

Fans and Controllers for Agricultural Applications

Contents

Superbly engineered fans 2

The choice is yours..... 3

Specification 4

Suggested number of livestock per installed fan 5

Performance curves 6

Plate fans 7

Chimney fans 8

Retrofit fans 9

ETAvent 10

Plastic louvre shutters15

Side wall air inlet15

Fan controllers 16

 . General description 16

 . 1~ speed controllers with turning knob 17

 . Electronic 1~ temperature control unit α control 18

 . Climate control module unicon 21

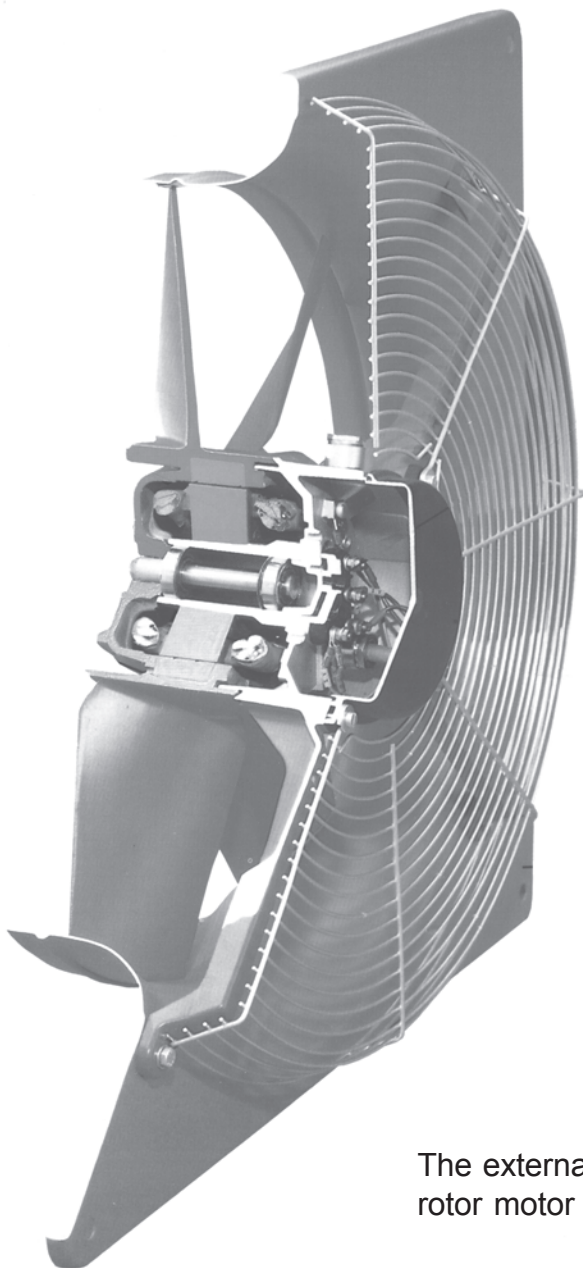
 . 3~ frequency inverter Fcontrol 22

 . Sensors 23

 . Motor protection Units 25

 . Main switch for ETAvent fans 26

Warranty 27



The external rotor motor

Superbly engineered fans

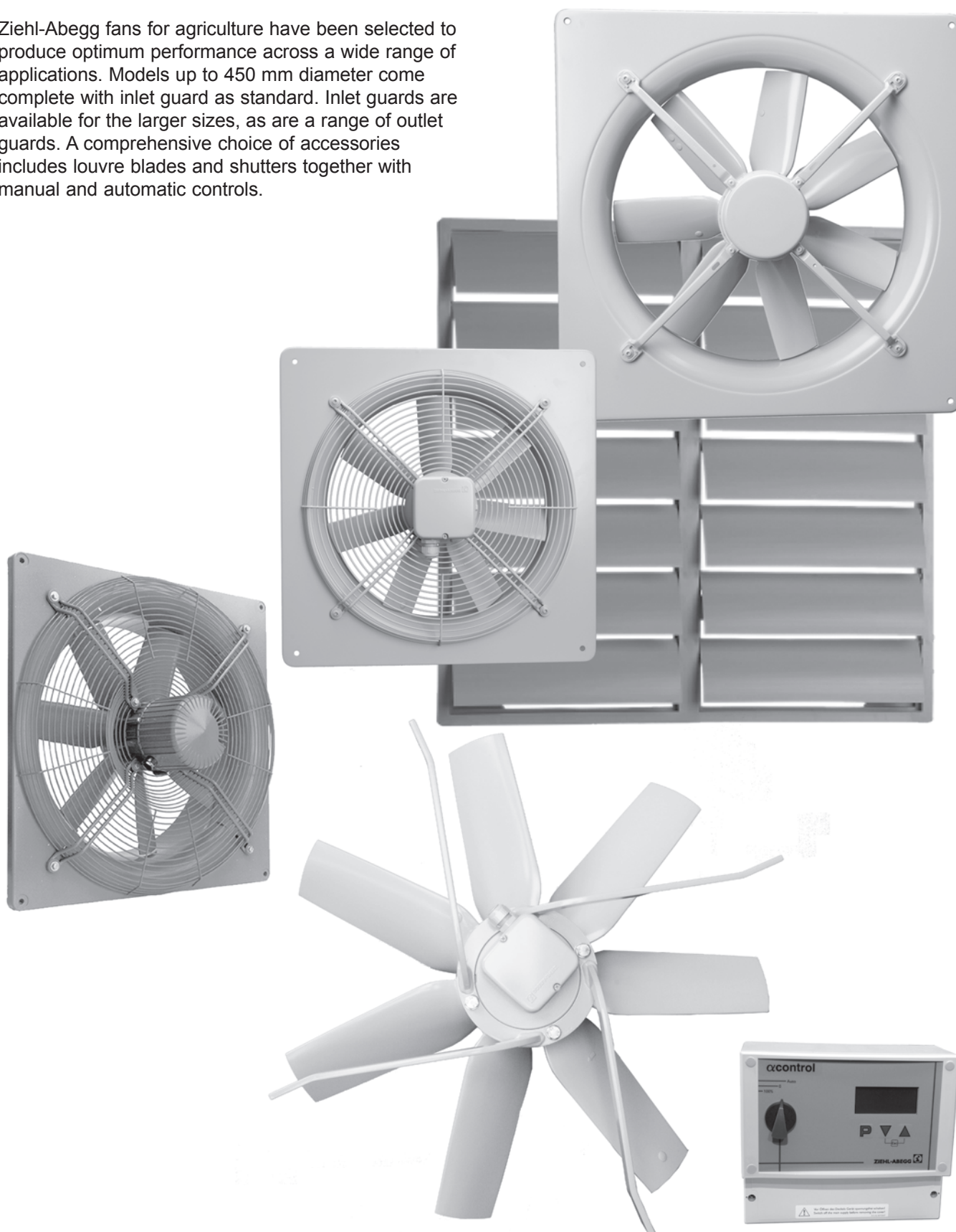
Ziehl-Abegg axial flow fans feature our legendary external rotor motor combined with the optimised aerofoil sectioned axial flow impeller, to give a high performance fan that delivers a large volume of air at relatively low power consumption. Noise and running costs are minimised.

Much of the heat generated in a motor is produced in the rotor. The external rotor motor has the rotor on the outside of the motor, with the metal impeller integral with the rotor, providing a good method of heat dissipation from the motor. Where other fans use standard internal rotor motors which hold the heat within the motor body, our superior heat dissipation system ensures long operating life, and provide full and reliable speed control by voltage reduction by three and two wire methods.

Both rotating parts, impeller and rotor, are an integral unit. Consequently we can dynamically balance, with accuracy, to ensure mechanical vibration is minimised and maintained at a low level after installation, to provide a long operating life.

The choice is yours ...

Ziehl-Abegg fans for agriculture have been selected to produce optimum performance across a wide range of applications. Models up to 450 mm diameter come complete with inlet guard as standard. Inlet guards are available for the larger sizes, as are a range of outlet guards. A comprehensive choice of accessories includes louvre blades and shutters together with manual and automatic controls.



Specification

Motor

External rotor motor, totally enclosed to IP54, continuously rated, class F insulation, fitted with precision ball bearings sealed for life and maintenance free. The motor has moisture and acid protection treatments applied to the internal parts to make it suitable for the arduous conditions encountered in the agricultural industry. Drain holes are fitted in both the rotor and stator to allow the moisture that gains entry to the motor to drain away.

Important notice: Where applicable upon installation the plug in the drain hole which is in the lowest position must be removed by the installer prior to operation.

Mounting plate

Painted galvanised sheet steel.

Guards

Sizes 315 mm to 450 mm have integral mounting arms and inlet guard. Inlet guards available for sizes 500 mm and above. Outlet guards are also available. Size 710 mm and above without inlet guard. Inlet guard must be separate specified if required.

Impeller

High efficiency aerofoil section, die cast aluminium impeller which is strong, rigid and corrosion resistant.

Speed control

100% speed control is possible by voltage reduction using auto transformer or electronic speed controllers. Ziehl-Abegg motors operate satisfactorily on two and three wire speed control.

Five years guarantee

A 5 year guarantee is available for

FC062-6_K.4I.A7,
FC063-6_Q.4I.A7,
FC063-6_T.4I.A7,
FC071-6_D.6K.A7,
FC071-6_Q.6K.A7,
FC071-6_T.6K.A7 and
FE082-6_T.6_V3

when used with an S-ET10 or STDT16 or 25 motor protection devices, and the appropriate drain hole is removed.

With three phase motors the use of a single phase protection device is required.

Safety requirements

The fans included in this catalogue are fans designed to be installed in livestock houses. If it is impossible to reach the fan because of the installation arrangement (for example because of the height where it is installed, or because it is installed in a chimney, there is no need to install any additional protective guard.

Observe safety distances according to DIN EN 294 Section 4, 4.1 and 4.2.

Fans without a protective guard may only be used if the height of installation (danger area) is greater than or equal to 2.7 m above the level of reference. If the fan is located within a danger area, the manufacturer or operator of the overall area must ensure that danger is avoided by means of a protective construction in accordance with DIN EN 294 both on the intake side and on the exhaust side of the fan.

