

Use and Maintenance Manual



Roof Fans **SMART-EC-4000**

Contents:

1.	Introductory Remarks.....	3
2.	Application	4
3.	Reservations of Producer	4
4.	Technical Data.....	4
5.	Structure and Function.....	5
6.	Assembly and Start-up	6
7.	Operational Use	8
8.	Troubleshooting Guide.....	9
9.	Maintenance	9
10.	Occupational Health and Safety	9
11.	Transport and Storage	10
12.	Terms of warranty	10
13.	Sample of the Declaration of Conformity	11

1. Introductory Remarks

The purpose of the present Use and Maintenance Manual is to supply User with directions within the range of application, installation, start-up and the operational use of the **SMART-EC-4000 Roof Fans**.

Installing, start up and operational use are exclusively admissible after getting acquainted with the contents of the Use and Maintenance Manual.

With regard to continuity of work carried on improvement of our products, we reserve for ourselves the revision possibility of the draft and technological changes improving their functional features and safety.

The construction of the **SMART-EC-4000 Roof Fans** meets the requirements of the current state of technology as well as the safety and health assurances included in:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of May 17th, 2006 on machinery – amending the 95/16/EC (recast) /*Journal of Laws EC L157 of 09.06.2006, page 24*/
- **2014/35/EC Directive** of the European Parliament and of the Council of February 26th, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. /*Journal of Laws EC L96 of 29.03.2014*/

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21th, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products / *Journal of Laws L 285 of 31.10.2009* /
- **327/2011 (EU) Regulation** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW / *Journal of Laws L No. 90 of 06.04.2011* /

The device has been constructed and produced on the basis of following harmonized standards:

- | | |
|----------------------------|-------------------------------------------------------------------------------------------------------------|
| • EN ISO-12100:2012 | - "Safety of machinery. Basic concepts, general principles for design. Risk assessment and risk reduction". |
| • EN 60204-1:2010 | - "Safety of machinery. – Electrical equipment of machines. Part 1: General requirements". |
| • EN 60034-1:2011 | - "Rotating electrical machines – Part 1: Rating data and parameters". |
| • EN ISO 5802:2008 | - "Industrial Fans – Performance testing in situ of installing". |
| • EN ISO 13857:2010 | "Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs". |

2. Application

SMART-EC-4000 roof fans are meant for general ventilation of buildings. They are designed for conveying the dry dust of maximum temperature +40°C and dustiness not exceeding 0,3 g/m³. The devices cannot be applied in atmosphere containing viscous, aggressive contaminants, or in atmosphere that create explosion hazard.

3. Reservations of Producer

- A. Manufacturer is not liable for any consequences following from the operational use that is in contradiction to the purpose of application.
- B. Do not install any additional elements not belonging to the normal device structure or accessory set.
- C. Any structural changes or modifications on the appliance on one's own are not permitted.
- D. Protect the device housing from mechanical damage.
- E. Before the installing, check the load carrying capacity of the wall / building structure in places where the roof fan shall be installed. Unsure mounting could cause damage of the device, risk to personnel / people in the vicinity.
- F. **SMART-EC-4000 fan is not appropriate for conveying the air polluted with a mixture of flammable substances in a form of gas, vapour, mist or dust, that could create the explosive atmosphere.**
- G. **Don't use the fan for conveying the air containing viscous compounds that would deposit within the appliance, especially at the impeller.**
- H. **Neither apply the fans for conveying the air containing aggressive compounds that would have destructive effect on the device.**
- I. In the course of operational use, the maximum impeller rotations should not exceed their nominal rotations.
- J. Manufacturer is not responsible for any wounds or body lacerations, experienced during the improper operational use of the appliance.

