

**INLINE CENTRIFUGAL FANS IN SOUND-INSULATED CASING  
VENTS VS, VENTS VS EC SERIES**

**USER'S  
MANUAL**





## PURPOSE

The inline centrifugal fan VENTS VS / VENTS VS EC enclosed in a sound-insulated casing with the intake spigot diameter from 355 up to 710 mm, hereinafter the fan, is designed for ventilation of industrial premises, swimming pools, apartment houses, offices, hospitals, restaurants and other premises.

Transported air must not contain any dust, solid, sticky and fibrous substances.

The fan is mounted by means of mounting brackets, round or square anti-vibration connectors.

The fan is applicable both for supply and extract ventilation.

The fan is rated for continuous operation always connected to power mains.

The fan is rated as a class I electric appliance.

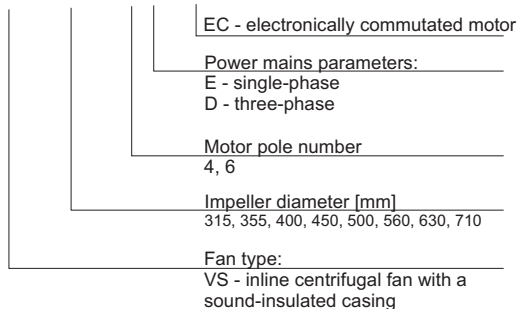
Hazardous parts access and water ingress protection rating is IP X4.

## TECHNICAL DATA

The unit design is constantly improved, so some models may slightly differ from the ones depicted herein.

### VS and VS EC designation key

XX XXX - X X EC



### Designation key example:

VS 355-4E: inline fan in a sound-insulated casing with a single-phase four-pole electric motor and a Ø 355 mm impeller.

VS 500 EC: inline fan in a sound-insulated casing with an EC motor and a Ø500 mm impeller.



## DELIVERY SET

The delivery set includes:

Fan - 1 item  
User's manual  
Packing box

## SAFETY REQUIREMENTS

Take steps to prevent ingress of smoke, carbon monoxide and other combustion products into the room through open chimney flues or other fire-protection devices. Mounting and maintenance operations must be performed by duly qualified electricians in compliance with acting technical regulations.

Disconnect the fan from power supply prior to maintenance and servicing operations.

Check the fan for any visible damages of the impeller and the casing before starting installation.

The fan casing must not contain any foreign objects that could damage the impeller blades.

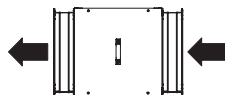
### WARNING

**The fan is not rated for operation in an explosive or inflammable medium.**

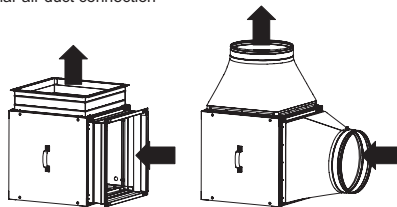
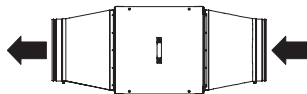
## FAN DESIGN

The special VS fan design enables to change the side panel positions and direct air flow both straightforward and perpendicularly at 90°. The VS fans may be used for construction of various complex ventilation systems.

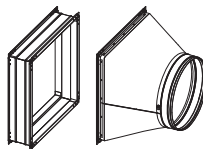
Fig. 1  
Linear air duct connection



Perpendicular air duct connection



Anti-vibration connector with a square to round reducer



## MOUNTING

The ceiling mounting is performed by means of the treaded rods fixed in the threaded expansion anchors (Fig. 2). The fan mounting to the horizontal plane is shown in Fig. 3.

While mounting the fan ensure sufficient service access for maintenance and repair operation. The minimum distance from the fan to the walls is 1 m.

In case of the outdoor fan mounting the fan must be protected with a protecting hood, as VPR-VS, Fig. 4 and (or) an outer ventilation hood, as KN-VS, Fig. 5.

