



# OPERATION AND MONTAGE MANUAL

## CENTRIFUGAL DUCT FANS

IBF/EC-...

Venture Industries Sp. z o.o. is not responsible for any damage caused by improper use of the fan and reserves the right to modify this document without informing the user.

## INTRODUCTION

This manual covers fans in standard version, listed on the title page and it is source of information necessary for safe and proper use. Read this manual carefully before any use of the device, comply with its requirements and keep it in place with easy access for users and service. In case of any doubts about use of the fan, please contact with manufacturer.



### After receiving the device - check

- whether the device is in compliance with order,
- whether the data on the rating plate are the same as desired (voltage, frequency, etc.)
- whether fan was not damaged during transport (e.g. there are no dents/cracks, impeller rotates freely)

In case of any irregularities, contact with your dealer or Venture Industries Sp. z o.o. service.

## 1. GENERAL INFORMATION

### 1.1 Information about device

- The fan is a machine not completed within the meaning of the Machinery Directive 2006/42/WE (please refer to the manufacturer's declaration - Appendix D). Information regarding to compliance with Commission Regulation (EU) No. 327/2011 (ERP Directive - 2009/125/WE) is located on the rating plate fan. Further details can be found on the manufacturer website ([www.venture.pl](http://www.venture.pl)).
- Fan is designed for use by trained, qualified adult persons. The fan is not designed for household and similar use.
- **The device is designed to transport clean air or air with low level of contamination.** Do not transport the explosive mixtures, liquids, viscous substances, substances with high humidity, substances that cause erosion, solid elements, and chemically reactive compounds - we recommend the use of suitable filters. The maximum temperature of transported medium is specified on the fan nameplate, the minimum is -15°C.
- The fan is designed for indoor use. It must be protected from effects of the weather conditions (e.g. snow, rain, excessive sun radiation, lightning). The fan surroundings cannot contain explosives atmospheres, substances causing abrasion, chemically aggressive substances and viscous substances. The maximum ambient temperature is specified on the fan nameplate, minimum is -15°C (or lower – if confirmed by the manufacturer).
- The fan with EC type motor (electronically commutated) has built-in speed regulator (see chapter 4.2 - Guidelines for regulation) with soft start and protections against effects of blocked impeller, overload, overheating, voltage drop or overvoltage.
- The fan has a hinged service flap (located on one side of the housing). In order to gain access to the inside of the fan interior, pick up the flap after releasing fasteners.
- The fan has following marks:
  - warnings and information (optional): information about risk associated with use of the fan and about correct fan installation and operation
  - fan nameplate with: logo and manufacturers name (Venture Industries Sp. z o.o.); full fan name; basic information – supply voltage and frequency, rated current, maximum temperature of ambient and transported medium (**Temp. max.** or **Temp. ambient max.**), weight (**Weight**), type of work; type of fan motor (**Motor**); information according to conformity with ERP Directive; article no. (**Art. No.**) serial no. (**No.**)
  - direction arrows: information about correct direction of impeller rotation and proper flow direction from inlet to outlet.

### 1.2 General risk and guidelines

During entire fan life cycle pay particular attention to **the risk and guidelines** presented below:

#### 1.2.1 moving parts

- The fan has moving elements (motor impeller set). Do not use the fan when not installed in the duct or without installed proper protection structures (e.g. guards on inlet and outlet) protecting from contact with moving elements. Prevent from opening the fan by unauthorized persons.

#### 1.2.2 suction power

- The fan has high suction power. Clothing, hair, assembly elements, items, and even body elements can be easily sucked in. Make sure that before start and during operation of the fan, near the fan inlet there is no person and items which can be sucked. It is forbidden to approach the fan in "loose" clothing or reaching toward inlet of working fan. Use appropriate inlet covers and if necessary – use relevant protective clothing (e.g. headgears).

#### Warning: Risk of serious injury.

#### 1.2.3 parts thrown with a high speed

- The air at the outlet of the fan has high energy. Elements sucked or placed inside the fan can be thrown with a high speed. In case of damage or improper operation, parts (with high kinetic energy) can be thrown out from fan. It is forbidden to look into the fan reaching toward inlet and outlet of the working fan. Make sure that before start and during operation of the fan there is no person on inlet side and in stream of transported medium. Use fan with proper safety constructions, install in duct with inlet and outlet covers.

