REACT ALS GMBa

Instructions for Use

12/02/2024
Art. 1546102

Key to symbols

Symbols on the machine

This product complies with applicable EU directives

Symbols in these Instructions for Use

Warning/Caution!

Risk of crushing

Application area

The product is a commissioning box with variable flow regulation or constant flow regulation, designed for comfort ventilation indoors. The product is used to regulate the supply air flow in ventilation ducts.

The product may not be used for anything other than its intended use.

General

Read through the entire instructions for use before you install/use the product and save the instructions for future reference. It's not permissible to make changes or modify this product other than those specified in this document.

The packaging contains the following items

1 x REACT ALS GMB

1 x Instructions for Use

Protective equipment

Always use appropriate personal protective equipment for the work in question, in the form of gloves, respirators and protective glasses during handling, installation, cleaning and service/maintenance.

Electrical safety

Permitted voltage, see "Electrical data". It is not permissible to insert foreign objects into the product's contactor connections or the electronics's ventilation openings; risk for short circuiting.

24 V isolation transformer to be connected should comply with the provisions of IEC 61558-1.

Cable sizing must be carried out for cabling between the product and the power supply source.

Disconnect the power supply when working on the product and it is not required to be running.

Always follow the local/national rules for who shall be permitted to carry out this type of electrical installation.

Other risk

When the product is voltage fed, the damper cone will either open or close. This can entail a certain risk for pinch injuries, for example, to the fingers if these are placed within the damper cone.

Handling

- Always use appropriate transport and lifting devices when the product is to be handled to reduce ergonomic loads.
- The product must be handled with care.
- It is not permissible to carry the product by the measuring tubes.

Installation

- Moist, cold and aggressive environments must be avoided.
- Avoid installing the product near a heat source.
- Assemble the product according to applicable industry regulations.
- Install the product so that it is not accessible by unauthorized persons, for example in a suspended ceiling.
- Install the product for easy access during service/maintenance.
- If the product is mounted in a fixed ceiling, the inspection hatch must be located so that the product is accessible for inspection.
- If the product is mounted in cold areas, the whole product must be insulated on the outside against condensation.
- The product must be installed horizontally.
- The product must be laid down prior to installation so that it cannot fall over.
- Check to make sure that the product doesn't have any visible defects.
- Check that the product is properly secured after it has been installed.
- Check that all cables are properly secured in place after installation.
- If the product is mounted so that it is possible to gain access to the inside of the product, it must be supplemented with appropriate protection, for example, a ventilation unit.
- It is recommended to mount the product so that the associated diffuser face can be opened.

The document was originally written in Swedish

Installation, dimensions and weights

Dimensions

Size	B (mm)	C (mm)	ØD (mm)	Ød (mm)	E (mm)	F (mm)	G (mm)	H (mm)	K (mm)	Weight (kg)
160-250	504	332	159	250	199	239	140	445	100	4.9
250-315	622	388	249	315	300	340	190	575	140	7.8

Size	Min.		Max = Vnom*)		Tolerance Q* ±5% but at least ±x	
	l/s	m³/h	l/s	m³/h	l/s	m³/h
160-250	7	25	120	432	2	7
250-315	20	72	330	1188	3	11

*)Vnom at 100 Pa in pressure reading.

*Installed according to the instructions.

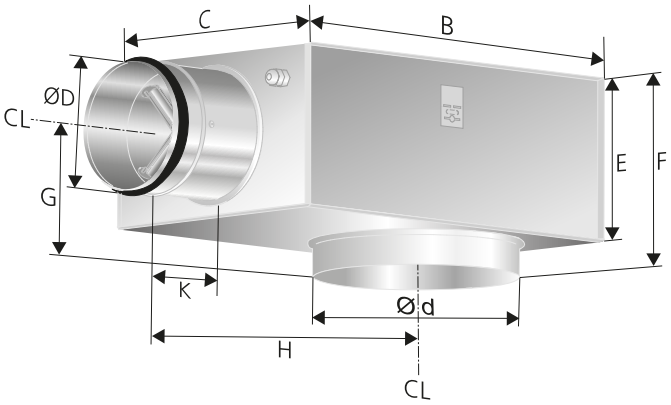
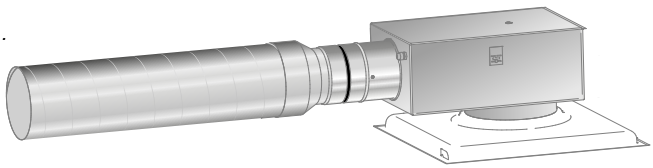


