

iSWAY-WFC®

WALL PRESSURISATION UNIT



Characteristics:

Set of products for pressure differentiation in smoke and heat control systems. Wall pressurisation unit with complete automation and accessories.

Intended use

The iSWAY® sets of products are intended for overpressure protection against smoke of escape routes in buildings in case of fire. Examples of SAFETY WAY® system layouts both during evacuation and rescue and firefighting operations. Thanks to a wide range of variants and available accessories, even the most complex pressure differential systems can be built of iSWAY® devices to provide effective protection against smoke in evacuation routes in buildings of various purposes.

iSway-WFC® wall unit is mountable directly into the wall of the building. All elements of the set responsible for its functioning (except for field automation elements such as boards, pressure sensors, etc.) are mounted inside the casing. The automation cabinet (SzA-FCK) is separate and must be connected to the unit on site.

Principle of operation

The creation and precise regulation of overpressure in protected spaces is carried out by changing the fan capacity based on measuring the pressure difference between the protected space and the reference (interior of the building or surroundings). The air stream supplied to the protected space is set automatically by changing the rotation speed of the fan equipped with a frequency converter (inverter). ISWAY® devices ensure that the escape routes are kept free of smoke, both during the pressure criterion (all doors closed) as well as during evacuation and rescue and fire-fighting operations (open doors in accordance with the adopted design assumptions). The sets of iSWAY-FC®, -RFC® and -WFC® devices provide continuous measurement and monitoring of overpressure in the protected space and an immediate response to its change by increasing or reducing the fan capacity without the need for mechanical overpressure dampers in staircases and standard transfer flaps in the atria.

Each device implements an individually programmed scenario, which means that there is no need to use a master controller. A dedicated two-way, ring-type fireBUS® bus has been used for communication and control. There are two types of fireBUS® loops:

- a. Global fireBUS® - a global loop connecting MAC-FC controllers in iSWAY automation cabinets and a Control and Signal Board (TSS) or Control Board (TS),
- b. Local fireBUS® - a local loop connecting MAC-FC controllers remote pressure difference sensors P-MACF, pressure regulators MAC-D-Min, temperature sensors T-MAC and MAC-LINK cards.

Dimensions

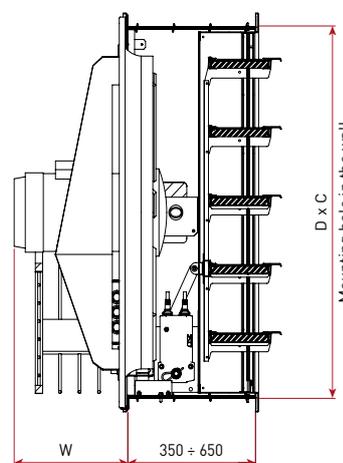
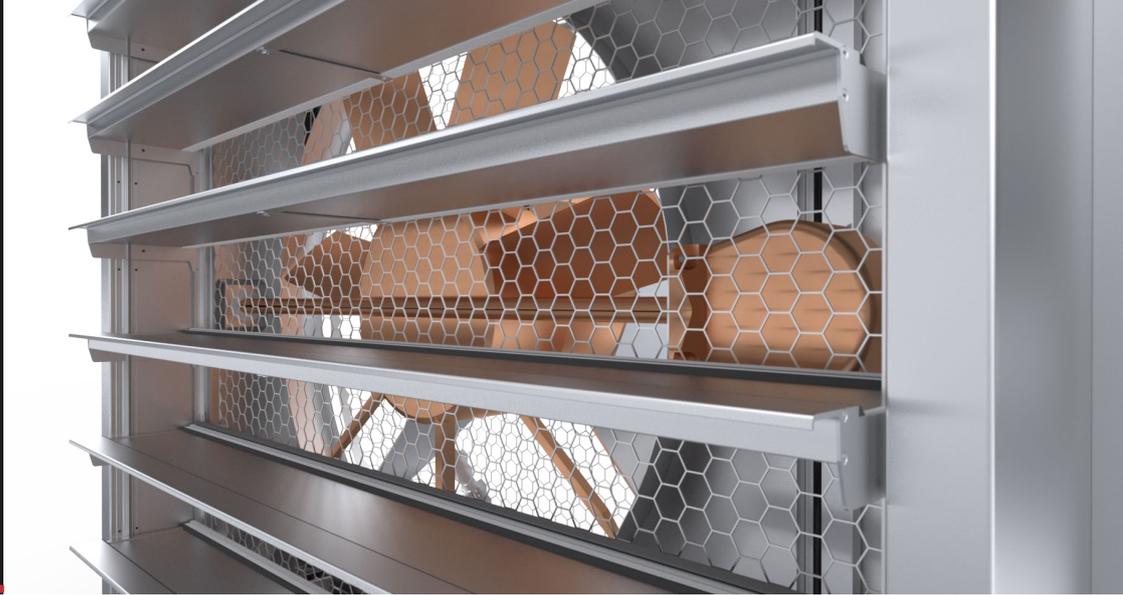


Figure 1. Dimensions of iSWAY-WFC® device.

