

Operating instructions

Supplement to BA-REF

Roof fans with EC technology
(Translation of the original)

BA-REF_EC 5.6 – 12/2015

		RDA 21-EC
		RDA 31-EC
		RDA 32-EC

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Further languages on request

1. Revision Index

Table 1-1:
Revision index

Revision	Date
BA-DV-EC 5.3 - 10/2011	10/2011
BA-REF_EC 5.4 – 10/2013	10/2013
BA-REF_EC 5.4 – 02/2014	02/2014
BA-REF_EC 5.5 – 02/2014	02/2014
BA-REF_EC 5.6 – 12/2015	12/2015

2. About This Operating Manual



Attention: This Operating Manual is a supplement to the Operating Manual for Roof Fans and must be observed in conjunction with that manual. There you will find further descriptions and information on transport, installation and designated use as well as issues relating to maintenance and service.

2.1. Validity

This operating manual only applies to the roof fans stated on the front page.

2.2. Target Group

This operating manual is intended for operators and qualified professionals trained in installation, commissioning, operation, maintenance and decommissioning.

2.3. Other Applicable Documents

In addition to reading these instructions, due notice should also be taken of the following documents and specifications on the roof fan:

- DIN VDE 0100-100
- EN 60204-1
- EN 61000-3
- EN ISO 13857
- EN ISO 12100
- EN ISO 13732-1
- EN 50081-1
- Type Plate
- Technical catalogue
- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU

2.4. Symbols and Markings

2.4.1. Use of Warning Signs



Signal word

Nature, source and consequences of hazard!

- ▶ Steps required to avert danger

2.4.2. Levels of Danger in Warning Signs

Table 2-1:
Levels of danger in warning signs

Symbol / Danger Level	Likelihood of Occurrence	Consequences of Neglect
 Danger	Imminent danger	Death, serious physical injury
 CAUTION	Potential danger	Minor physical injury
CAUTION	Potential danger	Damage to property

2.4.3. Notes

- Note** Note giving pointers for easier or safe work.
- ▶ Steps required for easier or safe work.

2.4.4. Other Symbols and Markings

Table 2-2:
Other symbols and markings

Symbol	Meaning
☑	Requirement for an operation
▶	Operation with one step
1. 2. 3.	Operation with several steps
•	Bullet point (primary list)
-	Bullet point (secondary list)
Accentuation (bold)	For emphasis

3. Designated Use

3.1. Operating Data / Maximum Ratings



CAUTION

Risk of injury!

- ▶ Adhere to technical specifications and permissible limits.

For technical specifications reference should be made to the type plate, technical data sheet and technical catalogue.

The roof fans are suitable for extracting dust-free air and other non-corrosive gases or vapours.

Permissible conveyed medium temperatures

Table 3-1:
Data limits

Model	Perm. temperature of conveyed medium	Max. ambient temp. on drive motor
RDA 21 -....-EC	-20°C to +60°C ¹⁾	+60°C
RDA 31 -....-EC	-20°C to +40°C ¹⁾	+40°C
RDA 32 -....-EC	-20°C to +40°C	+40°C

¹⁾ = Data depend on model; see full list "Roof fans".

4. Safety

4.1. Information on Machine Safety

The machines in series RDA 31-....-EC, RDA 32-....-EC and RDA 21-....-EC are machines within the meaning of the EC Machinery Directive. They have the CE mark and are delivered along with an EC Declaration of Conformity. The assessment of the risks and necessary safety measures of the machine was undertaken using VDMA Worksheet 24167: Fans; safety requirements.

5. Product Description

5.1. General Information on Roof Fans



Danger

All the roof fans are delivered ready for connection and are protected by an outlet guard conforming to EN ISO 13857.

Inlet guards are not fitted as standard.

If there is a danger of contact with the impeller owing to the way the fan is installed then it is necessary to fit an inlet guard conforming to DIN EN ISO 13857 (available as an accessory).

Roof fan with EC technology including associated control unit, prewired for infinite adjustment of output. The single phase electronic controller with variable output voltage and frequency is optimally coordinated to the operation of Nicotra Gebhardt brushless DC motors.