## CONNECTION TO POWER MAINS

**CONNECTION TO POWER MAINS SHALL ONLY BE PERFORMED BY A PROFESSIONAL ELECTRICIAN AFTER CAREFUL STUDY OF THE PRESENT USER'S MANUAL.**

**THE FAN IS ONLY INTENDED FOR AC MAINS SUPPLYING THE VOLTAGE COMPLIANT WITH THE TECHNICAL PARAMETER TABLE. CHECK THE CABLE FOR CHOKING. DO NOT SWITCH ON THE FAN IF THE CABLE IS DAMAGED.**

**THE RATED ELECTRIC PARAMETERS OF THE FAN ARE SHOWN ON THE RATING PLATE.**

**ANY INTERNAL CONNECTION MODIFICATIONS ARE NOT ALLOWED AND WILL VOID WARRANTY.**

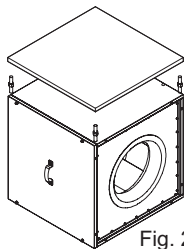


Fig. 2

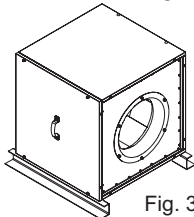


Fig. 3

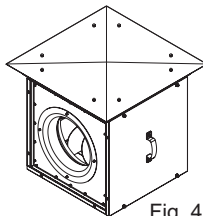


Fig. 4

Table 1. Technical parameters

Model	Wiring diagram Fig.	Voltage [V]	Circuit breaker trip current [A]
VS 315 EC	6	230	2
VS 355-4E	1	230	2
VS 355-4D	4	400	1
VS 355 EC	7	230	4
VS 400-4E	2	230	3,15
VS 400-4D	5	400	2
VS 400 EC	7	230	4
VS 450-4E	2	230	4
VS 450-4D	4	400	2
VS 450 EC	7	400	4
VS 500-4E	3	230	6,3
VS 500-4D	4	400	4
VS 500 EC	8	400	3,15
VS 560-4D	4	400	6,3
VS 560-6D	4	400	2
VS 560 EC	9	400	4
VS 630-4D	4	400	8
VS 630C-4D	4	400	10
VS 630-6D	4	400	4
VS 630 EC	9	400	4
VS 630 S EC	9	400	5
VS 710-6D	5	400	5

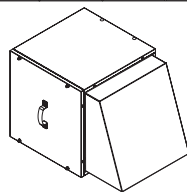


Fig. 5

**Connect your fan to power mains in compliance with a respective wiring diagram number as stated in the table 1.**

The fan is designed for connection to AC single-phase AC 230 V / 50 Hz or three-phase 400 V / 50 Hz power mains.

For electric installations use an insulated, durable and heat-resistant cables with the minimum core cross section 1 mm<sup>2</sup>.

The above conductor section value is tentative.

In practice the conductor selection shall be based on the maximum permissible wire heating depending on the wire type, its insulation, length and installation method.

Use only copper core wires.

The fan must be properly grounded!

The external power input (230 V/50-60 Hz or 400 V/50-60Hz) must be equipped with an automatic circuit breaker built into the stationary wiring to disconnect all the power mains phases. Position of the circuit breaker QF must ensure free access for quick power-off of the fan. The trip current must be not less than the consumption current. The recommended circuit breaker trip current must exceed the rated consumption current. The recommended circuit breaker trip current and wiring diagram number for various fan types are stated in the table 1.

The recommended wiring diagram example for connection of the VS fan with a heat protection and a single-phase motor is shown in the wiring diagram 12 and with three-phase motor is shown in the wiring diagram 13.

The terminals TW1, TW2 are the normally closed contact leads of the motor overheating protection. This contact must be connected in series to the power supply circuit of the coil of the magnetic starter KM1 that activates the motor after pressing the button S1. In case of the motor overheating the contact opens, the starter coil turns off and the motor stops. The automatic circuit breaker QF, the magnetic starter KM1, the control buttons S1 and S2 are not included in the delivery set and must be installed by the user.

The VS EC fans are powered by high-efficient electronically commutated motors that are featured with high performance and total controllable speed range.

The maximum EC motor efficiency reaches 90 %.

Connect the VS EC fans to power supply on the terminal block located in the terminal box in compliance with the wiring diagram and terminal designations.

The terminal designations are shown on the sticker inside of the terminal box.



The VS EC are operated via various external control signals. The fan with EC motor responds to changes of a control parameter value and delivers required air flow to the ventilation system.