#### 1.2.4 sharp edges

- During manufacturing the fan sharp edges was grinded. However the fan may have edges touching which may cause injury. We recommend the use of relevant protective gloves.



#### 1.2.5 inertia

- Conveying equipments and fan support structures must be selected proper to the fan weight and ensure that fan would not move. Do not approach the hanging load during transport.

• The fan has a high inertness. In case of no permanent fix turning on the fan will lead to it uncontrolled movement. The unit can work only after proper installation.

• Uncontrolled start of the fan can create hazard situation. Prevent against unexpected start of the fan – see also 1.2.6.

#### 1.2.6 noise

• The sound pressure level is not the same over the fan whole range. We recommend to check the sound pressure level and if necessary use the silencer and relevant sound protection.

#### 1.2.7 used materials

• In case of fire or transport of improper medium – fan parts can generate fumes hazardous to health. See also 1.2.5.

#### 1.2.8 environment

• The fan can make over and under pressure. In areas where a specified air pressure and the quantity of air are required (e.g. in places with combustion) make sure that there would be no deficit/excess of air. Ensure that the installation to which the fan is connected withstand the under/over pressure which can be made by fan (including work with forbidden parameters).

#### 1.2.9 high temperature

• The housing and fan elements are not insulated and take the temperature of the transported medium. During transport the temperature of medium and fan components may increase. Electric motor may heat up to high temperatures (especially when overloaded/overheated – caused by e.g. blocking the impeller, too low supply voltage, too high medium temperature). The appropriate steps should be made to prevent from fire and burns caused of high temperatures.

**In case of fire – to extinguish a fire use fire extinguisher approved for electrical equipment and follow recommendation of fire department.**

#### 1.2.10 electricity

• Before any work on the fan (e.g.: installation, maintenance and review, dismantling) the power supply must be completely disconnected (all poles, check there is no voltage, disconnecting switch with minimum 3mm insulation gap).

• Make sure that power supply won't be connected during the work on the unit, and that the moving parts do not move. It is recommended to wait 3 minutes after disconnecting unit before open the fan cover.

**Warning: risk of electric shock.**

• The appropriate steps should be made to prevent from electric shock. Protect from getting access to the electric elements by unauthorized person.

#### 1.2.11 unexpected start/ connecting power supply

• Fan is not equipped with control system which blocks restart after a power shutdown or failure – the return of power supply cause in immediate start. Make sure that there will not be any dangerous and forbidden situation in case of temporary power supply failure.

• The built-in motor regulator protection turns off fan only during the failure. This protection after tripping (e.g. caused by motor temperature overload) resets automatically (e.g. after cooling down motor temperature). Make sure that there won't be any dangerous and forbidden situation after tripping motor protections.

• In case of blocking the impeller –release of impeller can provide to sudden movement. Take appropriate steps to prevent from blocking impeller, and in such case turn off power supply and review the fan (see chapter 5).

• After disconnecting power supply the fan rotating parts are still rotating for period of time under the accumulated energy. Take it into account when using the fan.

#### 1.2.12 use

• Improper installation and use may lead to damage of the device and to the dangerous situation. The unit can be installed, maintained, dismantled and used only by qualified and authorized personnel, in accordance to safety rules and current regulations in the country of use (including proper electrical authorization). Personnel need to be familiar with reactions of the fan.

• If it is necessary to remove parts of the unit (e.g. during montage or maintenance), users must be warned about the potential risk, and these parts of unit must be closed/mount after the completion of the work.

It is forbidden to use the unit if it is incomplete / disassemble.

**Warning: Risk of serious injury.**

• The device must not be exposed to radiation (such as microwave, UV, laser, x-ray).

• Any modifications of the unit are forbidden. Complicated maintenance work (such as dismantling the motor or impeller) need to be made by Venture Industries Sp. z o.o. service or with it permission. Improper assembly may lead to reduce the fan parameters, damage the unit and lead to the dangerous situation.

#### 1.2.13 explosive atmospheres

• Contact of the fan with explosive atmospheres could cause the ignition. It is forbidden to storage or use the fan with explosive atmospheres inside or outside the unit.

