

GB



TECHNICAL DOCUMENTATION



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1.0 Device description



The AL-KO ceiling fan "Energie" carriess the raising warm air and heat trapped beneath the ceiling back to the occupant zone. It is used along with the AL-KO air heaters, particularly in heated, high-ceiling rooms such as those in storehouses and dispatch centres.

The AL-KO ceiling fans can be equipped with an adjustable ceiling suspension if desired. The adjustment range for all four individual corner supports is: 150-250 mm.

1.1 Design

The AL-KO "ENERGY" ceiling fans are made of galvanised sheet steel. Their robust design and quality manufacturing ensure durability and faultless operation. A special focus was on ease of maintenance as well as quick and easy installation.

Housing:

Robust galvanised sheet steel. Horizontal stamped suction panels on all four sides. Fan inlet nozzle made of galvanised sheet steel – thermoformed. Outlet nozzle with self-locking, adjustable blow-out louvres. Housing completely powder-coated.

Fan:

Axial fan balanced statically and dynamically. An external rotor motor serves as the drive. Motor mounted via a coated supporting grille.

1.2 Application area



Unused quantities of heat are trapped near the ceiling of every hall.

AL-KO ceiling fan "Energie" can be used in halls with ceiling heights ranging from 5 m to 16 m.

Installing AL-KO "Energie" ceiling fans achieves optimum cost-effectiveness.

The dynamically operated system enables you to reduce thermal layers and to prevent the warm air flow from rising. The desired heat output as well as the circulated quantity of air can be achieved through air heaters or a free-standing heating system.



1.3 Selection criteria, recommendations, examples: We differentiate broadly between three main applications

Case 1:

The recirculating air is heated with ceiling installed air heaters.

This device arrangement partially carries trapped heat to the occupant zone. During air heater downtime or restoration, the additional ceiling fans producemore intensive ambient air circulation.

Design: circulation 1.5 to 2 times room volume.

Case 2:

Recirculating air heated by wall mounted air heaters.

The situation precludes ceiling installed air heaters. For instance, in high-rise warehouses and craneways where ceilings are too high.

Design: circulation 2 to 2.5 times room volume.

Case 3:

A static heating system is selected.

E.g. radiators, convectors, floor heating, etc. There is no dynamic air recirculation.

Design: Circulation 2.5 to 3 times room volume.

Important: Recirculation must be distributed among appropriate number of devices.

2.0 Dimensions and technical data

2.1 Dimensions





Туре	a mm	b mm	с mm	d mm	e mm	f mm	g mm	h mm
DL-140 E	600	572	632	290	310	423	183	578
DL-250 E	700	672	632	340	385	523	183	678
DL-650 E	900	872	632	500	500	723	183	878

2.2 Technical data

Fan:

Three phase AC motor 3 x 400 V Y/∆ THCL 155 Index of protection IP 54 Winding cover contacts

Ceiling fan	DL 140 E		DL 2	50 E*	DL 650 E		
Max. / Min. speed	min ⁻¹	1390	1170	1330	1040	880	680
Motor output kV		0.19	0.14	0.29	0.21	0.75	0.47
Rated current	А	0.40	0.13	0.55	0.35	1,65	0.90
Weight	kg	30		38		56	
	63 Hz	52	48	54	48	61	61
	125 Hz	57	50	63	52	64	60
Sound pressure level	250 Hz	60	53	66	55	68	65
(Measurement at a 5 m	500 Hz	56	50	62	52	64	58
over the frequency hand	1000 Hz	54	47	59	50	61	53
in db	2000 Hz	51	44	56	50	57	49
	4000 Hz	45	38	50	45	54	44
	8000 Hz	35	28	46	34	45	33
Heat output m ³ /h		2700	2100	4000	3300	8400	6400
Projection range m		11	9	12	10	14	12

*Only in conjunction with FC (LEVEL4B2)

2.3 Accessories



Bracket set "a"

The vertically adjustable ceiling suspension profile is suitable for fixing the device where the ceilings are low or inclined. The range of adjustment for each of the four ceiling brackets is 150 to 250 mm (sections of 25 mm each). The set comprises 1 set of brackets (4 units) and fixing and connecting screws on the ceiling fan.

2.4 Vertical projection range

Maximum projection ranges for uniform suction from all 4 sides and vertically positioned exhaust jalousies. The exhaust jalousies can be adjusted as desired to decrease projection range.



3.0 Controls

3.1 Level 4B2

The proven air heaters and coolers manufactured by AL-KO are provided with a comprehensive control program having several distinctive advantages:

- The automatic control devices are continuously variable, while the manual switches have a 4-step contact.
- Maximum and minimum speed limits depending on installation height can be set directly on the air heater.
- Alarm light in CB-RS on every air heater unit. This enables locating the defect unit from a distance.



Automatic controller TMC

Intelligent control for room temperature dependent, continuous operation with individual operating time settings. Up to 10 air heaters connected within a given zone. Accessories: Temperature sensor TF



Manual switch HS-4

A four-step manual switch for room temperature dependent operation. Preselecting 4 electronically controlled speed steps, connecting up to 10 air heaters in a given room. Accessories: Room thermostat RTA-4 or RTI-4



Manual controller HR-2 For room temperature dependent operation. Continuous speed preselection. Connecting 2 air heaters in a given room.





4.0 Installation examples



While mounting devices on the ceiling, make sure that the vertical air jet's depth of penetration is adequate. Disagreeable levels of temperature stratification can be avoided by checking the resultant vertical penetration depth of the air jet at device selection time. Relevant values must be taken from the tables provided in the catalogue.

Air jet dispersion and direction can be changed by adjusting the vertically positioned exhaust jalousies. The air jet's depth of penetration can also be reduced by reciprocally aligning the exhaust jalousies.

The sensor is positioned on site in the trapped heat area (on the ceiling or DL)



The AL-KO ceiling fan carries the trapped heat and the raising warm air to the occupant zone. The temperature sensor is installed on site in the trapped heat area (on the ceiling or DL)



5.0 Text for invitation to tender



Ceiling fan AL-KO THERM ENERGIE Including Blow-off nozzle AD

Housing:

Elegant and robust galvanised housing, completely powder-coated in light grey RAL 7035. Suction plates positioned horizontally on all four sides. Fan inlet nozzle made of galvanised sheet steel – thermoformed. Blow-off nozzle with self-locking, adjustable exhaust jalousies.

Drive:

Axial fan with external rotor motor. Axial fan made of diecast aluminium with an external rotor motor. IP 54 class protection, moisture-proof protection, insulation class THCL 155.

Control:

Automatic speed control using automatic controller TMC and temperature sensor TF.

Brand: AL-KO THERM Type:

Technical Data: Volumetric flow rate Differential temperature Δt_L	m³/mir K
Motor: Rotational speeds Operating voltage Current drawn Motor output	U/min V A kW
Device Dimensions: Breadth Height Depth Device weight	mm mm mm kg
Sound pressure level: (Overall) 5m distance Vertical projection range Suspension height	dB(A) m m

Bracket "a"

Ceiling suspension with 4 corner supports is adjustable within the range from 150 to 250 mm.



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