or capacitor fans
- Wire (W) or terminal (T) connection
- Motor protection: impedance or thermal
- Support system: ball or sleeve bearing
- Frameless versions (A12W and A12Z models)
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
A06G12HWBF00	60x60x30	115 V a.c.	5/4	14/17	18/27	27/28	Ball	CE; cURus;
A06G23HWBF00	60x60x30	230 V a.c.	5/4	14/17	17/27	27/28	Ball	CE; cURus;
A08A12HWBF00	80x80x25	115 V a.c.	14/11	36/41	40/55	32/35	Ball	CE; cURus;
A08A12HWSF00	80x80x25	115 V a.c.	14/11	36/41	40/55	32/35	Sleeve	CE; cURus;
A08A23HWBF00	80x80x25	230 V a.c.	16/14	32/39	35/55	32/35	Ball	CE; UR;
A08A23HWSF00	80x80x25	230 V a.c.	16/14	32/39	35/55	32/35	Sleeve	CE; UR;
A08B12HWBF00	80x80x38	115 V a.c.	12/9	41/51	40/55	32/36	Ball	CE; cURus;
A08B12HWSF00	80x80x38	115 V a.c.	14/12	41/51	40/55	32/36	Sleeve	CE; cURus;
A08B12LWBF00	80x80x38	115 V a.c.	12/9	33/42	25/40	28/32	Ball	CE; cURus;
A08B12LWSF00	80x80x38	115 V a.c.	12/9	33/42	25/40	28/32	Sleeve	CE; cURus;
A08B23HWBF00	80x80x38	230 V a.c.	14/12	41/51	40/55	32/36	Ball	CE; UR;
A08B23HWSF00	80x80x38	230 V a.c.	14/12	41/51	40/55	32/36	Sleeve	CE; UR;
A08B23LWBF00	80x80x38	230 V a.c.	14/12	33/42	25/40	28/32	Ball	CE; UR;
A08B23LWSF00	80x80x38	230 V a.c.	14/12	33/42	25/40	28/32	Sleeve	CE; UR;
A09A12HTBF00	92x92x25	115 V a.c.	14/11	56/68	37/54	32/36	Ball	CE; cURus;
A09A12HTSF00	92x92x25	115 V a.c.	14/11	56/68	37/54	32/36	Sleeve	CE; cURus;
A09A23HTBF00	92x92x25	230 V a.c.	16/14	56/68	37/54	32/36	Ball	CE; UR;
A09A23HTSF00	92x92x25	230 V a.c.	16/14	56/68	37/54	32/36	Sleeve	CE; UR;
A09A23MTBF00	92x92x25	230 V a.c.	16/14	51/63	30/45	28/32	Ball	CE; UR;
A09A23MTSF00	92x92x25	230 V a.c.	16/14	51/63	30/45	28/32	Sleeve	CE; UR;
A12W12HWBW00	113x38	115 V a.c.	20/18	150/167	66/81	43/48	Ball	CE; cURus;
A12W23HWBW00	113x38	230 V a.c.	20/19	148/182	65/80	46/49	Ball	CE; cURus;
A12Z12HWBW00	113x38	115 V a.c.	19/18	150/167	66/81	43/48	Ball	CE;
A12Z12HWSW00	113x38	115 V a.c.	19/18	150/167	66/81	43/48	Sleeve	CE;
A12Z23HWBW00	113x38	230 V a.c.	18/18	148/182	65/80	46/49	Ball	CE;
A12Z23HWSW00	113x38	230 V a.c.	18/18	148/182	65/80	46/49	Sleeve	CE;
A12A12HTBF00	120x120x25	115 V a.c.	14/11	99/117	42/40	38/42	Ball	CE; cURus;
A12A12HTSF00	120x120x25	115 V a.c.	14/11	99/117	42/40	38/42	Sleeve	CE; cURus;
A12A12MTBF00	120x120x25	115 V a.c.	14/11	87/105	27/32	33/35	Ball	CE; cURus;
A12A12MTSF00	120x120x25	115 V a.c.	14/11	87/105	27/32	33/35	Sleeve	CE; cURus;
A12A23HTBF00	120x120x25	230 V a.c.	16/14	109/127	52/52	38/42	Ball	CE; UR;
A12A23HTSF00	120x120x25	230 V a.c.	16/14	109/127	52/52	38/42	Sleeve	CE; UR;
A12A23MTBF00	120x120x25	230 V a.c.	16/14	87/102	27/32	34/36	Ball	CE; UR;
A12A23MTSF00	120x120x25	230 V a.c.	16/14	87/102	27/32	34/36	Sleeve	CE; UR;
A12B05HTBW00	120x120x38	24 V d.c.	14/14	129/142	55/40	45/48	Ball	CE;
A12B05HTSW00	120x120x38	24 V d.c.	13,2/13,2	147/142	55/50	46/45	Sleeve	CE;
A12B12HTBW00	120x120x38	115 V a.c.	20/18	148/182	65/80	46/49	Ball	CE; cURus; VDE;
A12B12HTSW00	120x120x38	115 V a.c.	20/18	138/178	55/75	44/48	Sleeve	CE; cURus; VDE;
A12B12LTBW00	120x120x38	115 V a.c.	11/11	133/122	35/32	42/40	Ball	CE; cURus; VDE;
A12B12LTSW00	120x120x38	115 V a.c.	11/11	115/104	35/20	41/37	Sleeve	CE; cURus; VDE;
A12B12MTBW00	120x120x38	115 V a.c.	16/15	136/143	52/62	44/46	Ball	CE; cURus; VDE;