## 2. TRANSPORT AND STORAGE

During transport and storage follow the guidelines contained in 1 chapter and **transport and storage guidelines**.

### 2.1 transport and storage guidelines

• The fan should be transported and stored in original packaging, without excessive shocks. The device must be protected from weather conditions, transported and stored in dry, well ventilated, and free from substances harmful to the device areas. The fan cannot be transported and stored in areas with fertilizers, chlorinated lime, acids and other aggressive chemicals. Fan should be protected against foreign body entrance.

• During transport and storage protect the fan against damage (including crush).

• The unit should be lifted by the housing. Do not lift the unit by wires, terminal box or impeller.

• It is recommended that storage time not exceed one year. After long storage, check the fan (see Chapter 5).

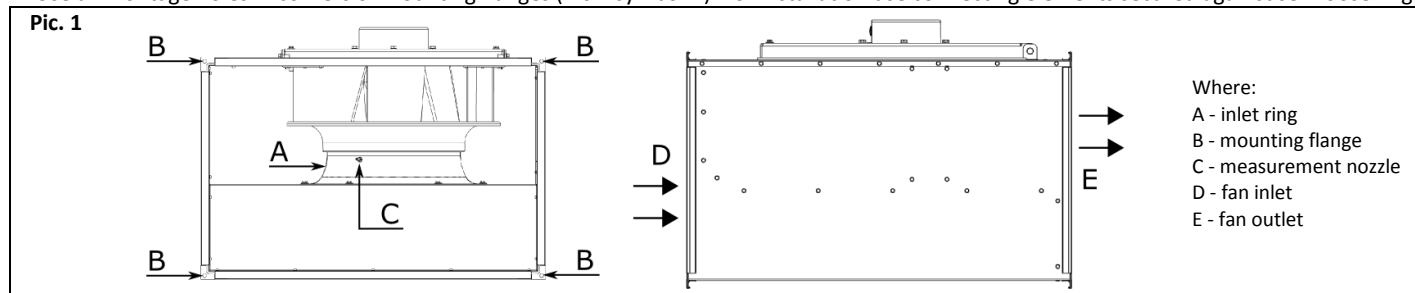


### 3. MONTAGE AND INSTALLATION

During installation follow the guidelines contained in 1 section of this instruction and **installation guidelines**.

#### 3.1 installation guidelines

- The fan is a machine not ready for use (within the meaning of the Machinery Directive 2006/42/WE - before use ensure conformity with requirements of Machinery Directive 2006/42/EC and current editions (with changes) of: EN ISO 12100, EN ISO 13857, EN 349+A1, EN ISO 13850, EN 60204-1.
- Before installation remove temporary items that protect fan during transport and storage (e.g. box, foil, caps – do not remove any guards) – Starting the fan with those items could lead to damage of the fan. Make sure that the fan is not damaged.
- The device must be mounted in the horizontal or vertical orientation of motor. The fan needs to be mounted to external constructions (brackets, hangers) supporting its weight and connected to the installation (ducts) with use of fan mounting flanges (use all montage holes).
- Use all montage holes in corners of mounting flanges (Pic.1 symbol B). For installation use connecting elements secured against self-loosening.



- The fan support construction must be able to support the fan working with the full power (start-up, breakdown, improper use should be also consider).
- The fan must not be exposed to external vibrations. It is recommended to use accessories to minimize the vibration transmitted from/to the fan.
- The fan must be after installation protected at inlet and outlet side against accidental contact with moving parts (impeller) according to ISO 13857.
- The fan must be protected against sucking and disposing of foreign elements (see 1.2.3). Girds on the inlet and outlet of the fan (duct) must comply with IP20 according to EN 60529.
- After fan mechanical installation make all electrical connections and check the impeller direction of rotation in accordance with points 3.2 and 3.3.
- The fan is equipped with measuring nozzle on the inlet ring (Pic. 1 symbol C) which allows to measure fan performance.
- Ensure that there are no foreign bodies (e.g. mounting elements, tools) inside and near of the unit, that impeller is not blocked, the fan is properly secured after installation (the cover is closed and secured, the terminal box/service switch is closed, the fastening elements are properly tightened).

