REACT PX-SR GMBa

Instructions for Use

05/02/2024
Art. 1546182

Key to symbols

Symbols on the machine

This product complies with applicable EU directives CE

Symbols in these Instructions for Use

Warning/Caution!

Risk of crushing

Application area

The product is a pressure regulating damper designed for comfort ventilation indoors. The product is used to regulate supply or extract air pressure 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

1 x REACT PX-SR 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 will either open or close. This can entail a certain risk of pinch injuries, for example, to the fingers if these are placed between the damper blade and ventilation duct when the damper blade rotates.

The product is equipped with a spring return actuator and has no release button, manual control is performed using the supplied hex key where the damper blade is cranked to the required position and then locked. Do not forget to disable the lock after working on it.

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.

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 above a suspended ceiling.
- Install the product for easy access during service/maintenance.
- Supplement the duct system with a cleaning hatch in the vicinity of the product to facilitate cleaning.
- If the product is mounted above a fixed ceiling, the inspection hatch must be located so that the product is accessible for inspection.
- 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.
- If the product is mounted in cold areas, the whole product must be insulated on the outside against condensation.
- For installation, the accessory FSR is recommended.
- The product can be installed position-independent.
- It is recommended to mount the product so that the product's display is visible.
- 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.
- Use the product's eyes to secure the cables with cable ties.
- Check that all cables are properly secured in place after installation.
- Check that the actuator/controller is properly mounted.

The document was originally written in Swedish

Swegon

Installation, torque, dimensions and weights

Dimensions

Size Ød (mm)	A (mm)	B (mm)	C (mm)	E (mm)	F (mm)	G (mm)	Torque (Nm)	Weight (kg)
100	210	45	190	220	50	80	5	1.9
125	210	45	220	220	50	80	5	2.0
160	210	45	260	220	50	80	5	2.1
200	210	45	300	220	50	80	5	2.4
250	210	45	355	220	50	80	5	2.6
315	210	70	415	220	50	100	10	3.1
400	255	70	505	265	50	100	10	4.1
500	255	70	605	275	50	100	10	5.6
630	255	70	735	275	50	100	20	7.2

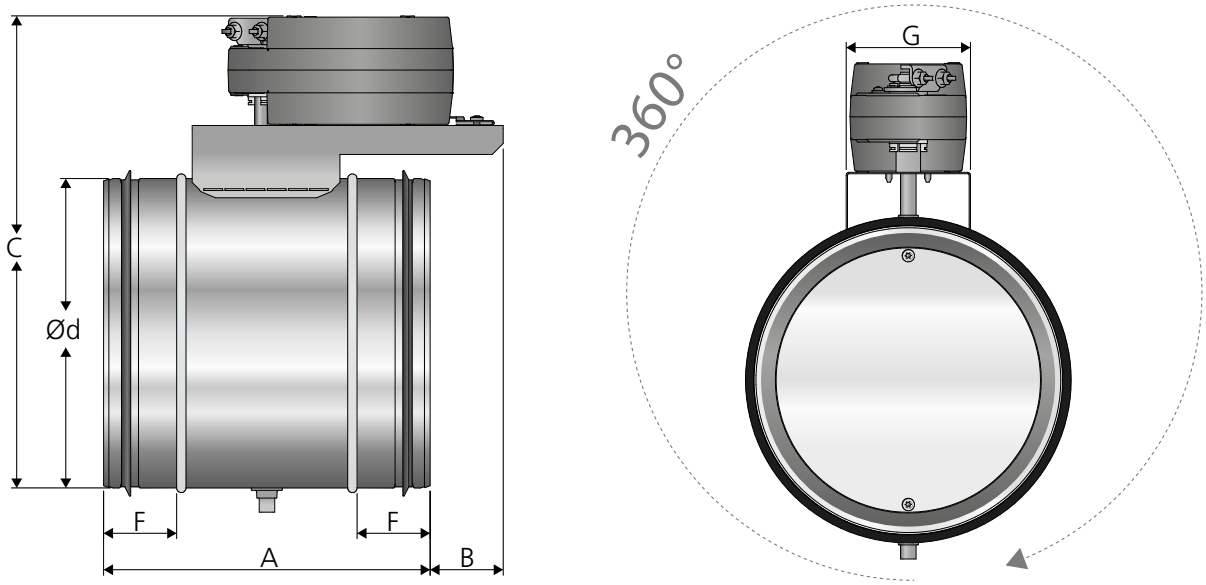

Figure 1. Dimensions (mm), REACT PX-SR GMB. The damper can be installed at an optional angle.