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
A12B12MTSW00	120x120x38	115 V a.c.	16/15	129/141	50/52	44/46	Sleeve	CE; cURus; VDE;
A12B12STBW00	120x120x38	115 V a.c.	22/20	165/182	75/95	48/50	Ball	CE; cURus; VDE;
A12B12STSW00	120x120x38	115 V a.c.	22/23,8	165/182	62/95	47/50	Sleeve	CE; cURus; VDE;
A12B23ETSW00	120x120x38	230 V a.c.	6,5/6	83/82	16/16	29/28	Sleeve	CE;VDE
A12B23HTBW00	120x120x38	230 V a.c.	20/19	139/182	60/80	46/49	Ball	CE; cURus; VDE;
A12B23HTSW00	120x120x38	230 V a.c.	20/19	138/178	55/75	44/48	Sleeve	CE; cURus; VDE;
A12B23LTBW00	120x120x38	230 V a.c.	11/10	114/102	27/22	44/42	Ball	CE; cURus; VDE;
A12B23LTSW00	120x120x38	230 V a.c.	11/10	115/104	35/20	41/37	Sleeve	CE; cURus; VDE;
A12B23MTBW00	120x120x38	230 V a.c.	16/15	133/143	47/57	43/45	Ball	CE; cURus; VDE;
A12B23MTSW00	120x120x38	230 V a.c.	16/15	129/141	50/52	44/46	Sleeve	CE; cURus; VDE;
A12B23STBW00	120x120x38	230 V a.c.	22/21	143/199	62/97	47/50	Ball	CE; cURus; VDE;
A12B23STSW00	120x120x38	230 V a.c.	22/21	141/182	62/95	47/50	Sleeve	CE; cURus; VDE;
A12R23HTBW00	120x120x38	230 V a.c.	20/19	150/167	66/81	48/54	Ball	CE; cURus; VDE;
A12R23HTSW00	120x120x38	230 V a.c.	20/19	150/167	66/81	48/54	Sleeve	CE; cURus; VDE;
A13B12HTBF00	127x127x38	115 V a.c.	14/12	174/204	72/28	46/50	Ball	CE; cURus;
A13B23HTBF00	127x127x38	230 V a.c.	17/15	174/204	72/28	46/50	Ball	CE; cURus;
A17C12HWBF00	172x150x51	115 V a.c.	32/28	290/331	105/95	50/55	Ball	CE; cURus;
A17C23HWBF00	172x150x51	230 V a.c.	35/30	290/331	105/95	50/55	Ball	CE; cURus;
C17B12HTBF00	172x150x38	115 V a.c.	29/28	300/360	167/187	54/58	Ball	CE; cURus;
C17B23HTBF00	172x150x38	230 V a.c.	27/26	300/360	167/187	54/58	Ball	CE; cURus;
C17C12HTBF00	172x150x51	115 V a.c.	31/31	348/384	157/197	53/58	Ball	CE; cURus;
C17C23HTBF00	172x150x51	230 V a.c.	29/29	348/384	157/197	53/58	Ball	CE; cURus;
C18C12HTBF00	172x172x51	115 V a.c.	31/31	348/384	157/197	50/55	Ball	CE; cURus;
C18C23HTBF00	172x172x51	230 V a.c.	29/29	348/384	157/197	50/55	Ball	CE; cURus;
C22S12HKBD00	218x218x83	115 V a.c.	79/96	855/930	190/201	64,6/67,4	Ball	CE;
C22S23HKBD00	218x218x83	230 V a.c.	78/94	855/930	197/211	65/68	Ball	CE;
C22S40HKBD00	218x218x83	400 V 3 ~	174	970	265	61	Ball	CE;
C25S12HKBE00	280x280x80	115 V a.c.	107/138	1680/1920	299/270	64,6/67,4	Ball	CE;
C25S23HKBE00	280x280x80	230 V a.c.	101/127	1630/1865	280/280	67/70	Ball	CE;
C25S40HKBE00	280x280x80	400 V 3 ~	86/117	1540/1680	280/275	67/69	Ball	CE;

Other fans with different features available.

DC axial frame fans - Costech

- Brushless motor
- Wire connection
- Motor protection: impedance or IC
- Support system: ball, sleeve or hypro bearing
- Alarm or speed sensor output (optionally)