Figure 1. Dimensions (mm).

Installation

- The product's air flow measurement requires a straight duct section as per the installation figures.
- In unfavourable conditions before or with disruption, the product's tolerances cannot be guaranteed.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

1.



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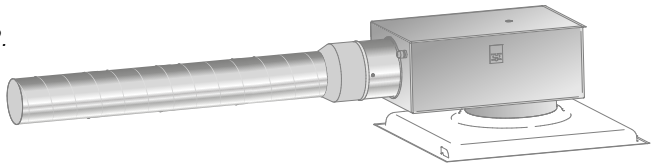
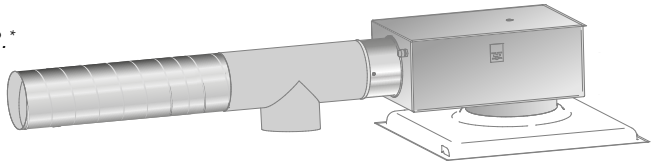


*3.**



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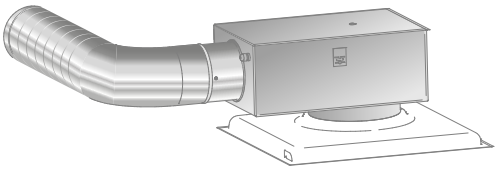

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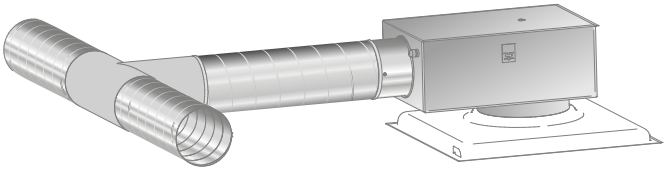

Figure 2. Straight duct section requirements, number of Ø before product:
Images 1-4 require no straight duct section (image 3 illustrates a T piece with a cleaning hatch).*
Image 6 requires a straight duct section before the product equivalent to 4 x the diameter of the duct.

Connection

1-2 – Supply voltage 24 V AC/DC
1-3 – Control signal (Y) 0..10/(2..10) V DC
1-4 – Actual value signal (U) 0..10/(2..10) V DC
A – Modbus (-CA)
B – Modbus (+CB)
For further calculations of Y and U, see the formulas on page 9.
Load on output 4: max. 0.5 mA.

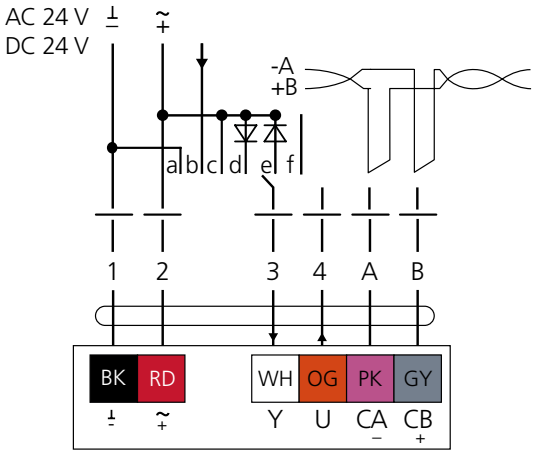

Figure 3. Wiring diagram.