Installation

- The product's pressure measurement requires spacing as per the installation figures.
- In unfavourable conditions before or with disruption, the product's tolerances cannot be guaranteed.
- Installation is position dependent.
- The product can be installed horizontally or vertically.
- The user manual is supplied on delivery, but can also be downloaded from www.swegon.com.

Distance requirements

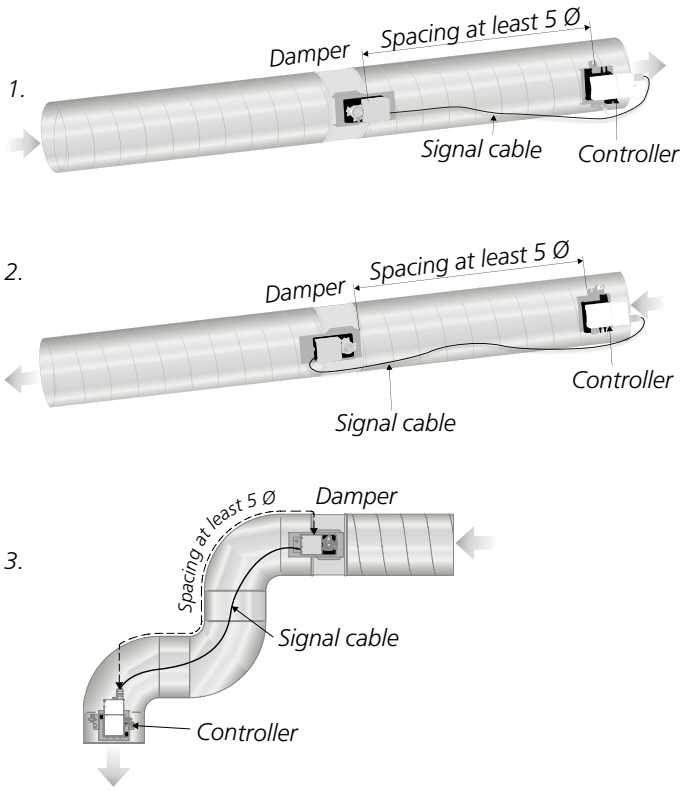

Figure 2. Distance requirements, number of Ø before and after product:
1. At least 5 x Ø after the damper (supply air).
2. At least 5 x Ø before the damper (extract air).
3. Examples of how spacing can be measured.
4. Controller installation.

Installation in the duct system

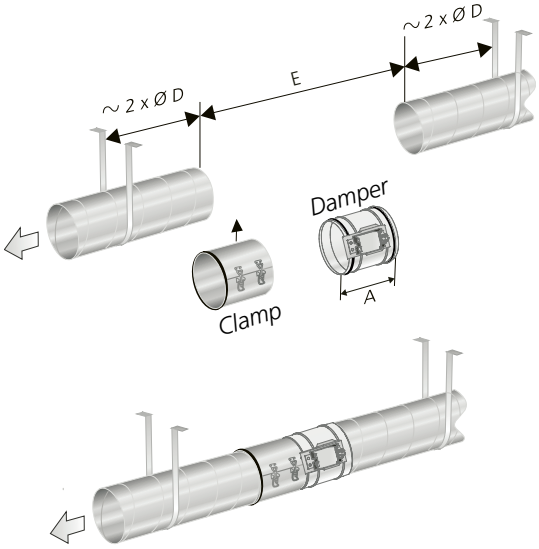

Figure 3. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Connection

1-2 – Supply voltage	24 V AC/DC
3 – Control signal (Y)	0..10/(2..10) V DC
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 page 8.

Load on output 4: max. 0.5 mA

NOTE! Electrical connection of the motor from the factory is not complete.

