
KBT Thermo box fan AC

KBT Thermo box fan EC



Table of contents

1	Introduction	1	12.3	Wiring diagrams	13
1.1	Product description	1	12.3.1	Wiring diagrams for AC fans	13
1.2	Intended use	1	12.3.2	Wiring diagrams for EC fans	14
1.3	Document description	1	12.3.3	Wiring diagrams for speed controller for AC motors	14
1.4	Product overview	1	12.3.4	Wiring diagrams for speed controllers for EC motors	17
1.5	Name plate	2	12.3.5	Wiring diagrams for ON/OFF controls for EC motors	19
1.5.1	Type designation	2			
1.6	Product liability	2	13	Accessory overview	20
2	Safety	2	14	EU Declaration of Conformity	21
2.1	Safety definitions	2	15	UK Declaration of Conformity	22
2.2	Safety instructions	3			
2.3	Personal protective equipment	3			
3	Transportation and storage	4			
4	Installation	4			
4.1	To do before the installation of the product	4			
4.2	To install the product	5			
4.2.1	To connect the ducts to the product	5			
5	Electrical connection	6			
5.1	To do before the electrical connection	6			
5.2	To connect the product to the power supply	6			
5.3	Speed controller for EC motors	6			
5.4	Motor protection for EC motors	6			
5.5	Speed controller for AC motors	6			
5.6	To install motor protection for AC motors	6			
6	Commissioning	7			
6.1	To do before the commissioning	7			
6.2	To do the commissioning	7			
7	Operation	7			
7.1	To start a product with an EC motor	7			
7.2	To stop the product	7			
7.2.1	To stop the product in an emergency	7			
7.3	To start a product with an AC motor	7			
8	Maintenance	8			
8.1	Maintenance schedule	8			
8.2	To clean the product	8			
8.3	Spare parts	8			
9	Troubleshooting	9			
10	Disposal	11			
10.1	To disassemble and discard the parts of the product	11			
11	Warranty	11			
12	Technical data	12			
12.1	Technical data overview	12			
12.2	Product dimensions	12			

1 Introduction

1.1 Product description

The product is a centrifugal thermo box fan with AC or EC motor, and a casing that is made from galvanized steel and has mineral wool as insulation. The product is supplied with built-in weather protection and a drain plug for condensation.

The product is applicable for air flow connected to a duct system, and transportation of clean and contaminated air (for example dust, kitchen exhaust).

The product is not supplied with an external speed control or installation equipment, these parts are available and recommended as accessories.

1.2 Intended use

The product is applicable for ventilation with a maximum constant airflow temperature of 120 °C.

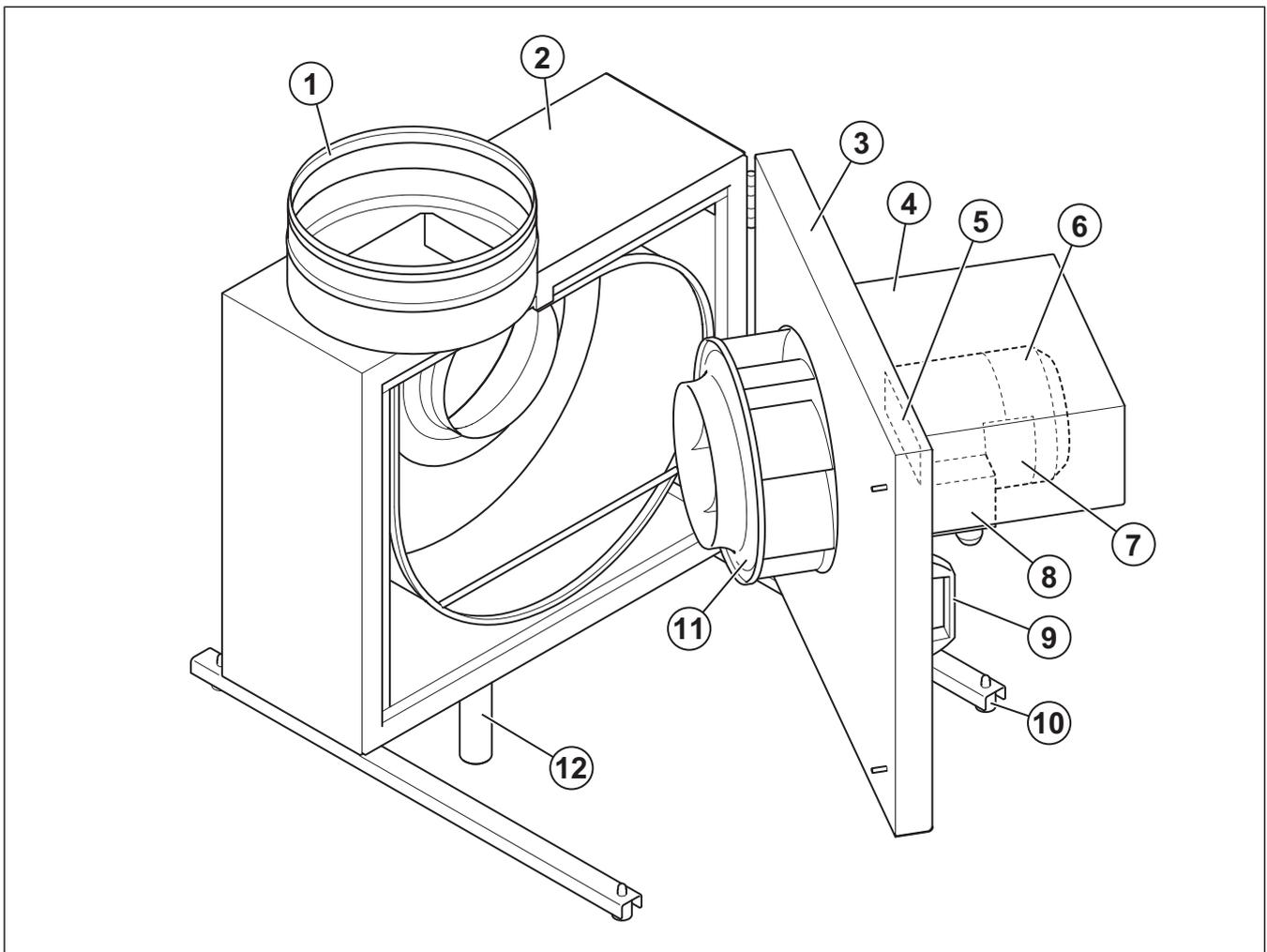
The product is not applicable for transportation of air that contains explosive, flammable or aggressive media. The product is not applicable for locations where there is a risk of explosion.

1.3 Document description

This document contains instructions for installation, operation and maintenance of the product. The procedures must be done by approved personnel only.

Speak to Systemair for more information on how to install the product in different installation locations.

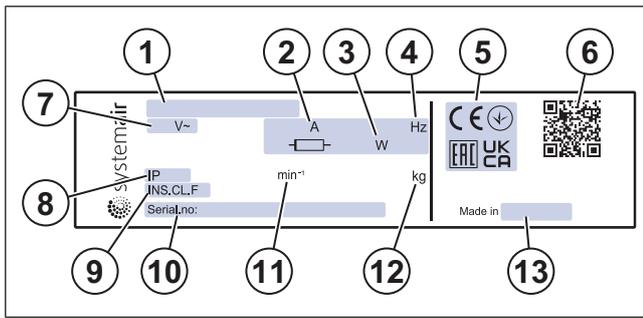
1.4 Product overview



1. Duct connection
2. Casing
3. Service door
4. Weather protection
5. Name plate
6. Motor

7. Motor name plate
8. Connection box
9. Handle
10. Mounting feet
11. Fan impeller
12. Drain plug

1.5 Name plate



1. Type designation: Product name, dimension and motor type. Refer to 1.5.1 [Type designation](#).
2. Current, A
3. Input power, W
4. Frequency, Hz
5. Certifications
6. Scannable code 1
7. Voltage, V
8. IP class, enclosure class
9. Insulation class
10. Serial number: part number/production number/production date
11. Nominal fan speed
12. Weight, kg
13. Country of production

Note:

The data on the name plate applies to “standard air” that is specified in the standard ISO5801.