Table 1. Dimensions of iSWAY-WFC® devices

| Size | Hole width | | length of the telescopic duct in the partition G [mm] | Length outside partition W [mm] |
|------|------------|--------|--|------------------------------------|
| | C [mm] | D [mm] | | |
| 1.1 | 955 | 785 | 350 - 650 | 165 |
| 1.5 | 1035 | 785 | | 165 |
| 2.2 | 1135 | 960 | 350 - 650 | 185 |
| 3.0 | 1240 | 960 | | 315 |
| 5.5 | 1355 | 1135 | | 345 |



Examples of SAFETY WAY® system layouts

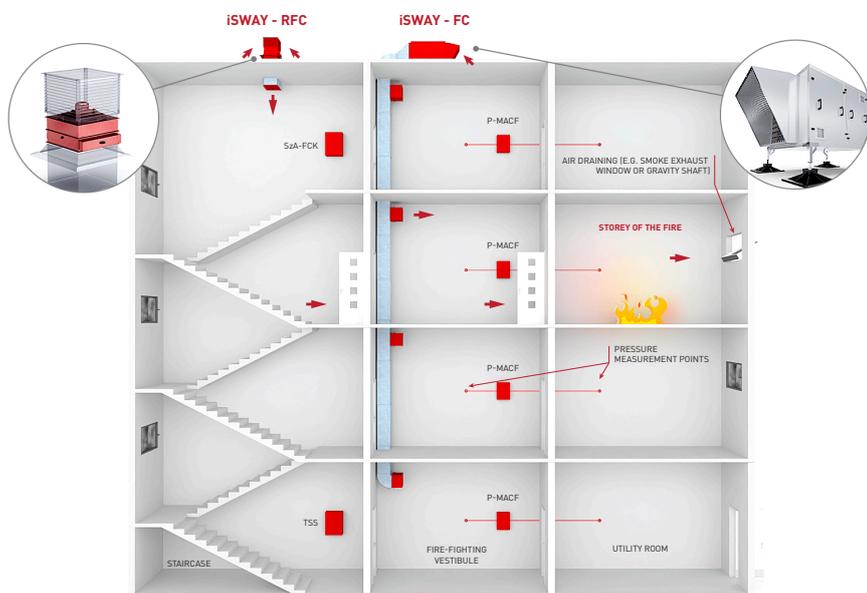


Figure 2. Aeration of the staircase with the use of multi-point ventilation and an iSWAY-FC® device..

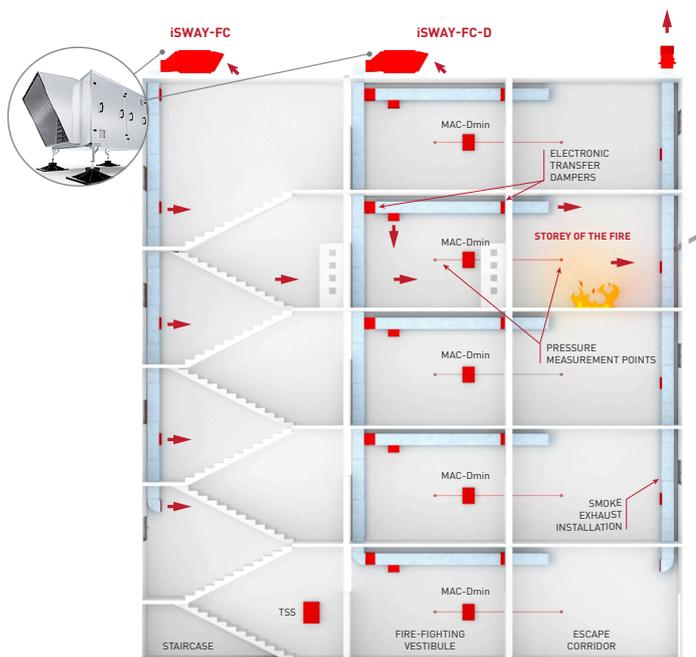


Figure 3. . Aeration of the staircase with the iSWAY-FC® device with multi-point airflow and the vestibules with the iSWAY-FC® device with electronic transfers ensuring compensation of smoke exhaust from corridors.