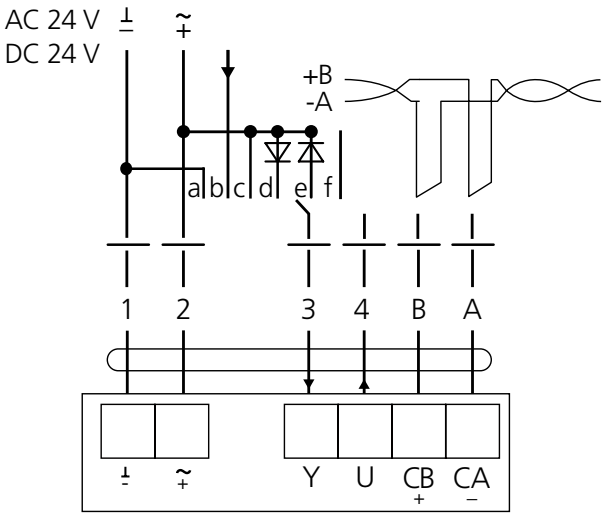

Figure 4. Connection.

Regulation and forced control via analogue control signal

See connection in the wiring diagram, Figure 4.

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

[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

Electrical connection actuator

A signal cable is connected between the actuator and controller's connection cables as per the numbers/colour coding. For example, 1 to 1, or black to black. See figure 5.

Connection points and signal cable not included.

Controller

Fixed connection cable,
1000 mm with cable size — 4 x 0.75 mm²

Actuator

Fixed connection cable,
1000 mm with cable size — 4 x 0.75 mm²

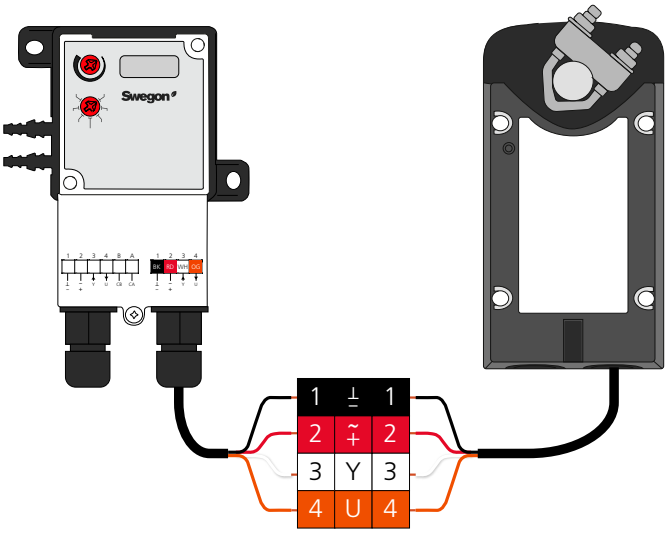

Figure 5. Connection between actuator and controller.

Length of signal cable

Max cable length between controller and actuator.

Cable area	Max. cable length
0.75 mm²	20 m
1.0 mm²	30 m
1.5 mm²	45 m
2.5 mm²	75 m

Pressure tube

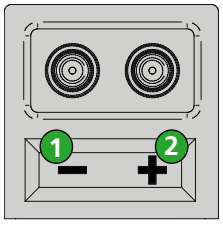

Figure 6. Tube couplings actuator.

1. *Pressure tube for extract air installation.*
2. *Pressure tube for supply air installation.*

Operation

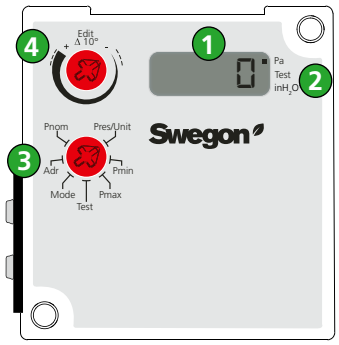

Figure 7. Gruner controller.

1 **Display**

Display for setting and changing value 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 the required values on the display

Pa:	Square is shown in the top right corner of the display
inH_2O*10^{-3}:	Square is shown in the bottom right corner of the display

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3 **Function wheel**

To select among the menus

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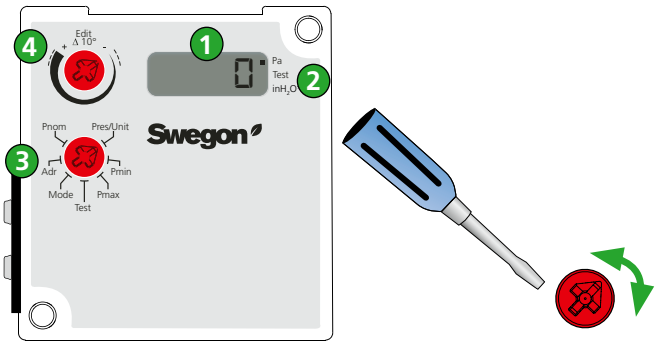
4 **Edit wheel**

