KAMOUFLAGE AP

a v_{edw}-classified, motorized, aesthetic smoke control shutter

VKF AEAI

CE 1812

UK CA

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Rf-t

www.rft.eu

V36-EU-B 12/2024

Table of content

Table of content

Explanation of the abbreviations and pictograms

Wn = nominal width
Hn = nominal height
Sn = free air passage
Sl = free surface
E = integrity
I = thermal insulation
S = smoke leakage
60/120 = fire resistance time
Pa = pascal
o -> i = meets the criteria from the outside (o) to the inside (i)
i <-> o = fire side not important
AA = automatic activation
MA = manual activition
multi = multi compartment
ved = vertical duct
hod = horizontal duct
vew = vertical wall penetration
V = volt
W = watt
V AC = Volt alternating current
V DC = Volt direct current
E.TELE = power supply magnet
E.ALIM = power supply motor
Auto = automatic
Tele = remote controlled
Pnom = nominal capacity
Pmax = maximum capacity
DAS MOD = modular product
OP = option (delivered with the product)
KIT = kit (delivered separately for repair or upgrade)
PG = connection flange to the duct
GKB (type A) / GKF (type F): “GKB” stands for standard plasterboards (type A according to EN 520) while “GKF” plasterboards offer a higher fire resistance for a similar plate thickness (type F according to EN 520)
Cal-Sil = calcium silicate
ζ [-] = pressure loss coefficient
Q = airflow
ΔP = static pressure drop
v = air speed in the duct
Lwa = A-weighted sound power level
ME = motorised
H = habitat

DECLARATION OF PERFORMANCE

1. Unique identification code of the product-type:	**KAMOUFLAGE AP**
2. Intended use/es:	Smoke control damper to be used in smoke control systems, in multi-compartment applications at fire temperatures, or in single-compartment applications.
3. Manufacturer:	Rf-Technologies NV, Lange Ambachtstraat 40, B-9860 Oosterzele
4. System/s of AVCP:	System 1
5. Harmonised standard / European Assessment Document; notified body / European Technical Assessment, Technical Assessment Body, notified body; certificate of constancy of performance:	EN 12101-8:2011, Efectis with identification number 1812; Efectis-1812-CPR-2216
6. Declared performance according to EN 12101-8:2011	(fire resistance according to EN 1366-10, classification according to EN 13501-4)

Essential characteristics					Performance
Range	**Product**	**Type**	**Material**	**Installation**	**Classification**
350x385 mm ≤ Kamouflage 1V AP ≤ 700x1165 mm	Kamouflage 60 AP	Duct	Promatect L500 ≥ 30 mm	1	EI 60 (v_{edw} i ↔ o) S 1000 C10000 AA multi
			Geoflam ≥ 30 mm		
			Geotec ≥ 30 mm		
			Tecniver ≥ 35 mm		
			Glasroc F V500 ≥ 35 mm		
			Exthamat ≥ 30 mm		
		Shaft	Masonry, concrete blocks, concrete ≥ 100 mm		
	Kamouflage 120 AP	Duct	Promatect L500 ≥ 30 mm	1	EI 90 (v_{edw} i ↔ o) S 1000 C10000 AA multi
			Geoflam ≥ 35 mm		
			Tecniver ≥ 45 mm		
			Exthamat ≥ 30 mm		
		Shaft	Masonry, concrete blocks, concrete ≥ 100 mm		
	Kamouflage 120 AP	Duct	Promatect L500 ≥ 30 mm	1	EI 120 (v_{edw} i ↔ o) S 1000 C10000 AA multi
			Geoflam ≥ 45 mm		
			Geoflam Light ≥ 35 mm		
			Geotec ≥ 45 mm		
			Tecniver ≥ 50 mm		
			Glasroc F V500 ≥ 50 mm		
			Exthamat ≥ 35 mm		
		Shaft	Masonry, concrete blocks, concrete ≥ 100 mm		