Suggested number of livestock per installed fan

			Static Pressure @ 50 Pa															
Fan Diameter (mm)			315		350		400		450		500		630		710		800	1000
Supply (phase)			Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Three	Three
Air Volume m³/h			1493	1602	2793	3013	4366	4603	5564	5625	7175	7646	10011	10206	14185	14896	21356	32000
Type of Livestock	to weight kg	m³ / h/kg	Suggested Number of Livestock per Fan type															
Pigs																		
Early Weaners	22,68	1,88	35	38	66	71	102	108	130	132	168	179	235	239				
Porkers	68,03	1,88	12	13	22	24	34	36	44	44	56	60	78	80				
Baconers	90,70	1,88	9	9	16	18	26	27	33	33	42	45	59	60				
	115,00	1,88	7	7	13	14	20	21	26	26	33	35	46	47				
Poultry																		
Growers	1,22	5,60									1050	1119	1465	1494	2076	2180	3126	4684
Growers	2,27	4,50									702	749	980	999	1389	1458	2091	3133
Broilers	2,04	3,75									938	999	1309	1334	1854	1947	2792	4183
Layers	1,50	7,50									638	680	890	907	1261	1324	1898	2844
Layers	3,17	7,50									302	322	421	429	597	627	898	1346

			Static Pressure @ 75 Pa															
Fan Diameter (mm)			315		350		400		450		500		630		710		800	1000
Supply (phase)			Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Single	Three	Three	Three
Air Volume m³/h						2527	3675	3964	5052	5149	6554	7190	8702	8762	12629	13544	19979	30000
Type of Livestock	to weight kg	m³ / h/kg	Suggested Number of Livestock per Fan type															
Pigs																		
Early Weaners	22,68	1,88				59	86	93	118	121	154	169	204	205				
Porkers	68,03	1,88				20	29	31	40	40	51	56	68	69				
Baconers	90,70	1,88				15	22	23	30	30	38	42	51	51				
	115,00	1,88				12	17	18	23	24	30	33	40	41				
Poultry																		
Growers	1,22	5,60									959	1052	1274	1282	1849	1982	2924	4391
Growers	2,27	4,50									642	704	852	858	1236	1326	1956	2937
Broilers	2,04	3,75									857	940	1138	1145	1651	1770	2612	3922
Layers	1,50	7,50									583	639	774	779	1123	1204	1776	2667
Layers	3,17	7,50									276	302	366	369	531	570	840	1262

Performance curves

Measured in accordance with DIN24163

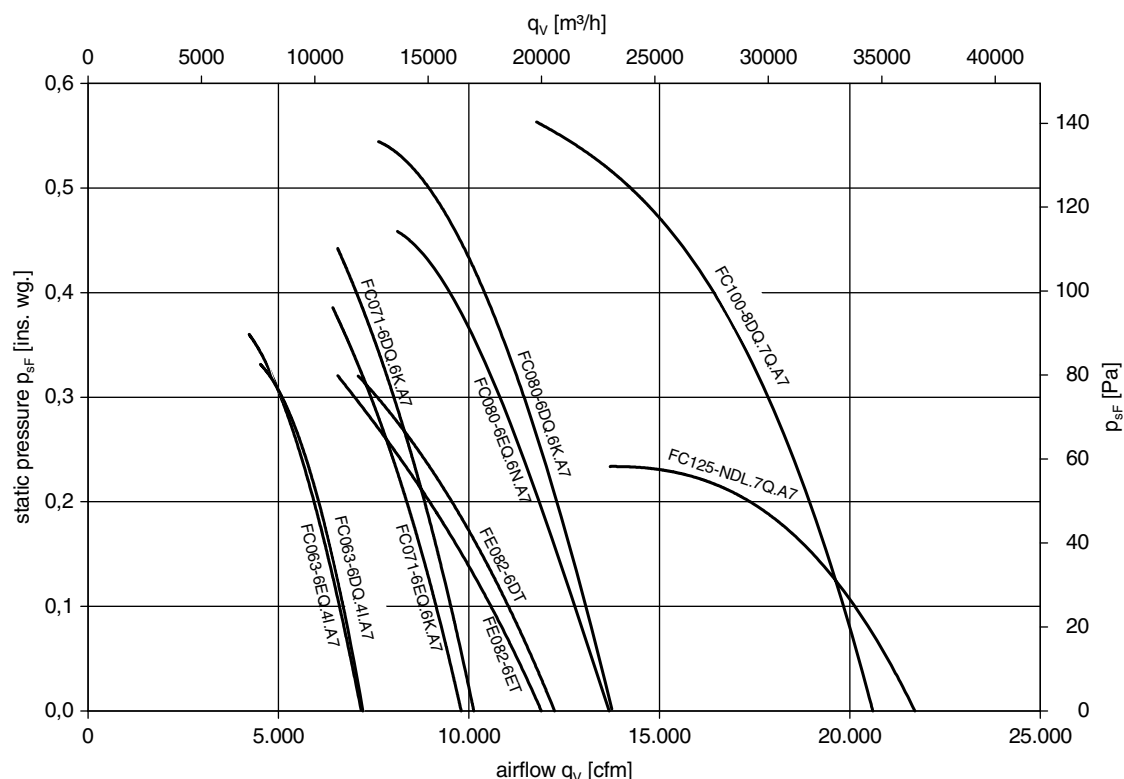
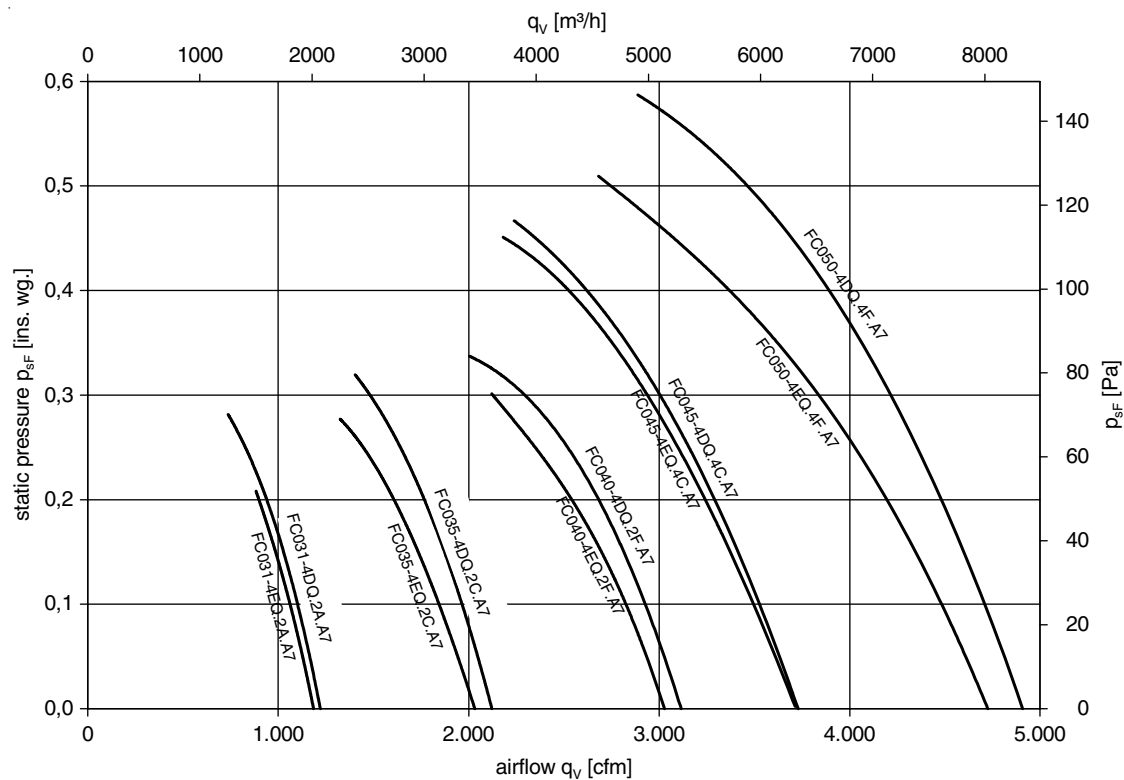
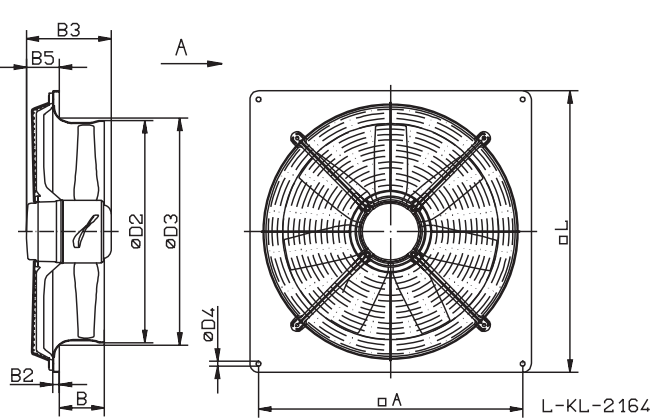


Plate fans

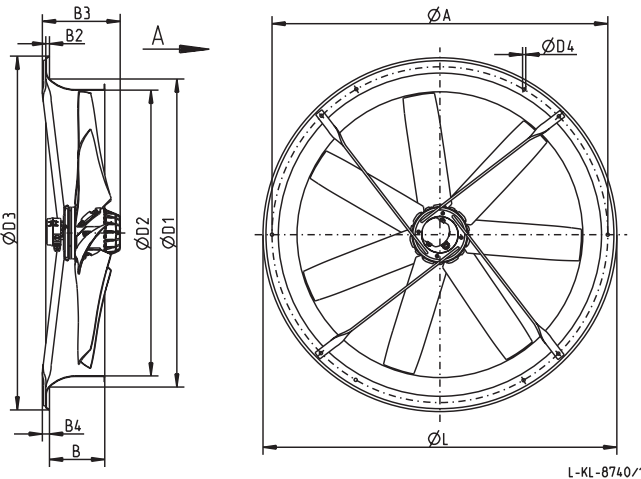
Technical details and dimensions

Technical Details																	Sound
Diameter	Phase	Dimensions									Speed	Power	Current (A)		Capctr	Max Amb	Pressure
mm		A	B2	B3	B	B5	D2	D3	D4	L	rpm	input (W)	rated	max	μF	°C	LpA(dB(A))
315	single	380	11	100	69	22	324	330	9	430	1370	125	0.63	0.82	3	65	46
350	single	435	12	113,5	75	24	367	375	9	485	1330	185	0.84	0.96	4	60	46
400	single	490	12	130,5	88	29,5	412	420	9	540	1350	290	1,45	1,55	5	60	49
450	single	535	14	125,5	96	28	463	480	11	575	1370	360	1,95	2,25	6	60	54
500	single	615	16	197,5	104	77	517	528	11	655	1290	510	2,30	2,70	8	70	53
630	single	750	16	217,5	134	59,5	643	670	11	805	880	600	2,70	3,00	12	60	53
710	single	810	20	260,5	150	37	720	765	14,5	850	850	890	4,10	4,50	16	60	55
800	single	910	17	272,0	208	64	804	869	14,5	970	830	1350	6,10	6,30	20	60	-
315	three	380	11	100	69	22	324	330	9	430	1390	110	0,25	0,29	-	70	46
350	three	435	12	113,5	75	24	367	375	9	485	1390	175	0,39	0,41	-	70	47
400	three	490	12	130,5	88	29,5	412	420	9	540	1380	280	0,60	0,65	-	70	55
450	three	535	14	125,5	96	28	463	480	11	575	1390	360	0,75	0,80	-	70	54
500	three	615	16	197,5	104	77	517	528	11	655	1380	550	1,05	1,20	-	70	54
630	three	750	16	217,5	134	59,5	643	670	11	805	890	590	1,40	1,40	-	60	53
710	three	810	20	260,5	150	37	720	765	14,5	850	890	890	1,80	1,90	-	70	55
800	three	910	18	248,5	192	34	804	870	14,5	970	900	1500	2,60	2,90	-	60	55
1000	three	1110	20	324	200	40	1016	1070	14,5	1170	650	2200	4,20	4,40	-	70	57
1250	three	1480	15	344	245	30	1260	1361	14	1560	410	1250	2,80	3,00	-	70	55

Maximum currents under motor speed control are up to 15% higher than running currents.
Acoustic pressure level taken, free blowing at a distance of 7m on the output side, 45 degrees of the axis of the fan.



