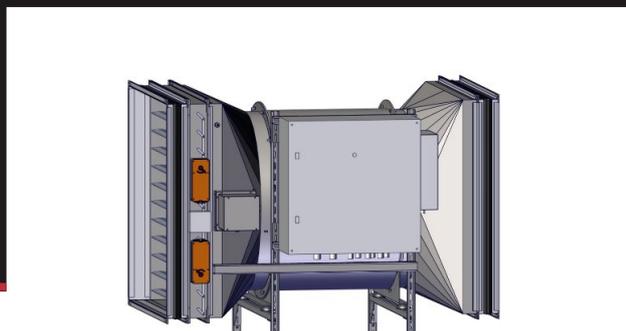


iSWAY-FC-B[®]

PRESSURISATION UNIT WITHOUT HOUSING



Characteristic:

Set of products for pressure differentiation in smoke and heat control systems. Pressurisation unit without housing with complete automation and accessories.

Intended use

The iSWAY-FC[®], iSWAY-WFC[®] and iSWAY-RFC[®] sets of products are intended for overpressure protection against smoke of escape routes in buildings in case of fire, parts 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.

The unit without the housing iSWAY-FC-B allows for separate assembly of individual elements of the unit, such as a fan, damper, automation cabinet, etc., which allows the unit to be used on short parts of the installation.

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:

- Global fireBUS[®] - a global loop connecting MAC-FC controllers in iSWAY automation cabinets and a Control and Signal Board (TSS) or Control Board (TS),
- 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

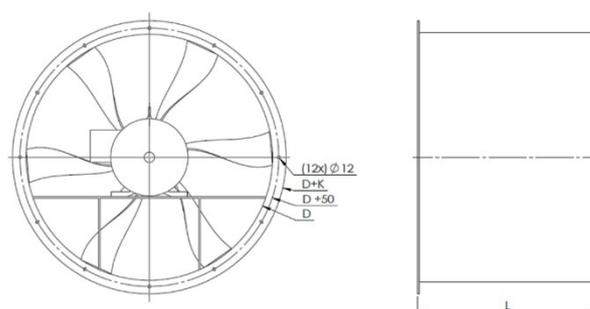


Figure 1. Dimensions of fan for iSWAY-FC-B[®] device

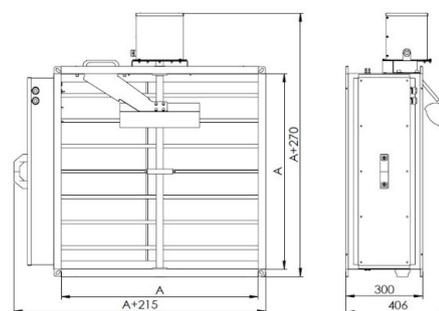


Figure 2. Dimensions of damper with smoke detector SRC

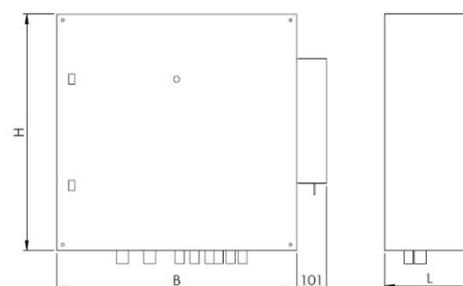


Figure 3. Dimensions of automation cabinet FCK

Table 1. Dimensions of main components iSWAY-FC-B[®].

iSWAY size	Diameter ØD [mm]	Length L [mm]	Flange ½K [mm]	Damper AxA [mm]	Cabinet FCK BxHxL [mm]
0.3, 0.12	560	450	50	770x770	600x750x210
1.17, 1.20, 1.24	800	620	50	1005x1005	600x750x210
2.31					600x750x210
2.39, 2.47	1000	730	55	1205x1205	750x750x210
2.75					800x800x300

FIRE VENTILATION ZONE

National Technical Assessment
ITB-KOT-2018/0565



System SAFETY WAY®

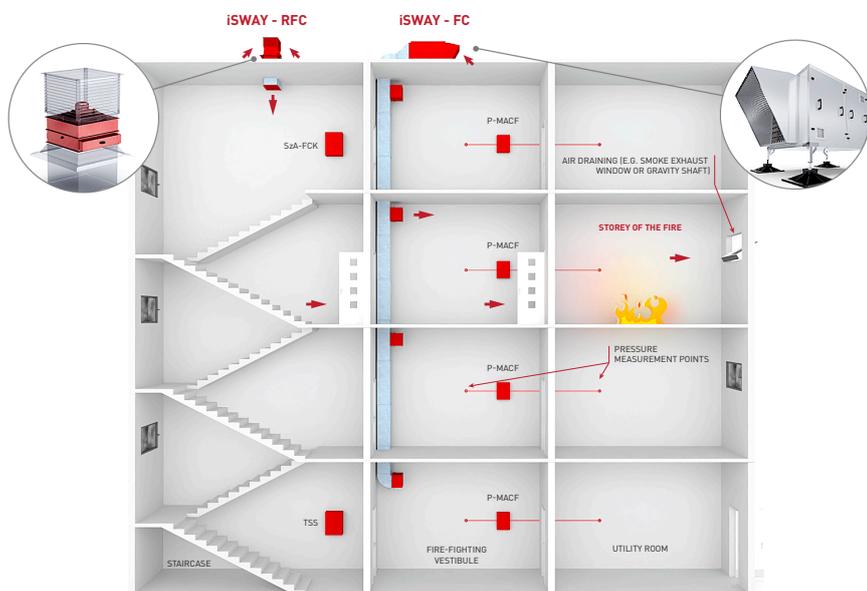


Figure 4. Aeration of the staircase with the use of multi-point ventilation.