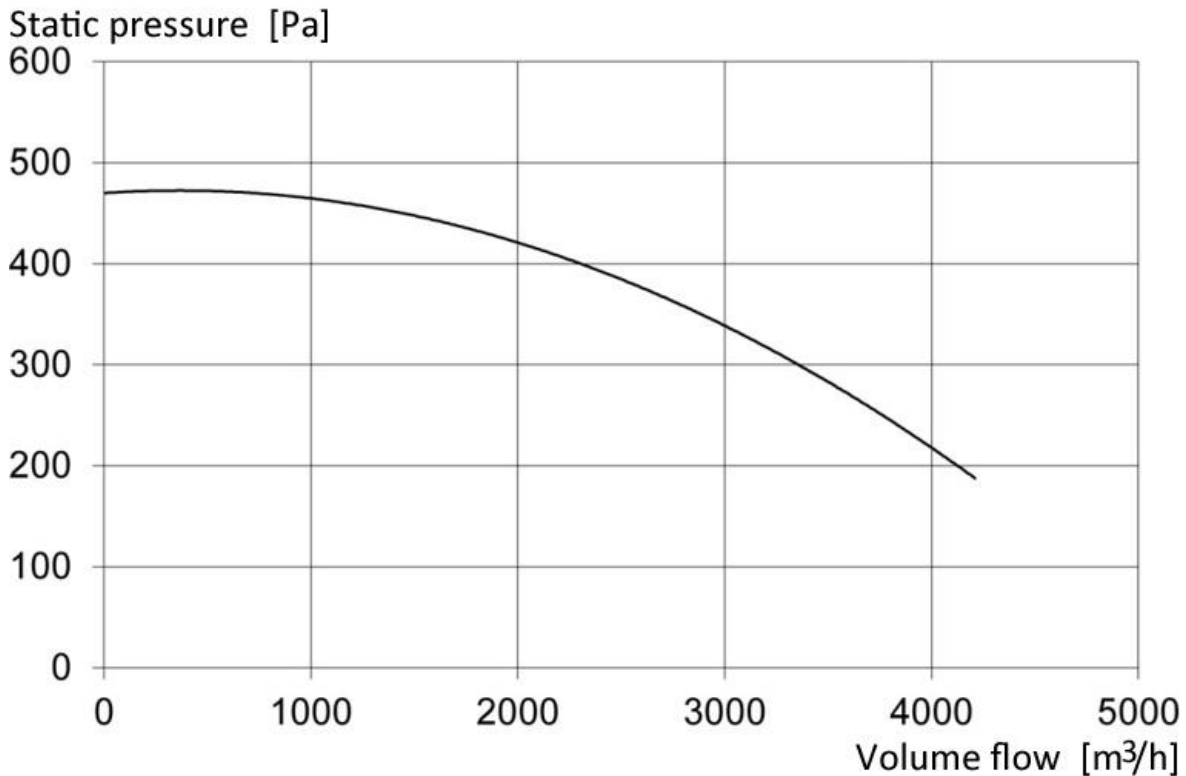
4. Technical Data

Table No.1

Type	Supply voltage [V/Hz]	Rotations [1/min]	Motor rate [W]	Maximum volume flow [m ³ /h]	Maximum vacuum [Pa]	Weight [kg]
SMART-EC-4000	230 / 50	1450	330	4200	480	22,4

Ingress protection IP44

Flow Chart



5. Structure and Function

SMART-EC-4000 fans feature an original construction of bent steel profiles, making up a skeleton of streamline and robust properties. Inside is located a motor with a radial impeller.

Lower skeleton is surrounded with a circumferential wire net, providing an openwork structure through which the air is discharged. Under the lower skeleton is located the fan inlet with a flange serving as a mounting element to the roof base.

Manufacturer suggests installing on sound absorbing roof bases TPD or TPDC, or eventually on standard roof bases BI or BII.

Additionally, on demand of Customer, are delivered rotation speed governors type RP for step-less adjustment of the fan flow efficiency.

Upper parts of the fan are shielded by a plastic hood.

Structure of the fan and dimensions are illustrated in Fig. No.1.