FC031 - FC100



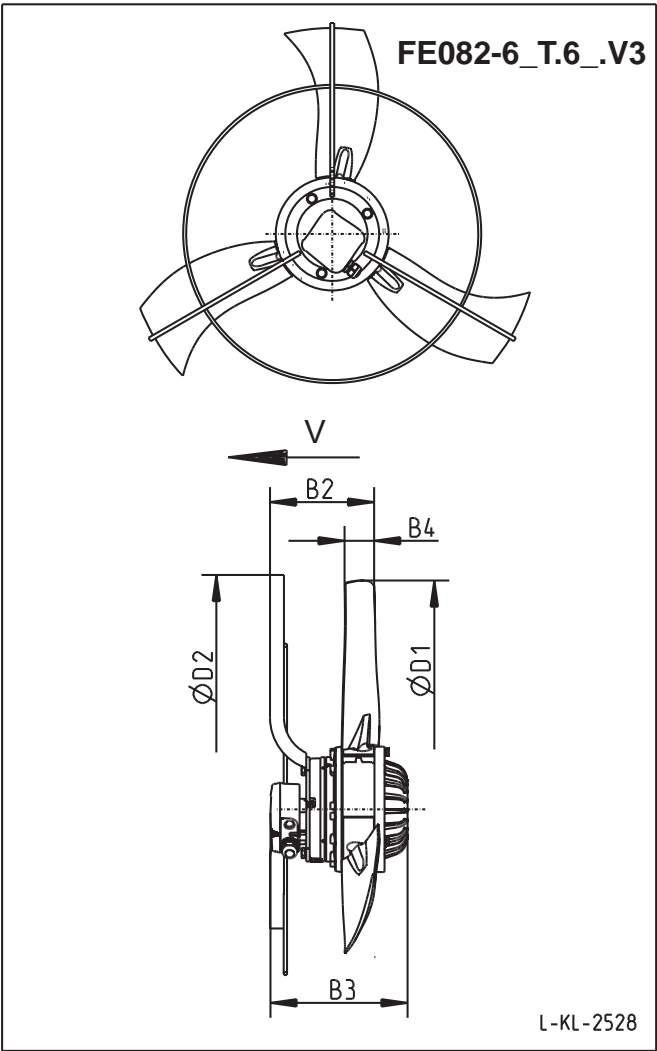
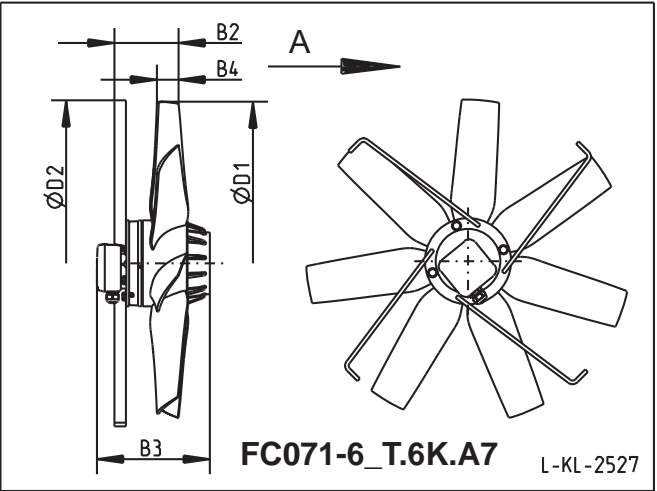
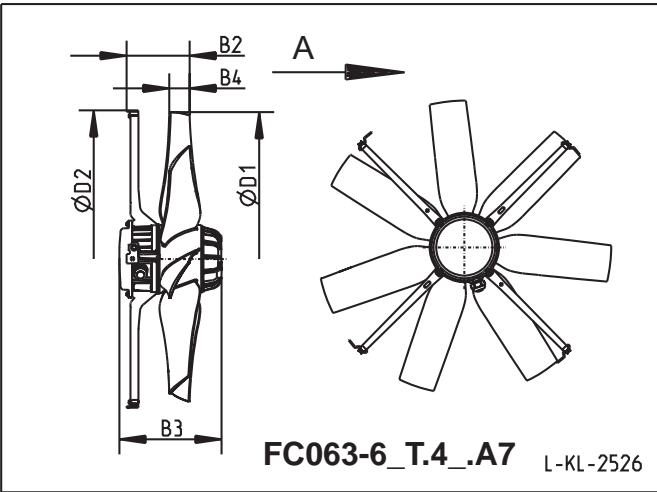
FC125-NDL.7Q.A7

Chimney fans

Technical details and dimensions

Technical Details													Sound
Diameter	Phase	Dimensions					Speed	Power	Current		Capacitor	Max Amb	Pressure
mm		B3	B4	B2	D1	D2	rpm	input (W)	rated	max	mf	°C	LpA(dB(A))
630	single	217.5	43	134,5	627	633	880	600	2,7	2,7	12	70	53
710	single	245.5	47	139,5	703	709	850	890	4,1	4,6	16	60	57
820	single	245.5	55	184,0	820	840	770	770	3,8	4,4	16	70	55
630	three	197,5	43	134,5	627	633	890	590	1,3	1,3	-	60	53
710	three	245,5	47	139,5	703	709	890	890	1,8	1,8	-	70	57
820	three	220,5	55	184,0	820	840	910	780	1,7	1,7	-	60	55

Maximum currents under motor speed control are up to 15% higher than running currents.
 Acoustic pressure level taken, free blowing at a distance of 7m on the output side, 45 degrees to the axis of the fan.
 Mounting brackets for the 630 mm and 820 mm diameters are available as accessories.

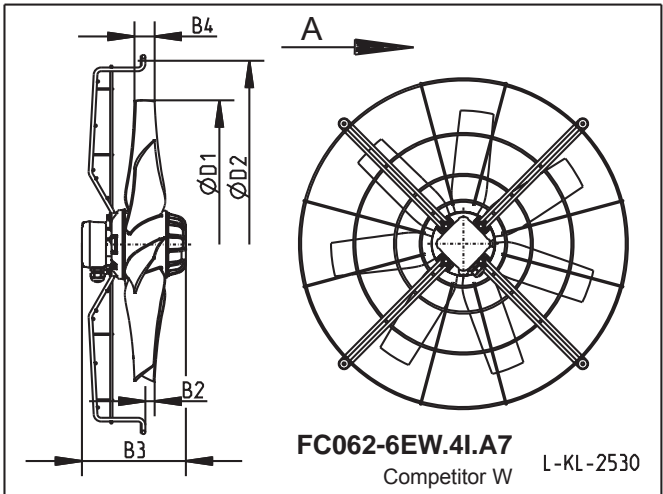
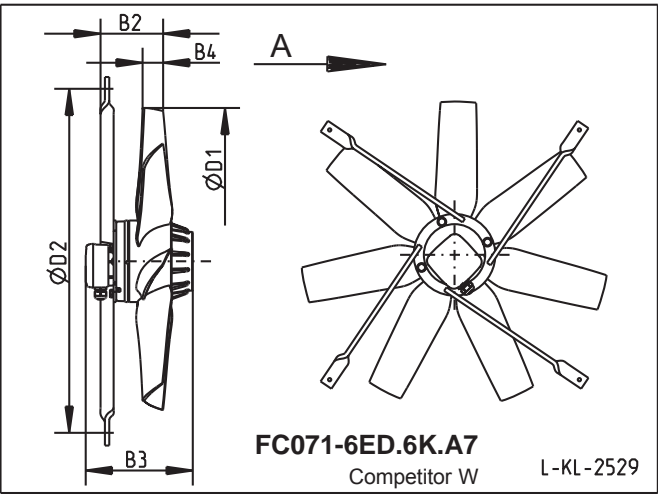


Retrofit fans

Technical details and dimensions

Technical Details													Sound
Diameter	Phase	Dimensions					Speed	Power	Current		Capacitor	Max Amb	Pressure
mm		B3	B4	B2	D1	D2	rpm	input (W)	rated	max	μf	°C	LpA(dB(A))
630	three	224.5	43	20	619	789	910	560	2,5	2,9	12	55	53
For bellmouth design Competitor W													
710	three	245.5	47	144	703	810	850	890	4,1	4,6	16	60	55
Competitor W													

Maximum currents under motor speed control are up to 15% higher than running currents.
Acoustic pressure level taken, free blowing at a distance of 7m on the output side, 45 degrees to the axis of the fan.



Axial fans with external rotor - EC motor ETAvent

The stable fan with direct drive via external rotor EC motor and integrated EC controller

- High level of efficiency through the entire speed range means lower operating costs
- Low-noise operation
- Extremely simple installation
- High output density, thus very compact
- Complies with valid electromagnetic compatibility requirements for houses and industries
- Integration of all components to eliminate signal interference in the unit
- Maximum speed is independent of the power supply frequency
- PWM or analogue input signal for speed control

Energy savings

ETAvent is a fan/controller system with an extremely low energy requirement. The EC controller integrated into the fan opens up new possibilities of control in comparison to existing systems.

Application example

The maximum possible air output is only required in ventilation systems for high external temperatures. Speed-controlled fans are usually operated in this application at a reduced speed along the system characteristic curve. The minimum speed is determined by the requirement of the animals for fresh air.

A low energy draw and therefore a high level of efficiency at partial load is required to make the system economical (diagram 1). Due to phase-initial controlled 1~ asynchronous drives (diagram 2), the consumption of electrical energy is significantly lower for EC drives specifically in the middle range speed where it is required than for drives that are normally used in stall ventilation.

The higher investment costs for EC drives have already paid for themselves after 2 - 3 years through significantly lower operating costs. Over the entire lifetime of the fan, there is a cost advantage of more than 40% (diagram 3).

EC drives make it possible to maintain the preset temperature level much more precisely, since the motor speed is set proportionate to the control level. 1~asynchronous drives controlled via phase initiation behave in a non-linear fashion in this case.