To select a 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 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
Pres/Unit	0	Pa Test inH_2O*10^{-3}	Shows set point (flashes until the set point is reached) Change of unit, square in the display indicates the selected unit
Pmin	0	Pa Test inH_2O*10^{-3}	Adjustment to required min. value (set point Y = 0 /2 V DC) The min. value must be smaller than the max. value
Pmax	0	Pa Test inH_2O*10^{-3}	Adjustment to required max. value (set point Y = 10 V DC) The max. value must be larger than the min. value
Test	off	Pa Test inH_2O*10^{-3}	Forced control. Square in the display indicates active test mode. Alternately shows test mode/current air flow. Disconnects automatically after 10 hours.
	off		Normal operation
	on		Actuator stops in the current position
	oP		Opens the damper fully
	cL		Closes the damper fully
	Lo		The damper regulates to selected min. value
	Hi		The damper regulates to selected max. value
	AdP		End position calibration
	123		Shows the current software version
Mode	0-i	Pa Test inH_2O*10^{-3}	Actuator control. *Direction of rotation can only be changed via Modbus.*
	0-i		0-10 V DC, Analogue, Inverted direction of rotation (NO)
	2-i		2-10 V DC, Analogue, Inverted direction of rotation (NO)
	0-n		0-10 V DC, Analogue, Normal direction of rotation (NC)
	2-n		2-10 V DC, Analogue, Normal direction of rotation (NC)
Addr	1	Pa Test inH_2O*10^{-3}	Bus communication, see How to use Modbus
	1		Modbus address 1…247
	o24		Communication settings o 1…o 24
Pnom	100	Pa Test inH_2O*10^{-3}	Not used.

How to use Modbus

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

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

Display number	Baud Rate - Parity - Stop bit
1[3]	1200-None-2
2[3]	1200-Even-1
3[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[4]	19200-Even-1
15	19200-Odd-1
16	38400-None-2
17	38400-Even-1
18	38400-Odd-1
19[3]	1200-None-1
20	2400-None-1
21	4800-None-1
22	9600-None-1
23	19200-None-1
24	38400-None-1

[3] Limited data length per reading of max. 8 addresses

[4] 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 right and unique Modbus address.

The product shows incorrect/no air pressure

- Make sure that the product is energized.
- Make sure that the product is installed according to the recommended distance to disruptions, see "Installation".
- Check that there is air pressure.
- Check that the measuring tube is mounted correctly, plus for supply air function or minus for extract air function.
- Check that the measuring tubes are undamaged and not creased.
- Check the pressure in the measuring tube. Check the pressure in the measuring nipple.

The product does not regulate the air pressure

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

The product does not regulate the desired air pressure

- Check that the settings for Pmin and Pmax correspond with the desired regulation range.
- Check the electrical connection for the required function, see wiring diagrams in the document "REACT Gruner Description of functions & wiring diagrams".

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 set point settings for Pmin and Pmax. The value of Pmax must be higher than Pmin 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 attempt to 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

- When cleaning the ventilation system, the product must be dismantled if there are no cleaning hatches close to the product.
- 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).

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 by Swegon AB; or (2) the serial number on the product has been made illegible or is missing.

Performance checks

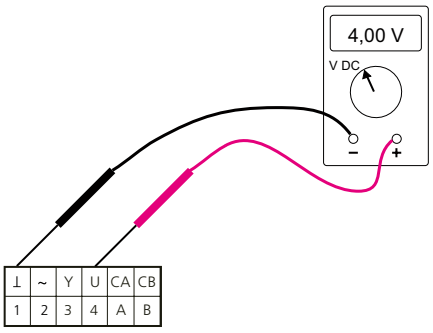


Figure 8. Shows how to connect a voltmeter for checking the actual value.

Formulas for calculating air pressure

The following applies for analogue control.

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

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

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

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

$$U = 10\ V\ DC \bullet \frac{P_{act}}{300}$$

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

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

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

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

$$U = 2\ V\ DC + 8\ V\ DC \bullet \frac{P_{act}}{300}$$

Key to formulas opposite:

Y = control signal in [V] DC.
U = actual value signal in [V] DC.
P_{act} = current air pressure in [Pa, inH_2O×10^{-3}].
P_{min} = set min. pressure in [Pa, inH_2O×10^{-3}].
P_{max} = set max. pressure in [Pa, inH_2O×10^{-3}].