#### 3.2 Electrical connection guidelines

- The fan and power supply network must be secured in accordance with local law requirements.
- Use protection against short circuits, overloads and for fans with three phase power supply - voltage failure/unbalance.
- Use appropriate protection against electric shock - it is required to connect fan grounding terminal placed inside connection box to proper grounding system.
- The electrical connection need to be made in accordance with the data on the fan and motor nameplates, motor manual (if included), proper wiring diagram and fan marking.
- Depending on the chosen speed regulation method it is needed to connect adequate devices or signal wires to speed regulation system terminals (see appendix C).
- Voltage and frequency of supply network should be as indicated on the fan nameplate. The fan has built-in speed regulator. It is forbidden to use voltage or frequency regulators to supply unit. Voltage or frequency regulation is ineffective and could lead to the fan damage.
- Use electrical wires with proper insulation and size. Wires should be placed in way that in any situation **will not touch the moving elements**, and that the water (e.g. from condensation) not flow inside the junction box. Wires should be connected to the terminal box, through properly tightened cable glands and wire fasteners.



#### 3.3 Rotor rotation direction

The fan has built-in speed regulator which do not allow to change the direction of rotor rotation, although if the impeller would rotate in incorrect direction contact with manufacturer. Direct of rotor rotation is shown by arrow on the fan casing.

## 4. USE

During fan use follow the guidelines contained in 1 section of this instruction and **use guidelines**.

Before first start of the fan follow guidelines from chapter 5.

### 4.1 Use guidelines

- Make sure that turning on of the fan does not make any risk for personnel and property.
- Fan cannot work with voltage, frequency, current higher than shown on the fan nameplate.
- The fan is designed for continuous operations (S1) – too high frequency of turning may lead to the motor regulator overheat and damage (see also chapter 4.2 Guidelines for regulation).
- In case of activation of any electrical protection, detection of damage, working with current greater than specified on the fan nameplate – unit must be immediately turned off.
- **Using of fan in dismantled/uncompleted state is forbidden, especially without covers on inlet and outlet.**
- During fan regulation – follow regulation guidelines in chapter 4.2.

### 4.2 Guidelines for regulation

- The fan has built-in speed regulator of EC type motor (see connection diagram - appendix C) allowing regulating speed in following methods:

1) maximal speed operation,

2) rotor speed proportional to input signal on the input, set by potentiometer 0-10 kΩ and internal source of 10V DC signal,

3) rotor speed proportional to input signal on the input, set by external source of analogue signal 0-10 V DC or signal 1-10 kHz PWM.

- The fan start is done over 1,0 V (10% PWM) - below this value the fan stops. For models with DIGITAL INPUT it is also needed connection signal from DC OUT output to this input to enable operating (start permission).

- For start and stop of the fan it is recommended to use input signals (DIGITAL INPUT or INPUT 0-10V). Control by cutting-off the power supply e.g. by contactor, is not recommended and in wrong conditions (responsive on/off) could lead to the fan electronic rapid wear and damage.

- Built-in controller change the fan speed proportional to the level of input analogue signal.  
The minimal speed is set by 1 V / 10% PWM signal and maximal speed by 10 V / 100% PWM signal.

- Never overload fan voltage outputs, the standard limit of load current on signal output is 2,5 mA. Limit values for no standard signal outputs are shown on connection diagrams.

- The parameters of the device (ambient and operation temperature, flow rate min and max etc.) refer to the rated speed. Too slow rotation speed can lead to the deterioration of motor cooling and cause to overheating / damage.



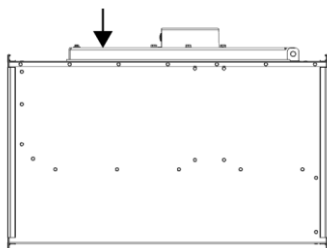
## 5. MAINTENANCE, REVIEW

During maintenance and review follow the guidelines contained in 1 chapter of this instruction and maintenance guidelines.

