REACT Ma

Instructions for Use

20201117
Art. 1546067

Symbol key

Symbols on the machine.

This product complies with applicable EU directives

CE

Symbols in this user manual

Warning/Caution!

Application area

The product is a measurement unit designed for comfort ventilation indoors. The product is used to measure supply and extract 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 is 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 M

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 products that are not required to run in production.

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

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 tube.

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 does not 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 in place.

The document was originally written in Swedish

Swegon

Installation, torque, dimensions and weights

Circular design

Size ØD (mm)	A (mm)	B (mm)	C (mm)	Weight (kg)	Flow range				Tolerance Q* ±5% with at least ±x l/s
					Min.		Max=Vnom*)		
					l/s	m³/h	l/s	m³/h	
100	220	50	200	0.8	5	18	90	324	2
125	220	50	225	0.9	9	32	147	529	2
160	220	50	260	1.1	16	58	254	914	2
200	220	50	300	1.2	25	90	404	1454	3
250	220	50	350	1.4	40	144	658	2369	5
315	220	50	415	1.7	63	227	1054	3794	8
400	220	50	500	2.1	102	367	1732	6235	13
500	230	50	600	2.5	164	590	2670	9612	20
630	230	50	730	3.0	300	1080	4174	15026	32

*) Vnom at 250 Pa in pressure reading.
*Installed according to the instructions

Installation – all designs

- 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.

Installation – circular version

- Installation is position dependent.
- Can be installed horizontally or vertically.

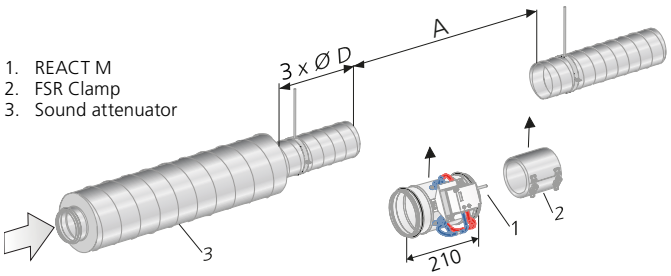


Figure 1. Requires a straight duct section of 3 x Ø for sound attenuators with baffle or centre body.

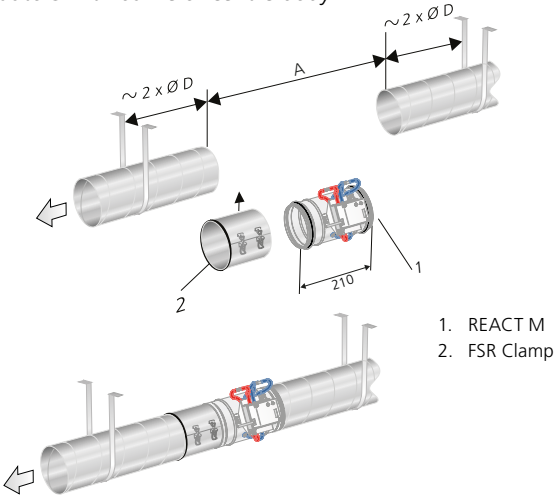


Figure 2. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of REACT M.