1.5.1 Type designation

Product name	KBT AC	KBT EC
Dimension	160	160
	180	180
	200	200
	225	225
	250	250
	280	
Motor type	DV: 4 pole, 3-phase 400V	EC: Electronically commutated, 1-phase 230V
	D4 IE2: 4 pole, 3-phase 400V, High Efficiency	
	D4 IE3: 4 pole, 3-phase 400V, Premium Efficiency	

1.6 Product liability

Systemair is not liable for damages that the product causes in these conditions:

- The product is incorrectly installed, operated or maintained.
- The product is repaired with parts that are not original spare parts from Systemair.
- The product is used together with accessories that are not original accessories from Systemair.
- The product is used without motor protection.

2 Safety

2.1 Safety definitions

Warnings, cautions and notes are used to point out specially important parts of the manual.



Warning

If you do not obey these instructions, there is a risk of death or injury.

1. Use a mobile device to scan the scannable code and go to the Systemair documentation portal for more documentation and document translations.



Caution

If you do not obey these instructions, there is a risk of damage to the product, other materials or the adjacent area.

Note:

Information that is necessary in a given situation.

- Approved hearing protection
- Approved protective gloves
- Approved protective shoes
- Approved work clothing

2.2 Safety instructions



Warning

Read the warning instructions that follow before you do work on the product.

- Read this manual and make sure that you understand the instructions before you do work on the product.
- Obey local conditions and laws.
- The ventilation contractor and the operator are responsible for correct installation and intended use.
- Keep this manual at the location of the product.
- Do not install or operate the product if it is defective.
- Do not remove or disconnect safety devices.
- Make sure that you can read all warning signs and labels on the product when it is installed. Replace labels that have damage.
- Only permit approved personnel to work on the product and to be in the adjacent area during all work on the product.
- Make sure that you know how to stop the product quickly in an emergency.
- Use applicable safety devices and personal protective equipment during all work on the product.
- Before you do work on the product, stop the product and wait until the fan impeller stops. Make sure that there is no voltage on the motor terminals.
- If the maintenance is not correctly and regularly done, there is risk of injury and damage to the product.
- Only do the maintenance as given in this manual. Speak to Systemair technical support if other servicing is necessary.
- Always use spare parts from Systemair.
- Sound levels exceeding 70 dB(A) may occur depending on model and size. Visit www.systemair.com for more detailed information about your product.
- The product is not to be used by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Do not allow children to play with the device.

2.3 Personal protective equipment

Use personal protective equipment during all work on the product.

- Approved eye protection
- Approved protective helmet

3 Transportation and storage



Warning

Make sure that the product does not become damaged or wet during transportation. A damaged or wet product can cause fire or electric shock.

- Before you move the product to the installation location, examine the packaging for damages.
- Do not move the product by the cables, terminal box, fan impeller, protection grille, inlet cone or silencer.
- If lifting equipment is used, make sure that the lifting equipment can hold the weight of the product. Refer to the name plate for information. Do not lift the product by the packaging.



Warning

Do not walk below a lifted product.

- Keep the correct side of the packaging up during transportation. Refer to the arrows on the packaging.
- Load and unload the product carefully.
- Keep the product in a dry and clean location during storage. Make sure that the ambient temperature during storage is between -10 and $+30$ °C. A stable ambient temperature prevents damage from condensation.
- Keep the product in storage for maximum 1 year.

4 Installation

4.1 To do before the installation of the product

- Make sure that you have the necessary installation accessories:
 - Refer to [13 Accessory overview](#) for an overview of the accessories.
 - If you install the product outdoors, it is necessary to install a weather protection roof.
 - To decrease vibrations transmitted from the product to the duct system, Systemair recommends to install vibration dampers, fast clamps or flexible connections.
 - If you install the product with free suction or free discharge, it is necessary to install a protection grille. Make sure that the safety distance agrees with the standard ISO 12499.
- Use installation material with fire resistance rating for the installation location.
- Examine the packaging for transportation damage and remove the packaging from the product carefully.
- Examine the product and all components for damage.
- Make sure that the motor effect and the fan performance agrees with the expectations at the installation location.
- Make sure that the information on the name plate and the motor name plate agrees with the operation conditions.
- Install the product in a location where there is space for commissioning, troubleshooting and maintenance.
- Make sure that the installation location is clean and dry, for full safety during electrical work.
- Make sure that the installation surface has sufficient capacity to hold the weight of the product.
- Refer to the airflow direction arrows on the name plate or on the product to install the product in the correct position.
- Make sure that all cable glands are tight against the cables to prevent leaks.

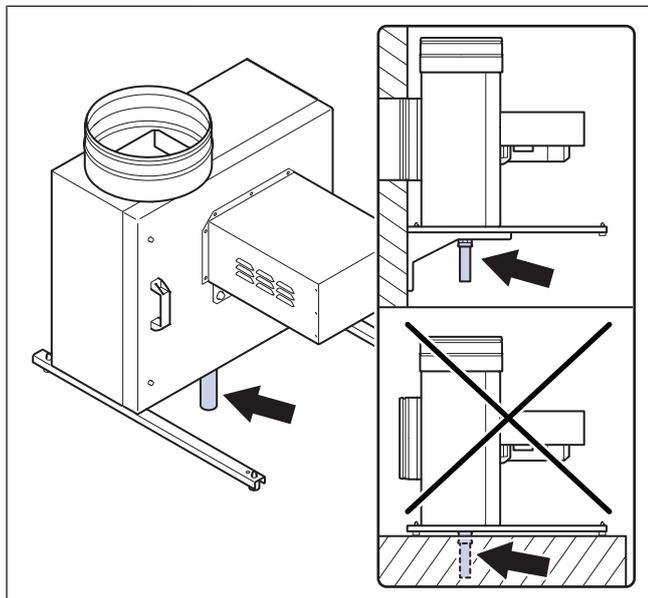
4.2 To install the product

- 1 Install the product on the mounting feet. Make sure that the weight of the product is equal on the mounting feet. Make sure the drain plug is at the lowest point of the product to drain the condensation.



Caution

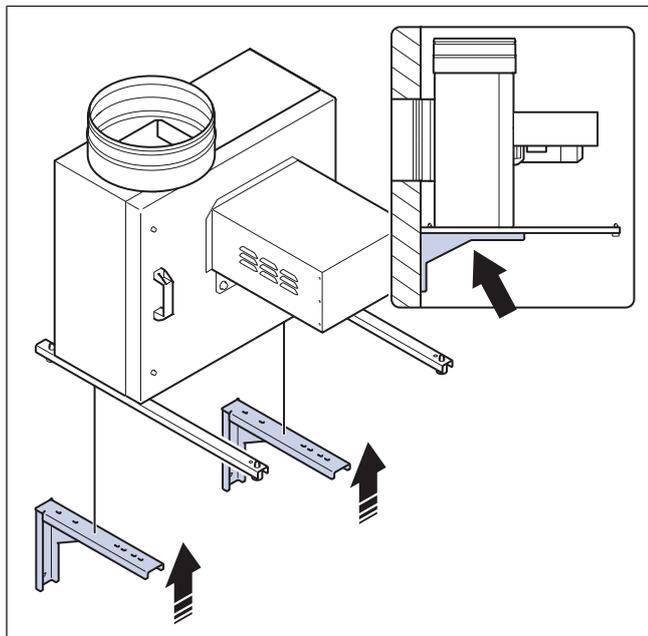
Risk of damage to the product if there is much water that cannot drain.