Axial fan with EC motor ETAvent and integrated EC controller

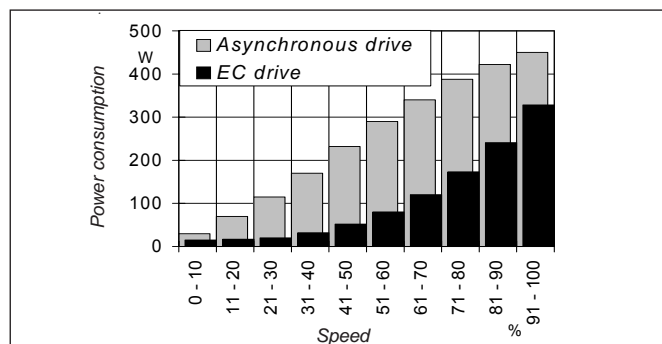


Diagram 1: Power consumption of an axial fan FC050 along the system characteristic curve for stall ventilation

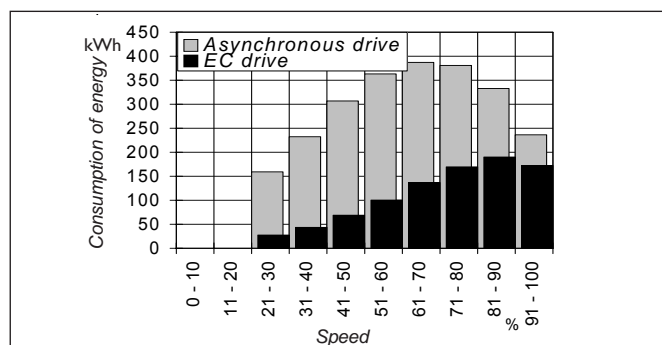


Diagram 2: Consumption of electrical energy with typical distribution of operating time along the system characteristic curve

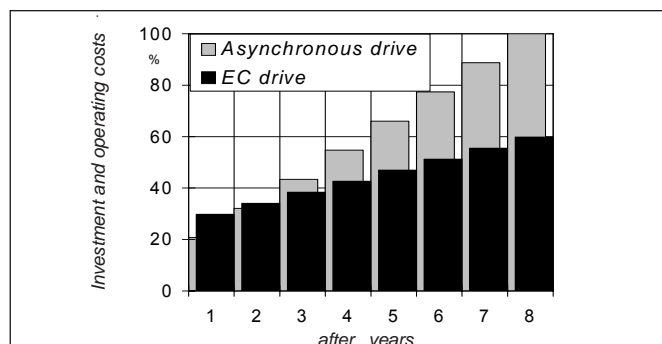


Diagram 3: Total relative investment costs and operating costs

Axial fans with external rotor - EC motor ETAvent

EC controller - block diagram

Interference filter:

Existing requirements for electromagnetic compatibility are maintained without any additional measures.

PFC:

The power factor controller controls the input current so that no harmonic ripples arise, in accordance with requirements.

Control electronics:

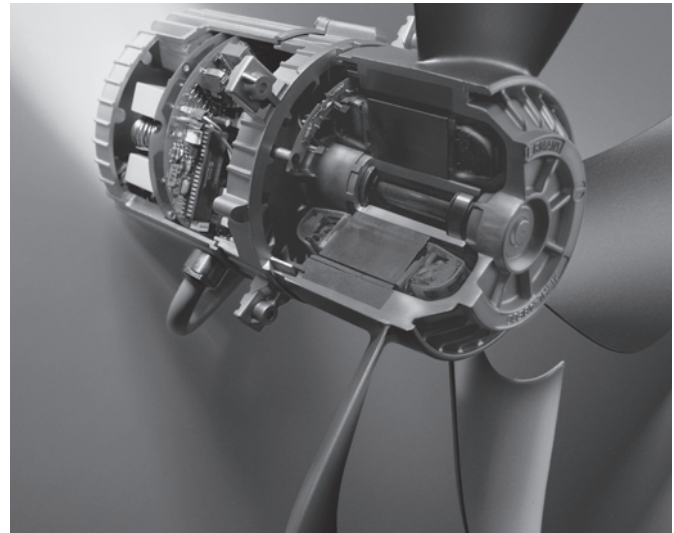
The most modern microprocessor controlled technology ensure exact control and constant monitoring of all functions.

IGBT:

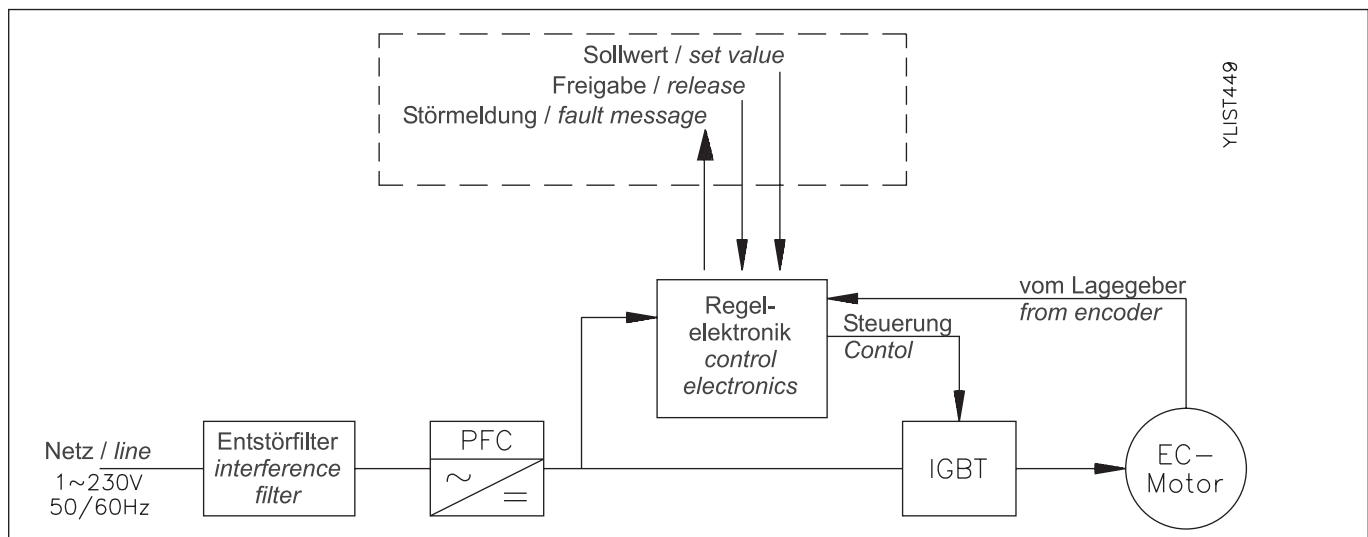
The IGBT module ensures reliable and low-noise operation.

Actuation:

The ETAvent can be regulated by 0-10 V or PWM-signal control output.



Cross-section of ETAvent axial fan with integrated EC controller



Control options:

Block diagram of EC controller

Speed controller with 0-10 V or PWM input

ETAvent fans can be controlled for motor speed by means of a 0-10 V or PWM input signal. The fan speed is then adjustable between 0% and 100%. The motor speed is monitored and readjusted as necessary, thus ensuring it will run even if it is dirty, for example. The proportionality (for example set point 5 V corresponds to exactly half motor speed) ensures a very constant temperature in the stable.

Fan and speed problems are reported back via a potential-free relay.

A separate control line (100% function) allows you to switch between controlled operation and maximum motor speed. This ensures ventilation should the control unit fail.

If an existing unit is to be retrofitted with ETAvent, the simplest way is to replace only the fans. The existing control devices can be used to control the ETAvent via a 0-10 V or PWM signal (pulse-width-modulated) to set the motor speed.

Axial fans with external rotor EC-motor ETAvent

Technical data

Type	Rated data				Values at medium \dot{V}		Values at max. speed and operating point ⁵⁾ :				DLG test report no.
	P ₁ kW	U 50/60Hz V	I A	n min ⁻¹	\dot{V} m ³ /h	P _{spez} Wh/1000m ³	$\Delta p_{fa} = 0 \text{ Pa}$ \dot{V} m ³ /h	$\Delta p_{fa} = 30 \text{ Pa}$ \dot{V} m ³ /h	P _{spez} Wh/1000m ³	$\Delta p_{fa} = 0 \text{ Pa}$ L _{pA} ⁴⁾ dB(A)	
FC040 -4I_.4C.A7	0,25	1~230	1,15	1400	2480	30,2	4730	4400	48,5 (51,6) ¹⁾	51	5078
FC045 -4I_.4C.A7	0,41	1~230	1,9	1400	3340	34,9	6350	5990	57,9 (61,0) ¹⁾	53	5079
FC050 -4I_.4C.A7	0,56	1~230	2,7	1380	4450	31,5	8180	7640	61,2 (63,7) ¹⁾	57	5080
FC056 -4I_.4C.A7	0,47	1~230	2,3	1000	---	---	9400	8550	47,2 (49) ¹⁾	49	kein / no
FC063 -4I_.4F.A7	0,53	1~230	2,5	900	6080	27,7	12200	11400	40,0 (41,7) ¹⁾	53	5077
FE071 -4I_.4I.A3	0,89	1~230	3,8	1100	8880	26,9	16060	14780	47,7 (49,7) ¹⁾	57	4841
FE080 -4I_.4I.A3	0,98	1~230	4,4	1050	---	---	20880	19140	47,5 (50,5) ¹⁾	---	kein / no
FE091 -4I_.4I.A3	1,10	1~230	4,9	950	13210	25,0	25350	22600	46,7 (48,6) ¹⁾	58	4840

¹⁾ Values in (): include EC controller

⁴⁾ Sound pressure level taking into account the protective guard, free blowing at a distance of 7 m on the output side, 45° to the axis of the fan.

⁵⁾ Values without protective guard

Design

Design	PWM		0-10 V	10-0 V	PWM		0-10 V	10-0 V
Set point function =	0-100% ²⁾	100-0% ³⁾	0-100% ²⁾	100-0% ³⁾	0-100% ²⁾	100-0% ³⁾	0-100% ²⁾	100-0% ³⁾
Type	Design Q without protective guard				Design Q with protective guard			
FC040-4IQ.4C.A7								
FC045-4IQ.4C.A7								
FC050-4IQ.4C.A7								
FC056-4IQ.4C.A7								
FC063-4IQ.4F.A7								
FE071-4IQ.4I.A3								
FE080-4IQ.4I.A3								
Type	Design T without protective guard				Protective guard as accessory			
FC040-4IT.4C.A7								
FC045-4IT.4C.A7								
FC050-4IT.4C.A7								
FC056-4IT.4C.A7								
FC063-4IT.4F.A7								
FE071-4IT.4I.A3								
FE080-4IT.4I.A3								
FE091-4IT.4I.A3								

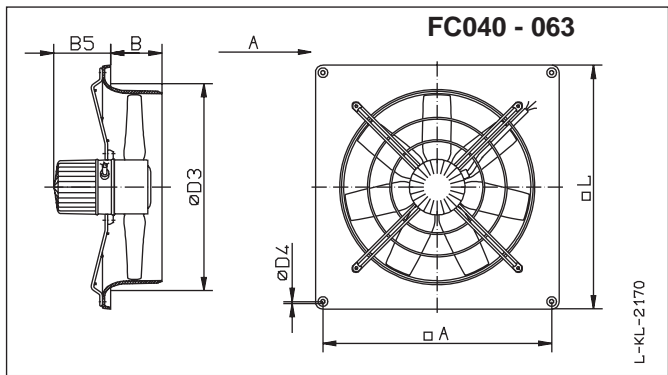
²⁾ For fans with PWM signal (set point 0 - 100%) and 0 - 10 V, a continuous signal or 10 V corresponds to maximum speed. If there is no signal, the fan is at rest.

³⁾ For fans with PWM signal (set point 100 - 0%) and 10 - 0 V, a continuous signal or 10 V corresponds to fan at rest. If there is no signal, the fan is turning at maximum speed.