Model	Dimensions	Rated Voltage	Voltage Range	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	V d.c.	W	m^3/h	Pa	dB(A)		
D04D04HWBZ00	40x40x20	12 V d.c.	10.8 - 13.2	1.3	15	70	36	Ball	CE; cURus;
D04D05HWBZ00	40x40x20	24 V d.c.	21.6 - 26.4	2.16	15	70	36	Ball	CE; cURus;
D04E04HWHT00	40x40x10	12 V d.c.	10.8 - 13.2	1.2	11	25	26	Hypro	CE; cURus;
D04E05HWBT00	40x40x10	24 V d.c.	21.6...26.4	2.16	11	25	30.5	Ball	CE; cURus;
D04E05HWHT00	40x40x10.5	24 V d.c.	21.6 - 26.4	2.16	11	25	30.5	Hypro	CE; cURus;
D06A04HWBA00	60x60x25	12 V d.c.	10.8...13.2	2.8	42	50	36.8	Ball	CE; cURus;
D06A04HWSA00	60x60x25	12 V d.c.	10.8...13.2	2.76	42	50	33.1	Hypro	CE; cURus;
D06A05HWBA00	60x60x25	24 V d.c.	21.6 - 26.4	2.88	40	63	33.1	Ball	CE; cURus;
D06A05HWSA00	60x60x25	24 V d.c.	21.6 - 26.4	2.88	40	63	33.1	Hypro	CE; cURus;
D08A04HWSA00	80x80x25	12 V d.c.	10.8 - 13.2	3	68	38	33.4	Sleeve	CE; cURus;
D08A05HWBA00	80x80x25	24 V d.c.	21.6 - 26.4	3.84	68	38	33.4	Ball	CE; UR;
D08A05HWSA00	80x80x25	24 V d.c.	21.6 - 26.4	3.84	68	38	33.4	Sleeve	CE; UR;
D08D04HWSA00	80x80x20	12 V d.c.	10.8 - 13.2	2.9	49	37	34	Sleeve	CE; UR;
D09A04HWSZ00	92x92x25	12 V d.c.	10.8-13.2	3	87	34	35.4	Sleeve	CE; cURus;
D09A05HWBZ00	92x92x25	24 V d.c.	21.6...26.4	3.6	95	36	37.5	Ball	CE; cURus;
D09A05HWSZ00	92x92x25	24 V d.c.	21.6 - 26.4	3.6	87	34	35.4	Sleeve	CE; cURus;
D12A04HWSZ00	120x120x25	12 V d.c.	10.8 - 13.2	5.28	149	33	39.1	Sleeve	CE; cURus;
D12A04SWSZ00	120x120x25	12 V d.c.	10.8-13.2	6	150	42	43.9	Sleeve	CE; cURus;
D12A05HWBZ00	120x120x25	24 V d.c.	21.6 - 24.6	4.56	134	35	39.3	Ball	CE; cURus;
D12A05HWSZ00	120x120x25	24 V d.c.	21.6-26.4	5.76	149	33	39.1	Sleeve	CE; cURus;
D12B04HWBZ00	120x120x38	12 V d.c.	10.8 - 13.2	6	179	66	46.7	Ball	CE; UR;
D12B05HWBZ00	120x120x38	24 V d.c.	21.6 - 26.4	7.68	179	66	46.7	Ball	CE; cURus;
D12B05HWSZ00	120x120x38	24 V d.c.	21.6 - 26.4	7.68	179	66	46.7	Sleeve	CE; cURus;
D12B05SWBZ00	120x120x38	24 V d.c.	21.6...26.4	9.6	204	83	48	Ball	CE; cURus;
D17C05HWBA00	172x150x51	24 V d.c.	12 - 26	24	450	187	58.8	Ball	CE; cURus;

Other fans with different features available.

EC axial frame fans - Costech

- EC green technology for high performances
- Brushless motor
- Wire connection
- Impedance protected motor
- Ball bearing system
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
E08B12HWBL00	80x80x38	115 V a.c.	5/5	64/68.5	46/53	35/37	Ball	CE;
E08B23HWBL00	80x80x38	230 V a.c.	5/5	68/73	53/61	37/39	Ball	CE;
E12B23HWBL00	120x120x38	230 V a.c.	6/6	198/206	79/77	45/46.8	Ball	CE;
E12B23LWBL00	120x120x38	230 V a.c.	2.5/2.5	132/138	32/37	34/35.7	Ball	CE;
E12B23MWBL00	120x120x38	230 V a.c.	4/4	169/176	55/58	40/41.8	Ball	CE;

Other fans with different features available.

DC blowers - Costech

- Brushless motor
- Wire connection
- IC protected motor
- Support system: ball and sleeve bearing

Model	Dimensions	Rated Voltage	Voltage Range	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	V d.c.	W	m^3/h	Pa	dB(A)		
DC1G05MWBA01	120x120x31	24 V d.c.	21.6...26.4	9.4	48	220	49.0	Ball	CE; cURus;

Other fans with different features available.

IP55 AC fans - Costech

- Water jet resistant and dustproof
- Shaded pole motor
- Wire (W) or terminal (T) connection
- Motor protection: impedance or thermal
- Ball bearing system
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
A06G23HWBFF0	60x60x30	230 V a.c.	5/4	14/17	17/27	27/28	Ball	CE;
A08B12HWBFF0	80x80x38	115 V a.c.	14/12	41/51	40/55	32/36	Ball	CE;
A08B23HWBFF0	80x80x38	230 V a.c.	14/12	41/51	40/55	32/36	Ball	CE;
A12W23HWBWF0	113x38	230 V a.c.	20/19	150/180	66/80	46/49	Ball	CE;
A12W23SWBWF0	113x38	230 V a.c.	22/21	165/182	62/95	48/50	Ball	CE;
A12B05HTBWF0	120x120x38	24 V d.c.	14/14	129/142	55/40	45/48	Ball	CE;
A12B12ETBKF0	120x120x38	115 V a.c.	6/5.5	78/84	15/15	27/28	Ball	CE;
A12B12HWBWF0	120x120x38	115 V a.c.	18/18	136/168	57/80	46/49	Ball	CE;
A12B12LTBKF0	120x120x38	115 V a.c.	7/7	120/114	35/22	32/30	Ball	CE;
A12B23ETBKF0	120x120x38	230 V a.c.	6.5/6	78/84	15/15	27/28	Ball	CE;
A12B23HTBWF0	120x120x38	230 V a.c.	20/19	139/182	60/80	46/49	Ball	CE;
A12B23HWBWF0	120x120x38	230 V a.c.	20/19	148/182	65/80	46/49	Ball	CE;
A12B23LTBKF0	120x120x38	230 V a.c.	7.5/7.5	120/114	35/22	32/30	Ball	CE;
A12B23MTBWF0	120x120x38	230 V a.c.	16/15	133/143	47/57	43/45	Ball	CE;
A12B23SWBWF0	120x120x38	230 V a.c.	24/22	143/199	62/97	48/50	Ball	CE;
A17M12SWBMF0	172x150x55	115 V a.c.	42/42	332/391	137/157	49/53	Ball	CE;
A17M23SWBMF0	172x150x55	230 V a.c.	42/42	332/391	137/157	49/53	Ball	CE;cURus

Other fans with different features available.