5.2. Roof Fans with Built-In EC Motor

5.2.1. RDA 21-....-EC



*Fig 5-1:
RDA 21*

Roof fan with EC technology including associated control unit, prewired for infinite adjustment of output.

5.2.2. RDA 31-....-EC / RDA 32-....-EC



*Fig 5-2:
RDA 31*

Roof fan with EC technology including associated control unit, prewired for infinite adjustment of output.

Function

- ▶ Minimum and maximum speed to be set as well as a floating fault contact
- ▶ Realisation option for night-time reduction of preset values

Option for night-time reduction

To realise a night-time reduction, the desired height target value must be first be set at the rotary potentiometer Nmin of electronic controller EKE 05-0018-5E-IA / EKE 05-0040-5E-IA. A floating contact (clock timer, relay, switch) can then be used to switch off or on the day setpoint (0...5V or 0...10V input) set in the terminal box of the fan.



*Fig 5-3:
RDA 32*

5.3. Motor Protection

5.3.1. Series RDA-EC

The motors have no direct temperature monitoring through thermal contacts or thermistors. The motor is protected via the current monitoring in the electronic controller.

5.4. External Control Unit EKE 05 for Electronically Controlled Motors (RDA 31-/32-....-EC)

5.4.1. Execution

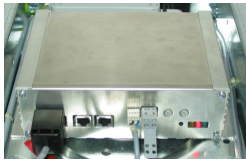


Fig 5-4:
EKE 05-0018-5E-IA

Single phase electronic controller with variable output voltage and frequency optimally coordinated to the operation of roof fans with EC motors. With the use of modern power semiconductors, speed settings with high efficiency can be achieved. The output voltage is emitted with high clock frequency (15 kHz).

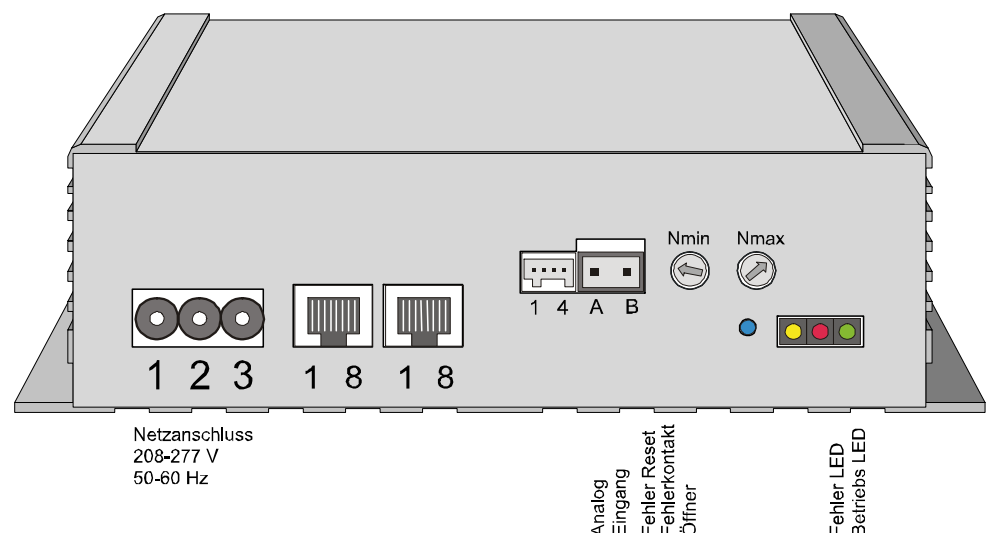
5.4.2. Performance Characteristics

- ▶ Exclusively suited for the operation of Nicotra Gebhardt EC motors
- ▶ Single phase AC voltage mains connection
- ▶ Electrical motor output: 370W (EKE05-0018-5E) or 930W (EKE05-0040-5E)
- ▶ Permitted ambient temperature during operations from -10°C to + 40°C
- ▶ Adjustable minimum and maximum speed (option for night-time reduction)
- ▶ Analog interface 0...5V, 0...10V
- ▶ Function monitoring (floating fault output)
- ▶ No fault – contact closed
- ▶ Default (including no supplier voltage) – contact open
- ▶ Fault reset button