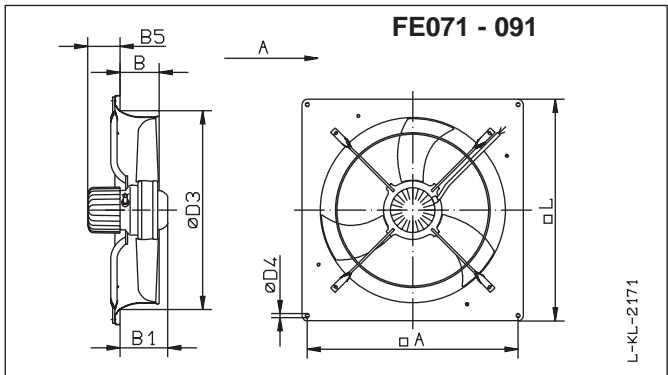
Axial fans with external rotor EC-motor ETAvent

Dimensions

Fan of design Q without protective guard



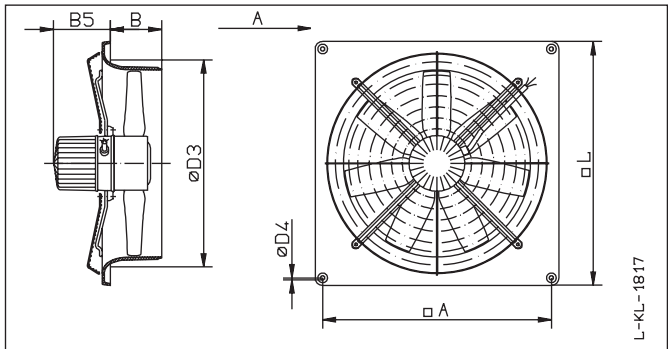
Typ / Type	A	B	B2	B5	D2	D3	D4	L	kg
FC040-4IQ	490	127	23	162	411	461	9	540	11,5
FC045-4IQ	535	125	25	164	466	506	11	575	12,0
FC050-4IQ	615	135	25	156	516	557	11	655	14,0
FC056-4IQ	675	119	16	138	568	589	11	725	18,0
FC063-4IQ	750	134	20	145	643	664	11	805	23,0



Typ / Type	A	B	B1	B2	B5	D2	D3	D4	L	kg
FE071-4IQ	810	150	183	20	124	720	763	14,5	850	36,0
FE080-4IQ	910	193	182	17	125	804	869	14,5	970	38,0
FE091-4IQ	1010	190	179	20	128	922	977	14,5	1070	37,5

Design sizes FC040 / 045 / 050 with wall ring plate made of plastic
Design sizes FC056 / FC063, FE071 / 080 / 091 with wall ring plate made of galvanized sheet steel.

Fan of design Q with protective guard



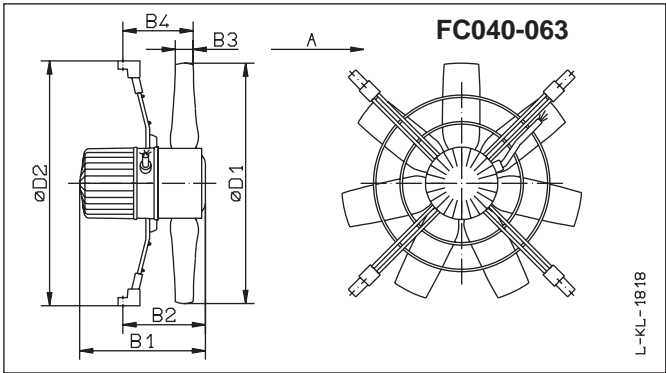
Typ / Type	A	B	B2	B5	D2	D3	D4	L	kg
FC040-4IQ	490	127	23	162	411	461	9	540	12,5
FC045-4IQ	535	125	25	164	466	506	11	575	13,0
FC050-4IQ	615	135	25	156	516	557	11	655	15,0
FC063-4IQ	750	134	20	145	643	664	11	805	24,0

Design sizes FC040 / 045 / 050 with wall ring plate made of plastic
Design sizes FC063 with wall ring plate made of galvanized sheet steel

Axial fans with external rotor EC-motor ETAvent

Dimensions

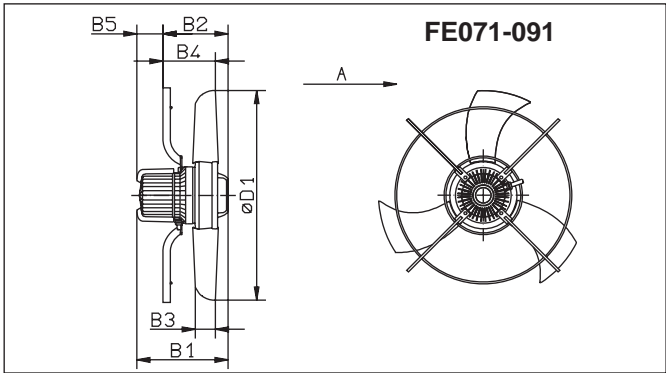
Ventilator Bauform T ohne Berührungsschutzgitter



Typ / Type	B1	B2	B3	B4	D1	D2	kg
FC040-4IT	260	157	37	132	394,5	400	8,5
FC045-4IT	260	164	33	137	447	456	9,0
FC050-4IT	260	170	37	145	497	506	10,0
FC056-4IT	278	204	46	155	553	566	10,5
FC063-4IT	278	204	43	154	627	636	13,0

The support braces for fastening fans in the chimney exhaust are included with delivery up to and including design size FC063.
The support braces for fans FE071 - 091 for fastening fans in the chimney exhaust are not included with delivery.

Fan of design T without protective guard



Typ / Type	B1	B2	B3	B4	D1	D2	kg
FE071-4IT	307	220	67	174	703	720	24,0
FE080-4IT	307	216	56	174	788	810	25,0
FE091-4IT	307	216	51	171	905	910	26,0

Connection diagram

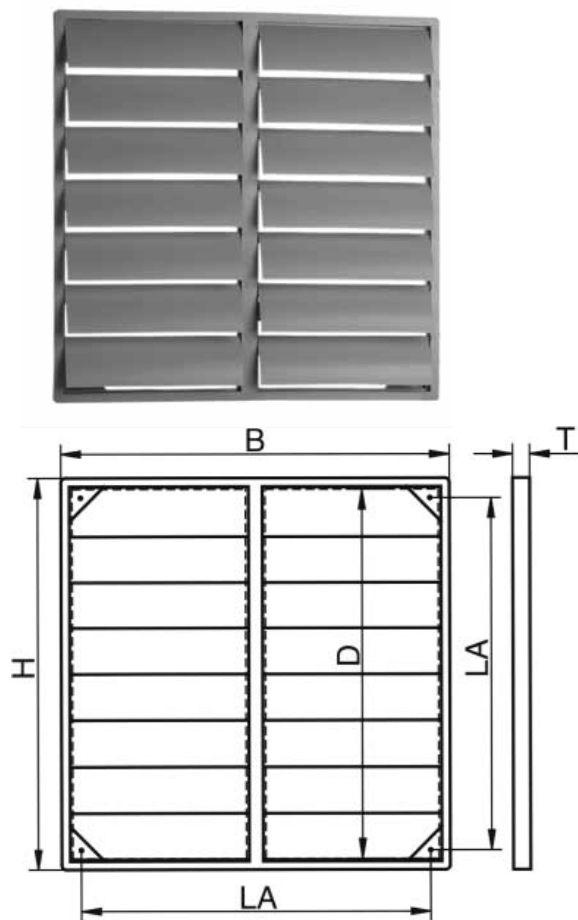
ETAvent with 0 - 10 V or PWM system

Power supply	Function	Cross-section	Color	
	Phase	1x 0,75 mm2	1x black (BK)	230 V ~
	Zero	1x 0,75 mm2	1x blue (BU)	(195 - 253 V ~ 50 - 60 Hz)
	Ground line	2x 0,75 mm2	2x green/yellow (GNYE)	Double ground line, since leakage current > 3,5 mA
Control line	Set point motor speed	2x 0,34 mm2	1x grey (GR) 1x pink (PK)	Grey: GND pink: + set point 0 - 10 V: Ri > 100 kW PWM: Ri » 2 kW UL < 1 V UH = 7 V - 16 V pulse-width modulated f = 1 - 10 kHz
	Emergency operation	2x 0,34 mm2	1x brown (BN) 1x yellow (YE)	<u>24 - 230 V AC or DC:</u> control operation <u>No voltage:</u> 100 % motor speed
	Disturbance	2x 0,34 mm2	1x white (WH) 1x green (GN)	Potential-free contact, Disturbance causes contactor to falls out
	Shielding	1x0,75 mm2	1 x black	

Plastic louvre shutters

- Automatic plastic louvre shutter with self adjusting flaps
- Manufactured with high standard ecologically friendly plastic material
- Streamlined shape and durability
- Outdoor weather resistant and UV stabilised
- Suitable for an operating temperature range of -30°C to +70°C
- Each louvre shutter is individually carton packed
- Set of four fastening screws included
- WSK50 and below are not the split configuration shown
- Individual louvre blades can be supplied in 4m length

Fan dia mm	Shutter Type mm	D mm	H/B mm	LA (hole centres) mm	T mm
250	WSK25	Ø 260	294	232	26
315	WSK30	Ø 310	347	276	26
350	WSK35	Ø 360	397	310	26
400	WSK40	Ø 420	459	364	26
450	WSK45	Ø 460	501	395	31
500	WSK50	Ø 510	549	445	31
630	WSK65	□ 555	696	626	31
710	WSK71	□ 720	760	692	40
800	WSK80	□ 800	840	772	40
1000	WSK100	□ 1000	1040	972	40

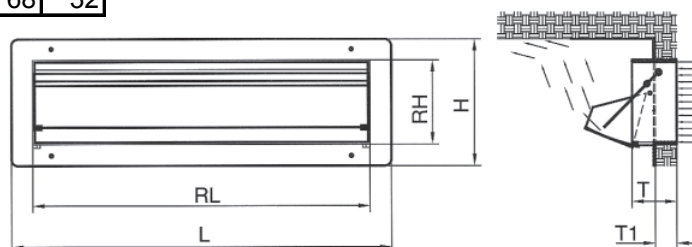


Side wall air inlet

The LEP air inlet grille features a counterbalanced flap which opens on proportion to increased air speed but minimised draughts. The extended shape at the bottom of the grille deflects the air upward as it enters the building to mix with the warmer air inside, reducing the dumping of cold air onto the livestock.

The system is manufactured from UV stabilised ecologically friendly plastic suitable for temperature range -30°C to +70°C.

Dimensions mm	L mm	RL mm	H mm	RH mm	T mm	T1 mm
Type LEP 100 / D	1070	1020	170	125	60	24
Type LEP	570	505	190	125	68	32



Ziehl-Abegg controllers, for speed control of fans in agriculture

General description

The requirements for controllers are very wide in agricultural applications. Our products are able to comply with many of them. Ziehl-Abegg controllers take care of optimal climate conditions and because of this you get optimal results with your animals. Beyond the speed control of fans, it is possible to control heatings and air shutters, too.

On the following pages you can find our controllers with different configuration. Depending on your application, you can choose the optimal controller.

The principles of speed control

The different principles for the speed control of fans can be realized with the controller product range of Ziehl-Abegg. You have the choice which principle you prefer:

Voltage control of 1~ or 3~ motors:

There are controllers available, which have an integrated process control and an integrated power stack. The fans can be controlled independently of the desired set point by means of a connected temperature sensor.