IP55 DC fans - Costech

- Water jet resistant and dustproof
- Brushless motor
- Wire connection
- Motor protection: impedance or IC
- Ball bearing system

Model	Dimensions	Rated Voltage	Voltage Range	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	V d.c.	W	m^3/h	Pa	dB(A)		
D08A04HWBAF0	80x80x25	12 V d.c.	10.8 - 13.2	3	68	38	33.4	Ball	CE; cURus;
D12B04HWBAF0	120x120x38	12 V d.c.	10.8...13.2	6	179	66	46.7	Ball	CE;
D12B05HWBAF0	120x120x38	24 V d.c.	21.6...26.4	7.7	179	66	46.7	Ball	CE;

Other fans with different features available.

High temperature resistant AC fans - Costech

- High temperature resistant up to 90°C
- All metal construction
- Shaded pole motor
- Wire (W) or terminal (T) connection
- Motor protection: impedance or thermal
- Ball bearing system(B)
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
A09B12HWBMT0	92x92x38	115 V a.c.	12/11	75/87	60/75	37/42	Ball	CE;
A09B23HTBMT0	92x92x38	230 V a.c.	12/11	75/87	59/74	37/42	Ball	CE;
A12B12HTBMT0	120x120x38	115 V a.c.	17/15	150/175	64/60	42/46	Ball	CE;
A12B12LTBMT0	120x120x38	115 V a.c.	17/15	110/115	25/22	33/35	Ball	CE;
A12B23HTBMT0	120x120x38	230 V a.c.	17/15	150/175	64/59	42/46	Ball	CE; cURus;
A12B23LTBMT0	120x120x38	230 V a.c.	17/15	107/110	25/22	33/35	Ball	CE; cURus;
A17M12SWBMT0	172x150x55	115 V a.c.	42/42	332/391	137/157	49/53	Ball	CE; cURus;
A17M23SWBMT0	172x150x55	230 V a.c.	42/42	332/391	137/157	49/53	Ball	CE; cURus;
A17T12SWBMT0	172x150x55	115 V a.c.	45/45	383/434	124/124	58/61	Ball	CE; cURus;
A17T23SWBMT0	172x150x55	230 V a.c.	45/45	383/434	124/124	58/61	Ball	CE; cURus;

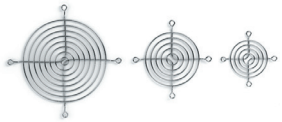
Other fans with different features available.

All metal AC fans - Costech

- Metal fan blades for good corrosion resistant
- Shaded pole motor
- Wire (W) or terminal (T) connection
- Motor protection: impedance or thermal
- Ball bearing system
- Frequency: 50/60 Hz

Model	Dimensions	Rated Voltage	Rated power	Max air flow	Static Pressure	Noise	Bearing	Approvals
	mm	V	W	m^3/h	Pa	dB(A)		
A09B12HWBM00	92x92x38	115 V a.c.	12/11	75/87	60/75	37/42	Ball	CE; cURus;
A09B23HWBM00	92x92x38	230 V a.c.	12/11	75/87	60/75	37/42	Ball	CE; cURus;
A12B12HTBM00	120x120x38	115 V a.c.	15/13	151/175	64/60	42/46	Ball	CE; cURus;
A12B12LTBM00	120x120x38	115 V a.c.	17/15	107/114	25/22	33/35	Ball	CE; cURus;
A12B23HTBM00	120x120x38	230 V a.c.	17/15	151/175	65/60	42/46	Ball	CE; cURus;
A12B23LTBM00	120x120x38	230 V a.c.	17/15	107/114	25/22	33/35	Ball	CE; cURus;
A17M12SWBM00	172x150x55	115 V a.c.	42/42	332/391	137/157	49/53	Ball	CE; cURus;
A17M23SWBM00	172x150x55	230 V a.c.	42/42	332/391	137/157	49/53	Ball	CE; cURus;
A17T12SWBM00	172x150x55	115 V a.c.	45/45	383/434	123/126	58/61	Ball	CE; cURus;
A17T23SWBM00	172x150x55	230 V a.c.	45/45	383/434	123/126	58/61	Ball	CE; cURus;

Other fans with different features available.

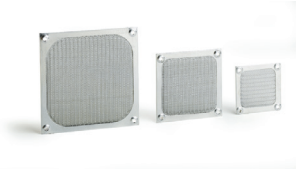


Accessories - Metal fan guards

- A: fan guard diameter

Model	A
	mm
40	29.1
50	42
60	53
80	76
92	90

Model	A
	mm
120	115.6
127	115.6
150	154.4
150/S	154.4
GMP200NK	215
GMP250NK	278



Accessories - Metal filters

Model	Dimensions
	mm
FM/60	60x60
FM/80	83.8x82.8
FM/92	92x92
FM/120	119x119
FM/150	182x182

Accessories - Metal ventilation louvres

Model	Dimensions
	mm
G120M-7035	120x120

Accessories - Plastic fan guards

Model	Dimensions
	mm
G40	42.3x42.3
G60	60x60
G80	81x81
G92	92x92
G120	121x121
G150	173x173