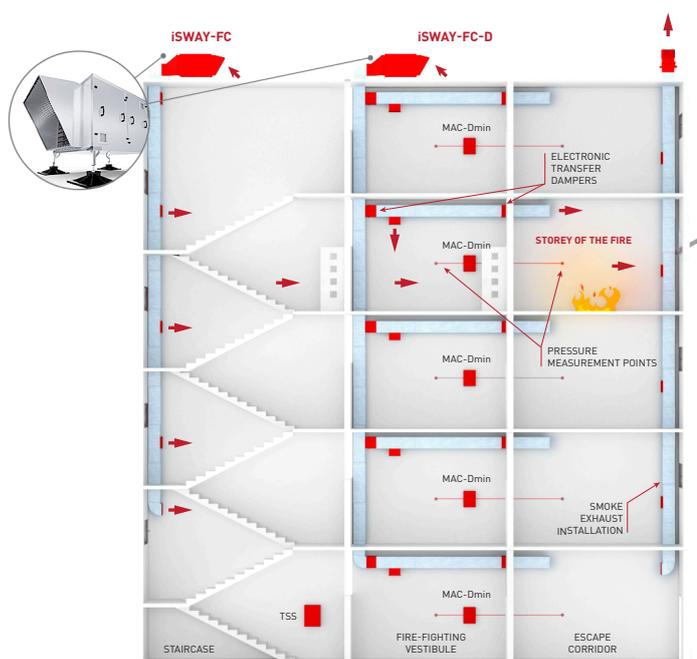


Figure 5. Aeration of the staircase with multi-point airflow and the vestibules with electronic transfers ensuring compensation of smoke exhaust from corridors.

Table 2. Components of Safety Way® system.

Name	Component appearance	Brief description
Control and Signalling Board TSS		Indication of current value of overpressure in the protected space, monitoring of iSWAY® proper operation
Monitoring of Device Operating conditions MSPU		Visualisation of architecture and diagnostics of complex pressure differential systems 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 space
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
I/O card MAC-LINK		Extension of basic functionality of the pressure differential system in buildings by increasing the available number of digital and analogue inputs/outputs

Technical data

Table 3. Parameters of iSWAY-FC-B® devices.

Size	Diameter	Active power [kW]	Supply voltage [V]	Apparent power [kVA]	Sound power level in frequency bands, L_w [dB]								L_{WA} [dB(A)]	Fan weight, m [kg]			Air damper weight m [kg]	Automation cabinet weight m [kg]
	ØD [mm]				63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz		TOTAL	FC-(D)	FC-R		
0.3	560	3,38	3x 400	3,45	89	96	95	94	92	89	88	84	97	51	-	35	34	26
0.12		5,47	3x 400	5,57	92	91	91	91	92	90	91	87	98	62	-	59		
1.17		5,26	3x 400	5,36	90	91	91	92	91	88	88	84	96	105	136	94		
1.20	800	6,96	3x 400	7,10	92	90	92	90	89	88	88	84	95	114	130	102	47	
1.24		9,22	3x 400	9,40	93	90	92	90	89	89	88	84	96	135	140	115		
2.31	1000	9,22	3x 400	9,40	91	90	90	90	90	89	91	88	97	230	153	141	58	
2.39		13,00	3x 400	13,26	94	94	92	93	92	92	92	89	99	245	207	205		
2.47		17,40	3x 400	17,75	71	78	83	87	89	89	87	79	95	289	221	233		33
2.75		21,26	3x 400	21,34	96	103	99	98	96	93	90	87	101	-	-	273		

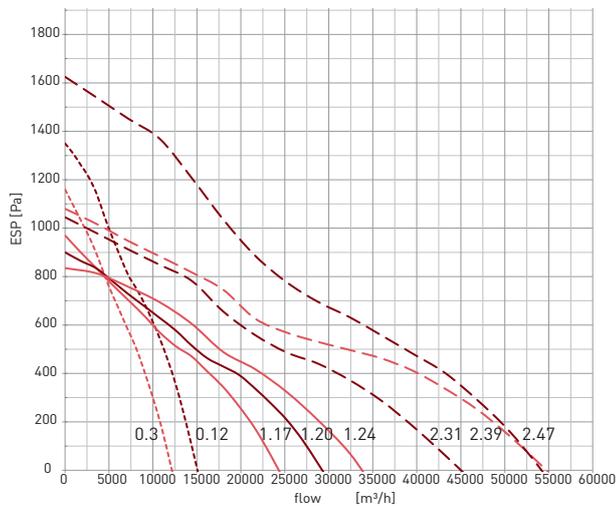


Chart 1. Characteristics of iSWAY-FC® in the standard variant.



The characteristics of the units show the dependence of the flow on the external static pressure (taking into account the pressure loss of the cut-off damper and the air intake installed on the device).