Alternatively we have controllers which are controlled by an external 0-10V signal. Depending on this signal, the speed of the connected fans is controlled. This signal is generated by an external control unit. Such a control unit is e.g. our CTE/AHX-L. Other units with a similar signal are possible.

Survey of types:

1~ Manual speed controllers

- P-E

1~ Temperature controllers with power stack:

- PRE6-M / PRE10-M
- PTRE6-M / PTRE10-M
- PTE-6AHQ / PTE-10AHQ
- PTE-6AHQX-L / PTE-10AHQX-L

Climate control module with 0-10V (also PWM) outputs

- CTE/AHX-L

Control of 3~ motors with frequency inverters:

There are frequency inverters FXDM available, which are accessed by a 0-10V signal.

We can deliver them for a rated current of 4/8/13/18/22/32/40 ampere in the protection class IP54.

The 0-10V signal must be generated by an external control unit, e.g. our climate controller CTE/AHX-L.

The basic control is handled by the external control unit. Additional functions like relays for limit values, or suppressing of critical frequency ranges are possible to manage with our FXDM.

Because of the integrated sine filter between phase to phase and phase to ground, unrestricted parallel operation of fans is possible with the FXDM. Screened motor cables are unnecessary.

Controllers in combination with ETAvent fans:

Regarding energy efficiency, the ETAvent fans are the optimal product for agricultural climate control. The fan speed is regulated by means of a 0-10V or PWM signal.

This signal must be generated by an external control unit, e.g. our climate control module CTE/AHX-L.

In special cases it is possible to switch on standard peak load fans. This function can be executed by our CTE/AHX-L, too.

If there is a failure of the external control module, a continuous ventilation is necessary. We have ETAvent fans with a 100% function. To use this function, it is necessary to have our main switch „Zenec“, available as accessory.

Different switch settings are possible. The settings 0 – automatic control function – 100% are possible.

1~ speed controllers with turning knob

Stepless speed control of one or several voltage controllable 1~ fans.
The adjustment of the desired fan speed is carried out via the integrated turning knob.

Features:

- switch function on/off
- Integrated status signal lamp
- Integrated switching contact for additional units, e.g. ventilation flap, etc.
- Maximum ambient temperature 35°C

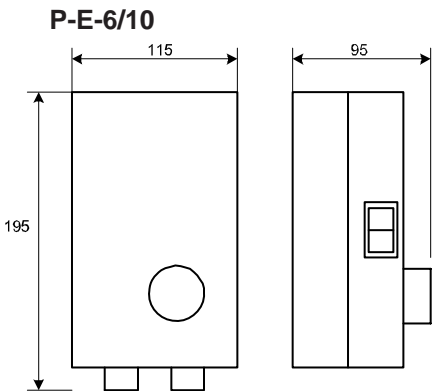
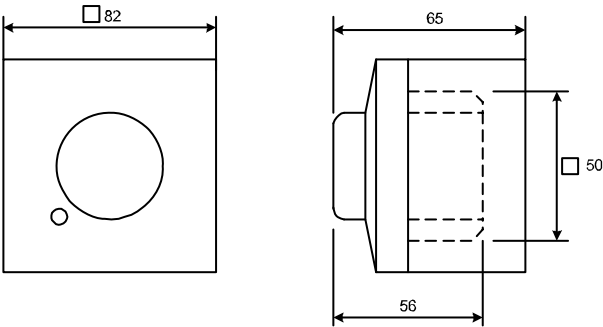


Electronic 1~ speed controller P-E...

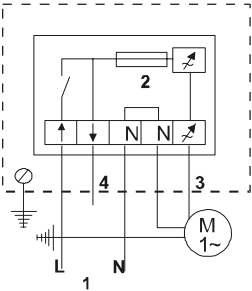
	Type	Part no.	I _B */ A	protection class
1 ~ 230V 50/60Hz	P-E-1	303586	1,0	IP54: Housing for wall mounting
	P-E-2.5	303587	2,5	IP44: Without housing bottom part, for flush mounting
	P-E-4	303588	4,0	IP54: Housing for wall mounting
	P-E-6	303589	6,0	IP54: Housing for wall mounting
	P-E-10	303590	10,0	IP54: Housing for wall mounting

* Rated current 230V at mains voltage

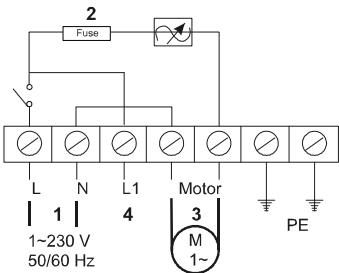
Dimensions P-E-1...4



Connection diagram P-E-1...4



P-E-6/10



Electronic 1~ temperature control unit
αcontrol

For continuously variable speed-regulation of voltage
controllable 1~ fans.

Application:
Basic temperature control for one stall

Temperature acquisition is carried out via a Ziehl-Abegg
model TF... temperature sensor.

- Common features:
- Adjustable target range 0-40°C
 - IP54 protection class housing
 - Speed preset and speed limitation manually
adjustable on unit (nmin / nmax)
 - Maximum permissible ambient temperature 40°C
 - Integrated semiconductor fuse



Accessories: Sensors TF...

	Type	Part no.	*A	Protection class	Weight
1~ 230V 50/60Hz	PRE6-M	303538	6,0	IP54	1,25
	PRE10-M	303539	10,0	IP54	1,5
	PTRE6-M	303532	6,0	IP54	1,4
	PTRE10-M	303533	10,0	IP54	1,7
	PTE-6AHQ	303580	6,0	IP54	1,65
	PTE-10AHQ	303581	10,0	IP54	2,6

* Rated current at 230V mains voltage

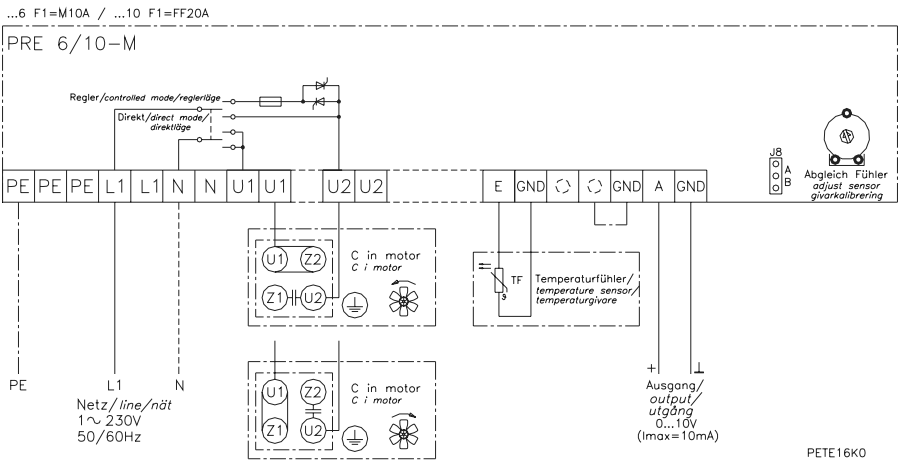
Note : With its numerous extra
functions, the PTE are especially
suitable for stable climate-control
in agricultural applications.

- Equipment:
- PRE6-M / PRE10-M**
- Control function: Cooling ($\vartheta \uparrow \rightarrow n \uparrow$)
 - Master switch with bypass function
 - Output 0-10 V \triangleq motor voltage, e.g. for activation of a
subsequent speed controller
 - TFR temperature sensor is included in the scope of
delivery

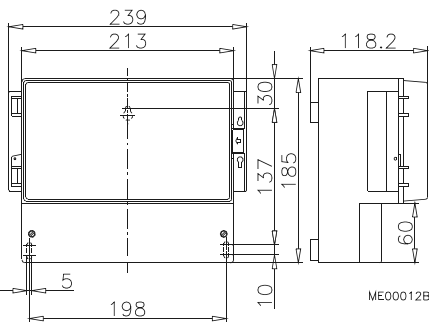


PRE6/10-M

Connection diagram:



Dimensions PRE6/10-M



ME00012B

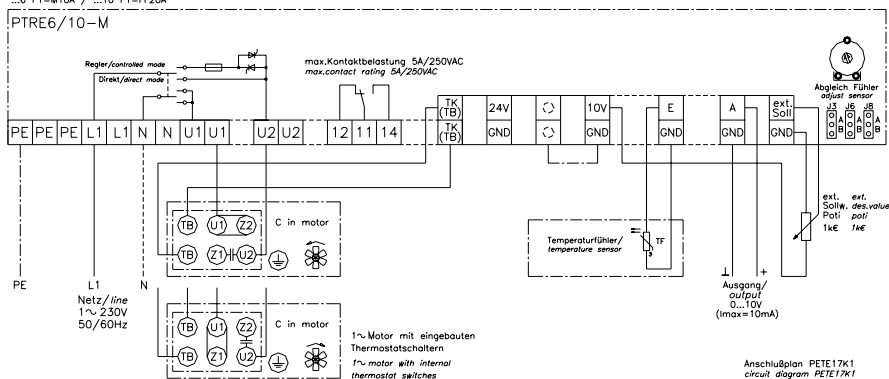
PETE16K0

PTRE6-M / PTRE10-M

- Switchable control function:
Cooling ($\vartheta \uparrow \rightarrow n \uparrow$) / Heating ($\vartheta \uparrow \rightarrow n \downarrow$)
- Master switch with bypass function
- Manual / automatic switch-over
- Output 0-10 V \triangleq motor voltage, for example for activation of a subsequent speed controller
- Motor protection through facility for connecting thermocontacts
- External target-value preset possible
- Potential free alarm contact
- Voltage supply for auxiliary devices (+24V, max 70mA)

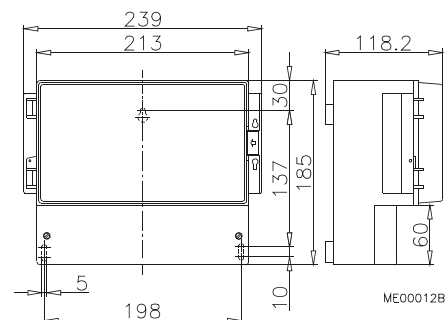
Connection diagram

6. E1=M10A / 10. E1=EE20A



PTRE6/10-M

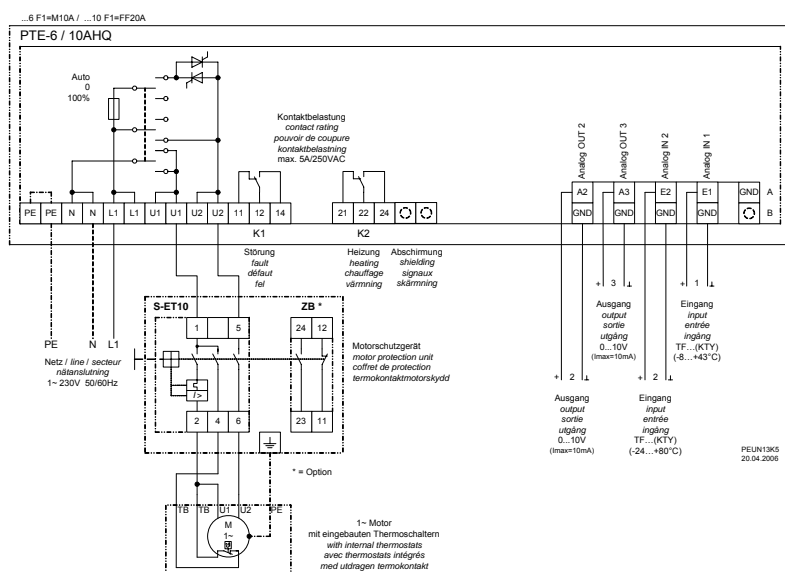
Dimensions PTRE6/10-M



PTE-6AHQ/ PTE-10AHQ

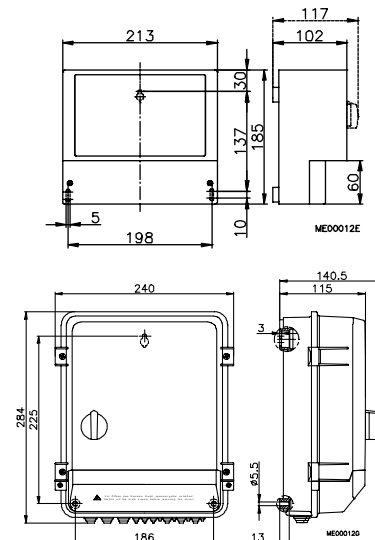
- Multifunction display with plain text
- Control function; cooling ($\vartheta \uparrow \rightarrow n \uparrow$)
- Relay for, e.g., triggering a heater (hysteresis adjustable)
- Relay for, e.g., status signals or alarms (excess-, under temperature)
- Main switch with bypass function
- 2 x outputs 0-10V, e.g. for triggering a subsequent speed controller / ventilation flap
- 1x TFR temperature sensor is included in the scope delivery
- Connection facility for a second temperature sensor for acquiring the outdoor temperature