### 5.1 maintenance guidelines

- Fan must be subject of regular review and maintenance (point 5.2). The set between routine checks and maintenance should be determined by user, based on the observation of unit and specific conditions and actions. If irregularities are found, the device must be taken out of service and repaired.
- To clean fan use slightly damp delicate material. It is prohibited to use detergents, liquids under pressure and tools that may scratch the unit surface. After fan cleaning (after end of maintenance) turn on the fan for 30 minutes (with full speed).
- In case of long fan downtimes it should be run at least once per month for 2 hours (with full speed).
- Prevent the accumulation of dust/dirt on and inside the fan. Dirt accumulated on: grids – may reduce the fan parameters; impeller – may lose it balance; housing and motor – can reduce the cooling; hot surfaces – in extreme situations may ignite. If the device is secured by filter - filter should be regularly inspected and replaced if it pollution is too high. The dirt accumulated on the filter reduces the fan parameters.
- Ensure that there are no foreign bodies near and inside the fan, the impeller is not blocked, the unit is clean, dry and secured after maintenance and review.
- Fan motor is equipped with bearing with life expectancy 40 000 hours (ambient temperature 40°C). Bearings do not need refill lubricate.
- Excessive vibration may cause mechanical damage of the fan or it mounting construction. The vibration increase can indicate bearings damage or loss of impeller balance. Vibration value needs to be controlled, and if its growth is noticed, the reason need to be determined and device must be repaired.
- Maximum vibration value on motor cover (see Pic. 2) after fan installation cannot exceed value presented in table below:

**Pic. 2**



Rigidly mounted*		Flexibly mounted*	
peak	r.m.s	peak	r.m.s.
6.4 mm/s	4.5 mm/s	8.8 mm/s	6.3 mm/s

\*according to ISO 14694

### 5.2 Unit maintenance and review

During review and before first use of the unit or after long time period of storage attention to the following should be paid:

- accumulation of the dirt on the unit and filter (if used), state of grid / covers,
- is the device stable, not damaged, the structure is complete, moving elements can move freely,
- if there are any foreign bodies or loose elements inside the fan,
- if there is loose bearing and rotating the shaft cause in its heavy/noisy work,
- are connecting elements tightened, is fan surface without corrosion, are electrical wires not damaged,
- is the safety equipment working and property set, is shock protection effective,
- if there are leaks from the motor, overheating and vibrations.

During operations, especially after first start pay attention to:

- correct operation,
- there are no unusual noises and vibrations, leaks from the motor, overheating or vibrations,
- the grids are in proper condition,
- the fan current is not higher than show on nameplate. Exceed of current placed on the name plate could by a sign of unit damage.

## 6. REPAIR, WARRANTY

Use only original spare parts and original accessories. Fan repairs need to be made by manufacturer or after manufacturer permission.

Warranty conditions are placed in the fan warranty card.

## 7. DISMANTLING AND RECYCLING

Disconnect unit from its power supply, and dismount according to the guidelines from section 1 of this instruction. Therefore, please deposit all left-over material and packaging in their corresponding recycling containers and hand in the replaced machines to the nearest handler of this type of waste product.

**APPENDIX A - (THE DEVICE RECEIPT FORM)**

<b>Before launch</b>	Check confirmation
Type and model of fan are in accordance with the order.	
The fan is undamaged.	
There is no foreign body inside fan and the fan is clean.	
The fan is reliably and solidly fixed in workplace.	
The fan is properly levelled	
Wires are properly tightened.	
Ambient temperature and transported medium temperature are compatible with fan nameplate	
Proper electrical protection is applied	
Grounding of fan is applied.	
Mains supply is compatible with fan power supply.	
Power supply disconnecting switch (with 3mm visible gap) is applied.	
Personnel using the fan read and understood the operation and montage manual.	
Proper inlet and outlet covers (grids) have been applied	
<b>After fan launch (continuous work period minimum 30 minutes)</b>	
Readings and set of vibration measurement device has been written (they are available in future)	
Readings and set of current measurement device has been written (they are available in future)	
Value of current for each of phase does not exceed nominal one	
The vibration value is not higher than permitted.	