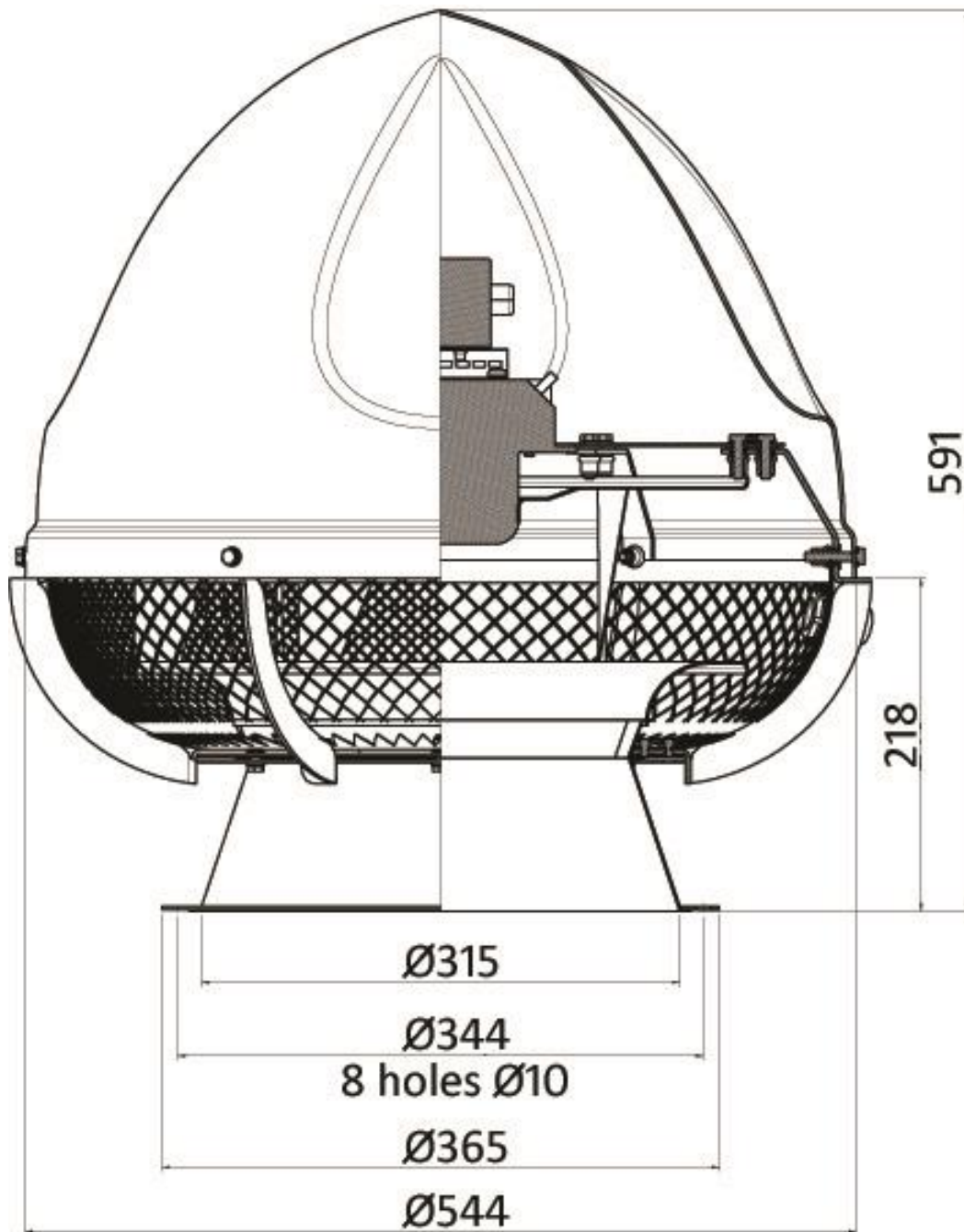


Fig. No.1 – Structure and dimensions of the fan SMART-EC-4000

6. Assembly and Start-up

SMART-EC-4000 fans are meant for work outside the buildings. It is recommended to install them on roof bases or wall brackets (delivery on separate order).

To reduce the noise level, it is advised to apply sound absorbing roof bases. After the fan is placed on a roof base, it is important to screw up thoroughly all the mounting bolts between the fan flange connection and the roof base.

In the Fig. No.2 are given the dimensions of the mounting flange and sound absorbing roof bases.