Connection diagram:



PTE-6AHQ / PTE-10AHQ
With multi functional display

Dimensions PTE-6/10AHQ



Electronic 1~ temperature control unit αcontrol

For continuously variable speed regulation of voltage
controllable, 1~ fans, air shutters, heatings, peak load
fans, external speed controllers.

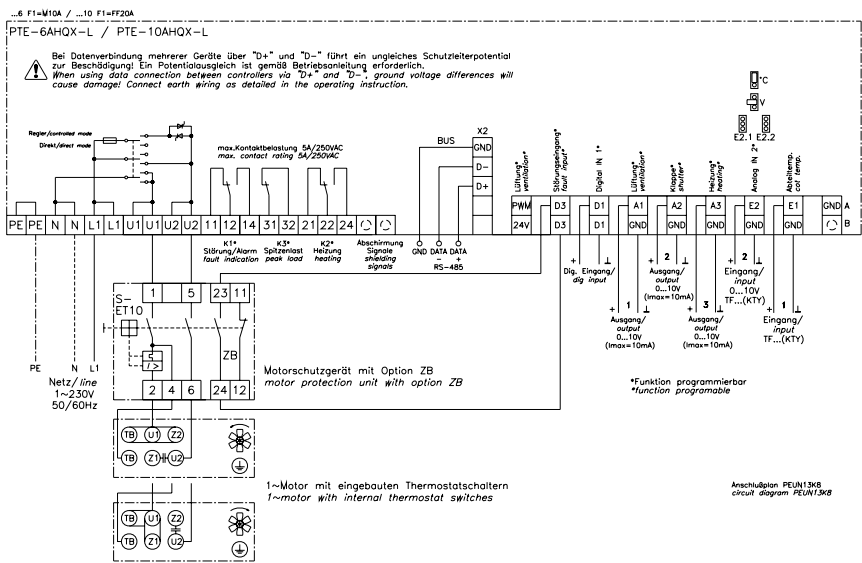
Application: Extensive control function for one stall

Temperature acquisition is carried out via a Ziehl-Abegg
model TF... temperature sensor.

- Features:**
- Adjustable target range 0-40°C
 - IP54 protection class housing
 - Speed preset and speed limitation manually adjustable on unit (nmin / nmax)
 - Maximum permissible ambient temperature 40°C
 - Integrated semiconductor fuse

- Equipment:**
PTE6-AHQX-L / PTE10-AHQX-L:
- Actuation of fans via voltage control
 - Actuation of slave controllers via 0-10V, 10-0V
 - 0-10V and relay contact for heating actuation
 - 0-10V for actuation of shutters
 - 2 keys and rotary pulse encoder for easy programming
 - 2 digital inputs, programmable
 - Potential-free fault and alarm signal contact
 - 2 inputs for temperature sensors (indoor / outdoor temperature sensor)
 - Network via bus system (e. g. for central exhaust systems)
 - Multi functional display
 - Main switch with bypass function

Connection diagram

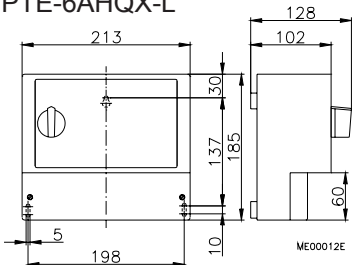


Accessories: Sensors TF...

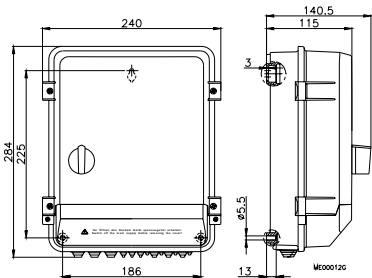


PTE-6AHQX-L / PTE-10AHQX-L
With multi functional display

Dimensions PTE-6AHQX-L



PTE-10AHQX-L



Climate control module Unicon

For speed regulation of ETAvent fans, air shutters,
heatings, peak load fans, external speed controllers.

Application:
Extensive control function for one stall

Temperature acquisition is carried out via a Ziehl-
Abegg temperature sensor type TF...

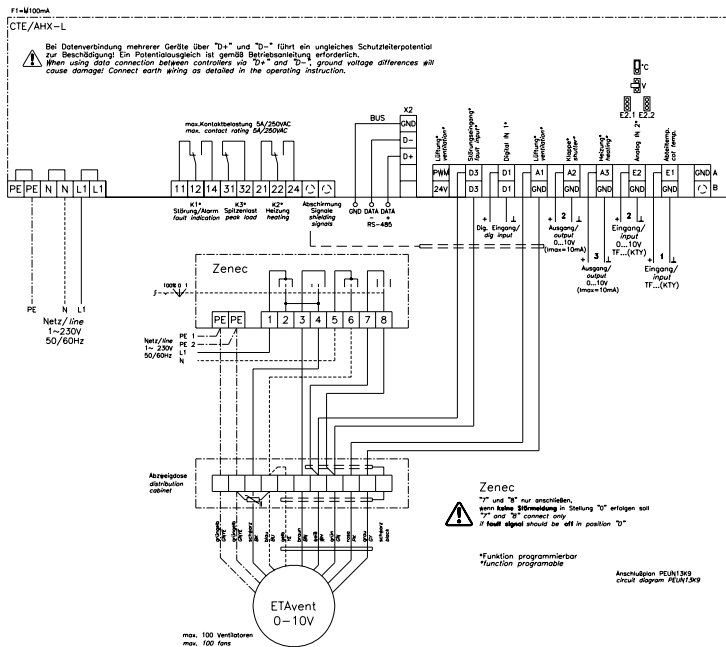
- Common features:
- Adjustable target range 0-40°C
- IP54 protection class housing
- Speed preset and speed limitation manually adjustable
on unit (nmin / nmax)
- Maximum permissible ambient temperature 40°C
- Integrated semiconductor fuse



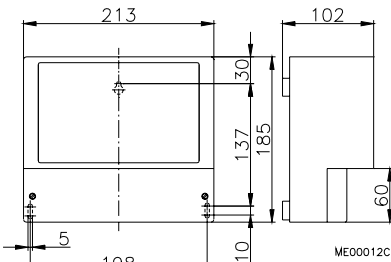
CTE/AHX-L
With multi functional display

- Equipment:
CTE/AHX-L:
- Control of ETAvent via PWM, 0-10V, 10-0V
- Actuation of slave controllers via 0-10V, 10-0V
- 0-10V and relay contact for heating actuation
- 0-10V for actuation of shutters
- 2 keys and rotary pulse encoder for easy
programming
- 2 digital inputs, programmable
- Potential-free fault and alarm signal contact
- 2 inputs for temperature sensors (indoor/outdoor
temperature sensor)
- Network via bus system (e. g. for central exhaust
systems)
- Multi functional display

Connection diagram



Dimensions



3~ frequency inverter Fcontrol FXDM...AM with multifunctional display

Speed controller for 3~ fans. Problem-free parallel operation of fans without shielded motor lines is feasible through integrated, **all-pole effective sinusoidal-filter**. Therefore usable for retrofitting.
The speed preset is performed by using an external 0-10 V or 10-0 V signal.

Characteristics:

- Speed limitation manually adjustable on unit (nmin / nmax)
- With integrated voltage supply for auxiliary devices, e.g. external potentiometer
- Maximum permississible ambient temperature + 40°C

	Type	Part no	I _B * / A 40°C	I _B ** / A 50°C	Protection class	Weight / kg
3~ 208V-480V 50/60Hz	FXDM4AM	308040	4,0	4,0	IP54	8,8
	FXDM8AM	308045	8,0	7,5	IP54	9,0
	FXDM13AM	308039	13,0	13,0	IP54	22,8
	FXDM18AM	308041	18,0	14,0	IP54	25,4
	FXDM22AM	308050	22,0	16,0	IP54	28,1
	FXDM32AM	308009	32,0	26,0	IP54	29,5
	FXDM40AM	308049	40,0	32	IP54	31,8

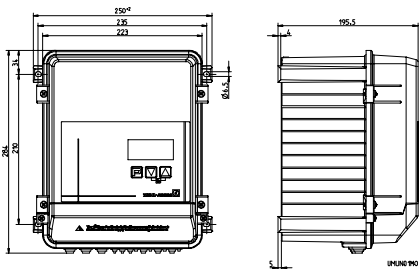
* Rated current at 415V mains voltage and 40°C ambient temperature
 ** Rated current at 415V mains voltage and 50°C ambient temperature

Equipment:

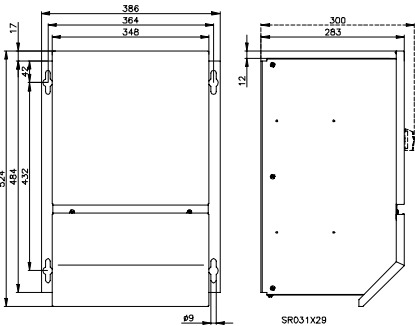
- Multifunctional display with plain text display, various menu languages can be selected
- Output 0-10 V \triangleq motor voltage for slave controller
- Motor protection using thermostatic switch or temperature sensor connection
- 2 digital inputs programmable (e.g. enable function, speed limitation)
- 2 digital outputs (relay) programmable (e.g. status signals, threshold values)
- Critical frequency ranges masked out

Dimensions:

FXDM4/8AM(E):



FXDM13/18/22/32AM/40AM




Fcontrol FXDM...AM (IP54) with multi functional display


Sensors

TF... temperature sensors


Varieties of versions are available. Contact, room, immersion, living space, and duct sensors for registration of the actual temperature value and for control of fans in conjunction with Ziehl-Abegg control units. The silicon PTC element changes its resistance depending on the ambient temperature. $R_{20^{\circ}\text{C}} = 1.9\text{ K}\Omega$ (KTY10-6 and KTY81-210 respectively)
TF... temperature sensors are passive sensors; they do not need any voltage supply.