For instance, the air flow is controlled by means of the speed controller R-1/010, hereinafter the controller. The air flow is regulated from zero to the maximum value depending on the need of ventilation. The speed controller is not included in the delivery set. The connection of the speed controller is shown in the wiring diagrams 6, 7, 10.

The fan may be controlled by means of a CO<sub>2</sub> sensor (the recommended accessories CO<sub>2</sub>-1 and CO<sub>2</sub>-2). The CO<sub>2</sub> sensor may be connected either to an analogue output with the control voltage 0-1 V or to a discrete output (relay contact). In the first connection option the fan speed increases as CO<sub>2</sub> concentration rises above the set point and decreases as CO<sub>2</sub> concentration drops below the set point.

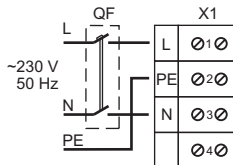
In the second connection option the normally open relay contact turns the fan on as CO<sub>2</sub> concentration rises above the set point and stops it as CO<sub>2</sub> concentration drops down below the set point.

Connect a humidity sensor in the same way. Connect the external control units with integrated terminal boxes to the terminal boxes KL3 in compliance with the terminal designation. The wiring examples are shown in Fig. 10.

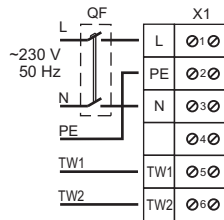
Humidity sensors, differential pressure switches, CO<sub>2</sub> sensors are not included in the delivery set and must be installed by the user.

Connection of other external control units to the fans with integrated terminal box must be performed in compliance with performance charts submitted by EC motor manufacturer. The applied software enables high accuracy control of all integrated fans, Fig. 11.

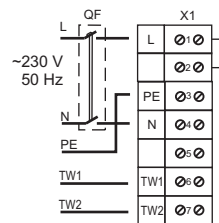
Wiring diagram 1



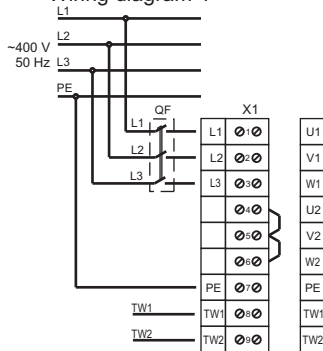
Wiring diagram 2



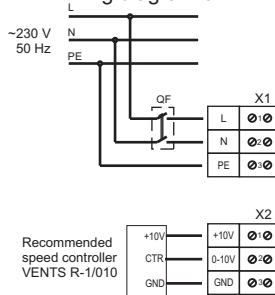
Wiring diagram 3



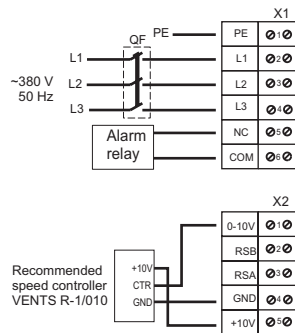
### Wiring diagram 4



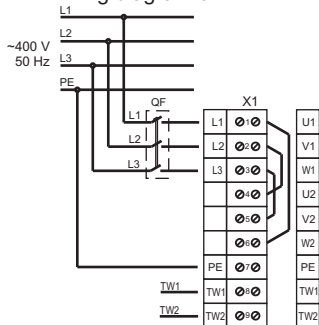
### Wiring diagram 6



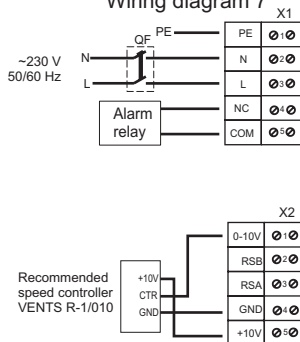
### Wiring diagram 8



### Wiring diagram 5

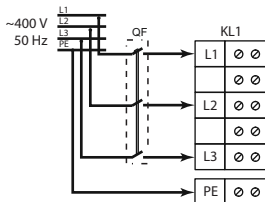
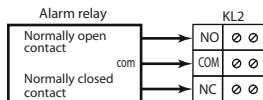
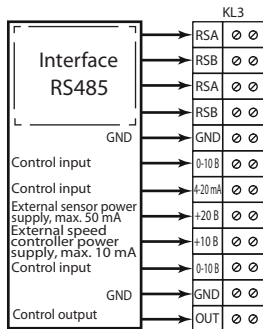