- 2 If wall brackets are used, install the wall brackets.

Note:

Wall brackets for installation on walls are available as accessories.

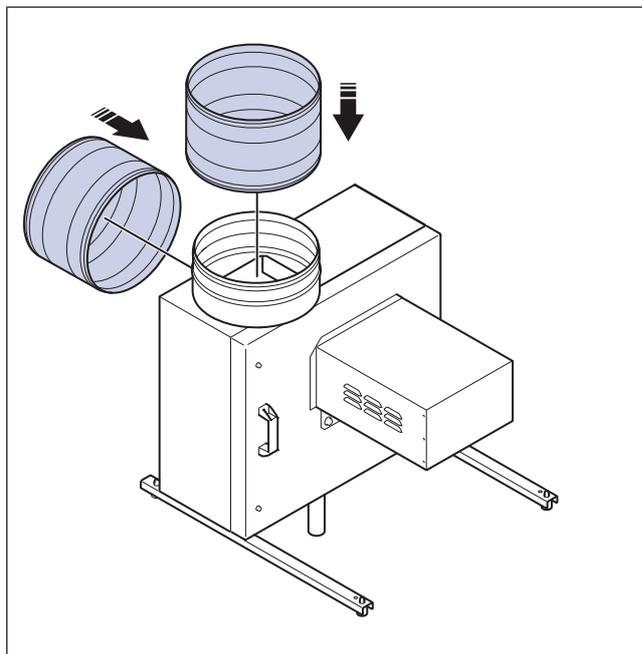


4.2.1 To connect the ducts to the product

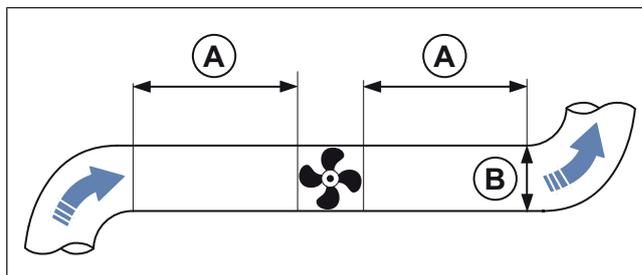
- 1 Put the ducts on the duct connections of the product.

Note:

Systemair recommends to use flexible connections or FK fast clamps to attach the duct to the product. Flexible connections and FK fast clamps are available as accessories.



- 2 Tighten the fast clamps around the duct and the product with the screws that are supplied with the fast clamps. Make sure that there is a distance between the duct and the product to decrease vibrations transmitted from the product to the duct system.
- 3 If you install the product near a duct bend, do these steps to prevent vibrations, unwanted noise and decreased air pressure:
 - a. Measure the distance (A) between the product and the duct bend.
 - b. Make sure that the distance (A) is a minimum of 2.5 x the diameter (B) of the duct system. For circular ducts, (B) is the nominal diameter. For rectangular ducts, (B) is the hydraulic diameter.



5 Electrical connection

5.1 To do before the electrical connection

- Make sure that the electrical connection agrees with the product specification on the motor name plate.
- Make sure that the environment for electrical connection is clean and dry.
- Make sure that the wiring diagram that is included with the supply of the product agrees with the terminals in the connection box.

5.2 To connect the product to the power supply

- Complete the electrical connection for the motor. Refer to the motor wiring diagram that is included with the product.
- Make sure that the cross section of the protective earthing is equal to or larger than the cross section of the phase conductor.
- Install a circuit breaker in the permanent electrical installation, with a contact opening of a minimum 3 mm at each pole.
- If a residual current device (RCD) is installed, make sure that it is an all-current sensitive RCD. Consider if the product has a frequency converter, uninterruptible power supply (UPS), or an EC motor. EC motors have a leakage current to earth that is ≤ 3.5 mA.

5.3 Speed controller for EC motors

- EC motors are controlled through a stepless 0–10 V signal.
- Do not use power supply for the speed controller.
- Refer to [12.3 Wiring diagrams](#) and the instruction manual for the external speed controller.

5.4 Motor protection for EC motors

EC motors have an integrated motor protection. Reset the motor protection by disconnecting the fan from power supply for 60 seconds.

5.5 Speed controller for AC motors

Note:

The speed controller alternatives are different for different motor types. Make sure that your motor is compatible with the speed controller type before you use it.

The speed can be controlled with a frequency converter if the installed frequency converter has built in all-pole sine filter and shielded cables are not needed.

5.6 To install motor protection for AC motors

- If the product has an built in motor protection, reset by disconnecting the product from power for 60 seconds.
- If the motor has temperature monitors such as thermal contacts (TK) or thermistors lead out into the terminal box, these must always be connected in the control circuit using appropriate motor protection.
- Make sure that an overheated motor cannot start again automatically when it becomes cool.
- Install the motor cables and the temperature monitor apart.
- If the motor does not have temperature monitors, install a motor protection switch.

6 Commissioning



Caution

- If strong vibrations occur during commissioning, immediately increase or decrease the fan speed until the vibrations are decreased. Continuous strong vibrations can cause damage to components.
- Do not increase the fan speed to a higher rpm value than the maximum value that is given on the name plate.

The commissioning report is found at www.systemair.com.

6.1 To do before the commissioning

- Make sure that the installation and electrical connection are correctly done.
- Visually examine the product and accessories for damage.
- Make sure that the safety devices are correctly installed.
- Make sure that there are no blockages in the air inlet and the air outlet.
- Make sure that installation material and unwanted objects are removed from the product and the ducts.

6.2 To do the commissioning

- 1 Set the installed safety switch in the OFF position.
- 2 If it is possible to get access to the fan impeller, do the steps that follows:
 - a. If it is necessary, remove parts of the installation.
 - b. Turn the fan impeller by hand and make sure that it turn easily.
 - c. Record the result in the commissioning report.
- 3 Make sure to turn the product in a direction that agrees with the related arrow on the product.
 - a. Record the result in the commissioning report.
- 4 If you removed parts of the installation to get access to the fan impeller, install the removed parts again.
- 5 Set the installed safety switch in the ON position.
- 6 Start the product.
- 7 Set the minimum operation speed.
- 8 Increase the operation speed gradually to the maximum operation speed.
 - a. Examine the vibrations in the casing and the bearing areas at all speed levels.
 - b. Make sure that the vibrations agree with the specifications in ISO 14694.
 - c. Make sure that none of the speed levels cause unwanted noise in the product.
 - d. Record the result in the commissioning report.
- 9 Record the necessary data in the commissioning report.

7 Operation



Caution

EC motors must be set to ON/OFF via the control input. To stop the product via mains supply decreases the life time of the motor. Systemair recommends to install external speed controller for easy access to control the input signal.

7.1 To start a product with an EC motor

- 1 Make sure that the 0–10 V signal is set to “0” with the speed controller.
- 2 Set the installed safety switch in the ON position and wait 5 seconds.
- 3 Adjust the fan speed with the 0–10 V signal speed controller. If an external speed controller is not installed, adjust the fan speed directly with the integrated potentiometer.

7.2 To stop the product

- 1 Set the installed speed controller in the OFF position. Refer to the instruction manual for the installed speed controller.
- 2 Set the installed safety switch in the OFF position.

7.2.1 To stop the product in an emergency

- Set the installed safety switch in the OFF position.

7.3 To start a product with an AC motor

- 1 Set the installed safety switch in the ON position.
- 2 Install the external speed controller. Refer to the instruction manual for the installed speed controller.