TFR
00089846
Room sensors




TFT
00154797
Immersion sensors



TFA
00153407
Contact sensors



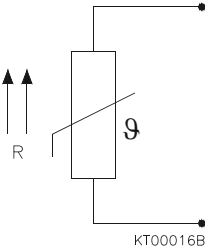
TFW
00154798
Living room sensors



TFK
384022
Air dust sensors

Type	Part no.	Protection Class	Details
TFA	00153407	IP67	Ø 4 x 50mm, cable 2m
TFR	00089846	IP54	Housing dimensions W x H x D: 75 x 75 x 37mm
TFT	00154797	IP43	Ø 7 x 50mm, cable 1,9m
TFW	00154798	IP20	Housing dimensions W x H x D: 84 x 84 x 22mm
TFK	384022	IP65	Housing dimensions W x H x D: 50 x 65 x 44mm Sensing element: Ø 7 x 135mm

Connection diagram



:
It is not necessary to pay attention to polarity while connecting

Sensors

MAF Humidity / Temperature sensor

Combined sensor for the measurement of relative humidity and temperature (agriculture / air conditioning)
The relative humidity and temperature can be acquired selectively or combined. Depending on the detected value, the speed, for example of Ziehl-Abegg fans, is controlled in conjunction with a Ziehl-Abegg control unit.
During humidity measurement, the MAF sensor is supplied with +24 V from a Ziehl-Abegg control unit. Through the output of a 0-10 V signal, the measured actual value is transmitted to the Ziehl-Abegg control unit. During humidity measurements, the MAF acts as an active sensor; during temperature measurements, passively.

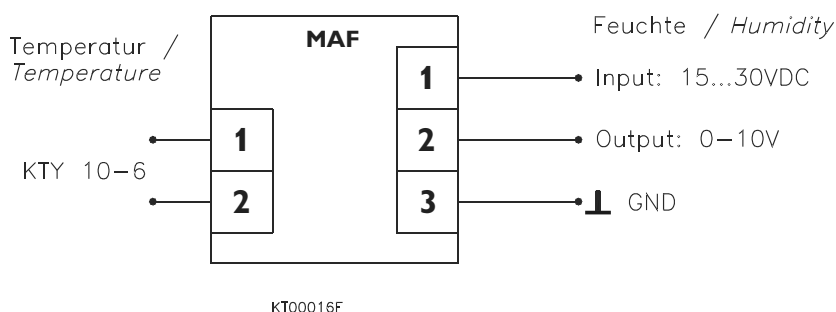
Features: MAF

- Measurement range 0-100% rel. humidity
- Housing protection class IP66
- Protection of the sensing element through a sintered bronze filter
- Housing dimensions (WxHxD) 80x80x35mm
- Long probe 50mm / Ø 12mm



Type: MAF
Part no.: 384016

Connection diagram



Motor protection units for monitoring thermostatic switches (TB)

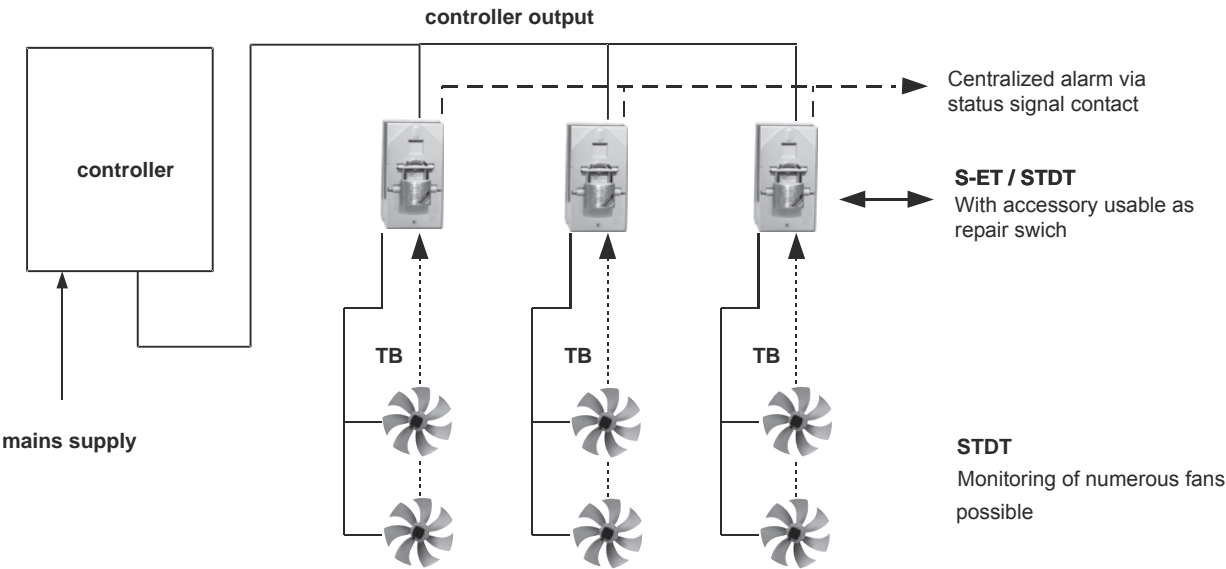
Complete motor protection is implemented through the connection of the TB integrated into the motor. When the TB responds due to too high a coil temperature, the motor is switched off. Applicable from 60V.

Line protection (in 3~ units only) through integrated short-circuit release and adjustable overcurrent release on the conductor cross-section.

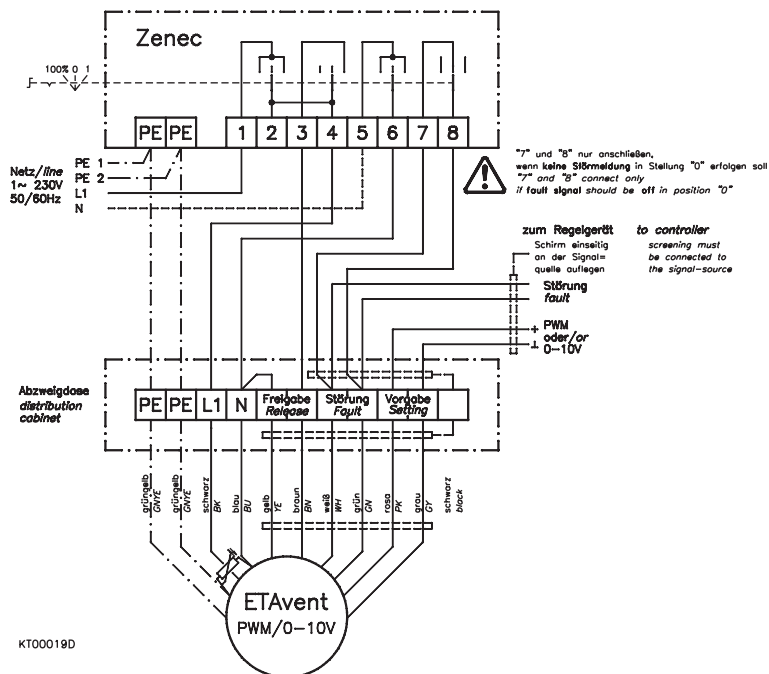


Design	Type	Part no	*A	
mains supply 1~ 230V, 50/60Hz				
Switch cabinet installation on top-hat rail	S-ET10E	382021	10	
In IP55 housing	S-ET10	382020	10	
mains supply 3~ 400V, 50/60Hz				Overcurrent release
Switch cabinet installation on top-hat rail	STDT16E	382012	16	10 – 16A
	STDT25E	382015	25	20 – 25A
In IP55 housing	STDT16	382011	16	10 – 16A
	STDT25	382014	25	20 – 25A
Accessories				
Status signal contact	ZB (1Ö + 1S) ZK (2S)	382013 382022		*Rated current at 230V or 400V mains voltage
Padlock	Zrep	382025		

Application example: Motor protection unit S-ET or STDT, depending on mains supply. With STDT monitoring of numerous fans per motor protection device possible. Thermocontacts are connected in series.



Main switch for ETAvent fans



The Zenec switch with it's three switch positions serves to switch an ETAvent fan, with integrated EC controller, on and off.

Characteristics:

- Housing protection IP65
- Contact rating 250V AC, 20A

Positions of the controller:

Position 0:

Switch-off of the fan (padlock feature)

Position 1:

Control operation

Position 3:

Full speed by-pass function for use in the event of failure of external control unit

Special features:

There are additional terminals (terminal 7 and 8) located at the Zenec switch. By bridging the terminals 7 and 8 as shown in the circuit diagram, a fault signal in switch setting 0 can be suppressed (fault signal via the fault signal relay integrated in the ETAvent fan). If it is intended that this fault signal should not be suppressed in switch setting 0, the terminals are not to be bridged.

Zenec Part no. 349022

Warranty

In the event of any of the products detailed in this catalogue being supplied by Ziehl-Abegg UK Ltd. (the Company) and being found to be defective the Company shall, subject as hereinafter provided, be responsible only for the repair or (at its discretion) replacement of the goods free of charge for labour and materials. All other claims (including claims for consequential loss but excluding other claims for death or personal injury) relating to any express or implied warranties as to satisfactory quality and fitness for purpose of the goods shall be excluded. The liability of the Company hereunder shall cease after expiry of 1 year^{*)} from the date of delivery and shall in any event only arise on condition that:

- The goods shall have been overloaded nor had any improper use made of them
- The goods shall have been installed in accordance with the Installation, Operation & Maintenance Instructions and the company shall be given access to verify the same
- The correct electrical supply shall have been used
- No unauthorised repairs shall have been made to the goods
- The goods shall have been returned, carriage paid, to the Company or its appointed distributor.

As part of a policy of continuous product improvement Ziehl-Abegg UK Ltd. reserves the right to alter specifications without notice. Details of current specifications are available on request.

Sales are subject to our Standard Terms and conditions of Sale, a copy of which is available upon request.

^{*)} Except

FC062-6_K.4I.A7,
FC063-6_Q.4I.A7,
FC063-6_T.4I.A7,
FC071-6_D.6K.A7,
FC071-6_Q.6K.A7,
FC071-6_T.6K.A7 and
FE082-6_T.6_V3

where a 5 year warranty is offered when used with suitable motor protection.

European Regulations

The fans comply with the following directives, E.E.C. Directive 72/23/CEE (Low Voltage Directive) as amended by 93/68/EEC (or other amendments taking place after print of this document) and E.E.C. Directive 89/336/CE (Electromagnetic Compatibility Directive) as amended by 92/31/EEC and 93/68/EEC (or other amendments taking place after print of this document). The fans are designed for incorporation under E.E.C-Directive 89/37/CE (Mechanical Directive).

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ZIEHL-ABEGG reserves the right to make any dimensional design changes which may be required as part of our continuous improvement programme. Please visit our website to view the most up to date information.

The sale of the products is subject to the "Technical Conditions of Sale" for fans in accordance with German standard DIN 24 166.

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