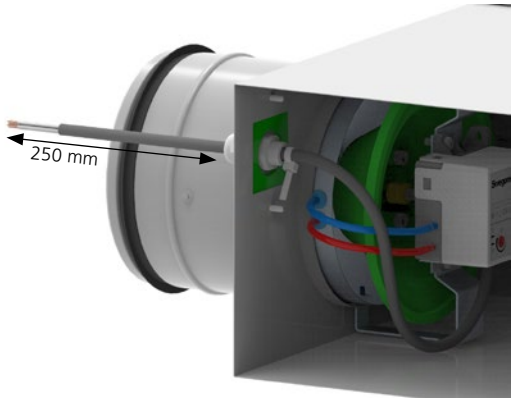

Figure 4. Length of the connection cable during installation.

250 mm connection cable is available during installation. The remaining length of the cable is required to remove the damper during service.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, Figure 3.

	a	b	c	d	e	f
Signal	⊥ − 3	3	~ + 3	~ 3	~ 3	3
Mode 2...10 V	Closed	Vmin[1]	Vmax	Open[2]	Closed[3]	Vmin
Mode 0...10 V	Vmin	Vmin[1]	Vmax	Open[2]	Closed[3]	Vmin

[1]Control signal 0-10 V DC / 2-10 V DC
[2]Positive half-wave, AC only
[3]Negative half-wave, AC only

Mode 2-10 V: Damper closed < 0.8 V

Swegon reserves the right to alter specifications.

Handling

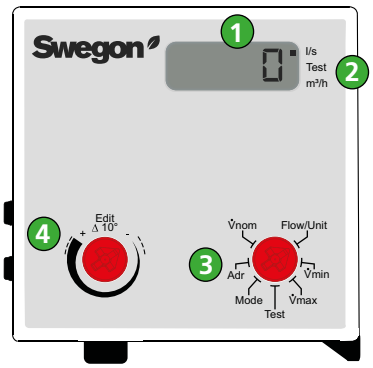

Figure 5. Gruner controller.

1 **Display**

Display for setting and changing values directly on the controller with a screwdriver. The display only shows three figures. In the case of larger values, apostrophes are shown and the remaining figures are hidden.

- 1000 = 1´00
- 10000 = 10´0
- 1278 = 1'27

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2 **Unit matrix**

The unit matrix can be read on the label/checked against required values on the display

l/s:	Square is shown in the top right corner of the display
m^3/h:	Square is shown in the bottom right corner of the display

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3 **Function wheel**

In order to select among the menus

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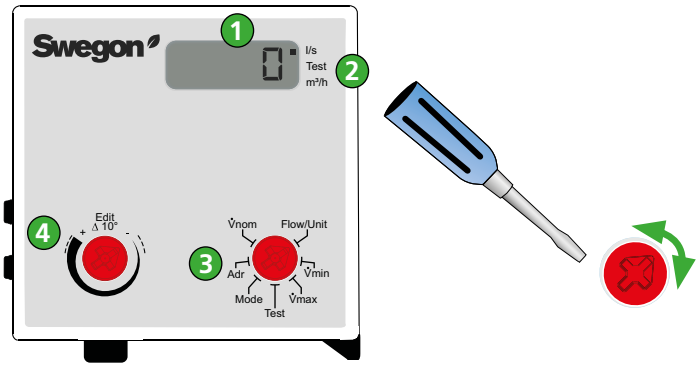
4 **Edit wheel**

For choice of sub menu or to change the values that are shown on the display. The value flashes twice when a new value has been accepted.



Setting and reading of parameters

1. Select the required menu by turning the Function wheel.
2. Set the values or select sub menus by turning the Edit wheel.
3. The value flashes twice when a new value has been accepted.