### Wiring diagram 7





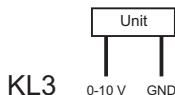
Wiring diagram 9



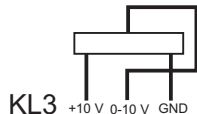
Wiring diagram 10

**Wiring example for connection of various control units to EC motors**

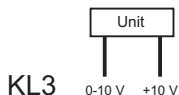
Connection of analogue 0-10 V output of a control unit



Connection of a speed controller (potentiometer)



Connection of relay output of a control unit



Connection of a 4-20 mA pressure sensor



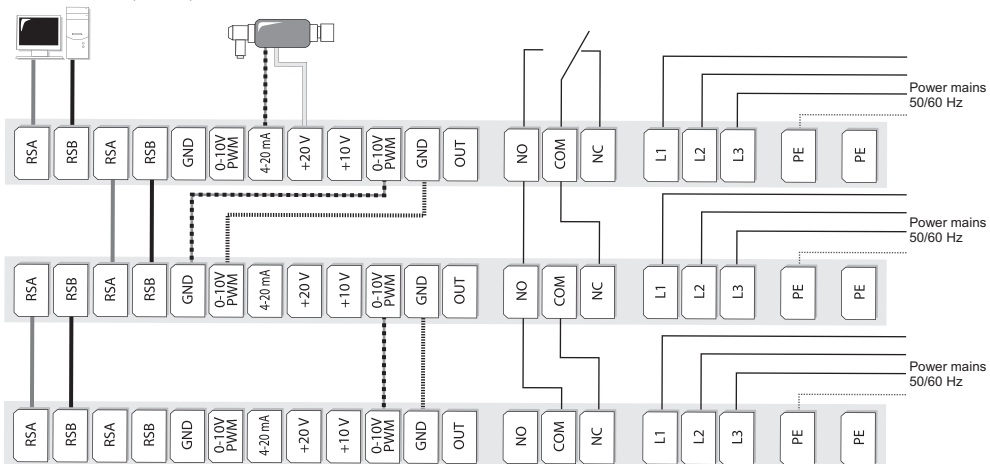
## Wiring diagram 11

### External wiring diagram for integration of EC motor fans in the group

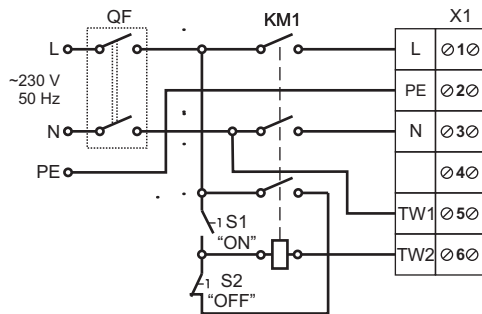
Computer with an interface converter (RS 486)

Pressure sensor

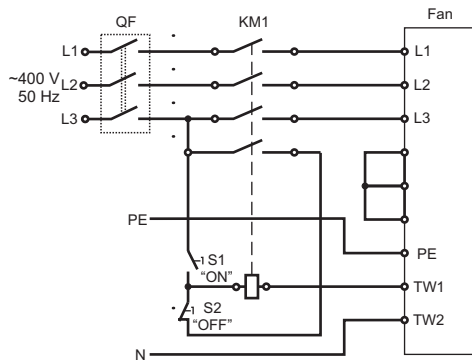
Alarm relay



Wiring diagram 12



Wiring diagram 13



## TROUBLESHOOTING

Faults and troubleshooting		
Problem	Possible reasons	Troubleshooting
The fan does not start up during the ventilator start-up.	No power supply.	Make sure that the fan is properly connected to the power mains and make any corrections, if necessary.
	Motor jam.	Turn the fan off. Troubleshoot the motor jam. Restart the ventilator.
Automatic circuit breaker tripping during the fan activation.	Overcurrent resulted from short circuit in the electric circuit.	Turn the fan off. Contact the product seller for troubleshooting.
Noise, vibration	Impeller blades are clogged.	Clean the fan impeller.
	Loose screw connection.	Check and tighten the screws if required.