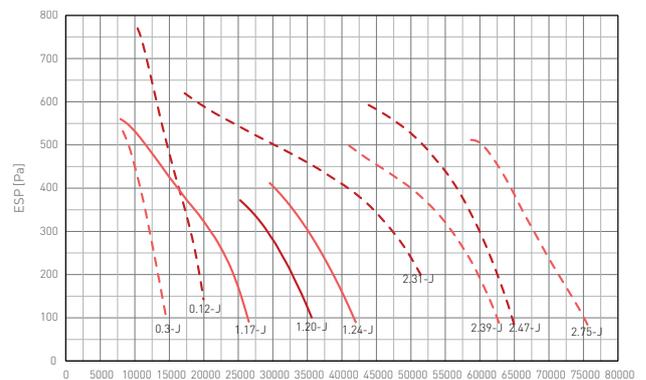


Chart 2. Characteristics of iSWAY-FC® with high airflow (symbol -J).

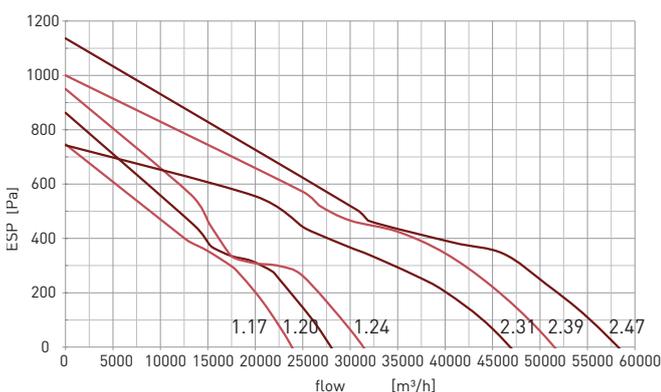


Chart 3. Characteristics of reversible iSWAY-FC® in the standard variant

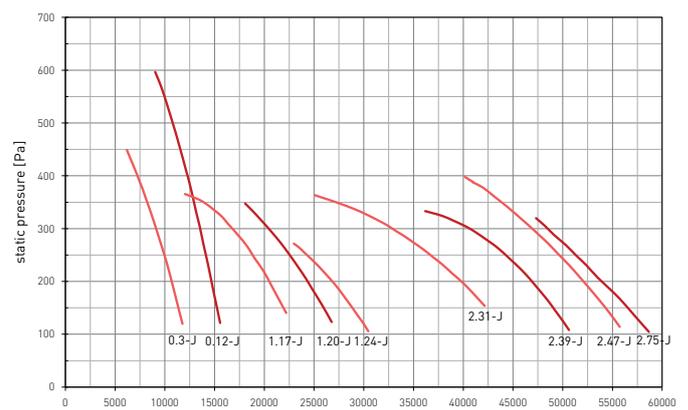


Chart 4. Characteristics of reversible iSWAY-FC® with high airflow (symbol -J).

Components included in the iSWAY-FC® device:

- inverter controlled fan
- shut - off damper with servomotor and smoke detector
- automation cabinet (with frequency inverter , braking resistor, regulator, power supply 24V DC)
- anti-freeze system of damper (optional)
- performance measurement module (optional)
- flexible connection(optional)
- roof air intake (optional)
- foot support system with vibration isolation (optional)
- mounting frame for the fan and the automation cabinet (optional)
- cover for the fan and the automation cabinet (optional)
- dampers of double air intake system (optional)

Accessories

KEK – flexible round connection

The iSWAY-FC-B fan should be connected to the aeration system duct network by means of flexible connectors, ensuring compensation of vibrations resulting from the operation of the fan and minor adjustments in the foundation. Connectors should be used directly in front of and behind the fan.

Table 4. Dimensions of flexible connection KEK

iSWAY size	Diameter	Length	Weight
	ØD [mm]	L _{MAX} [mm]	m [kg]
0.3, 0.12	560	130	4,3
1.17, 1.20, 1.24	800	130	6,1
2.31, 2.39, 2.47, 2.75	1000	130	7,2

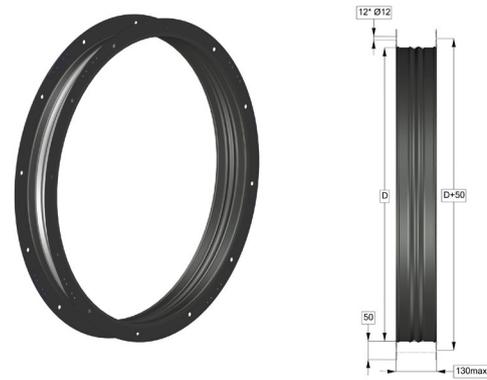


Figure 6. Dimensions of flexible round connection KEK

RSK – Circle-to-rectangle transition

The RSK type system element can be used to change from a circular fan to rectangular ventilation pipes. The RSK circle-rectangle transition has dimensions corresponding to the dimensions of the fan and the corresponding size of the shut-off damper with the actuator.