Actuator settings

Menu	Display	Description
Flow/Unit	0 l/s Test m³/h	Shows actual value (flashes until set point is achieved) Change of unit, square on the display indicates selected unit
Vmin	0 l/s Test m³/h	Adjustment to required min. value (set point Y = 0/2 V DC) The min. value must be less than the max. value
Vmax	0 l/s Test m³/h	Adjustment to required max. value (set point Y = 10 V DC) The max. value must be greater than the min. value
Test	off l/s Test m³/h off on oP cL Lo Hi AdP 123	Forced control. Square on the display indicates active test mode. Alternately shows test mode/ current air flow. Disconnects automatically after 10 hours. Normal operation Actuator stops in the current position Opens the damper fully Closes the damper fully Damper regulates to selected min. value Damper regulates to selected max. value End position calibration Shows the current software version
Mode	0-i l/s Test m³/h 0-i 2-i	Actuator control 0-10 V DC, Analogue, Inverted direction of rotation 2-10 V DC, Analogue, Inverted direction of rotation
Adr	1 l/s Test m³/h 1 o24	Bus communication, see How to use Modbus Modbus address 1…247 Communication settings o 1…o 24
Vnom	0 l/s Test m³/h	Shows the nominal air flow The display only shows three figures. In the case of larger values, apostrophes are shown and the nominal value is rounded to the nearest zero or five

Swegon reserves the right to alter specifications.

How to use Modbus

Modbus tables can be found in a separate document (REACT Gruner – Modbus settings).

By turning the Edit wheel, it is possible to set the actuator's Modbus address. It is possible to set the address from 1 to 247. If the value selector is turned to end stop "+", the display will show a "2". This makes it possible to select the second level. If the second level is selected, this is indicated on the display by a small circle.

Display number	Baud Rate - Parity - Stop bit
1	1200-None-2
2	1200-Even-1
3	1200-Odd-1
4	2400-None-2
5	2400-Even-1
6	2400-Odd-1
7	4800-None-2
8	4800-Even-1
9	4800-Odd-1
10	9600-None-2
11	9600-Even-1
12	9600-Odd-1
13	19200-None-2
14[1]	19200-Even-1
15	19200-Odd-1
16	38400-None-2
17	38400-Even-1
18	38400-Odd-1
19	1200-None-1
20	2400-None-1
21	4800-None-1
22	9600-None-1
23	19200-None-1
24	38400-None-1

[1]Default setting

Trouble shooting

The product does not communicate over Modbus

- Make sure that the product is energized.
- Check the product's Modbus connection.
- Check the product's communication settings.
- Check that the product has the correct, unique Modbus address.

The product shows incorrect/no air flow

- Make sure that the product is energized.
- Check that the motor's set size (Vnom) corresponds with the physical size of the product, see "Use".
- Make sure that the product is installed according to the recommended distance to disruptions, see "Installation".
- Check that there is an air flow.
- Make sure that the product is correctly oriented in terms of air direction. The air flow must follow the instructions on the product.
- Check that the measuring tubes are mounted correctly, plus to plus (red), minus to minus (blue).
- Check that the measuring tubes are undamaged and not creased.
- Check with the help of the k-factor and pressure difference between the red and blue measuring tubes that the flow is within the product's measurement range.

The product does not regulate the air flow

- Make sure that the product is energized.
- Check that the damper motor has not become detached from the damper cone.
- Check that the product is connected correctly.
- Check that the product is not force controlled.

The product does not regulate on the desired air flow

- Check that the settings for Vmin and Vmax correspond with the required regulation range.
- Check the electrical connection for the required function, see wiring diagrams in the document "Description of functions & wiring diagram".

Product does not exit test mode

- Check that the product is connected correctly, check the "Y" signal and polarity on "G" and "G0". See "Connections".
- Check the setpoint settings for Vmin and Vmax. The value for Vmax must be higher than Vmin in order for the product to be in automatic mode.
- If Modbus communication is used for the damper, test mode can be active via the communication. Try disconnecting the Modbus cables and set the motor in automatic mode. See "Use".

Cleaning

Ideally, the product should be cleaned in connection with the cleaning of the rest of the ventilation system.

Cleaning of electrical components

- If needed, use a dry cloth to clean the components.
- Never use water, detergent and cleaning solvent or a vacuum cleaner.