Harmonised standard EN 12101-8:2011

1 Type of installation: in duct/shaft-mounted 0/180°.

Nominal activation conditions/sensitivity:	Pass - automatic activation
Response delay (response time): closure time	Pass - automatic activation
Operational reliability: cycling	10000 cycles (no load)
Durability of response delay:	Pass
Durability of operational reliability:	Pass
Approved accessories	EASY-KAP AP or EASY-KGC AP mounting frame; Option Black
High operational temperature (HOT 400/30):	NPD (no performance determined)

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:
Duchan Laplace, R&D Manager

Oosterzele, 01/12/2024

Product presentation KAMOUFLAGE AP

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The Kamouflage AP is a v_{edw}-classified, motorized, aesthetic smoke control shutter that can be perfectly integrated in smoke control systems. It is CE-certified in accordance with EN12101-8, suitable for vertical mounting in ducts or concrete smoke control shafts. Offering 60, 90 or 120 minute fire resistance at minimum pressure drop, in single- or multi-compartment applications. In addition, Kamouflage AP has a C_{10000} cycling classification, which means it can be used in combined smoke control and environmental, energy saving systems.

It opens to supply and release air or to evacuate smoke in emergency situations whilst maintaining its fire resistant integrity in both directions in standby position.

The Kamouflage AP is designed for use in:
- Pressure Differential Systems (PDS): e.g. pressurising staircases.
- Smoke and Heat Exhaust Ventilation Systems (SHEVS): ventilating protected lobbies and corridors through shafts, either naturally or mechanically, or a combination of both.
- Energy saving systems combined with PDS or SHEVS: e.g. night cooling systems.

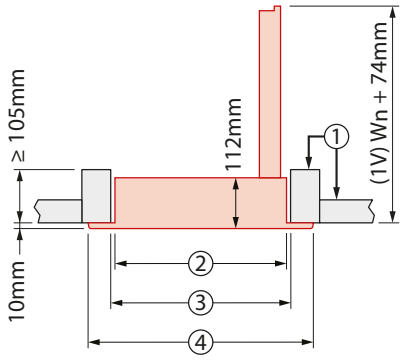
Smoke control shutters and dampers are suitable for use in ventilating protected lobbies, venting to shafts either naturally or mechanically. They open to evacuate smoke in emergency situations whilst maintaining fire resistant integrity in both directions in standby position.

- ☑ can be used in smoke management systems requiring a v_{ed}-, v_{ew}- or v_{edw}-classification
- ☑ optimal smoke control system thanks to high free area and minimal pressure losses
- ☑ easy to install thanks to its light weight
- ☑ aesthetic solution that can be integrated in any interior design
- ☑ simple operating tests through remote opening and resetting by an actuator
- ☑ opens 90° and at intermediate positions when installed in shallow ducts/shafts
- ☑ excellent thermal and acoustic insulation thanks to a double-walled insulated door leaf and seals

- ■ tested according to EN 1366-10 and EN 1366-2
- ■ compliant with EN 12101-8
- ■ compliant with MVV TB 2023/1 Anhang 14, 7
- ■ fit for use as air release and air supply vent in PDS-systems according to EN 12101-6 & -13
- ■ suited as air supply and smoke evacuation vent in SHEVS-systems according to EN 12101-8
- ■ light weight: ≤ 35 kg
- ■ ready-to-install finish (white lacquered RAL 9010)
- ■ approved for installation in calcium-silicate ducts, Geostaff gypsum, Tecniver, Glasroc, Extha and concrete shafts.
- ■ maintenance-free
- ■ large range
- ■ Optional installation frame with or without fall protection.

1. 1 shutter
2. aluminium frame
3. lock + key
4. connection compartment
5. actuating arm
6. resetting motor
7. product identification

Range and dimensions KAMOUFLAGE AP



1. Refractory material
2. Nominal dimensions shutter Wn x Hn
3. Built-in dimensions (Wn+10) x (Hn+10)mm.
   Built-in dimensions with installation frame: (Wn+20) x (Hn+20)mm
4. Overall (outside) dimensions of the shutter (Wn+52) x (Hn+52)mm

	≥	≤
(W x H) mm	350x385	700x1165

Evolution - kits

EASY-KAP AP — Mounting frame (delivered separately)

EASY-KGC AP — Mounting frame with hinged drop guard grid (delivered separately)

Options - at the time of order

BLACK — Black finish (for use with a grill only)

TL — Trailing lead 3 m for external connection

Storage and handling

Storage and handling

As this product is a safety element, it should be stored and handled with care.