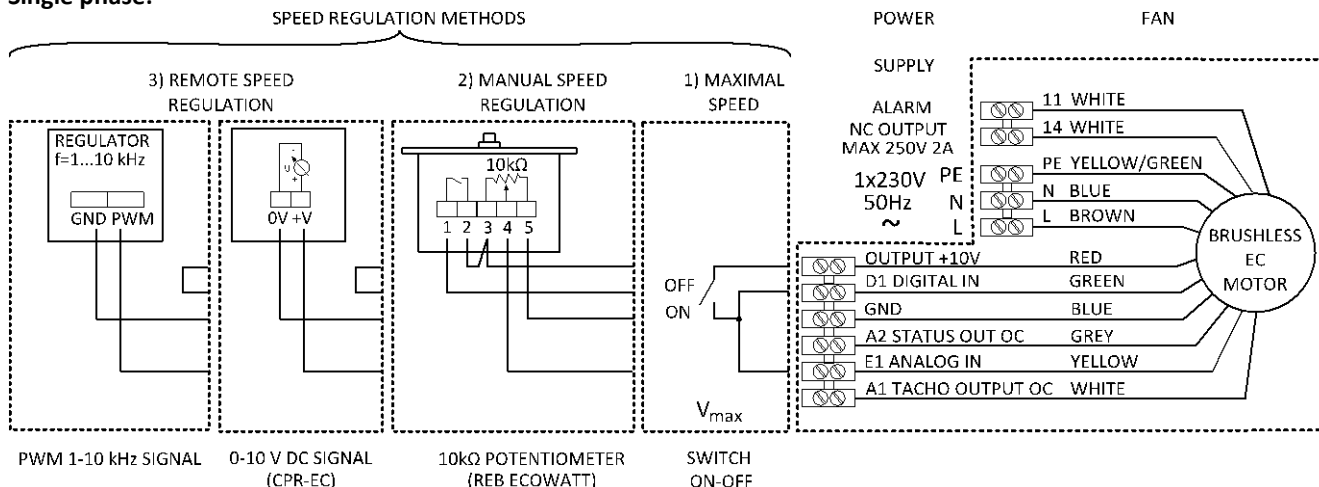
**APPENDIX B - (EXAMPLES OF DEVICE FAULTY WORKING)**

<b>SYMPTOMS</b>	<b>POSSIBLE REASON</b>
Excessive vibration or noise	<ul style="list-style-type: none"> <li>• Damaged impeller</li> <li>• Dirt accumulated on impeller caused loss of balance;</li> <li>• Impeller loss of balance;</li> <li>• Parts rubbing;</li> <li>• Damage or wear of bearings.</li> </ul>
Failed fan start-up/ stop during operation.	<ul style="list-style-type: none"> <li>• Rubbing between fan impeller and housing or foreign body (e.g. tool left after installation);</li> <li>• Overload of motor or electronic controller;</li> <li>• Damage or wear of bearings;</li> <li>• Power failure or phase failure;</li> <li>• Too high or too low supply voltage;</li> <li>• Electronic controller lock up (power restart needed);</li> <li>• No power restart done after activation of motor protective modules.</li> </ul>
Protective modules or devices activation during fan work and overheating	<ul style="list-style-type: none"> <li>• Excessive start-up time;</li> <li>• Motor overload;</li> <li>• Shortcut in power adapter circuits of EC motor;</li> <li>• Too often start-ups;</li> <li>• Improper set of protection circuit breaker and / or incorrect set of protective relays.</li> </ul>