Accessories - Plastic filters

Model	Dimensions
	mm
F40/MR	46.4x46.4
F60/MR	64x64
F80/MR	86x86
F92/MR	97x97
F120/MR	126x126
F150/MR	179x179

Accessories - Spare filter media (for plastic filters)

Model	Dimensions
	mm
M40	42x42
M60	60x60
M80	81x81
M92	92x92
M120	120x120
M150	172x172

Accessories - Fast assembly plastic fan guards

Model	Dimensions
	mm
G80/S	80x80
G120/S	120x120
G127/S	127.5x127.5

Accessories - Plastic rivets

- A: plastic rivet lenght

Model	Description	A	Color
		mm	
FAR175TPN	Flat	17	9005 (Black)
FAR175TPR	Flat	17	7032 (Grey)
FAR175TSN	V-shaped	17	9005 (Black)
FAR175TSR	V-shaped	17	7032 (Grey)
FAR225TPN	Flat	22	9005 (Black)
FAR225TPR	Flat	22	7032 (Grey)
FAR225TSN	V-shaped	22	9005 (Black)
FAR225TSR	V-Shaped	22	7032 (Grey)

Accessories - Elastic rivets

Model
EAR4401N

Accessories - Fan power leads

Model	Length of cable	Description
	mm	
C60	1,520	Straight
C80	2,030	Straight
C80E	2,030	Straight
C100	2,540	Straight
CM500E	5,000	Straight
C24	610	Straight
C24-45	610	45°
C36	910	Straight
C36-45	910	45°

H series heaters with cable

- Metal (M) or touch-safe plastic (P) cover
- 3x20AWG cable with 500mm length
- Clip fastening system for DIN rail TS35
- Heating element consists of a self-regulating PTC resistor

Model	Dimensions	Heating Power	Rated Voltage	Weight	Approvals
	mm	W	V	Kg	
HWM005	78x28x49	5	110-240 V a.c./d.c.	0.110	CE; cURus;
HWM010	78x28x49	10	110-240 V a.c./d.c.	0.110	CE; cURus;
HWM015	78x28x49	15	110-240 V a.c./d.c.	0.110	CE; cURus;
HWM015X	78x28x49	15	110-240 V a.c./d.c.	0.110	CE;
HWM020	78x28x49	20	110-240 V a.c./d.c.	0.110	CE; cURus;
HWM025	108x28x49	25	110-240 V a.c./d.c.	0.150	CE; cURus;
HWM030	108x28x49	30	110-120 V a.c./d.c.	0.150	CE; cURus;
HWM030X	108x28x49	30	110-240 V a.c./d.c.	0.150	CE;
HWM045	108x61.5x85	45	110-240 V a.c./d.c.	0.400	CE; cURus;
HWM045X	108x61.5x85	45	110-240 V a.c./d.c.	0.400	CE;
HWM060	108x61.5x85	60	110-240 V a.c./d.c.	0.400	CE; cURus;
HWM060X	108x61.5x85	60	110-240 V a.c./d.c.	0.400	CE;
HWM080	158x61.5x85	80	110-240 V a.c./d.c.	0.550	CE; cURus;
HWM100	158x61.5x85	100	110-240 V a.c./d.c.	0.550	CE; cURus;
HWM150	208x61.5x85	150	110-240 V a.c./d.c.	0.750	CE; cURus;
HWMS080X	108x61.5x85	80	110-240 V a.c./d.c.	0.425	CE;
HWMS100X	108x61.5x85	100	110-240 V a.c./d.c.	0.425	CE;
HWMS150X	158x61.5x85	150	110-240 V a.c./d.c.	0.575	CE;
HWP045	108x61.5x85	45	110-240 V a.c./d.c.	0.400	CE; cURus;
HWP060	108x61.5x85	60	110-240 V a.c./d.c.	0.400	CE; cURus;
HWP080	158x61.5x85	80	110-240 V a.c./d.c.	0.550	CE; cURus;
HWP100	158x61.5x85	100	110-240 V a.c./d.c.	0.550	CE; cURus;
HWP150	208x61.5x85	150	110-240 V a.c./d.c.	0.750	CE; cURus;

H series heaters with terminal block

- Metal (M) or touch-safe plastic (P) cover
- 3 screwless terminals
- Clip fastening system for DIN rail TS35
- Heating element consists of a self-regulating PTC resistor

Model	Dimensions	Heating Power	Rated Voltage	Weight	Approvals
	mm	W	V	Kg	
HTM045	138x61.5x85	45	110-240 V a.c./d.c.	0.450	CE; cURus;
HTM060	138x61.5x85	60	110-240 V a.c./d.c.	0.450	CE; cURus;
HTM080	188x61.5x85	80	110-240 V a.c./d.c.	0.600	CE; cURus;
HTM100	188x61.5x85	100	110-240 V a.c./d.c.	0.600	CE; cURus;
HTM150	238x61.5x85	150	110-240 V a.c./d.c.	0.800	CE; cURus;
HTMS080X	138x61.5x85	80	110-240 V a.c./d.c.	0.455	CE;
HTMS100X	138x61.5x85	100	110-240 V a.c./d.c.	0.455	CE;
HTMS150X	188x61.5x85	150	110-240 V a.c./d.c.	0.625	CE;
HTP045	138x61.5x85	45	110-240 V a.c./d.c.	0.450	CE; cURus;
HTP060	138x61.5x85	60	110-240 V a.c./d.c.	0.450	CE; cURus;
HTP080	188x61.5x85	80	110-240 V a.c./d.c.	0.600	CE; cURus;
HTP100	188x61.5x85	100	110-240 V a.c./d.c.	0.600	CE; cURus;
HTP150	238x61.5x85	150	110-240 V a.c./d.c.	0.800	CE; cURus;