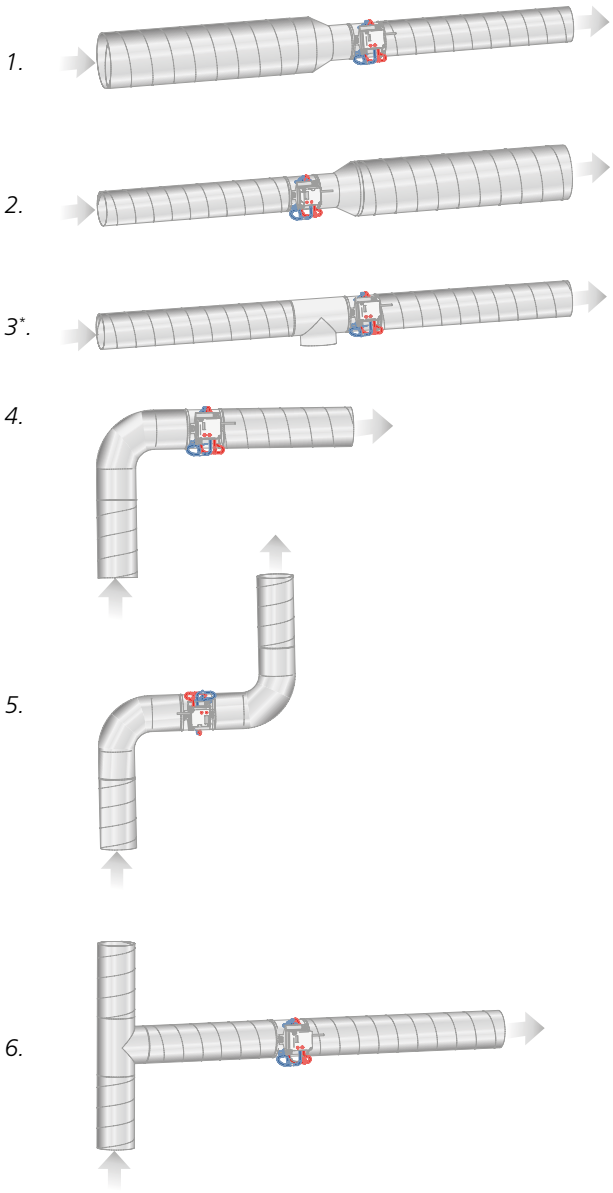


Figure 3. Straight duct section requirements, circular ducts, quantity Ø before the product:
Figures 1-5 require no straight duct section (figure 3 illustrates the T piece with cleaning hatch).*
Figure 6 requires a straight duct section before the product equivalent to 4 x the diameter of the duct.

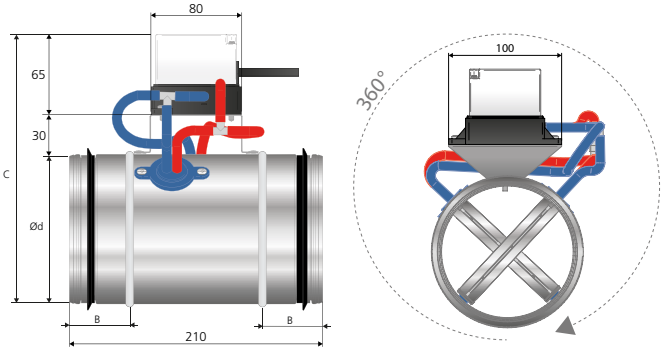


Figure 4. Dimensions (mm), REACT M circular. The damper can be installed at an optional angle.