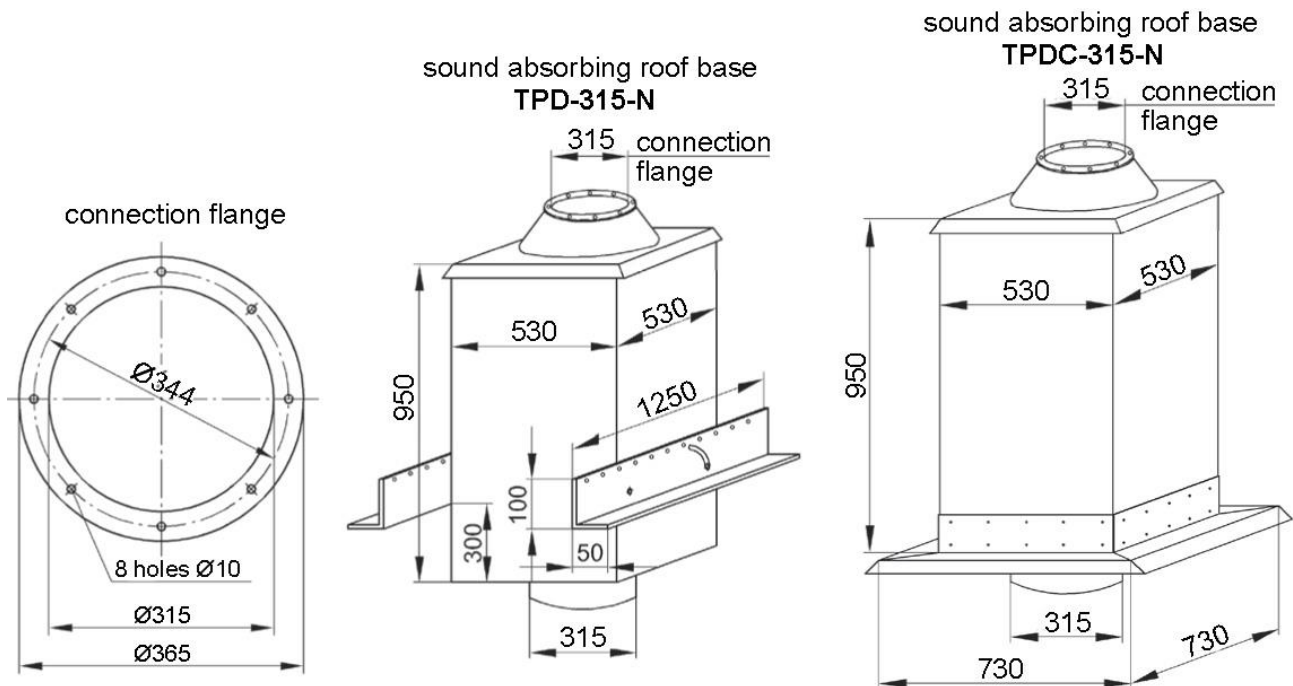


Fig. No.2 – Dimensions of the connection flange and sound absorbing roof bases

Connection to the power supply system ought to be executed by User on one's own.

WARNING

Connection to the power line should be carried out exclusively by an authorized person with valid qualifications.

It is important to install an isolating switch (IS) to cut off the power supply during the servicing. Within our assortment are offered isolating switches as additional equipment (delivered on separate order).

Isolating switch ought to be installed by User on one's own, in a place convenient for operator. The way of connection is illustrated in Fig. No.3.

First take off the fan hood to get access to the terminal box of the fan motor. After the connections are carried out, install the hood.

It is important to select the suitable sort and section of the supply cable and appropriate protection against the short-circuit and overload effect, according to the local conditions.

Prior to the startup of the fan check following aspects:

- nominal voltage of the supply system and of the motor,
- correct and durable connection of the PE protective cable,
- installing of correct protection within the supply circuit system.