## **MAINTENANCE**

Disconnect the fan from power supply prior to any maintenance operations. The fan maintenance includes regular cleaning of the fan surfaces of dirt and dust. Use a soft dry brush or compressed air to remove dust.

Clean the impeller blades once in 6 months. To clean the fan blades remove the screws take off the fan cover, clean the impeller blades using a detergent solution. Avoid water splashes on the fan motor!

## **STORAGE AND TRANSPORTATION REGULATIONS**

Store the fan in the manufacturer's original packing box in a dry ventilated premise at ambient temperatures from +10 °C up to + 40 °C. Storage environment must not contain aggressive vapours and chemical mixtures provoking corrosion, insulation and sealing deformation. Use suitable hoist machinery for handling and storage operations to prevent possible damage to the fan. Follow the handling requirements applicable for the particular type of cargo. The fan can be carried in the original packing by any mode of transport provided proper protection against precipitation and mechanical damage. Avoid sharp blows, scratches or rough handling during loading and unloading.

## **MANUFACTURER'S WARRANTY**

The manufacturer hereby warrants normal operation of the fan for 2 years after the retail sale date provided the user's observance of the transportation, storage, mounting and operation regulations.

In case of no sales date marking calculation of the warranty period starts from the manufacture date.

In case of any operating malfunctions during the warranty period a warranty claim must be submitted with a technical evaluation report with a detailed fault description.

The fan damages resulting from unauthorized tampering with the circuit diagram shall not be considered as a warranty case.

For warranty and post-warranty service contact the manufacturer or the fan seller. In case of a warranty claim this user's manual with the Seller's stamp must also be submitted. The warranty and post-warranty service is performed at the manufacturing facility.



## ACCEPTANCE CERTIFICATE

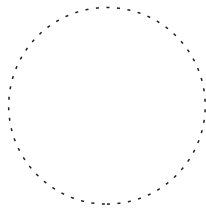
<b>Unit Type</b>	Inline centrifugal fan in sound-insulated casing
<b>Model</b>	<b>VENTS VS, VENTS VS EC Series</b>
<b>Serial Number</b>	
<b>Manufacture Date</b>	
Is compliant with the technical specifications and is recognized as serviceable. We hereby declare that the product complies with the essential protection requirements of Electromagnetic Council Directive 2004/108/EC, 89/336/EEC and Low Voltage Directive 2006/95/EC, 73/23/EEC and CE-marking Directive 93/68/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. This certificate is issued following test carried out on samples of the product referred to above.	
<b>Quality Inspector's Stamp</b>	

## SELLER INFORMATION

<b>Seller</b>	
<b>Address</b>	
<b>Phone Number</b>	
<b>E-mail</b>	
<b>Purchase Date</b>	

This is to certify acceptance of the complete fan delivery with the user's manual.  
The warranty terms are acknowledged and accepted.

<b>Customer's Signature</b>	
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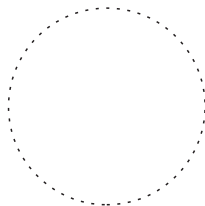


Seller's Stamp



## INSTALLATION CERTIFICATE

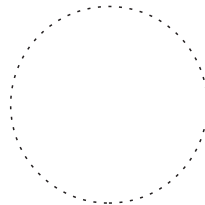
The inline centrifugal fan in sound-insulated casing <b>VENTS VS, VENTS VS EC</b> has been connected to power mains pursuant to the requirements stated in the present user's manual.	
<b>Company Name</b>	
<b>Address</b>	
<b>Phone Number</b>	
<b>Installation Technician's Full Name</b>	
<b>Installation Date:</b>	<b>Signature:</b>
The fan has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The fan operates normally as intended by the manufacturer.	
<b>Signature:</b>	



Installation  
Company Stamp

## WARRANTY CARD

<b>Unit Type</b>	Inline centrifugal fan in sound-insulated casing
<b>Model</b>	<b>VENTS VS, VENTS VS EC Series</b>
<b>Serial Number</b>	
<b>Manufacture Date</b>	
<b>Purchase Date</b>	
<b>Warranty Period</b>	
<b>Seller</b>	



Seller's Stamp