Rectangular design

Size WxH (mm)	Weight (kg)	Flow range				Tolerance Q* ±5% with at least ±x l/s
		Min		Max=Vnom*)		
		l/s	m³/h	l/s	m³/h	
200 x 200	2.5	67	240	527	1897	8
300 x 200	3.0	100	360	790	2845	12
400 x 200	3.4	133	480	1054	3793	17
500 x 200	3.9	167	600	1317	4742	21
600 x 200	4.3	200	720	1581	5690	25
700 x 200	4.8	233	840	1844	6638	29
800 x 200	5.3	267	960	2107	7586	33
1000 x 200	6.2	333	1200	2634	9483	42
300 x 300	3.4	152	548	1204	4334	19
400 x 300	3.8	203	731	1605	5779	25
500 x 300	4.3	254	914	2006	7223	32
600 x 300	4.8	305	1096	2408	8668	38
700 x 300	5.1	355	1279	2809	10113	44
800 x 300	5.7	406	1462	3210	11557	51
1000 x 300	6.6	508	1827	4013	14447	63
400 x 400	4.4	273	983	2158	7769	34
500 x 400	4.9	341	1228	2697	9711	43
600 x 400	5.3	409	1474	3237	11653	51
700 x 400	5.9	478	1720	3776	13595	60
800 x 400	6.4	546	1965	4316	15537	68
1000 x 400	7.3	682	2457	5395	19421	85
1200 x 400	8.3	819	2948	6474	23306	102
1400 x 400	9.2	955	3439	7553	27190	119
1600 x 400	10.2	1092	3931	8632	31074	136
500 x 500	5.3	429	1543	3388	12195	54
600 x 500	5.7	514	1851	4065	14634	64
700 x 500	6.3	600	2160	4743	17073	75
800 x 500	6.7	686	2468	5420	19513	86
1000 x 500	7.7	857	3085	6775	24391	107
1200 x 500	8.7	1028	3702	8130	29269	129
1400 x 500	9.7	1200	4319	9485	34147	150
1600 x 500	10.7	1371	4936	10840	39025	171
600 x 600	6.4	618	2227	4890	17602	77
700 x 600	7.0	722	2598	5704	20536	90
800 x 600	7.4	825	2969	6519	23470	103
1000 x 600	8.5	1031	3711	8149	29337	129
1200 x 600	9.5	1237	4453	9779	35204	155
1400 x 600	10.5	1443	5195	11409	41072	180
1600 x 600	11.6	1649	5937	13039	46939	206
700 x 700	7.4	844	3038	6671	24014	105
800 x 700	7.9	964	3472	7624	27445	121
1000 x 700	8.9	1205	4339	9530	34306	151
1200 x 700	9.9	1446	5207	11435	41168	181
1400 x 700	11.0	1688	6075	13341	48029	211

*) Vnom at 250 Pa in pressure reading.
*Installed according to the instructions

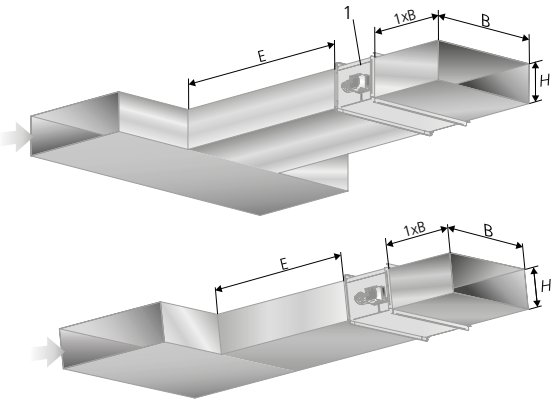
Installation – rectangular design

Dimension B in the figure and table below is found in the table "Rectangular design" to the left.

- Installation is position dependent.
- Can be installed horizontally or vertically.

Straight section before REACT M in rectangular ducts

Type of disruption	E (m_2=5%)	E (m_2=10%)
One 90° bend	E = 3 x B	E = 2 x B
T piece	E = 3 x B	E = 2 x B

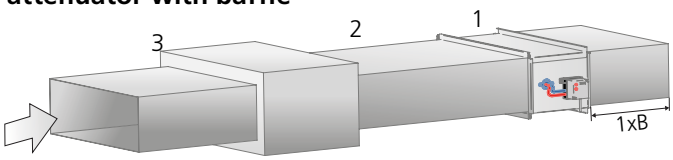


1. Controller/Actuator always on the side of the rectangular damper.

E = Straight section.
W = Width, duct.
H = Height, duct.

Figure 5. Straight section requirements, rectangular ducts.

Straight duct section before/after REACT M – sound attenuator with baffle



1. = Rectangular REACT M
2. = Straight duct ≥3xB.
3. = Sound attenuator with baffle.

Figure 6. Straight duct section requirements, rectangular REACT M and sound attenuator with baffle. Installation with a straight duct section applies to both the supply air and the extract air.