8 Maintenance



Warning

Set the installed safety switch in the OFF position before you do the maintenance unless the instructions tell you differently. Make sure that the safety switch is not accidentally set in the ON position.

8.1 Maintenance schedule

The intervals are calculated from continuous operation of the product.

Maintenance task	Usual operation conditions		Unusual operation conditions. ¹		
	Each 6 months	Each year	Each 3 months	Each 6 months	Each year
Visually examine the product and its components for damage, corrosion and dirt.		X		X	
Examine the fan impeller for damage and imbalance.		X		X	
Clean the product and the ventilation system.	X		X		
Do a check of all fasteners and make sure that they are fully tightened.		X			X
Make sure that the product and its components are correctly operated.	X			X	
Measure the power consumption and compare the result with the information on the name plate.		X		X	
If vibration dampers are installed, make sure that they operate correctly and examine them for damage and corrosion.		X			X
Make sure that the electrical protective equipment and the mechanical protective equipment operates correctly.		X			X
Make sure that you can read the name plates of the product.		X		X	
Examine all cable connections for damage. Make sure that the cable glands are tight against the cables.		X			X
If flexible connections are installed, examine them for damage.	X			X	

1. The unusual operation conditions are classified as follows: If a stable ambient temperature is higher than 30 °C or lower than -10° C, if the temperature changes are large or if very contaminated air is transported.

8.2 To clean the product



Caution

- Do not clean the product with a high-pressure washer.
- Do not clean the product with steel brushes or sharp objects.
- Do not bend the fan impeller blades.
- Be careful not to move the balance weights on the fan impeller.

- Remove dirt from the fan and the duct.
- If access to the fan impeller is possible, clean the fan impeller with a moist cloth or soft brush.

8.3 Spare parts

- When you send an order for spare parts, include the serial number of the product. The serial number is found on the name plate.
- For more information about spare parts, contact technical support.
- Always use spare parts from Systemair.
- To find spare parts, refer to the scannable code on the name plate.

9 Troubleshooting

Note:

If you cannot find a solution to your problem in this section, speak to Systemair technical support.

Problem	Cause	Solution
The product does not operate smoothly.	The fan impeller is not correctly balanced.	Speak to Systemair technical support.
	There is dirt on the fan impeller.	Clean the fan impeller carefully. Refer to 8.2 To clean the product .
	The fan impeller has damages or deformations because the transported air contains aggressive media.	Speak to Systemair technical support.
	The fan impeller does not turn in the correct direction.	Make sure that the electrical connection is correctly done.
	The fan impeller has deformations because of too high temperatures.	<ul style="list-style-type: none"> Replace the fan impeller. Make sure that the temperature of the transported air is not higher than the value on the name plate.
	There are unusually strong vibrations in the product or the duct system.	Make sure that the product is correctly installed. Do a check of the duct system.
	The product is operated in a resonant frequency range.	Increase or decrease the fan speed until the product operates smoothly. Refer to 6 Commissioning .
The air output is not sufficient.	The fan impeller does not turn in the correct direction.	Make sure that the electrical connection is correctly done.
	The electrical connection is not correctly done.	Make sure that the electrical connection agrees with the wiring diagrams.
	The air pressure is too low because of incorrect installation.	Do the necessary changes in the duct system and installed components to increase the air pressure. Refer to 6 Commissioning .
	The spring return damper on outdoor or exhaust duct is closed or not fully open.	Adjust the spring return damper.
	There is blockage in the air inlet or the duct system.	Remove the blockage.
	The product is not applicable for the installation location.	Make sure that the product is applicable for the installation location.
	The motor power is decreased because of too high temperature in the motor. Note: This is applicable for EC motors only.	<ul style="list-style-type: none"> Do a check of the ambient temperature. Make sure that the space around the motor is sufficient to keep the temperature down.
There is unusual noise when the product starts or operates.	There is strain in the connections of the duct system.	Loosen the connections, align the parts of the duct system correctly and tighten the connections.

Problem	Cause	Solution
Thermal contacts, PTC or resistors are released.	The fan impeller does not turn in the correct direction.	Make sure that the electrical connection is correctly done.
	A phase loss occurred.	If the motor is a 3-phase motor, make sure that no phase is missing. Note: This is not applicable for EC motors.
	The motor is overheated.	<ul style="list-style-type: none"> Do a check of the motor cooling impeller. If it is possible, measure the resistance to do a check of the motor winding.
	The capacitor is not connected or not correctly connected. Note: This is not applicable for EC motors or 3-phase AC motors.	Connect the capacitor correctly. Refer to the included motor wiring diagram.
	There is blockage in the motor.	Speak to Systemair technical support.
The fan speed does not get the nominal value.	Defective motor winding.	If it is possible, measure the resistance to do a check of the motor winding.
	The speed control is not correctly set.	Set the speed control correctly.
	The fan impeller cannot turn freely because of mechanical blockage.	Remove the blockage.
	Phase loss occurs.	If the motor is a 3-phase motor, make sure that no phase is missing.
The motor does not rotate.	A component in the power supply is defective.	Do a check of the power supply. Replace defective components and connect the power supply again.
	The electrical connection is not correctly done.	Make sure that the electrical connection agrees with the wiring diagrams.
	The motor protection is released because the motor is overheated.	Let the motor become cool. Reset the motor protection. Find the cause of the overheated motor.
	A phase loss occurred.	If the motor is a 3-phase motor, make sure that no phase is missing.
The electronic components or the motor is overheated.	The motor is overloaded or the ambient temperature is too high.	Let the motor become cool. Reset the motor protection. Find the cause of the overheated motor.
	The motor is overloaded.	Make sure that the product is applicable for the installation location.
	The ambient temperature is too high.	Make sure that the product is applicable for the installation location.
	The cooling of the product is not sufficient.	Make sure that the space around the motor is sufficient to keep the temperature down.

10 Disposal

The product follows the WEEE directive. This symbol on the product or the packaging of the product shows that this product is not domestic waste. The product must be recycled at an approved disposal location for electrical and electronic equipment.



10.1 To disassemble and discard the parts of the product

- 1 Disconnect and disassemble the product in the opposite sequence of electrical connection and installation.
- 2 Recycle the product parts and the packaging at an applicable disposal location.
- 3 Obey the local and national requirements for disposal.

11 Warranty

For warranty claims, send a written maintenance plan and the commissioning report to Systemair. The warranty is only applicable for these conditions:

- The product is correctly installed and operated.
- Motor protection is used.
- The instructions in the data sheets are obeyed.
- Maintenance instructions are obeyed.
- A product that is not operated continuously is operated for a minimum of 1 hour each month.