H series heaters with fan

- Metal (M) or touch-safe plastic (P) cover
- 3 screwless terminals
- Clip fastening system for DIN rail TS35
- Heating element consists of a self-regulating PTC resistor with integrated bimetal thermal protector

Model	Dimensions	Heating Power	Rated Voltage	Weight	Approvals
	mm	W	V	Kg	
HVMS200THP-115	143x61.5x85	200	115 V a.c.	0.550	CE; cURus;
HVMS200THP-230	143x61.5x85	200	230 V a.c.	0.550	CE;
HVMS250THP-115	193x61.5x85	250	115 V a.c.	0.700	CE; cURus;
HVMS250THP-230	193x61.5x85	250	230 V a.c.	0.700	CE; cURus;
HVMS350THP-115	243x61.5x85	350	115 V a.c.	0.900	CE; cURus;
HVMS350THP-230	243x61.5x85	350	230 V a.c.	0.900	CE;
HVPS200THP-115	143x61.5x85	200	115 V a.c.	0.550	CE; cURus;
HVPS200THP-230	143x61.5x85	200	230 V a.c.	0.550	CE;
HVPS250THP-115	193x61.5x85	250	115 V a.c.	0.700	CE; cURus;
HVPS250THP-230	193x61.5x85	250	230 V a.c.	0.700	CE; cURus;
HVPS350THP-115	243x61.5x85	350	115 V a.c.	0.900	CE; cURus;
HVPS350THP-230	243x61.5x85	350	230 V a.c.	0.900	CE;

DC thermoelectric units

IP55 protection degree

- Solid-state device with Peltier technology
- Suitable for any plate thickness
- No chlorofluorocarbons (CFC) and compressor
- Reversible process heat/cool
- Operation in any orientation
- Not sensitive to vibration
- Virtually free maintenance - No moving parts (except the fans)

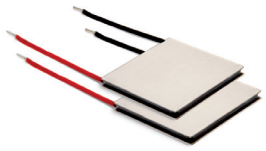
Model	Cooling Power	Rated Voltage	Rated Current	Max Current	Operating Temp. Range	Rated Voltage Range	Weight	Approvals
	W	V	A	A	°C	V	Kg	
TCU501240IP55-7035	50	12 Vd.c.	5.0	5.8	-20 ~ +70	7 ~ 13	4	CE;
TCU502440IP55-7035	50	24 Vd.c.	2.4	2.8	-20 ~ +70	10 ~ 27.6	4	CE;
TCU1002440IP55-7035	100	24 Vd.c.	4.7	5.7	-20 ~ +70	17 ~ 27	6	CE;
TCU1004840IP55-7035	100	48 Vd.c.	2.4	3.0	-20 ~ +70	34 ~ 54	6	CE;
TCU2002440IP55-7035	200	24 Vd.c.	9.5	11.5	-20 ~ +70	17-27 Vd.c.	12	CE;
TCU2004840IP55-7035	200	48 Vd.c.	4.8	6.0	-20 ~ +70	34-54 Vd.c.	12	CE;

AC thermoelectric units

IP55 protection degree

- Solid-state device with Peltier technology
- Suitable for any plate thickness
- Stainless steel external cover
- Integrated AC/DC power supply on the outer cover
- No chlorofluorocarbons (CFC) and compressor
- Operation in any orientation
- Not sensitive to vibration
- Virtually free maintenance - No moving parts (except the fans)

Model	Cooling Power	Rated Voltage Range	Input Power	Max Input Power	Operating Temp. Range	Weight	Approvals
	W	V	W	W	°C	Kg	
TCU200AC40-SIP	201	88-264 Va.c.	245	306	-20 ~ +50	14	CE;



Thermoelectric modules

- Semiconductor-based electronic components
- Core system of the thermoelectric units
- No chlorofluorocarbons (CFC)
- Reversible process heat/cool
- Not sensitive to vibration

Model	Dimensions	Max Current	Max Voltage	Max Cooling Power	Max Temp. Differential	Max Operating Temp.
	mm	A	V	W	°C	°C
TM1-1273050-HXHP	30x30x2.9	5.0	15.2	47.1	66	125
TM1-1274060-HXHP	40x40x3.8	6.0	15.3	60.0	67	125

Accessories - Drip trays

- Stainless steel accessory used to collect the condensate generated on the cold heat sink inside the enclosure
- Suitable for vertical installation of the thermoelectric units

Model	Descriptions
RC-TCU100-1001	for TCU100
RC-TCU200-1001	for TCU200 / TCU200AC
RC-TCU50-1001	for TCU50

NO-NC Thermostats

- Normally Closed (NC) and normally Open (NO) versions
- Patented snap-on fastening system on DIN rails TS35/15/32
- Wide temperature setting range with °C or °F scales
- Disc setting by hand or tool
- Standard color RAL 7035

Model	Rated Voltage Range	Rated Current	Contact Current	Setting Range	Setting Range	Differential (referred to set point)	Accuracy	Approvals
	V	A	A	°C	°F	K	K	
TRT-10A230V-NC	60 V d.c.;110-250 V a.c.	10	15	-10 ~ 80		-3	±3	CE; cURus;
TRT-10A230V-NCF	60 V d.c.;110-250 V a.c.	10	15		14 ~ 176	-3	±3	CE; cURus;
TRT-10A230V-NO	60 V d.c.;110-250 V a.c.	10	15	-10 ~ 80		+4 if A < 5 ; +7 if A > 5	±3	CE; cURus;
TRT-10A230V-NOF	60 V d.c.;110-250 V a.c.	10	15		14 ~ 176	+4 if A < 5 ; +7 if A > 5	±3	CE; cURus;