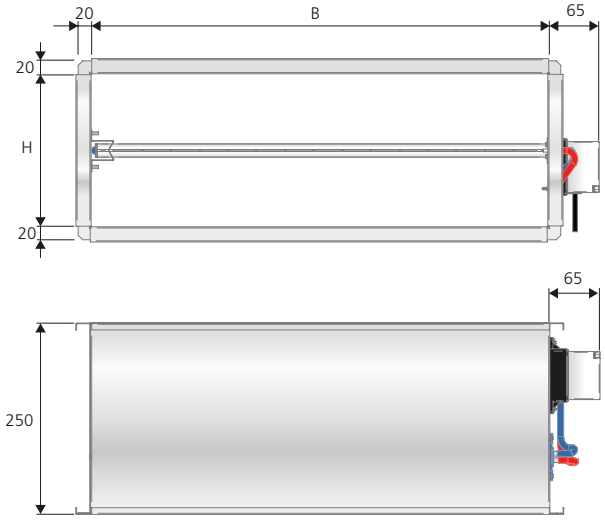


Figure 7. Dimensions, REACT M rectangular.

Connections

1-2 – Supply voltage	24 V AC/DC
1-4 – Actual value signal (U)	0..10/(2..10) V

A-B – Modbus

For further calculations of U see the formulas page 7.

Load on output 4: max. 0.5 mA

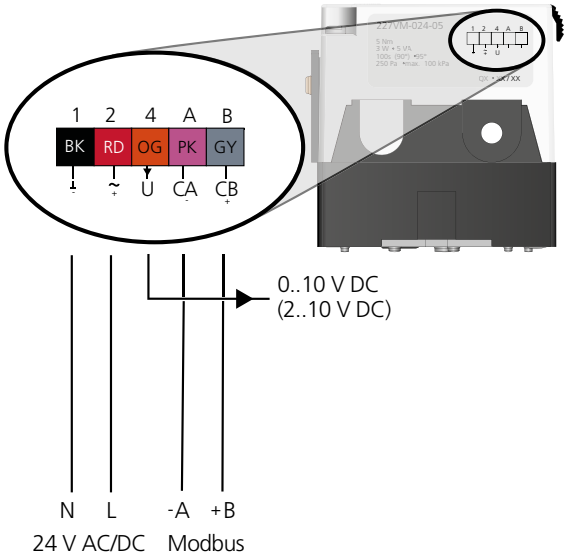


Figure 8. Wiring diagram.

Handling

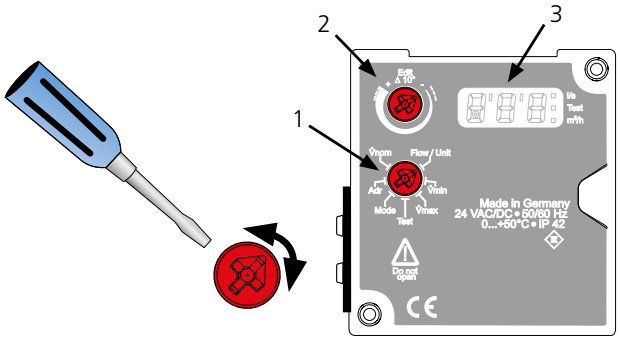


Figure 9. REACT interface.
1 – Select the required function by turning the "Function wheel".
2 – Set the value or select submenus by turning the "Edit" wheel.
3 – The value flashes twice when a new value is accepted.

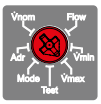
Menus

Flow

- Switch between l/s and m^3/h via the edit wheel.
- A "Lit" square on the display indicates the selected unit.

Vmin

- Select new value for Vmin via the edit wheel.
- Vmin should be less than Vmax.
- Vmin is equal to 0/2 V actual value signal.



Vmax

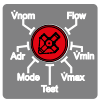
- Select new value for Vmax via the edit wheel.
- Vmax should be greater than Vmin.
- Vmax is equal to 10 V actual value signal.