Table 5. Dimensions of round-to-rectangular transition RSK

iSWAY size	Diameter	Wid. x High.	Length	Weight
	ØD [mm]	A x A [mm]	L [mm]	m [kg]
0.3, 0.12	560	770 x 770	300	10,2
1.17, 1.20, 1.24	800	1005 x 1005	300	14,0
2.31, 2.39, 2.47, 2.75	1000	1205 x 1205	300	17,6

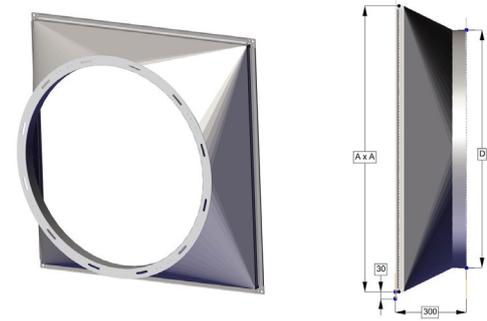


Figure 7. Dimensions of round-to-rectangular transition RSK

KW-H – rectangular air intake

If the cut-off damper is used at the fan inlet, a rectangular KW-H air intake can be used directly on the damper. The air intake is equipped with a mesh protecting against the entry of undesirable elements into the aeration system.

Table 6. Dimensions of rectangular air intake KW-H

iSWAY size	Wid. x High.	Length	Weight
	A x A [mm]	L [mm]	m [kg]
0.3, 0.12	770 x 770	350	8,7
1.17, 1.20, 1.24	1005 x 1005	410	12,5
2.31, 2.39, 2.47, 2.75	1205 x 1205	450	16,0

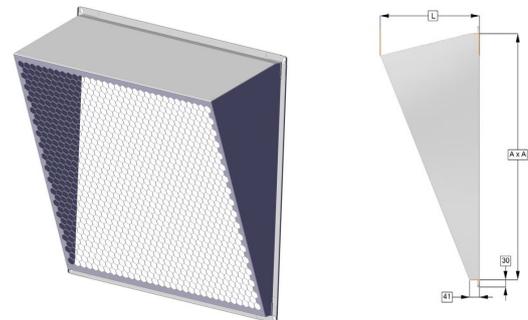


Figure 8. Dimensions of rectangular air intake KW-H

DC – round intake nozzle

In the case of installation of a shut-off damper on the discharge side of the fan, a round DC air intake with a protective mesh can be used directly at the inlet to the fan. When installing the intake nozzle directly to the fan, there is no need to use a flexible round connection.

Table 7. Dimensions of round intake nozzle DC

iSWAY size	Nominal diameter	Inlet diameter	Length	Weight
	ØD [mm]	ØDs [mm]	L [mm]	m [kg]
0.3, 0.12	560	645	165	5,3
1.17, 1.20, 1.24	800	915	170	7,7
2.31, 2.39, 2.47, 2.75	1000	1135	230	11,4

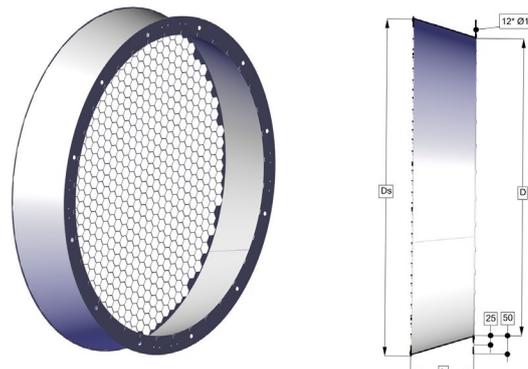


Figure 9. Dimensions of round intake nozzle DC

KSM – set of feet and vibro-isolators

The iSWAY-FC-B fan can be mounted horizontally using the KSM-H mounting feet or vertically using the KSM-V mounting feet. To dampen vibrations caused by the fan, flexible rubber vibration isolators are used, which are screwed to the supporting structure or system frame.

Table 8. Dimensions of the feet for horizontal mounting KSM-H

iSWAY size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	H [mm]	m [kg]
0.3, 0.12	160	45	525	475	21,3	340	24	3,6
1.17, 1.20, 1.24	200	60	700	650	28,5	460	24*	6,2
2.31, 2.39, 2.47, 2.75	220	60	830	770	28,5	560	27**	7,4

Table 9. Dimensions of the feet for vertical mounting KSM-V

iSWAY size	A [mm]	B [mm]	C [mm]	F [mm]	L [mm]	M [mm]	H [mm]	m [kg]
0.3, 0.12	190	50	560	379	13	420	24	8,2
1.17, 1.20, 1.24	240	60	750	505	40	590	24*	12,2
2.31, 2.39, 2.47, 2.75	260	60	880	610	40	720	27**	14,6

* for iSWAY-FC (-D) -1.24-B (standard vers.) height of the vibro-isolator H = 27 mm

** for iSWAY-FC-R-2.31-B (standard vers.) height of the vibro-isolator H = 24 mm



The KSM set includes two mounting feet and four vibration isolators - for mounting the fan horizontally (KSM-H) or vertically (KSM-V).