Avoid:

- any kind of impact or damage
- contact with water
- deformation of the casing

It is recommended:

- to unload in a dry area
- not to flip or roll the product to move it
- not to use the damper as a scaffold, working table, etc.
- not to store smaller dampers inside larger ones

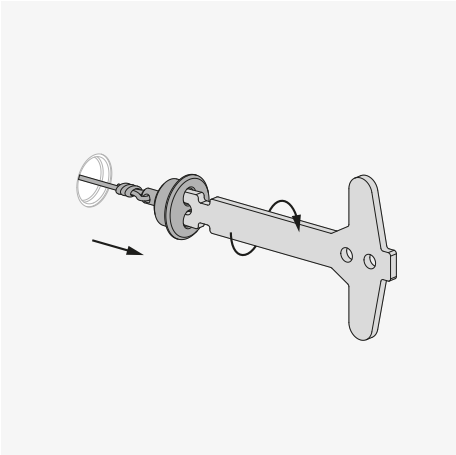
Installation

General points

- The installation must comply with the installation manual and the classification report.
- The installation of the smoke control duct must comply with the classification report delivered by the manufacturer.
- Axis orientation: see the declaration of performance.
- Avoid the obstruction of adjoining smoke control ducts.
- Verify if the blade can move freely.
- Rf-t smoke dampers may be applied to smoke control ducts that have been tested according to EN 1366-8 and EN 1366-9 as appropriate, constructed from similar materials with a fire resistance, thickness and density equal or superior to these of the tested materials.
  - ⚠ Caution: when fitting, the product should be handled with care and remain protected from any sealing products.
  - ⚠ Caution: before putting the installation into operation, clean off all the dust and dirt.
  - ⚠ Caution: bear in mind the blade's clearance inside the smoke control duct.

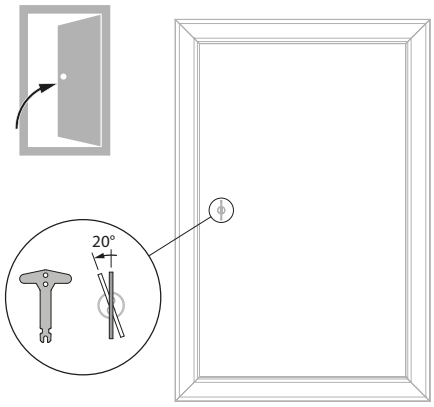
Operation: manual opening

1



1. Unscrew the finishing cap from the opening in the door. Use the key to do this.

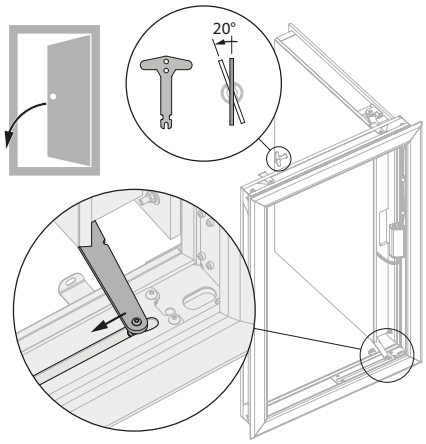
2



2. Turn the key 20° anti-clockwise and push the shutter into its open position.

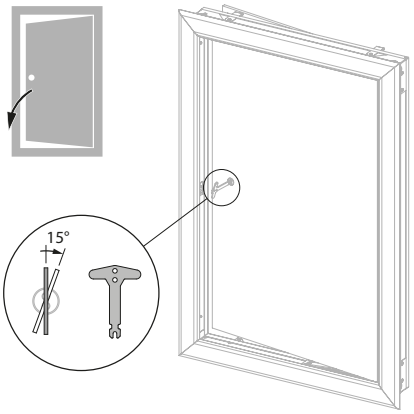
Operation: manual closing

1



1. Turn the key 20° anti-clockwise. Push the actuating arm in the direction of the arrow and pull the shutter into its closed position.