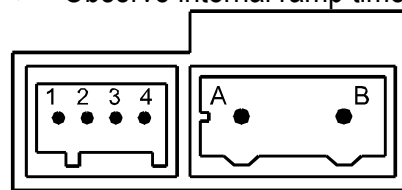
5.4.3. Norms and Directives

In order to adhere to the limits for emitted interference according to EMC generic standard EN 50081-1 (domestic and commercial sectors) and EN 61000-3-2, a suitable filter as well as an active power factor correction (PFC) is integrated so that the system can be used in all areas of the BelAir product program without limitations. The devices with integrated, tested electronics control represent a low risk with respect to emitted electromagnetic interference.

5.4.4. Connections / Interfaces



- ▶ Turn the potentiometer carefully!
- ▶ Do not turn past the stops!
- ▶ Observe internal ramp times!



1 = +5V
2 = 0...10V
3 = 0...5V
4 = Earth

A = Fault contact
B = Fault contact



Nmin = Minimum speed



Nmax = Maximum speed

5.5. Accessory – Speed Controller EGH 01

5.5.1. Execution

Shock resistant plastic housing (creamy white) in protection class IP 44 with front turn knob.

Clear, marked terminal strip for connection. When using the version with installation in a normal switch box, the control element with front plate is simply removed from the bottom part of the housing.

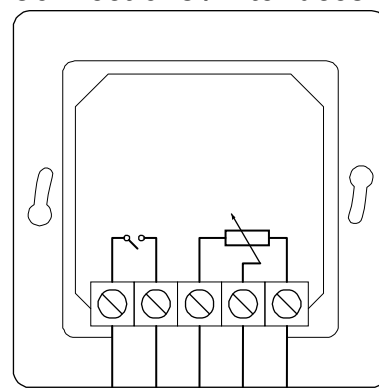
5.5.2. Function

The element contains a turn knob for infinite adjustment of the speed of the roof fan.

5.5.3. Performance Characteristics

- ▶ Resistance 10 k Ω
- ▶ Protection class IP44
- ▶ Mass = 145g

5.5.4. Connections / Interfaces



max. 4A / 250V AC +10V 0...10V
10A / 12V DC (+5V) (0...5V)

6. Electrical Connection

6.1. Safety Instructions for Electrical Connection



Danger

Caution! Danger of electric shock!

- ▶ Observe the safety instructions and preventive measures in Chapter 4 and the relevant legal requirements.
- ▶ EN 60204-1

6.2. Connecting the Motor

Note The device is wired. The single phase mains socket and control cables must therefore be connected in accordance with the enclosed wiring diagram. The current wiring diagram can be found in the documentation on the Internet at www.nicotra-gebhardt.com. External control cables must be shielded.

Note The electrical installation of the fan and components may only be carried out by specially trained personnel observing the operating manuals, Low Voltage Directive 2014/35/EU as well as EMC Directive 2014/30/EU and any local regulations provided by energy supply companies.

CAUTION

We expressly point out that any independent intervention in the internal cabling of the system invalidates the manufacturer's guarantee.

7. Faults

If faults occur during operation which cannot be repaired by maintenance personnel please contact the service department of Nicotra Gebhardt GmbH.

Roof fan may be damaged by improper operating states!

CAUTION

- ▶ Switch the roof fan off immediately if permissible limits are exceeded and in the event of irregularities or faults.

7.1. Faults and Error Rectification with RDA 31-/32-EC

Faults due to outside electrical influences acting on the supply lines can result in the electronic components being switched off (EKE 05-.....-5E-IA). This can be seen when a read fault LED flashes and can be remedied by pressing the reset button (see chapter "Connections") or by switching the device off and on again. For faults that cannot be reset, the points contained in the enclosed standard Operating Manual for Roof Fans can be followed.

7.2. Faults and Error Rectification with RDA 21-EC

Faults due to outside electrical influences acting on the supply lines can result in the internal motor electronic components being switched off. This fault can be remedied by switching the device off and then on again. For faults that cannot be reset, the points contained in the enclosed standard Operating Manual for Roof Fans can be followed.