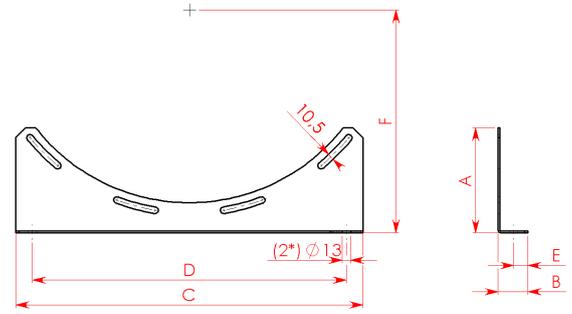


Figure 10. Dimensions of the feet for horizontal mounting (-H)

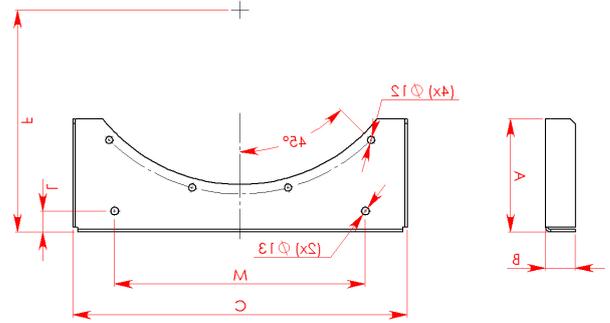


Figure 11. Dimensions of the feet for vertical mounting (-V)



Figure 12. Dimensions of vibro-isolators for horizontal and vertical feet

SKW / SKWA – frame on twisted feet

BFW / BFWA – frame on Big Foot feet

The fan should be placed using mounting feet and vibration isolators on a prepared supporting structure or with the use of SKW (A) / BFW (A) system frames. The SKW frame is equipped with screwed feet fixed to the floor, while the BFW frame has Big Foot feet placed on the ground. In both types, the... A variant also allows the automation cabinet to be installed directly next to the fan.

Table 10. Dimensions of the frame for the fan SKW / BFW

iSWAY size	Width	Mounting height	Total height	Length	Weight
	W [mm]	Hm [mm]	H [mm]	L [mm]	m [kg]
0.3, 0.12	431	280÷480	650	750	22
1.17, 1.20, 1.24	585	280÷480	650	990	24
2.31, 2.39, 2.47, 2.75	817	280÷480	650	1200	26

Tabela 11. Dimensions of the frame for the fan and automation cabinet SKWA / BFWA

iSWAY size	Width	Mounting height	Total height	Length	Weight
	W [mm]	Hm [mm]	H [mm]	L [mm]	m [kg]
0.3, 0.12	431	280÷480	1403	750	25
1.17, 1.20, 1.24	585	280÷480	1403	990	27
2.31, 2.39, 2.47, 2.75	817	280÷480	1403	1200	29

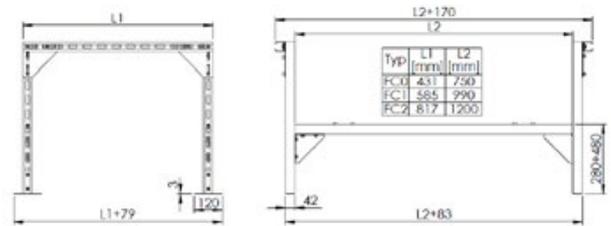


Figure 13. Dimensions of the frame for the fan SKW

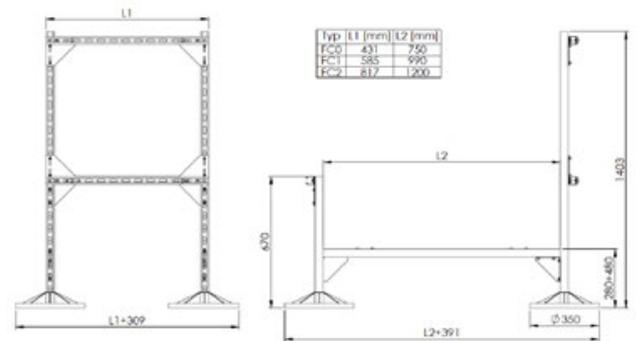


Figure 14. Dimensions of the frame for the fan and automation cabinet BFWA

DW – cover for the fan

When installing the fan outside the building, it must be protected against the adverse effects of weather conditions. For this purpose, use the DW canopy, attached directly to the fan's flange.

Table 12. Dimensions of the cover for the fan DW

iSWAY size	Diameter	Width. x Length.	Height from the fan axis	Weight
	ØD [mm]	A x B [mm]	Hw [mm]	m [kg]
0.3, 0.12	560	760 x 550	370	6,6
1.17, 1.20, 1.24	800	1000 x 720	500	10,6
2.31, 2.39, 2.47, 2.75	1000	1210 x 830	600	14,5

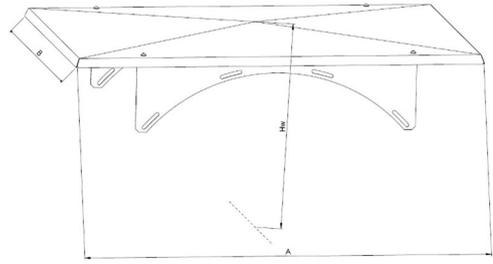


Figure 15. Dimensions of the cover for the fan DW

DA – cover for the automation cabinet

In the version iSWAY-FC-B without the housing, the automation cabinet can be mounted away from the fan. If the cabinet is installed outside the building, it should be protected against precipitation with a DA cover.