Replacing the damper motor

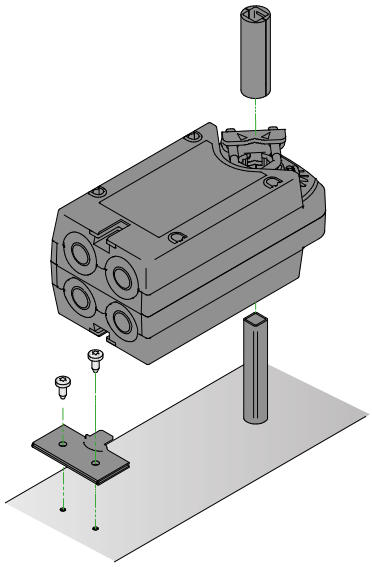


Figure 9. Dismantling the damper motor.

1. *Disconnect the cable.*
2. *Set damper motor to the open position.*
3. *Loosen the nuts on the spindle clamp (nuts: 8 mm).*
4. *Dismantle 2 screws for the locking strip (screws: TX20).*
5. *Lift off the damper motor and spindle adapter*
6. *Reassemble in the reverse order.*
   NOTE! Positioning of damper blade and locking strip, see figures 10 and 11.

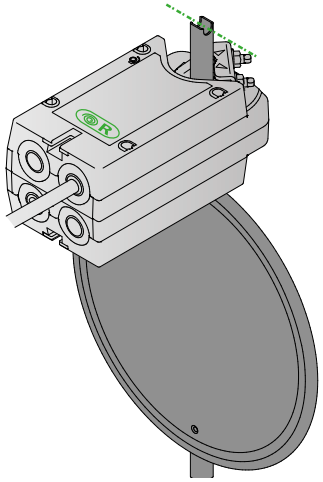


Figure 10. Standard installation (NC), damper closed with jumper to the right.

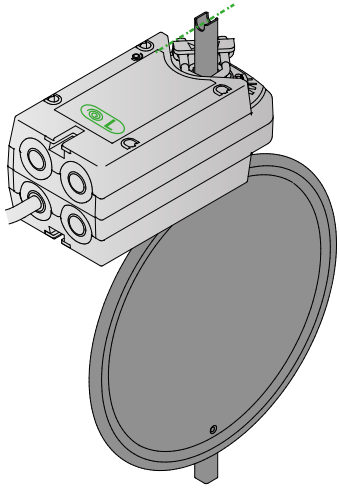


Figure 11. Damper open with jumper to the left (NO).

Change of direction

Figure 12. Change of direction.

1. *Standard installation of damper motor (NC (R)) Damper blade installed in closed position, see Figure 10.*
2. *Dismantle the circlip and spindle clamp.*
3. *Turn damper motor.*
4. *Refit spindle clamp and circlip. Then open the damper blade, see Figure 11.*
5. *Installed with spindle clamp (NO (L)).*
   Note: Settings must be changed on the product via Modbus (address 551, mode), see Modbus document.

Technical data

IP class:	IP42
Corrosivity class:	C3
Pressure class:	A
Leakage classes according to SS-EN 1751	
- Leakage class, casing:	C
- Leakage class, damper, closed:	4
Running time, electric (90°):	
5 Nm:	100 s
10 / 20 Nm:	150 s
Return time spring:	max. 20 s (90°)
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
Connection to screw terminals, cable size	6 x 0.5-2.5 mm^2

Power consumption, for transformer rating:		
REACT PX-SR GMB 5 Nm	5.0 W	6.5 VA
REACT PX-SR GMB 10 Nm	5.0 W	8.0 VA
REACT PX-SR GMB 20 Nm	8.0 W	11.5 VA

Signal cable connection

Controller

Fixed connection cable, 1000 mm with cable size	4 x 0.75 mm^2

Actuator

Fixed connection cable, 1000 mm with cable size	4 x 0.75 mm^2

Declaration of Conformity

Swegon AB hereby affirms that:

REACT PX-SR 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: 01/12/2023

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 PX-SR GMB Product data sheet

REACT Gruner – Description of functions & wiring diagrams

REACT Gruner – Modbus settings