Table 2. Components of the iSWAY® devices.

| Name | Component appearance | Brief description |
|---|----------------------|---|
| Control and Signalling Board TSS | | indication of current value of overpressure in the protected space, monitoring of proper operation of iSWAY® type devices and possibility of manual control of the iSWAY® devices |
| Monitoring of Device Operating conditions MSPU | | visualization of architecture and diagnostics of complex pressure differential systems of SAFETY WAY® type |
| Control Board TS | | manual control of the iSWAY® devices (to be used along with MSPU) |
| Pressure sensor P-MACF | | measuring the pressure difference between the protected space and the reference |
| Digital pressure controller MAC-D-Min | | control of dampers to maintain the set overpressure value in protected spaces |
| connector box PZ | | Connection of damper actuators with MAC-D-Min controllers |
| Temperature sensor T-MACF | | measuring the temperature of inside and outside air. Using in reversible pressure differential system SAFETY WAY (R) to determine flow direction. |
| I/O card MAC-LINK | | extension of the basic functionality of the pressure differential system in buildings by increasing the available number of digital and analog inputs/outputs |

Technical data

Table 3. Parameters of iSWAY-WFC® devices.

| Size | Active power | Supply voltage | Apparent power | Sound power level | sound pressure level in distance of 3m | Hole width | Hole height | length of the telescopic duct in the partition | Length outside partition | Weight |
|------|--------------|----------------|----------------|-------------------|--|------------|-------------|--|--------------------------|--------|
| | [kW] | [V] | [kVA] | LWA dB(A) | LPA [dB(A)] | C [mm] | D [mm] | G [mm] | W [mm] | m [kg] |
| 1.1 | 2,02 | 3x400 | 2,06 | 87 | 66 | 955 | 785 | | 165 | 66 |
| 1.5 | 2,50 | 3x400 | 2,54 | 91 | 70 | 1035 | 785 | | 165 | 70 |
| 2.2 | 3,20 | 3x400 | 3,26 | 94 | 73 | 1135 | 960 | 350 - 650 | 185 | 80 |
| 3.0 | 4,14 | 3x400 | 4,22 | 104 | 83 | 1240 | 960 | | 315 | 110 |
| 5.5 | 7,09 | 3x400 | 7,23 | 108 | 87 | 1355 | 1135 | | 345 | 180 |

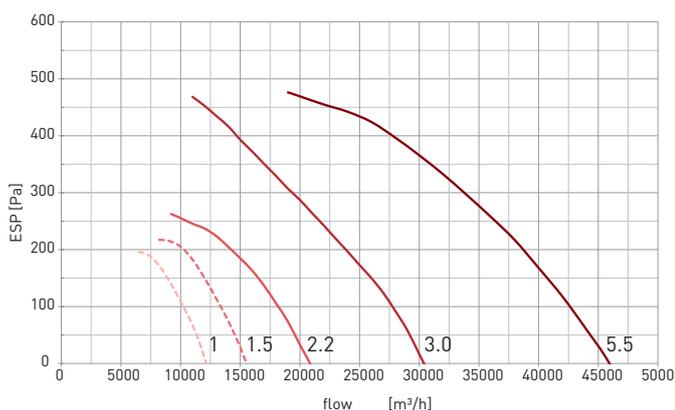


Chart 1. Standard characteristics of iSWAY-WFC® devices.

Components included in the iSWAY-WFC® device:

- inverter controlled fan
- air intake with a servomotor constituting the shut-off damper
- smoke detector
- telescopic duct for wall mounting
- fan mesh cover
- inspection panel
- automation cabinet Sza-FCK (with frequency converter, regulator, 24 VDC power supply, braking resistor) - mounted separately outside the device

Note: in range of series of types, there is the possibility of a custom fan version.

1. For simple pressure differential systems, use the Control and Signal Board (TSS) that supports a maximum of 6 iSWAY devices.
1. Complex pressurization systems shall be fitted with Operating Conditions Monitoring Device (MSPU) with Control Board (TS).
1. TSS or TS with MSPU should be located in a room accessible to rescue and firefighting teams, optimally at the entrance to the building or in the BMS room.
1. Maximum length of the pressure differential measurement tubes shall not exceed 12 m.
1. The maximum number of pressure difference sensors of P-MACF type or damper controllers of MAC-D-Min type on a single loop is 64.



Detailed technical parameters of the devices as well as guidelines for assembly and connection are given in the manufacturer's Operating and Maintenance Documentation.



SMAY Sp. z o. o. reserves the right to update and make changes to this catalog card without prior notice.

Device items of iSWAY-WFC® system

KWR compact exhaust vent

For some staircases in high-rise buildings, it is possible to use a one-way flow system with aeration with the iSWAY-WFC® device and a compact KWR exhaust vent in the upper part of the staircase. KWR counteracts excessive pressure increase caused by chimney draft, preventing the door from being opened. The KWR exhaust vent consists of a roof base, SRC-Z-KWR damper with three Belimo NMQ24-A-SR actuators, MAC D-Min regulator with pressure sensors and a WPDB roof vent.