Table 13. Dimensions of the cover for the automation cabinet DA

iSWAY size	WidthxLength	Height	Weight
	K x J [mm]	H [mm]	m [kg]
0.3, 0.12, 1.17, 1.20	282 x 820	120	3,7
1.24, 2.31, 2.39, 2.47	282 x 970	120	4,3
2.75	372 x 1024	120	5,4

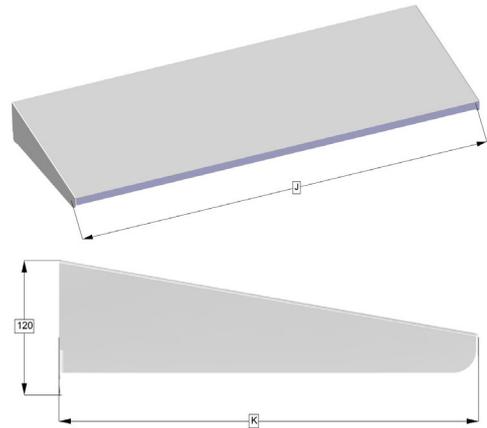


Figure 16. Dimensions of the cover for the automation cabinet DA

UP – double air intake dampers

In the event that the air intake is at roof level, two air inlets should be used. The ducts to both inlets should be protected with a system of two throttles, controlled by the automatics and the iSWAY smoke detector.

Table 14. Dimensions of the dampers in double air intake system UP

iSWAY size	Width x Height	Length	Weight*
	B x H [mm]	L [mm]	m [kg]
0.3, 0.12	770 x 770	300	28
1.17, 1.20, 1.24	1005 x 1005	300	39
2.31, 2.39, 2.47, 2.75	1205 x 1205	300	50

* the weight is given for a single damper



The UP system includes two SRC-Z-U dampers with Belimo BEN24 / BEE24 actuators, in an external version, in a protective box.

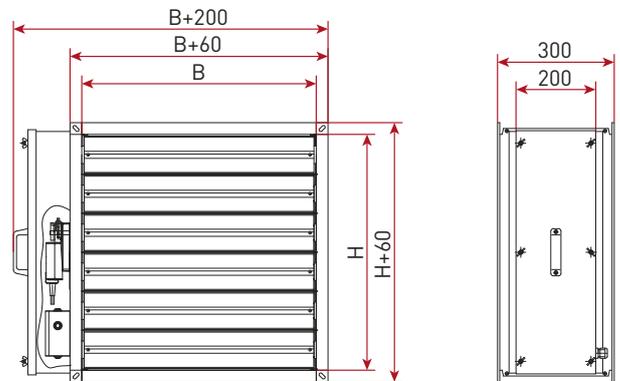


Figure 17. Dimensions of the dampers in double air intake system

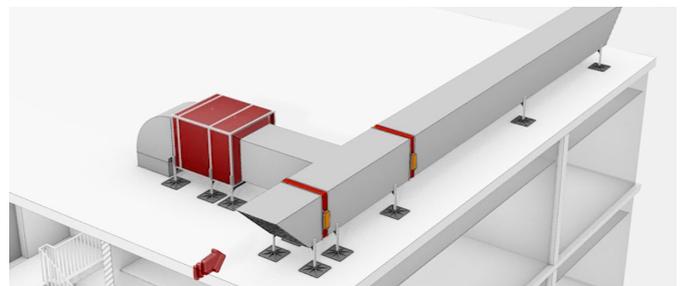


Figure 18. iSWAY-FC with 2 air intake system

Installation

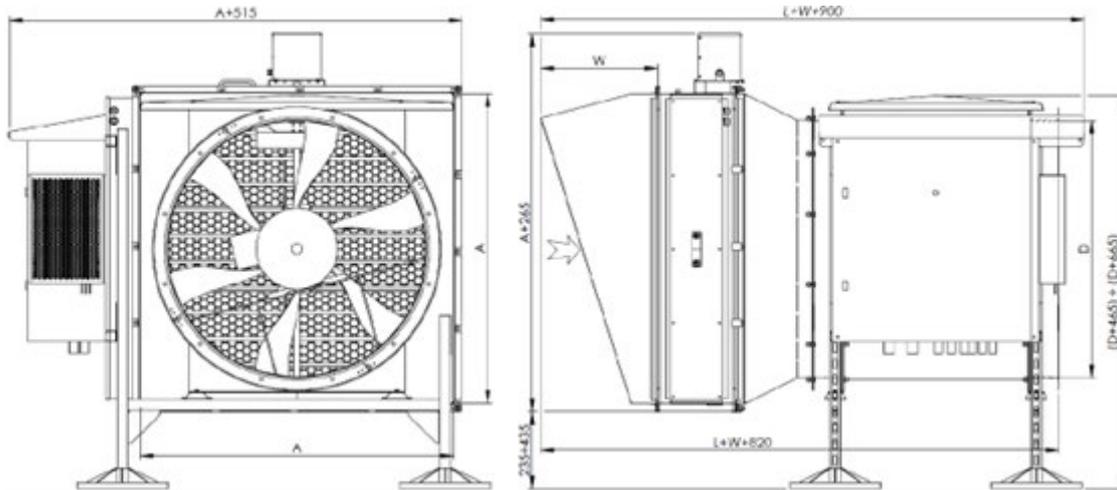


Figure 19. Example of iSWAY-FC-B assembly with accessories: rectangular KSM-H air inlet, RSK round-to-rectangular transition, KEK flexible connectors, DW fan canopy and DA automation cabinet, fan frame and automation cabinet, BFWA set of KSM-H feet and vibro-isolators.