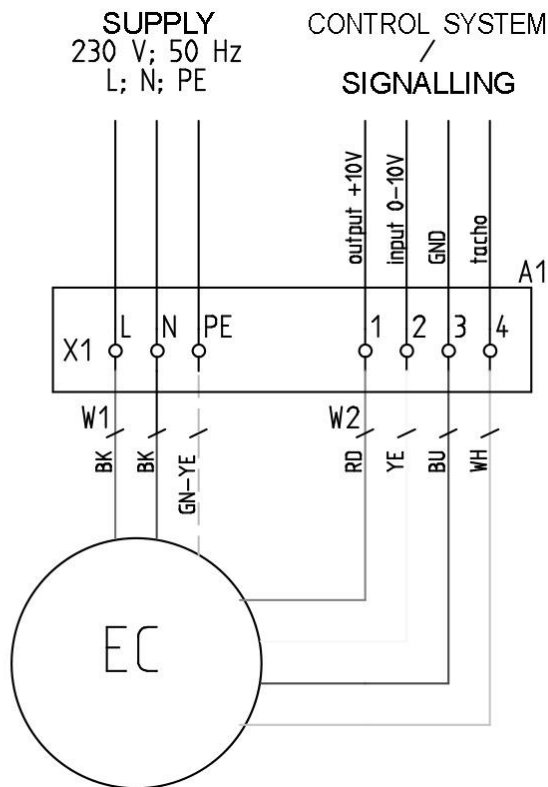


Fig. No.3 – Connection Diagram

CAUTION:

1. Overload protection should be selected by investor
2. It is suggested to install the S1 isolating switch in a place near the fan
3. Insulation class I
4. Ingress protection IP44

7. Operational Use

The construction and a solid execution of the fan guarantees its operational use without constant routine maintenance.

As inappropriate use is considered application of the fan that is in contradiction with its purpose (see Section 2 of the present Use and Maintenance Manual) and when the reservations of manufacturer are not observed (see Section 3 of the Use and Maintenance Manual).

Consequences of improper use:

- breakage of bearings,
- balance loss of the rotary elements,
- vibrations,
- deformations,
- damages caused by friction.

In case when any defective device function is noticed (increased noise level, vibrations, reduced efficiency), it is important to disconnect the fan from the power supply, and to undertake its technical revision in order to spot the reason of the functional disturbance. Typical disturbances and their reasons are exposed in the Section 8 of the present Use and Maintenance Manual.

8. Troubleshooting Guide

Table No.2

	Problem	Possible reason	Corrective action
1.	Sudden vibrations of the fan are occurring.	Obstacle objects reducing the air flow got stuck within the impeller.	Disconnect the fan from the power supply system, take off the hood and remove the obstacle.
		The impeller is faulty.	Replace the impeller for new.

9. Maintenance

The construction and a solid execution of the fans guarantee their operational use, without constant routine maintenance, provided that the operational use is correct.

To obtain correct functional performances and to meet the safety rules, it is recommended to submit the fan to technical revision in regular periods of time (i.e. once a year).

During the revision take into account the function of the fan as well as its technical state.



All the activities connected with technical revisions on the fan have to be carried out exclusively by an authorised person with adequate qualifications and necessarily after disconnection from the power supply system.

Additionally, observe the rules of Occupational Health and Safety. (Non-compliance of the rules could result in threat to life and health of the employees).

To disconnect the fan from the master circuit of the power supply, use the isolating switch (IS), which should be ordered and installed by User. Isolating switch ought to be installed within reach of the servicer.

Isolating switches (IS) are offered by KLIMAWENT S.A. as additional accessory. The way of connection is shown in the operation manual of the insulating switch (IS).

There are subsequent activities within the range of technical revision:

- examine and tighten up the mechanical- and electrical connections,
- check the mounting of the motor and fan, whereby mind if the clearance between the impeller and the non-rotary elements is equalised in the whole circumference,
- remove the impurities (eventually) deposited inside the fan.

Prior to the re-start of the fan carry out the revision steps as listed in the Section 6 “Assembly and Start-up” of the present Use and Maintenance Manual.

Exemption from this are tests that need to be carried out on the device being in run, along with the strictly followed rules of Occupational Health and Safety – as an example – measuring of vibrations.

During the revision activities it is important to follow the safety regulations.

10. Occupational Health and Safety

Start up and the operational use of the fan are admissible after getting acquainted with the contents of the present Use and Maintenance Manual.

The fan will not cause any mechanical hazard when it is correctly and firmly mounted to the roof base or another constructional element of the building that has adequate load carrying capacity.

Any installation activities related to the power supply system have to be carried out strictly according to the enclosed Connection Diagram and in accordance with the instructions given in the Section 6 of the present Use and Maintenance Manual.

WARNING

Connection to the power supply system ought to be carried out solely by an authorised person with qualifications, according to the valid regulations within the range of Occupational Health and Safety.