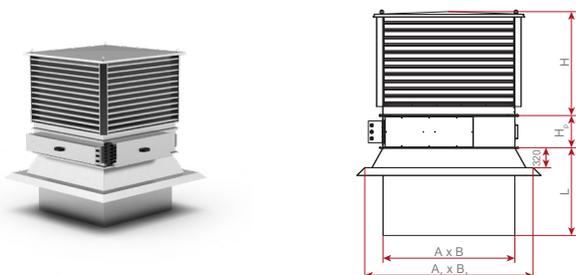


Figure 4. KWR exhaust vent.

KSN compact permanent vent

If an additional unsealing of the staircase is necessary, a roof vent with an ON/OFF damper can be used. Its task is to unseal the protected space in order to minimize pressure surges. The compact permanent vent consists of a roof base, SRC-Z-KSN damper with Belimo BF24 actuator and WPDB roof vent.

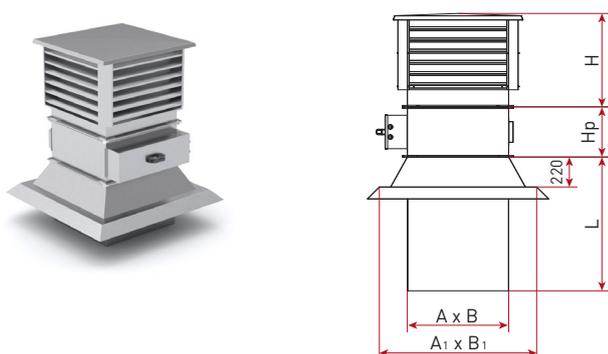


Figure 5. Dimensions of KSN vent.

Table 4. Dimensions of KWR vent.

| Wielkość wyrzutni | Przyłącz kanału | Podstawa dachowa | Wysokość wyrzutni | Długość przepust. | Masa |
|-------------------|-----------------|--------------------------------------|-------------------|-------------------|--------|
| | A x B [mm] | A ₁ x B ₁ [mm] | H [mm] | Hp [mm] | m [kg] |
| 1205x1205 | 1205 x 1205 | 1605 x 1605 | 910 | 300 | 172 |

KWR - compact exhaust vent

Upon placing an order the following information shall be provided:

KWR-1205x1205-<L>-<P><RAL>

Where:

L length of roof base

P finishing

SO - galvanized steel

SL - powder coated steel

RAL color according to RAL (for SL finishing)

Example of order: **KWR-1205x1205-500-SO**

Table 5. Dimensions of KSN vent.

| Wielkość wyrzutni | Przyłącz kanału | Podstawa dachowa | Wysokość wyrzutni | Długość przepust. | Masa |
|-------------------|-----------------|--------------------------------------|-------------------|-------------------|--------|
| | A x B [mm] | A ₁ x B ₁ [mm] | H [mm] | Hp [mm] | m [kg] |
| 605x605 | 605 x 605 | 901 x 901 | 530 | 300 | 80 |

KSN - compact permanent vent

Upon placing an order the following information shall be provided:

KSN-605x605-<L>-<P><RAL>

Where:

L length of roof base

P finishing:*

SO - galvanized steel

SL - powder coated steel

RAL color according to RAL (for SL finishing)

Example of order: **KSN-605x605-500-SO**

iSWAY-WFC® - Wall pressurisation unit

Upon placing an order for iSWAY-WFC® type unit following information shall be provided:

iSWAY - WFC-<W>-<U>-<Y>-<Dc>-<P><RAL>

Where:

| | |
|------------|---|
| W | size/type of the unit |
| | 1.1 – capacity 9500 m³/h at external static pressure of 150 Pa |
| | 1.5 – capacity 12700 m³/h at external static pressure of 150 Pa |
| | 2.2 – capacity 17000 m³/h at external static pressure of 150 Pa |
| | 3.0 – capacity 27000 m³/h at external static pressure of 200 Pa |
| | 5.5 – capacity 42000 m³/h at external static pressure of 200 Pa |
| U | location of the automation cabinet SzA-FCK* |
| | none - inside the building |
| | Z - outside the building |
| Y | 24V DC additional outputs* |
| | none - no 24V DC additional outputs |
| | M - additional outputs 24V DC to power supply for TSS, KWR, KSN, PMAC-F or MAC-D-Min |
| Dc | additional pressure sensor in the device* |
| | none - no additional pressure sensor |
| | PF - PMAC-F standard pressure sensor ±500 Pa |
| P | finishing (P and RAL relate to CDH-K intake included into iSWAY-WFC) |
| | AA - lamella profiles made of anodized aluminum, frame made of powder coated aluminum RAL9006 mat |
| | AL - frame and lamella profiles made of powder coated aluminum |
| RAL | RAL color (for AL. finishing) |

* optional values - default values will be used if optional values are not specified .

Example of order: **iSWAY – WFC – 3.0-AA**