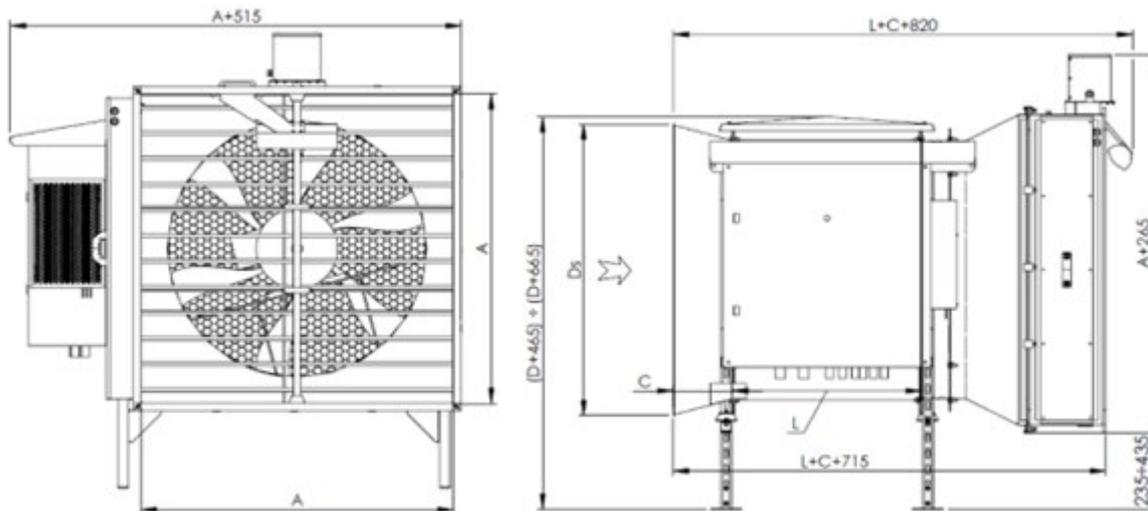


Figure 20. Sample installation of iSWAY-FC-B with accessories: DC intake nozzle, KEK flexible connector, RSK round-to-rectangular transition, DW fan canopy and DA automation cabinet, fan frame and automation cabinet, SKWA set of KSM-H feet and vibro-isolators.

1. For simple pressure differential systems, use the Control and Signal Board (TSS) that supports a maximum of 6 iSWAY devices.
2. Complex pressurization systems shall be fitted with Operating Conditions Monitoring Device (MSPU) with Control Board (TS).
3. 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.
4. Maximum length of the pressure differential measurement tubes shall not exceed 12 m.
5. 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.
6. In the event of a fire, the iSWAY-FC-D[®] device only works with one P-MACF or MAC D-Min sensor that has received a fire signal from the SSP.
7. Thanks to the use of MAC-D-Min regulators and control dampers, it is possible to individually control the overpressure simultaneously in several separate protected spaces, using a common iSway device, e.g. fire vestibules or elevator
8. iSWAY-D[®] devices are designed to work with remote pressure difference sensors P-MACF or MAC-DMin regulators.
9. The iSWAY-FC-R[®] devices are equipped with reversible fans and designed to operate in the SAFETY -WAY[®] flow differential pressure system.



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 catalogue card without prior notice.

Elements of iSWAY-FC® system

SRC-W-R dampers of electronic transfer system

An innovative electronic transfer system has been developed to ensure compensation of smoke exhaust in corridors, regardless of the opening of the vestibule door. The system consists of two dampers with fast actuators - on the duct to the vestibule and the corridor. Depending on the opening / closing of the door, air is directed to the vestibule or directly to the corridor.

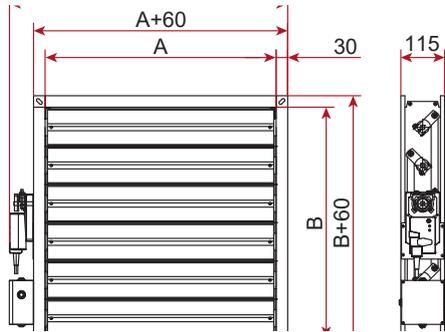


Figure 21. Dimensions of SRC-W-R damper

KWR compact exhaust vent

To minimize the unfavourable influence of the chimney draft, you can use an ejector with a smoothly adjustable throttle. KWR consists of a roof base, SRC-Z-KWR damper with three Belimo NMQ24-A-SR actuators, MAC-D-Min regulator with pressure sensors and WPDB roof exhaust hood.

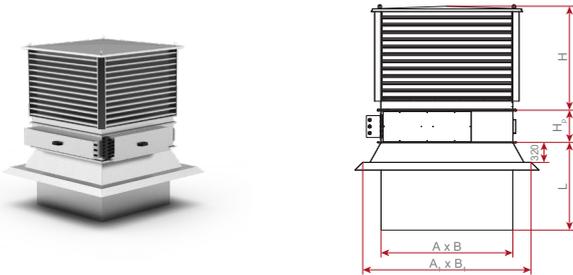


Figure 22. Dimensions of KWR compact exhaust vent

KSN compact permanent vent

If it is necessary to unseal the staircase, you can use a roof outlet with an on / off damper. KSN consists of a roof base, SRC-Z-KSN damper with Belimo BF actuator and WPDB roof exhaust hood.