8. Service, Spare Parts and Accessories

Nicotra Gebhardt GmbH
Gebhardtstraße 19–25
74638 Waldenburg
Germany

Tel: +49 (0) 7942 101 384
Fax: +49 (0) 7942 101 385
Mail: service@nicotra-gebhardt.com
www.nicotra-gebhardt.com

8.1. Ordering Spare Parts

- Use only genuine spare parts supplied by Nicotra Gebhardt GmbH as featured in the list of spare parts.

The use of spare parts supplied by other manufacturers may compromise the safety of the equipment.

The requirements for CE conformity are no longer met if spare parts supplied by other manufacturers are fitted.

Nicotra Gebhardt GmbH shall not accept any liability or provide any warranty cover in respect of primary or secondary damage arising as a consequence of using spare parts supplied by other manufacturers.

Spare parts can be ordered online at www.gebhardt.de/Partshop

8.2. Accessories

Nicotra Gebhardt GmbH has a wide range of accessories for economic and efficient use of the fans.

Accessories are optional and always need to be ordered separately.

Spare parts should be selected on the basis of the technical specifications or via our electronic selection program.

Accessories are supplied with separate operating or installation instructions unless their installation or use are self-explanatory.

9. Annex

9.1. Further documentation of Nicotra Gebhardt GmbH

Table 9-1:
Further documentation

Type of Documentation	File Location
Operating Manual for Roof Fans	http://www.nicotra-gebhardt.com/upload/download-center/instruction/OI_REF_DE.pdf
Maintenance and inspection recommendations	http://www.nicotra-gebhardt.com/cms/upload/download-center/maintenance-instruction/MI_REF_DE.pdf
Electric wiring diagram	http://www.nicotra-gebhardt.com/cms/upload/download-center/catalogue/TD_CONNECT_DE.pdf
EU DECLARATION OF CONFORMITYEC to Machinery Directive 2006/42/EC, EU Low Voltage Directive 2014/35/EU, EU Electromagnetic Compatibility 2014/30/EU, EC-Directive for the setting of eco design requirements for energy-related products(2009/125/EC)	Annex

EU DECLARATION OF CONFORMITY

to EC Machinery Directive (2006/42/EC),

EU Low Voltage Directive (2014/35/EU),

EU-Directive Electromagnetic Compatibility 2014/30/EU,

EC-Directive for the setting of eco design requirements for energy-related products (2009/125/EC)

The manufacturer:

Nicotra Gebhardt GmbH

Gebhardtstraße 19-25, 74638 Waldenburg, Germany

hereby declares that, as designed, constructed and placed in the stream of commerce by ourselves, the machinery named below meets the relevant health and safety requirements specified in the EU Directives listed below.

This declaration shall be null and void if modifications are made to the machine without consulting us and obtaining our approval.

Designation:

Roof fan with integrated controller

Machine type:

RDA ..-....-EC

Serial no:

See type plate

Year of construction:

See type plate

Relevant EC Directives:

EC Machinery Directive (2006/42/EC)

EU Low Voltage Directive (2014/35/EU)

EU-Directive Electromagnetic Compatibility 2014/30/EU,

EC-Directive for the setting of eco design requirements for energy-related products (2009/125/EC)

Harmonised standards¹⁾ applied, in particular:

DIN EN ISO 12100-1, 12100-2 , DIN EN ISO 13857, EN 60204-1, DIN EN 61000-3

Waldenburg, 18.12.2015

Representative for the documentation: Sven Kloos

Head of Production



i.V. T. Ehrhardt

Research & Development Director



i.V. Dr. J. Anschütz

¹⁾For the full list of applied standards and technical specifications see manufacturer's documentation.

NICOTRA || **Gebhardt**
fan|tastic solutions

Nicotra Gebhardt GmbH
Gebhardtstraße 19-25
74638 Waldenburg
Germany

Telefon +49 (0)7942 1010
Telefax +49 (0)7942 101170

E-Mail info@nicotra-gebhardt.com
www.nicotra-gebhardt.com