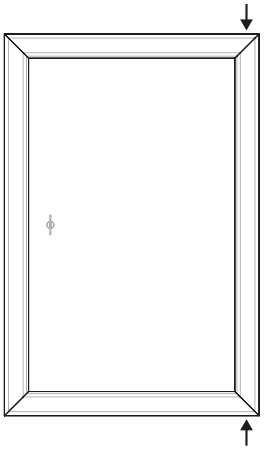
2



2. Turn the key 15° clockwise. The key blocks in the lock and the door can be pulled into its lock.

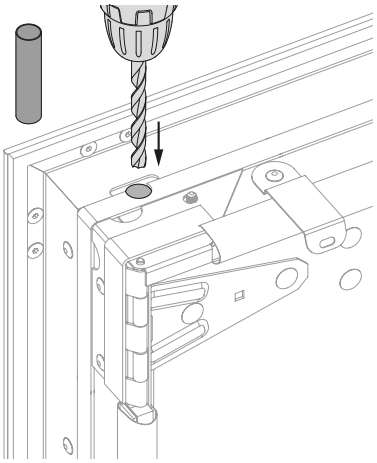
Electrical wiring

1



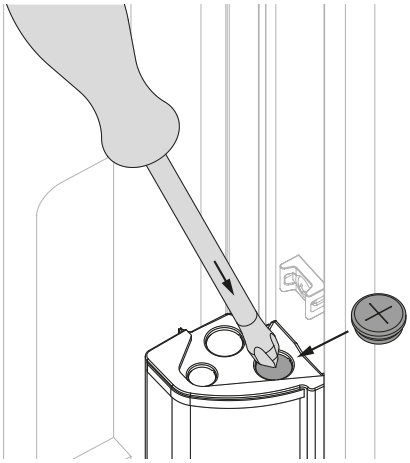
1. The electrical connection is possible via the 2 corners at the side of the hinges.

2



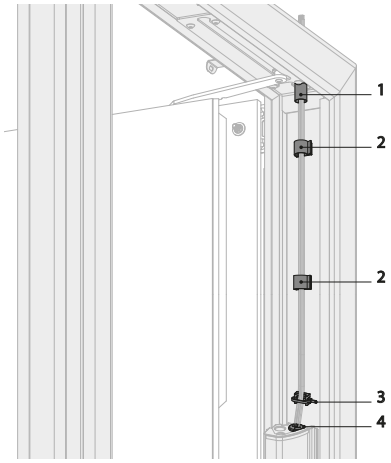
2. Drill a hole in the refractory material at the chosen corner(s). The galvanised part at the inside of the shutter is already indented.

3



3. Pierce an opening in the connection box. Affix the grommet delivered with the product.

4

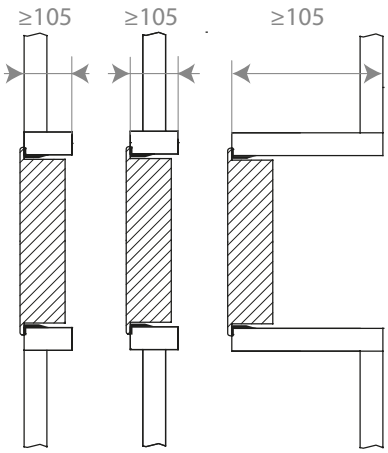


4. Lead the cables through the opening. Use the protective sleeve (1), the fixation clips (2) and the plastic cable clamp (3) to attach the cables to the frame. Lead the cables to the connection box through the grommet (4) and connect according to the electrical connection diagram.

⚠ Caution: after passing and fixing the cables, you need to seal the drilled hole in the refractory plates around the electrical cables with fire resistant adhesive sealant (BCM f.e.).