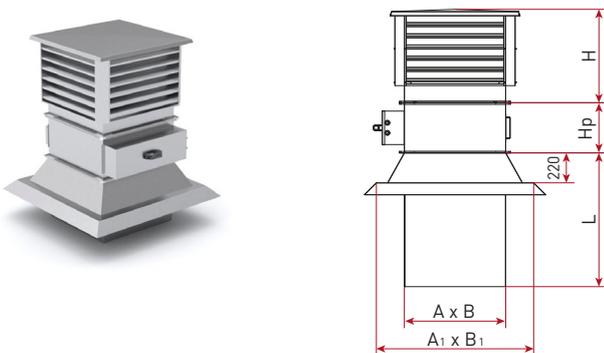


Figure 23. Dimensions of KSN compact permanent vent

Permissible dimensions of the SRC-W-R damper:

- Width **A = 300÷1400 mm** (every 100 mm)
- Height **B = 305÷1405 mm** (every 100 mm)

When ordering, please use the following code:

SRC-W-R-<A>x-<P><RAL>

Where:

A	nominal width of the damper, [mm]
B	nominal height of the damper, [mm]
P	finishing
	SO - galvanized steel
	SL - powder coated steel
RAL	Colour according to RAL (for <P>=SL finishing)

Example of order: **SRC-W-R-400X405-SO**

Table 15. Dimensions of compact exhaust vent KWR.

KSN size	Duct connection	Roof base	Height of exhaust hood	Height of damper	Weight
	A x B [mm]	A ₁ xB ₁ [mm]	H [mm]	Hp [mm]	m [kg]
1205x1205	1205 x 1205	1605 x 1605	910	300	172

When ordering, please use the following code:

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

Where:

L	length of roof base
P	finishing*
	SO - galvanized steel
	SL - powder coated steel
RAL	Colour according to RAL (for <P>=SL finishing)

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

Table 16. Dimensions of KSN compact permanent vent.

KSN size	Duct connection	Roof base	Height of exhaust hood	Height of damper	Weight
	A x B [mm]	A ₁ xB ₁ [mm]	H [mm]	Hp [mm]	m [kg]
605x605	605 x 605	901 x 901	530	300	80

When ordering, please use the following code:

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

Where:

L	length of roof base
P	finishing*
	SO - galvanized steel
	SL - powder coated steel
RAL	Colour according to RAL (for <P>=SL finishing)

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

iSWAY-FC-B[®] - Pressurisation unit without housing

When ordering please use the following code:

iSWAY- FC-<A>-<V>-<Q>-<H>-<DR>-<X>-<T>-<U>-<Y>-<ML>-<Dc>/<ADD>

Where:

A	Control system*
	none - standard control system
	D - intended for local FireBus [®] loop
	R - for reversible system
V	Size/ type of unit
	0.3 - max. capacity 14 500 m ³ /h (depending on configuration)
	0.12 - max. capacity 20 000 m ³ /h (depending on configuration)
	1.17 - max. capacity 27 200 m ³ /h (depending on configuration)
	1.20 - max. capacity 35 600 m ³ /h (depending on configuration)
	1.24 - max. capacity 42 000 m ³ /h (depending on configuration)
	2.31 - max. capacity 56 500 m ³ /h (depending on configuration)
	2.39 - max. capacity 61 500 m ³ /h (depending on configuration)
	2.47 - max. capacity 65 000 m ³ /h (depending on configuration)
	2.75 - max. capacity 78 200 m ³ /h (only variant with increased capacity<Q> = J)
Q	Variant of the unit*
	none - standard
	J - increased capacity
H	Execution*
	none - compact (in housing) – the compact variant has a separate catalogue card and a different order code
	B - without housing and wiring (individual elements mounted separately)
DR	Operating direction*
	none - on the air supply
	E - on the air exhaust
X	Operating side*
	none - right side
	L - left side
T	Operating temperature range*
	none - from -5 to +55 °C
	AF - from -25 to +55 °C – fitted with AntyFrost system
U	Location of automation cabinet*
	none - inside the building
	Z - outside the building
Y	Additional outputs 24V DC*
	none - no additional outputs 24V DC
	M - additional outputs 24V DC to power supply for TSS, compact vent KWR or KSN, peripheral device (PMAC-F, MAC-D-Min)
ML	Measuring strip module*
	none - no measuring strip
	LP - measuring strip
Dc	Additional pressure sensor in device*
	none - no additional pressure sensor
	PF - additional pressure sensor PMAC-F ±500 Pa
ADD	Accessories
	KEK - flexible round connection
	2KEK - 2 flexible round connections
	RSK - round to rectangular transition
	2RSK - 2 round to rectangular transitions

KW-H	- rectangular air intake
DC	- round intake nozzle
KSM-H	- set of feet and vibro-isolators for horizontal mounting
KSM-V	- set of feet and vibro-isolators for vertical mounting
SKW	- frame on twisted feet for fan
SKWA	- frame on twisted feet for fan and automation cabinet
BFW	- frame on Big Foot feet for fan
BFWA	- frame on Big Foot feet for fan and automation cabinet
DW	- cover for the fan
DA	- cover for the automation cabinet
UP	- double air intake dampers

* optional values – default values will be used if optional values are not specified

Example of order: **iSWAY-FC-D-1.24-J-B-AF-Z / 2KEK, 2RSK, KW-H, KSM-H, BFWA, DW, DA**