12 Technical data

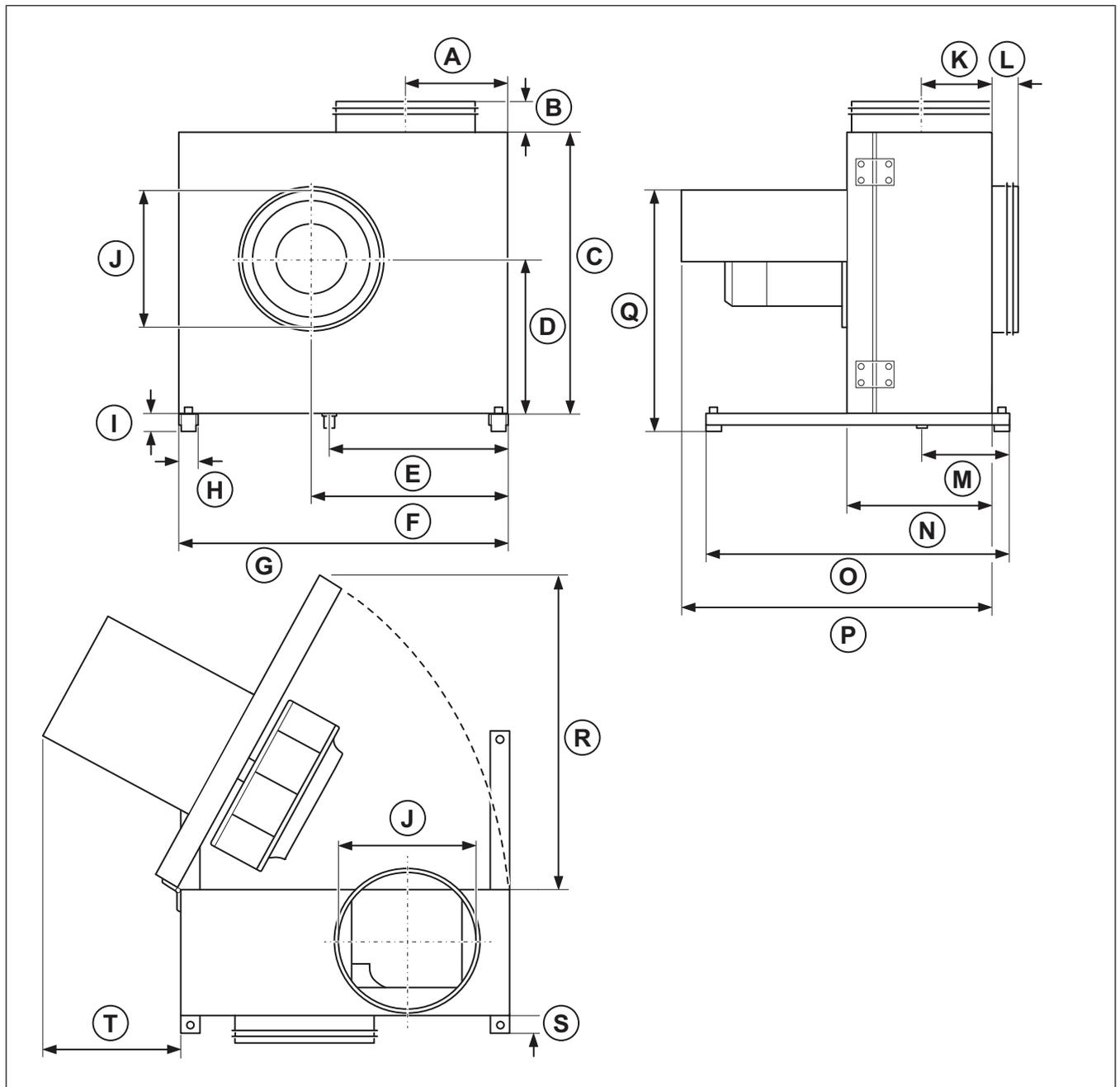
12.1 Technical data overview

Maximum temperature of transported air, °C	120
Sound pressure, dB	Refer to the data sheet in the online catalogue at www.systemair.com .
IP class	
Voltage, current, frequency, enclosure class, weight	Refer to the name plate. Refer to 1.5 Name plate for more information.
Motor data	Refer to the motor name plate or the technical documentation from the motor manufacturer.

12.2 Product dimensions

Note:

If the unit of measure is not specified, the dimensions are given in millimetres.



The dimensions are split over 2 separate tables. See Table 2 for measures K-T

Table 1

	A	B	C	D	E	F	G	H	I	ØJ
KBT 160	128	43	384	212	227	249	437	36	32	160
KBT 180	134	43	412	224	244	272	470	36	32	180
KBT 200	143	43	445	250	273	293	510	36	32	200
KBT 225	147	43	455	256	282	301	522	36	32	225
KBT 250	161	43	500	280	305	333	576	36	32	250
KBT 280	171	43	537	296	331	359	625	36	32	280

Table 2

	K	L	M	N	O	P	Q	R	S	T
KBT 160	100	43	100	209	470	473	345	437	54	320
KBT 180	105	43	95	218	470	483	366	470	54	320
KBT 200	115	43	113	233	470	617	392	510	54	440
KBT 225	121	43	121	251	620	635	412	522	54	440
KBT 250	140	43	139	272	620	656	436	576	54	440
KBT 280	155	43	139	293	620	677	462	625	54	440

12.3 Wiring diagrams

Abbreviation in wiring diagram	Cable colour
RD	Red
YE	Yellow
BU	Blue
WH	White
GN	Green
BN	Brown
BK	Black
GR	Grey
GY	Green/Yellow

12.3.1 Wiring diagrams for AC fans

KBT fans	3-phase 230 V	3-phase 400 V
KBT 160 D4 IE2		
KBT 200 D4 IE2		
KBT 280 D4 IE2		
KBT 225 D4 IE3		
KBT 250 D4 IE3		
KBT 280 D4 IE3		

12.3.2 Wiring diagrams for EC fans

KBT EC fans	1-phase 230 V
KBT 160 EC	<p style="text-align: center;"> A B C D E F G H I L N ⏚ 4-20mA PWM Tacho 10V 0-10V GND BN BU GY RD BN WH YE BU BK </p>
KBT 180 EC	
KBT 200 EC	
KBT 225 EC	
KBT 250 EC	

- A. Mains supply
- B. Neutral
- C. Earth
- D. DC current
- E. PWM signal input with 80 Hz and voltage 10 to 24 Vpk.
The motor speed can be set via the duty cycle. When the duty cycle is changed from 10– 95% the motor change speed from 0% to 100% of the maximal speed.
- F. Tacho
- G. 10 V DC (Max 25 mW or 2.5 mA)
- H. DC voltage (2–10V)
- I. Ground

12.3.3 Wiring diagrams for speed controller for AC motors

Note:
The selection of electrical accessories must be done in line with the technical parameters of the product.

RE	
Manual 5-step transformer.	<p style="text-align: center;">RE 1,5 RE 3 RE 5 RE 7</p> <p style="text-align: center;"> ~ N N ~ ⏚ ⏚ ⏚ N ~ A B C D </p>

- A. Relay connection. There is always 230 V between ~ and N when the transformer knob is in one of the positions 1–5.
- B. Mains supply
- C. Earth
- D. Fan

REE — Thyristor	
REE 1 and REE 2 - Surface mounting or with flush mounting casing included.	
REE 4 - Surface mounting.	
<p>Note:</p> <p>Starting currents must be considered when you select the speed controller type. Products that are used with this speed controller must have a built-in overheating protection and must be designed for thyristor speed control.</p>	

- L: the connection with cutting function on the speed control.
- (L): the connection without cutting function.

REU	
Manual 5-step transformer for high/low speed operation. Used together with a change-over contact, for example a timer or a thermostat.	<p>REU 1,5 REU 3 REU 5 REU 7</p>