External cleaning

- If necessary use tepid water and a well-wrung cloth.
- Never use detergent and cleaning solvent or a vacuum cleaner.

Internal cleaning

- The damper insert must be dismantled when cleaning the ventilation system.
- Cleaning equipment such as whisks and the like must not be fed through the product.
- If necessary remove dust and other particles that can be present in the product.
- Never use detergent and cleaning solvent or a vacuum cleaner.

Service/maintenance

- The product does not require any maintenance, except for any cleaning when necessary.
- In connection with a service, mandatory ventilation inspection or cleaning of the ventilation system, check that the general condition of the product appears to be good. Pay particular attention to the suspension, cables and that they sit firmly in place.
- It's not permissible to open or repair electrical components.
- If you suspect that the product or a component is defective, please contact Swegon.
- A defective product or component must be replaced by an original spare part from Swegon.

Materials and surface treatment

- All sheet-metal parts are galvanized sheet steel (Z275).
- Internal sound-absorbing material is made of PET (polyethylene terephthalate), fire rating: B-s1, d0.

Disposal

Waste must be handled according to local regulations.

Product warranty

The product warranty or service agreement will not be valid/will not be extended if: (1) the product is repaired, modified or changed, unless such repair, modification or change has been approved in writing by Swegon AB; or (2) the serial number on the product has been made illegible or is missing.

Performance checks

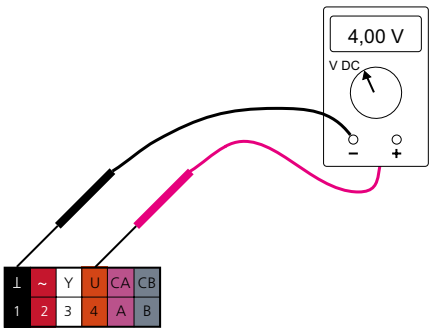


Figure 6. Shows connection to a voltmeter for checking the actual value.

Formulas for calculating air flow

The following applies for analogue control.

Control signal 0..10 V DC give the following formulas:

- Calculation of the current flow (V_{act}) when you know the value of the control signal (Y):

$$V_{act} = V_{min} + \frac{Y}{10\ V\ DC} \bullet (V_{max} - V_{min})$$

- Calculation of the current actual value (U) when you know the value of the current flow (V_{act}):

$$U = 10\ V\ DC \bullet \frac{V_{act}}{V_{nom}}$$

Control signal 2..10 V DC gives the following formulas:

- Calculation of the current flow (V_{act}) when you know the value of the control signal (Y):

$$V_{act} = V_{min} + \frac{Y - 2\ V\ DC}{8\ V\ DC} \bullet (V_{max} - V_{min})$$

- Calculation of the current actual value (U) when you know the value of the current flow (V_{act}):

$$U = 2\ V\ DC + 8\ V\ DC \bullet \frac{V_{act}}{V_{nom}}$$

Key to formulas opposite:

Y = control signal in [V] DC
U^* = actual value signal in [V] DC, always refers to 0-V_{nom}.
V_{act} = current air flow in [l/s, m³/h]
V_{min} = set min. flow in [l/s, m³/h]
V_{max} = set max. flow in [l/s, m³/h]
V_{nom} = nominal flow in [l/s, m³/h], see table page 2.

*Note! Does not indicate damper position.