During the maintenance, examine the connection of the PE protective cable. Any revision activities and repair can be executed exclusively after the device is disconnected from the power supply (isolating switch).

11. Transport and Storage

The fans have to be protected with foil and in cardboard packages (with their weights placed on the package surface). During loading/reloading and transport the device should be neither thrown nor knocked down. Do not put any additional load on the package.

It is inadmissible to put one device on top of another (stacking). During the transport protect them from atmospheric factors and from mechanical damage.

The fan must be stored in dry rooms and of efficient ventilation.

12. Terms of warranty

The period of warranty for the purchased device is indicated in the “Card of Warranty”.

The warranty does not comprise:

- mechanical damage and dysfunctions caused by User,
- device failures caused during use which was in contradiction with the purpose of operational use and the present Use and Maintenance Manual,
- damages being entailed during the improper transport, storage or incorrect maintenance.

Infringement of the Section 3 “Reservations of Producer” of the Use and Maintenance Manual and especially modifications undertaken by User on one’s own shall cause the loss of warranty validity.

13. Sample of the Declaration of Conformity

Declaration of conformity EC No.

Manufacturer (eventually the authorized representative / importer):

name: **KLIMAWENT S.A.**

address: **81-571 Gdynia, Chwaszczyńska 194**

A person, authorized for issuing the technical documentation: Teodor Świrbutowicz, KLIMAWENT S.A.

hereby declares that the appliance:

name: **Roof Fan**

type/model: **SMART-EC-4000**

serial number: year of production:

meets the requirements of the subsequent European Directives:

- **2006/42/EC Machinery Directive** of the European Parliament and of the Council of 17 May, 2006 on machinery – amending the 95/16/EC (recast) */Journal of Laws EC L157 of 09.06.2006, page 24/*
- **2014/35/EC Directive** of the European Parliament and of the Council of 26 February, 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. */Journal of Laws EC L96 of 29.03.2014/*

The appliance meets the requirements included in:

- **2009/125/EC (ErP) Directive** of the European Parliament and of the Council of October 21th, 2009 establishing a framework for the setting of ecodesign requirements for energy-related products */ Journal of Laws L 285 of 31.10.2009 /*
- **327/2011 (EU) Guideline** of March 30th, 2011 on implementing the **2009/125/EC Directive** of the European Parliament and of the Council with regard to ecodesign requirements for fans driven by motors with an electric input power between 125W and 500 kW */Journal of Laws L No. 90 of 06.04.2011/*

The device has been constructed and produced on the basis of following harmonized standards:

- | | |
|----------------------------|-------------------------------------------------------------------------------------------------------------|
| ● EN ISO-12100:2012 | – “Safety of machinery. Basic concepts, general principles for design. Risk assessment and risk reduction”. |
| ● EN 60204-1:2010 | – “Safety of machinery. – Electrical equipment of machines. Part 1: General requirements”. |
| ● EN 60034-1:2011 | – “Rotating electrical machines – Part 1: Rating data and parameters”. |
| ● EN ISO 5802:2008 | – “Industrial Fans – Performance testing in situ of installing”. |
| ● EN ISO 13857:2010 | “Safety of machinery. Safe distances to prevent hazard zones being reached by upper and lower limbs”. |

.....
place, date

.....
signature of authorised person

.....
name, surname, function
of the signatory

KLIMAWENT S.A.

Supported Employment Enterprise
81-571 Gdynia, ul. Chwaszczyńska 194
phone: +49 58 829 64 80

email: klimawent@klimawent.com.pl
www.klimawent.com.pl

District Court Gdańsk-Północ
in Gdańsk, VII Wydział Gospodarczy
of the National Register of Court
KRS 0000308902 company stock
13.779.200 zł paid in total

NIP: 958 159 21 35
REGON: 220631262
Bank Account: **Santander Bank Polska S.A.**
56 1500 1025 1210 2007 8845 0000

**Producer:****KLIMAWENT S.A.****81-571 Gdynia, ul. Chwaszczyńska 194**

tel. 058 629 64 80

fax 058 629 64 19

e-mail: klimawent@klimawent.com.plwww.klimawent.com.pl

812W82 SMART-EC-4000 25.01.2019/EN