Change-over thermostats

- Change over contact
- Snap-on fastening system on DIN rail TS35
- Standard color RAL 7035

Model	Rated Voltage Range	Rated Current	Contact Current	Setting Range	Differential (referred to set point)	Accuracy	Approvals
	V	A	A	°C	K	K	
TRT-230V-S01	230 V a.c.	(Heating) a.c. 10(4) d.c. 30W- (Cooling) a.c. 5(2)	10	5 ~ 60	1 (with thermal retroaction)	±3	CE;

Twin thermostats

- Normally Closed/Normally Open (NC-NO), Normally Closed/Normally Closed (NC-NC) and Normally Open/ Normally Open (NO-NO) versions
- Separate adjustment and operation of the devices
- Snap-on fastening system on DIN rail TS35
- Wide temperature setting range with °C or °F scales
- Disc setting by hand or tool
- Standard color RAL 7035

Model	Rated Voltage Range	Rated Current	Contact Current	Setting Range	Setting Range	Differential (referred to set point)	Accuracy	Approvals
	V	A	A	°C	°F	K	K	
TRT2-10A230V-NCNC	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15	-10 ~ 80		-3	±3	CE; cURus;
TRT2-10A230V-NCNCF	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15		14 ~ 176	-3	±3	CE; cURus;
TRT2-10A230V-NCNO	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15	-10 ~ 80		-3 (NC) / +4 if A < 5 ; +7 if A > 5 (NO)	±3	CE; cURus;
TRT2-10A230V-NCNOF	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15		14 ~ 176	-3 (NC) / +4 if A < 5 ; +7 if A > 5 (NO)	±3	CE; cURus;
TRT2-10A230V-NONO	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15	-10 ~ 80		+4 if A < 5 ; +7 if A > 5	±3	CE; cURus;
TRT2-10A230V-NONOF	60 V d.c.;110-250 V a.c.	10 + 10	15 + 15		14 ~ 176	+4 if A < 5 ; +7 if A > 5	±3	CE; cURus;

Hygrostats

- Snap-on fastening system on DIN rail TS35
- Disc setting by hand or tool
- Standard color RAL 7035
- UL approved till max 80% RH

Model	Rated Voltage	Rated Current	Setting Range	Differential average	Accuracy	Approvals
	V	A	%RH	%RH	%RH	
IGR35F	120-240 V a.c.	12 - 6 ; 6 - 3	10 - 90	5	± 5	CE; cURus;

Door limit switches

- Versions available:
  plain plunger (**FC-001**),
  plain plunger with manual reset (**FC-002**),
  roller plunger (**FC-003**),
  roller plunger with adjustable lever (**FC-004**),
  plain plunger with 3 NC contacts (**FC-005**)
- For all versions: No. 1 Normally Open (NO) contact and No. 1 Normally Closed (NC) contact, except for **FC-005** model

Model	a.c. Rated Voltage Range	a.c. Rated Current Range	d.c. Rated Voltage Range	d.c. Rated Current Range	Approvals
	V	A	V	A	
FC-001	24 - 400	10 - 4	24 - 250	6 - 0.4	CE; cULus;
FC-002	24 - 400	10 - 4	24 - 250	6 - 0.4	CE; cULus;
FC-003	24 - 400	10 - 4	24 - 250	6 - 0.4	CE; cULus;
FC-004	24 - 400	10 - 4	24 - 250	6 - 0.4	CE; cULus;
FC-005	24 - 400	10 - 4	24 - 250	6 - 0.4	CE; cULus;

Accessories - Slide limit switch

- Plastic support for simple positioning of FC series door limit switch
- The kit consists of No.1 slide for limit switch, No.2 screws and No.2 nuts

Model
SA-FC01K

Accessories - Schuko socket

- Clip fastening system for DIN rail TS35
- Grey color
- Screw terminals (2P+GND)

Model	Rated Voltage	Rated Current	Working Temp.Range	Weight	Approvals
	V	A	°C	kg	
FS-S16-DIN35	230 V a.c.	16	-20°C ÷ 40°C	0.1	CE;

FLL series AC LED lamps

- Long life and low energy consumption by LED technology
- ON/OFF switch (-S) or PIR movement sensor (-IR)
- Standard screw-in or, optionally, magnetic fastening for metallic surfaces (-IRM or -SM models)
- Wieland (-IRV or -SV models) or screwless wiring system
- Daisy chain connection (up to 10 units), except for models with Wieland connection
- Adjustable light beam
- Multi-voltage version available (FLL-300)
- Frequency: 50/60 Hz

Model	Length	Rated Voltage	Rated power	No. of led	Color Temp.	Lum. Flux	Approvals
	mm	V	W		K	lm	
FLL-120565U-IR	356	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-IRM	356	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-IRV	364	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-IRVM	364	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-S	356	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-SM	356	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-SV	364	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-120565U-SVM	364	115 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-IR	356	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-IRM	356	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-IRV	364	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-IRVM	364	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-S	356	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-SM	356	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-SV	364	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-230565U-SVM	364	230 V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-IR	356	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-IRM	356	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-IRV	364	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-IRVM	364	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-S	356	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-SM	356	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-SV	364	115-230V a.c.	5.0	40	7,100	315	CE; cURus;
FLL-300565U-SVM	364	115-230V a.c.	5.0	40	7,100	315	CE; cURus;