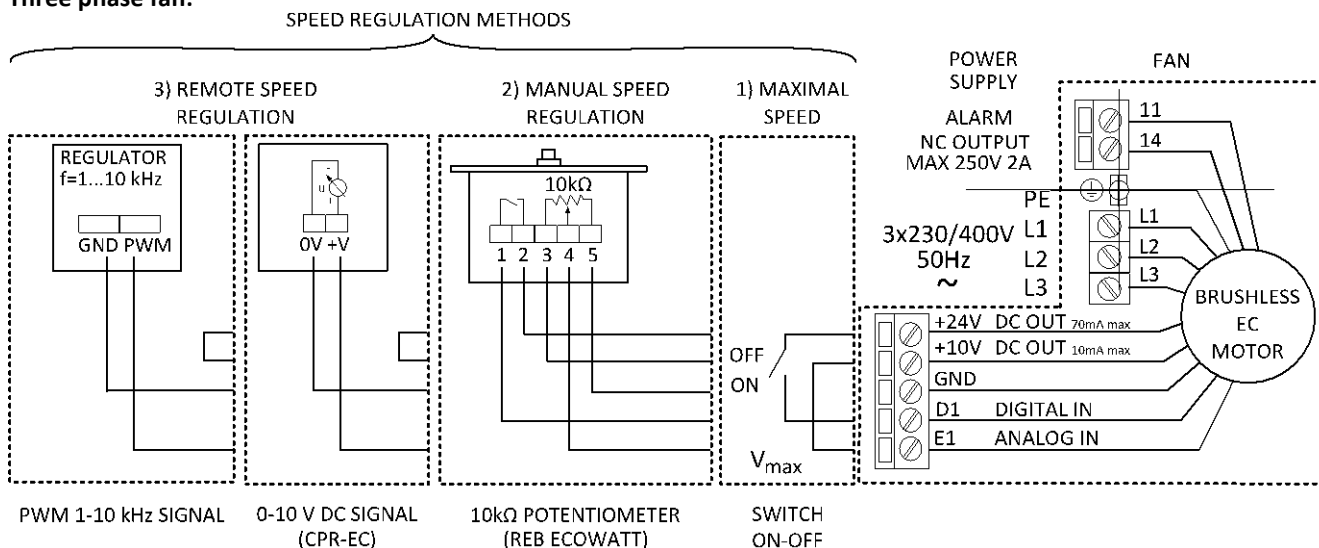


APPENDIX C - CONNECTION DIAGRAMS

Single phase:



Three phase fan:



**Note:** Unit generates leakage current <= 3,5 mA.

APPENDIX D - DECLARATION OF MANUFACTURER

EU Declaration of Conformity in accordance with 2014/30/EU Directive

EC Declaration of Incorporation in accordance with 2006/42/EC Directive (Appendix II 1B)

**Manufacturer:**

Venture Industries Sp. z o.o.  
ul. Mokra 27  
05-092 Łomianki-Kielpin  
Polska



doc. no. BF1.2.13012017\_EN

**declares that the product described below:**

Name: Duct fan  
Type: IBF/EC  
Model and serial no.: all manufactured  
CE marking date: 2014 - in accordance with 2014/30/EU Directive  
Use/Function: transport of specified medium **after incorporation into machinery (as defined by 2006/42/WE Directive)**

**complies with the requirements of:**

•Machinery Directive 2006/42/EC – Annex I, item: 1.3.4, 1.5.1, 1.7.1.

•Electromagnetic Compatibility Directive 2014/30/EU

*Compliance with 2014/30/EU Directive applies to the single product. When product is used with other components the installer is responsible for compliance of entire system with the provisions of 2014/30/EU Directive.*

**Following standards were applied (partially or full):**

EN ISO 12100:2010

EN ISO 13857:2008

EN 60034-1:2010 + Cor.:2010

EN 61000-6-3:2007 + A1:2011 + AC:2012

EN 60204-1:2006 + A1:2009 + AC:2010

EN 61000-6-2:2005 + AC:2005

EN 60529:1991 + A1:2000 + A2:2013

*Compliance with EN ISO 13857 refers to safety devices supplied and installed in the product by the manufacturer.*

**Furthermore:**

•**Product is partly completed machinery (as defined by Directive 2006/42/EC), and it must not be put into service until the machinery in which it is incorporated has been declared in conformity with the provisions of 2006/42/EC Directive (and its amendments).**

•The machinery (installation) into which the product is incorporated should particularly meet the requirements of current standards: EN ISO 12100, EN ISO 13857, EN 349+A1, EN ISO 13850, EN 60204-1.

•Product is in conformity with the Commission Regulation (EU) No 1253/2014 implementing ErP Directive 2009/125/EC with regard to eco-design requirements for ventilation units.

•In accordance with 2006/42/EC Directive requirements: The technical documentation for above mentioned product has been prepared in accordance with Directive 2006/42/EC, Annex VII, Part B, and is located in the manufacturer office: Lotnicza 21A, 86-300, Grudziądz, Poland. The person authorized to comply the relevant technical documentation: Zbigniew Kosmecki (Lotnicza 21A, 86-300, Grudziądz, Poland). Relevant information about the product will be provided in electronic or paper form in response to a reasonable request of national authorities.

•Quality system is in accordance with ISO 9001:2008.

Date: 13.01.2017

Kielpin

Wojciech Stawski  
Managing Director