Removing damper insert

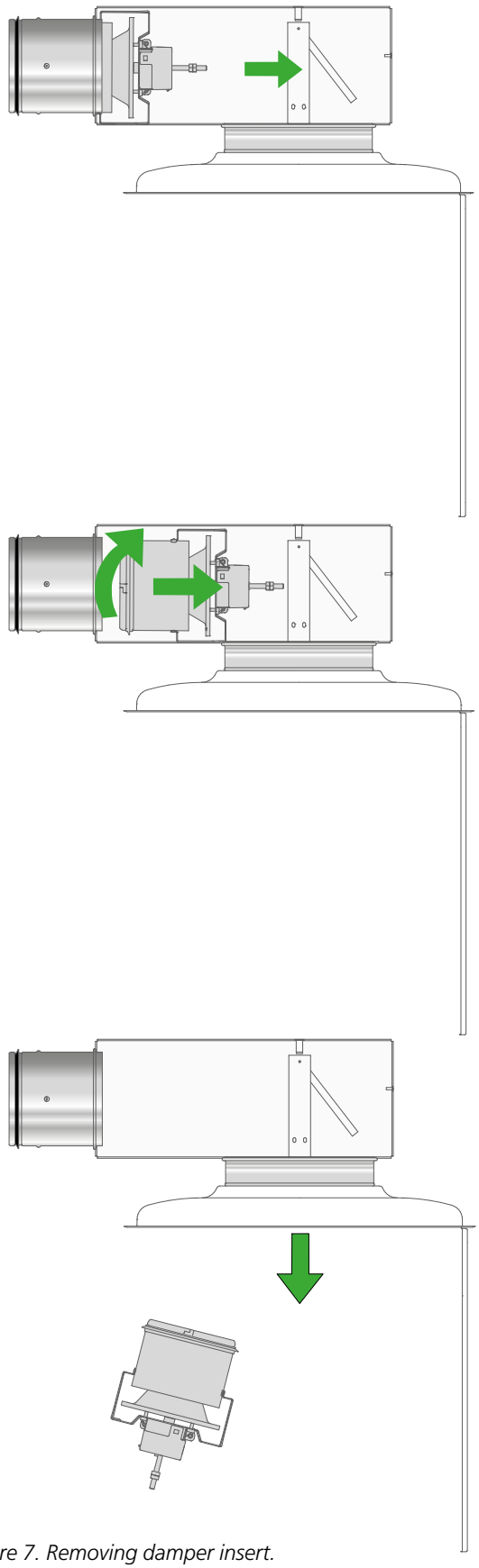


Figure 7. Removing damper insert.

1. *Disconnect the damper motor cable. Fold away the perforated mesh.*
2. *Turn the damper insert so that the bayonet fitting releases.*
3. *Pull out the damper insert.*
4. *Reassemble in the reverse order.*

Technical data

IP class:	IP42
Corrosivity class:	C3
Pressure class:	A
Leakage class according to SS-EN 1751:	C
Running times open/closed:	85 s
Ambient temperature	
Operation:	0 – +50 °C
Storage:	-20 – +50°C
RH:	10 - 95% (non-condensing)
CE marking:	2006/42/EC (MD)
	2014/30/EU (EMC)
	2011/65/EU (RoHS2)

Electrical data

Power supply:	24 V AC/DC ±15% 50 - 60 Hz	
Fixed connection cable, 250 mm with cable size.		
Supply voltage/control signal		4 x 0.75 mm^2
Modbus		2 x 0.38 mm^2
Power consumption, for transformer rating:		
REACT ALS GMB 150 N	2.0 W	3.5 VA

Declaration of Conformity

Swegon AB hereby affirms that:

REACT ALS GMBa complies with the essential characteristic demands and relevant regulations specified in the directives, 2006/42/EC (MD), 2014/30/EU (EMC) and 2011/65/EU (RoHS2):

The following standards have been observed:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk mitigation
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: Generic standards
EN 60730-1:2011	Automatic electrical control and control unit for household use - Part 1: Generic standards
EN 61000-6-2:2007	Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments
EN 61000-6-3:2007	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

CE

Person responsible for this declaration:

Name: Freddie Hansson, R&D Manager Tomelilla

Address: Industrigatan 5, 273 21 Tomelilla, Sweden

Date: 221116

This declaration is applicable only if the product has been installed according to the instructions in this document and if no modifications or changes have been made on this product.

References

www.swegon.com

Building Materials Declaration

REACT ALS GMB Product sheet

REACT Gruner Description of functions & wiring diagrams

REACT Gruner Modbus settings