FLL series DC LED lamps

- Long life and low energy consumption by LED technology
- ON/OFF switch (-S) or PIR movement sensor (-IR)
- Standard screw-in or, optionally, magnetic fastening for metallic surfaces (-IRM or -SM models)
- Wieland (-IRV or -SV models) or screwless wiring system
- Daisy chain connection (up to 10 units), except for models with Wieland connection
- Adjustable light beam

Model	Length	Rated Voltage	Rated power	No. of led	Color Temp.	Lum. Flux	Approvals
	mm	V	W		K	lm	
FLL-D120565U-IR	356	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-IRM	356	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-IRV	364	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-IRVM	364	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-S	356	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-SM	356	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-SV	364	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D120565U-SVM	364	12 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D240565U-IR	356	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-IRM	356	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-IRV	364	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-IRVM	364	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-S	356	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-SM	356	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-SV	364	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D240565U-SVM	364	24V a.c./d.c.	5.5/5.5 / 4.5	39	7,100	315	CE; cURus;
FLL-D480565U-IR	356	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-IRM	356	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-IRV	364	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-IRVM	364	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-S	356	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-SM	356	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-SV	364	48 V d.c.	4.5	39	7,100	315	CE; cURus;
FLL-D480565U-SVM	364	48 V d.c.	4.5	39	7,100	315	CE; cURus;

Accessories for **FLL Series** LED lamps

Model	Descriptions
FLL-2MA	Magnets kit (2pcs.)
CE-006WF	2-pole female Wieland connector
CVFLL-01	Power cable 2x18 AWG Wieland F L=3000 white
CVFLL-02	Power cable 2x18 AWG Wieland F L=3000 orange

CLG-L series LED lamps

- Long life and low energy consumption by LED technology
- ON/OFF switch
- Metal fixing brackets for an adjustable lamp positioning
- Daisy chain connection

Model	Length	Rated Voltage	Rated power	No. of led	Color Temp.	Approvals
	mm	V	W		K	
CLG-L307	400	115-230V a.c.	7	12	6,400	CE;

CLG series fluorescent lamps

- Equipped with fluorescent lamp type: T5 with lamp holder G5 type for CLG-R models; T4 with lamp holder G5 type for CLG-T models; T8 with lamp holder G13 type for CLG-S models
- ON/OFF switch
- Magnetic mounting system for CLG-T models available
- Schuko socket version (CLG-SS)

Model	Length	Rated Voltage	Rated power	Light type lamp holder	Cable length	Approvals
	mm	V	W		mm	
CLG-R2313	581	230 V a.c.	13	T5 / G5	1,800	CE;
CLG-R2321	914	230 V a.c.	21	T5 / G5	1,800	CE;
CLG-R236	277	230 V a.c.	6	T5 / G5	1,300	CE; GS;
CLG-R238	354	230 V a.c.	8	T5 / G5	1,800	CE;
CLG-SS2310	498	230 V a.c.	10	T8 / G13	-	CE;
CLG-T2312	425	230 V a.c.	12	T4 / G5	1,800	CE; GS;
CLG-T2316	516	230 V a.c.	16	T4 /G5	1,800	CE;
CLG-T2320	616	230 V a.c.	20	T4 / G5	1,800	CE;
CLG-T2324	710	230 V a.c.	24	T4 / G5	1,800	CE;
CLG-T2330	810	230 V a.c.	30	T4 / G5	1,800	CE;
CLG-T236	270	230 V a.c.	6	T4 / G5	1,800	CE; GS;
CLG-T238	390	230 V a.c.	8	T4 / G5	1,800	CE; GS;

Accessories for **Fluorescent** lamps

Model	Descriptions
CONNECTION CABLE	
CVL01-200	multiple connection cable 2000 mm
CVL01-25	multiple connection cable 250 mm
CVL02-150	multiple connection cable 1500 mm
CVL02-200	connection cable 2000 mm
CVL02-350	connection cable 3500 mm
MAGNETIC SUPPORT	
CLG-TSM1	for CLG-T models

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The product is made in conformity with the cogent standards provided for by European Health and Safety legislation.
Where expressly indicated, the product conforms to the standard of Safety and Performance defined by recognised international bodies and subject to their periodic verification.

Any loss or damage, both incidental and consequential, for any failure to perform or delay to perform due to wrong use or wrong installation of the product, as well as to the non-observance of technical specifications, are not covered by the Manufacturer's warranty.
The buyer alone is responsible to determine the suitability of the product.
The data indicated in the catalogue is purely indicative. The product is subject to wear.

Electrical connections must be carried out in compliance with pertinent national, state or local health and safety laws.
If the apparatus in which the product is incorporated should guarantee continuous use without variation or interruption in performance, the product must be utilised only in the presence of a device which immediately signals any functional anomaly or arrest, allowing immediate intervention or the activation of an auxiliary product.

If installed and/or integrated in other apparatus, the use and maintenance manual of the apparatus must also indicate the correct use of our product and its working characteristics and must prescribe its estimated life, before the product actually reaches the maximum working hours shown in the data sheets, that is to say, taking account of all the specific conditions of use and of the technical specifications supplied and must supply exhaustive information allowing the user to substitute the product (removal & substitution).

Any fan found to be defective within the limits of the warranty, will be replaced free of charge. Costs of labour or other extra subsequent costs relative to the removal, restitution or new installation of the fan are not covered by the product warranty.

Sales Conditions and Data Sheets available on www.fandis.it

Other models are available on request, subjet to quantities.

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