Test

- Turn the edit wheel to choose between the following modes:

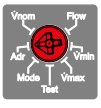
oFF – Test mode switched off, the controller regulates normally

123 – Shows the current software version



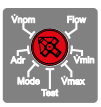
Mode

- Shows the selected actual value signal
- Switch between 0-10 and 2-10 V via the edit wheel



Addr

- Used for Modbus. for particulars on how to use Modbus, see next page.

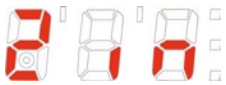


Vnom

- Used for factory configuration.

How to use Modbus

Modbus tables are available in a separate document (REACT-Modbus-m)

Function	Description	
Addr		Enables you to set the actuator's Modbus address, by turning the "edit wheel". It is possible to set the address from 1 till 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.
	The following functions are available at the second level:	
	Flow	Return to previous level
	V_{min}	Not used.
	V_{max}	Not used.
	Test	Not used.
	Mode	Shows the angle of the rotation (0…255 digital 0....100%)
	Addr.	Used for selecting communication settings for Modbus. See table below.
	V_{nom}	Used for setting response delay for the Modbus communication (see separate documents)

Display number	EEPROM value	Communication rate	Parity	Stop bits
1[3]	0	1200	None	2
2[3]	1	1200	Even	1
3[3]	2	1200	Odd	1
4	3	2400	None	2
5	4	2400	Even	1
6	5	2400	Odd	1
7	6	4800	None	2
8	7	4800	Even	1
9	8	4800	Odd	1
10	9	9600	None	2
11	10	9600	Even	1
12	11	9600	Odd	1
13	12	19200	None	2
14[4]	13	19200	Even	1
15	14	19200	Odd	1
16	15	38400	None	2
17	16	38400	Even	1
18	17	38400	Odd	1
19[3]	18	1200	None	1
20	19	2400	None	1
21	20	4800	None	1
22	21	9600	None	1
23	22	19200	None	1
24	23	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 the incorrect/no air flow

- Make sure that the product is energized.
- Check that the product's set size corresponds with the physical size.
- 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 tube is 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.

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 is 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

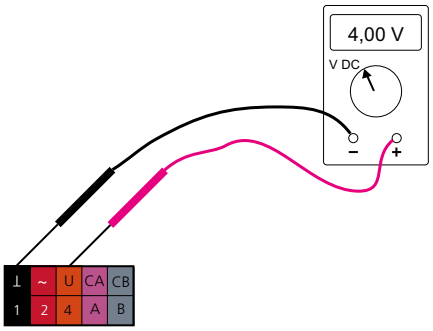


Figure 10. Shows how to connect a voltmeter for checking the actual value.

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

$$U = 10\ V\ DC \bullet \frac{V_{act} - V_{min}}{V_{max}}$$

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

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

Key to formulas above:
U = actual value signal in [V] DC
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]

Technical data

IP class:	IP42
Corrosivity class:	C3
Leakage classes according to SS-EN 1751	
- Leakage class, casing:	C
Ambient temperature	
Operation:	0 – +50 °C
Storage:	-20 – +50°C
RH:	10 - 95% (non-condensing)
CE marking:	2014/35/EU (LVD)
	2014/30/EU (EMC)
	2011/65/EU (RoHS2)

Electrical data

Power supply:	24 V AC/DC ±20% 50 - 60 Hz
Fixed connection cable, 1000 mm with cable size.	3 x 0.75 mm ^{2}
	2 x 0.38 mm ^{2}

Power consumption, for transformer rating:

REACT M	0.6 W	1.3 VA

Declaration of Conformity

Swegon AB hereby declares that:

REACT M complies with the essential characteristic demands and relevant regulations specified in the directives, 2014/35/EU (LVD), 2014/30/EU (EMC) and 2011/65/EU (RoHS2):

The following standards have been observed:

EN 60730-1:2011	Automatic electrical controls for household and similar 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: 200601

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 M Product Data Sheet

REACT Description of functions & Wiring diagram

REACT Modbus