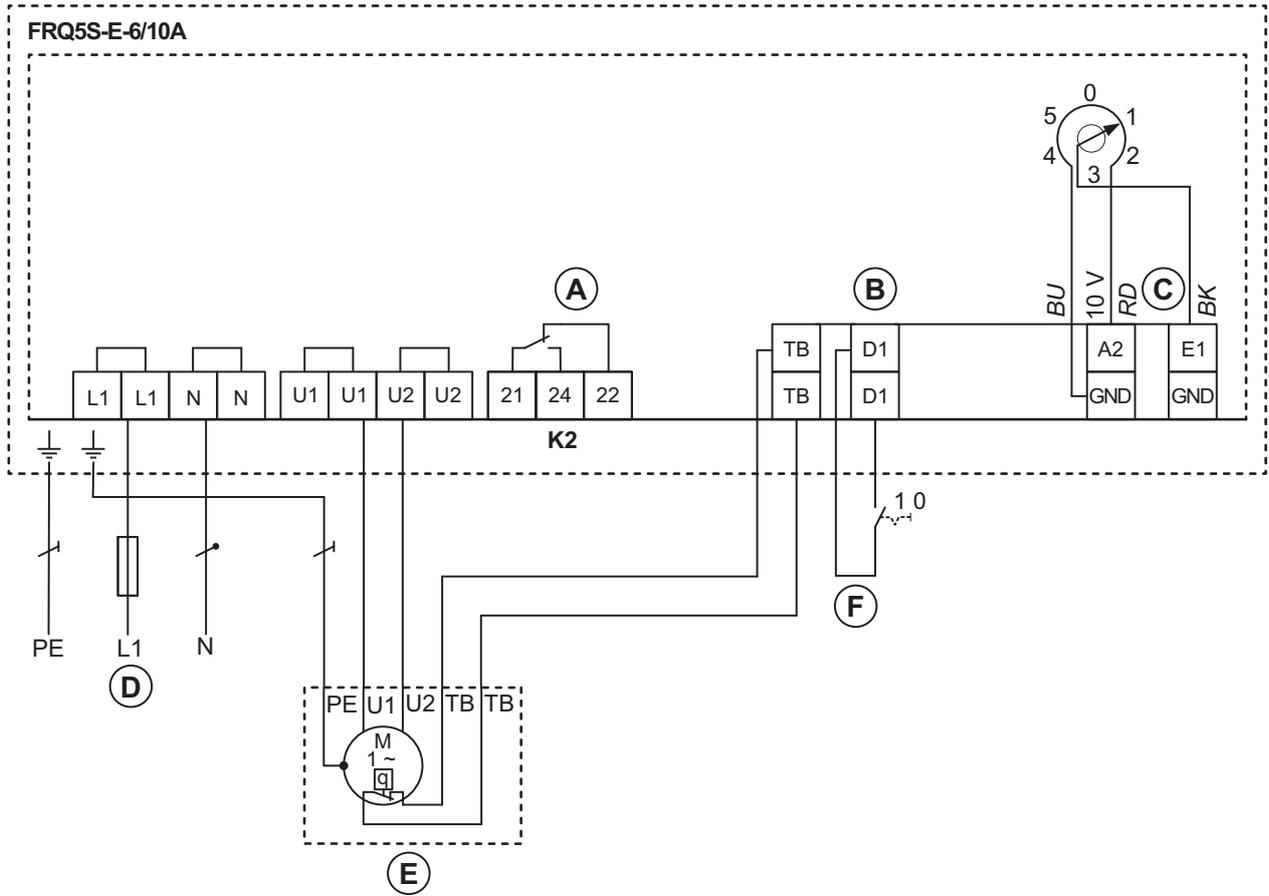
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. External change-over contact 2. Left selector switch 3. Right selector switch | <ol style="list-style-type: none"> A. Fan B. Earth C. Mains supply |
|--|---|

RTRE	
Manual 5-step transformer with motor protection.	<p>RTRE 1,5 RTRE 3 RTRE 5</p> <p>RTRE 7 RTRE 12</p>

- Relay connection. There is always 230 V between ~ and N when the transformer knob is in one of the positions 1-5.
- Mains supply
- Earth
- Fan
- Thermostat
- Motor protection. If the motor protection is not in use, Tk must be looped together.

FRQ5S-E-6A

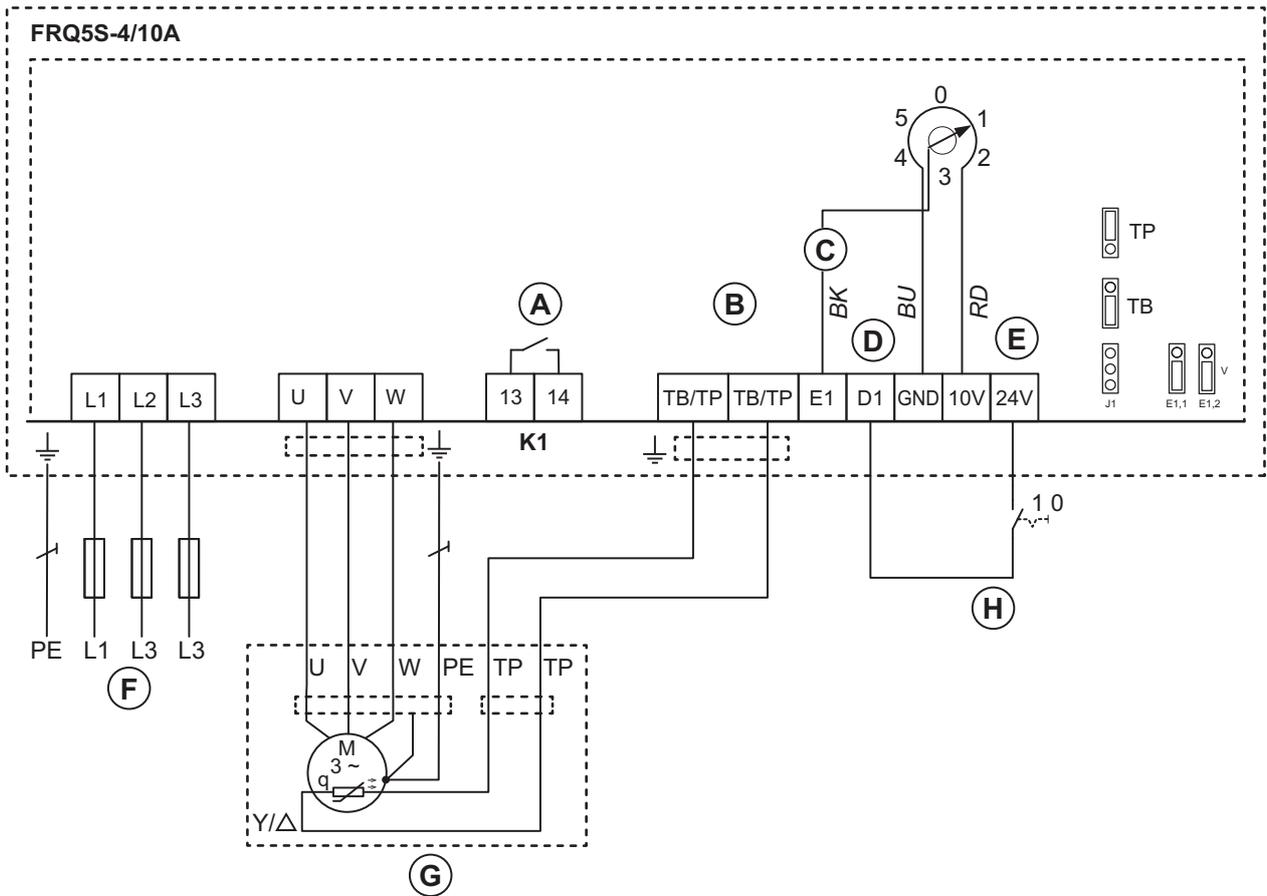
Frequency converter with built-in all-pole sine filter and 5-step switch.



- A. Contact rating, maximum AC 250 V/2 A
- B. Digital In 1
- C. Analog In 1
- D. Mains supply, 1-phase 208...277 V, 50/60 Hz
- E. Motor with internal thermal contacts
- F. OFF/ON

FRQ5S-4A

Frequency converter with built-in all-pole sine filter and 5-step switch.



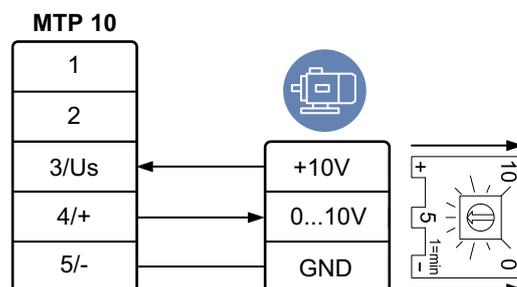
- A. Contact rating, maximum AC 250 V/2 A
- B. Thermistor (TP) or thermostat (TB) In
- C. Analog In 1
- D. Digital In 1
- E. 24 V Out
- F. Mains supply, 3-phase 208...480 V, 50/60 Hz
- G. Motor with internal thermistors
- H. OFF/ON

12.3.4 Wiring diagrams for speed controllers for EC motors

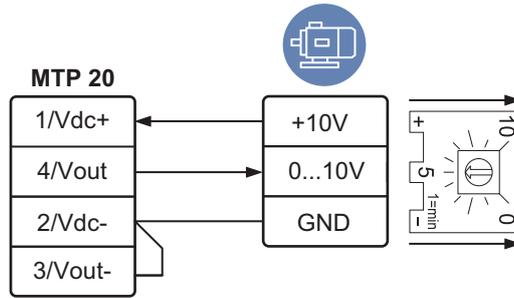
Note:

An internal potentiometer is installed on the terminal block from the factory. Remove the internal potentiometer when you use an external speed controller for the EC fan.

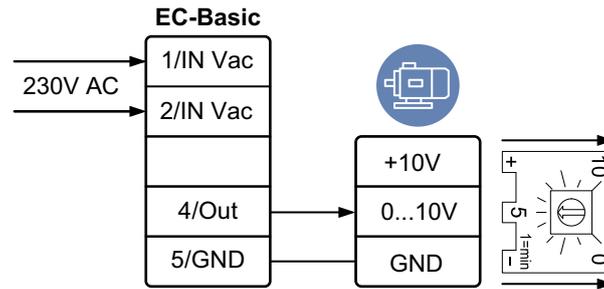
MTP 10



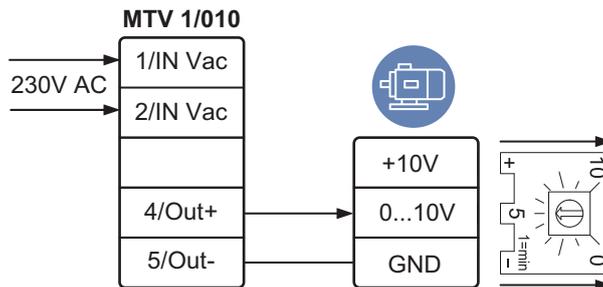
MTP 20



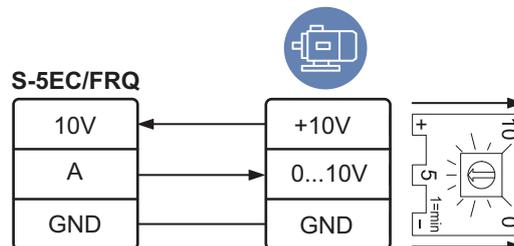
EC-Basic



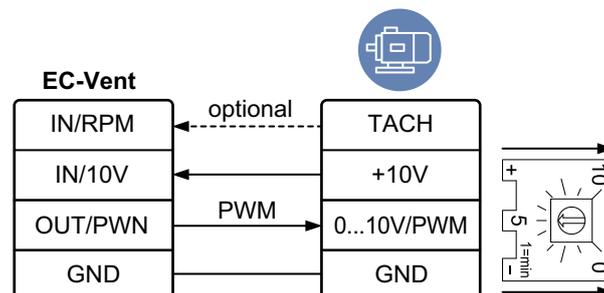
MTV-1/10



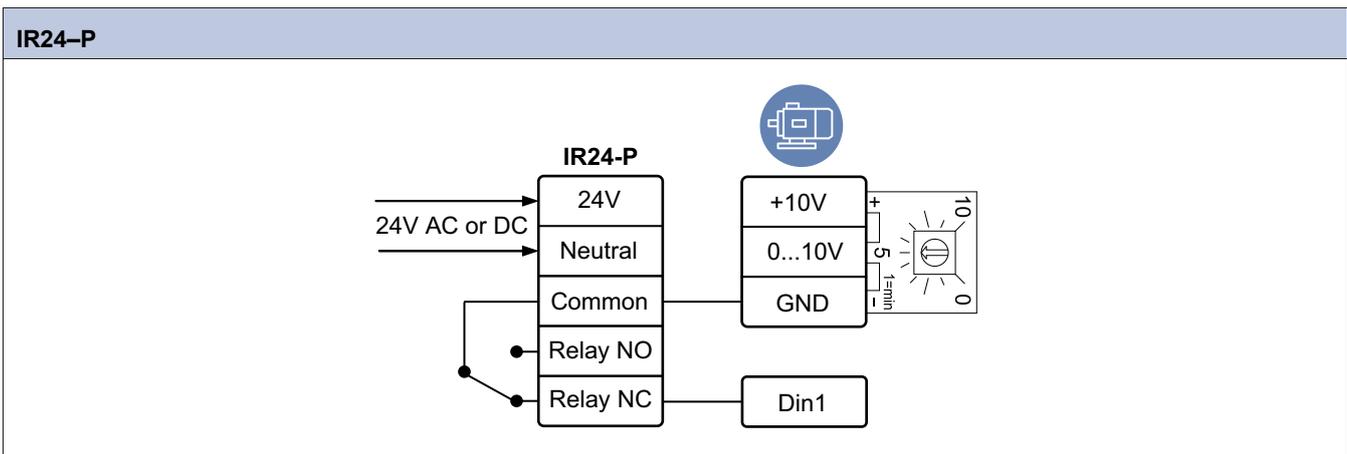
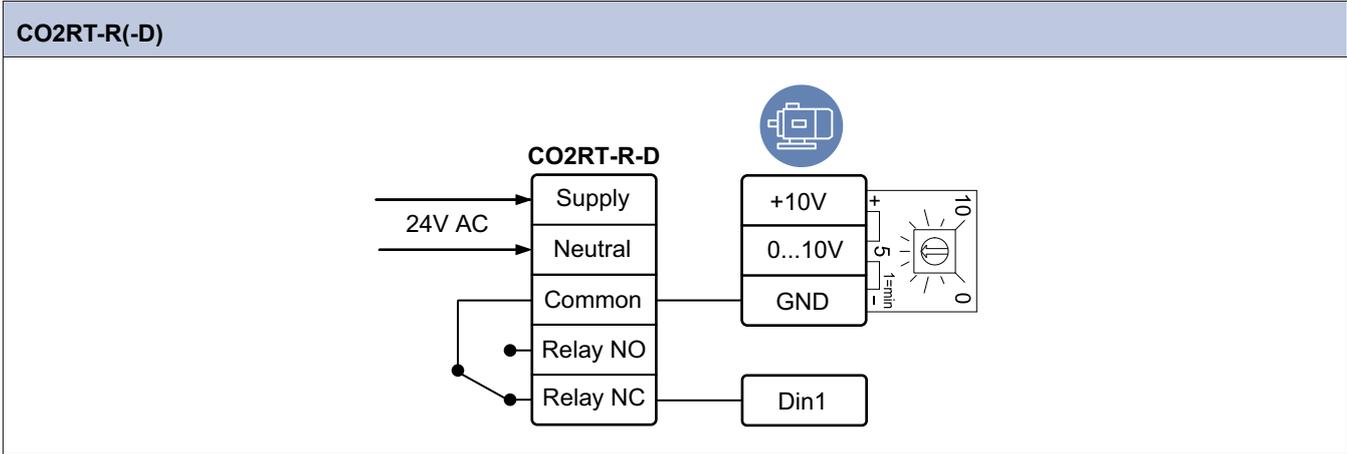
S-5EC/FRQ



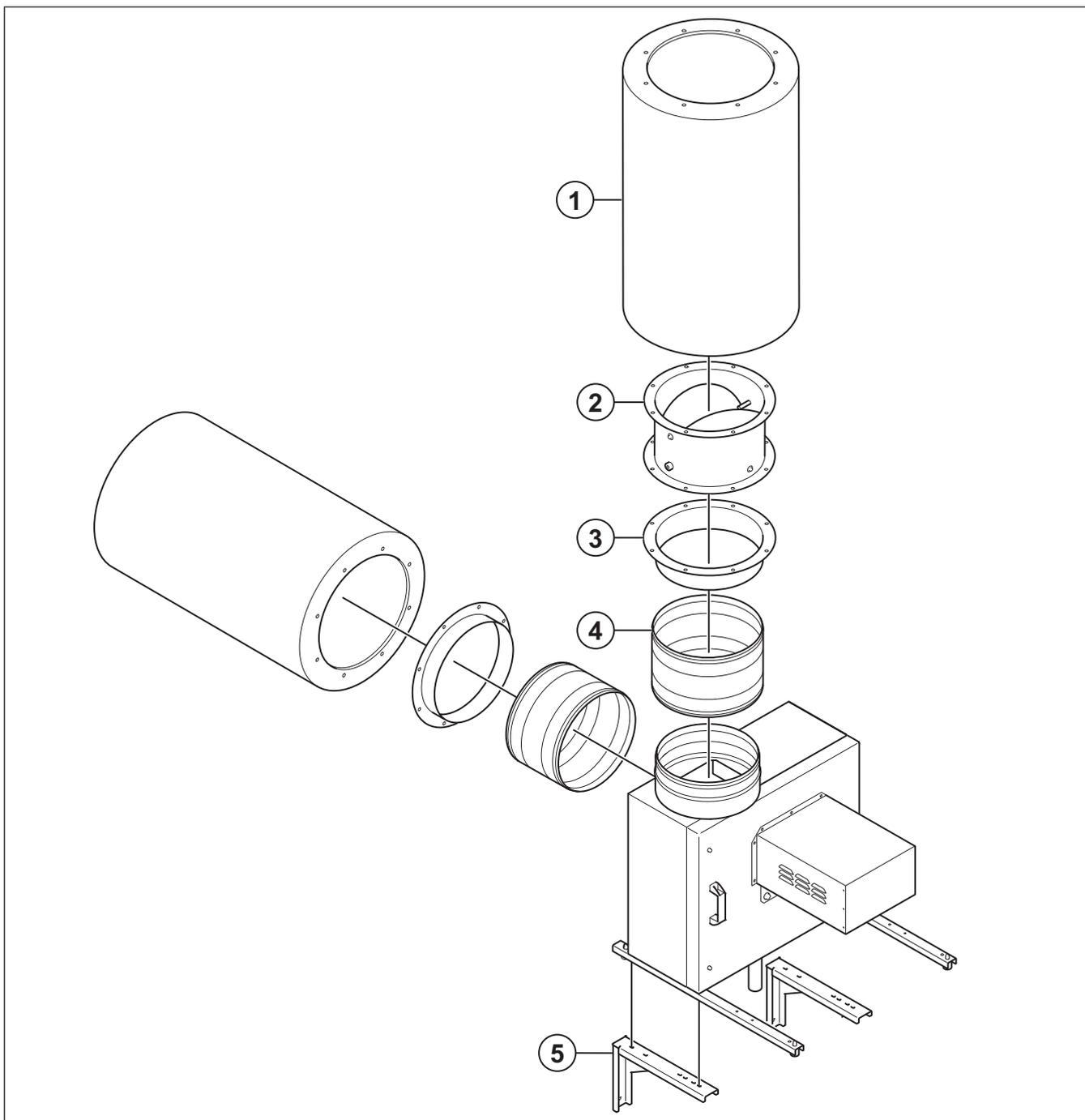
EC-Vent



12.3.5 Wiring diagrams for ON/OFF controls for EC motors



13 Accessory overview



- 1. RSA: Silencer
- 2. LRK: Airflow shutter
- 3. UGF: Transition flange

- 4. ASF: Flexible connection
- 5. WBK: Wall bracket

Note:

The selection of accessories shown are not supplied with the product. For more information and other available accessories, refer to www.systemair.com or speak to Systemair technical support.

14 EU Declaration of Conformity

We, the manufacturer

Manufacturer	Systemair Sverige AB
Address	Industrivägen 3 739 30 Skinnskatteberg Sweden

declare under our sole responsibility that the products

Machine	Thermo box fan
Type/Model	KBT

fulfils the relevant provisions of following directives and standards

Machinery Directive 2006/42/EC

EN ISO 12100:2010

Safety of machinery – General principles for design - Risk assessment and risk reduction

EN ISO 13857:2019

Safety of machinery – Safety distances to prevent hazard zones being reached by upper or lower limbs

EN 60204-1:2018

Safety of machinery – Electrical equipment of machines – Part 1: General requirements

EN 60335-1:2012

Household and similar electrical appliances – Safety Part 1: General requirements.

EN 60 335-2-80:2003

Household and similar electrical appliances – Safety – Part 2-80: Particular requirements for fans.

EN 50106:2008

Safety of household and similar appliances – Particular rules for routine tests referring to appliances under the scope of EN 60 335-1.

EN 60529:2014

Degrees of protection provided by enclosures (IP Code).

Directive electromagnetic compatibility (EMC) 2014/30/EU

EN 62233:2008

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

EN 61000-6-2:2005

Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments.

RoHS Directive 2011/65/EU

EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Persons authorized to compile the technical file:



Tomas Angelhag

Head Of Engineering

This declaration relates exclusively to the machinery in the state in which it was placed on the market and excludes components which are added or operations carried out subsequently by the final user.

Skinnskatteberg, Sweden 2024-02-20



Sofia Rask

Managing Director

15 UK Declaration of Conformity

We, the manufacturer

Manufacturer	Systemair Sverige AB
Address	Industrivägen 3 SE-73930 Skinnskatteberg Sweden

declare under our sole responsibility that the products

Machine	Thermo box fan
Type/Model	KBT

fulfils the relevant provisions of following directives and standards

Supply of Machinery (Safety) Regulations 2008

EN ISO 12100:2010

Safety of machinery – General principles for design - Risk assessment and risk reduction

EN ISO 13857:2019

Safety of machinery – Safety distances to prevent hazard zones being reached by upper or lower limbs

EN 60204-1:2018

Safety of machinery – Electrical equipment of machines – Part 1: General requirements

EN 60335-1:2012

Household and similar electrical appliances – Safety Part 1: General requirements.

EN 60 335-2-80:2003

Household and similar electrical appliances – Safety – Part 2-80: Particular requirements for fans.

EN 50106:2008

Safety of household and similar appliances – Particular rules for routine tests referring to appliances under the scope of EN 60 335-1.

EN 60529:2014

Degrees of protection provided by enclosures (IP Code).

Electromagnetic Compatibility Regulations 2016

EN 62233:2008

Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

EN 61000-6-2:2005

Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments.

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

EN IEC 63000:2018

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Persons authorized to compile the technical file:



Tomas Angelhag

Head Of Engineering

This declaration relates exclusively to the machinery in the state in which it was placed on the market and excludes components which are added or operations carried out subsequently by the final user.

Skinnskatteberg, Sweden 2024-02-20



Sofia Rask

Managing Director



Systemair Sverige AB
Industrivägen 3
SE-739 30 Skinnskatteberg

+46 222 440 00
mailbox@systemair.com
www.systemair.com

© Copyright Systemair AB
All rights reserved
EOE

Systemair AB reserves the rights to alter their products without notice. This also applies to products already ordered, as long as it does not affect the previously agreed specifications.