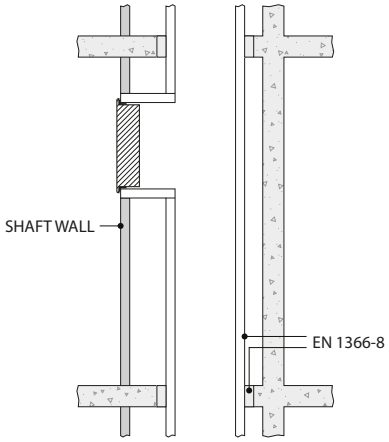
Installation in a duct

1



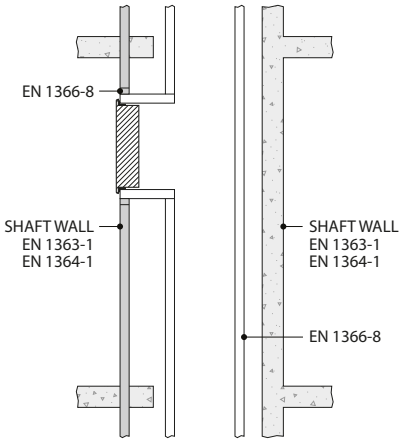
1. The shutter is fixed in the opening. It can be placed either in the duct, in the duct axis, outside the duct or duct extension or in surface-mounted.

2



2. Example of installation in a shaft

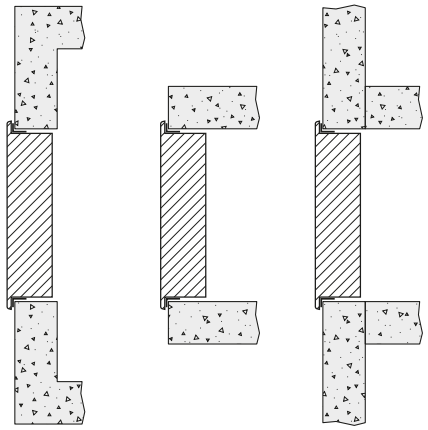
3



3. Example of installation in a shaft

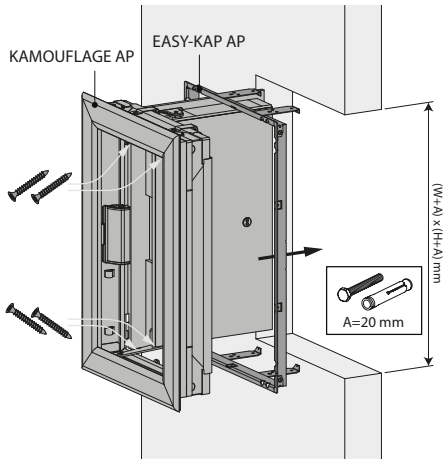
Installation in a shaft

1



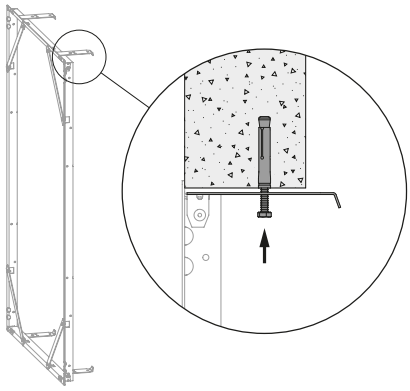
Installation into vertical concrete shaft with mounting frame

1



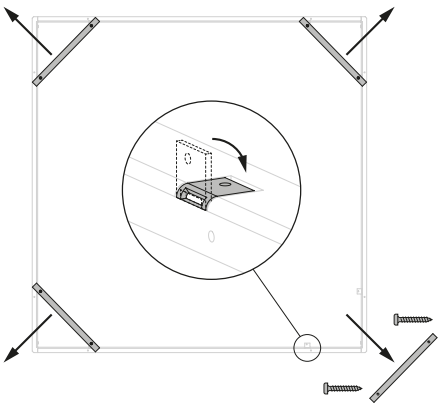
1. Make an opening with dimensions (W+20) x (H+20) mm. Mortaring the mounting frame is not permitted.

2



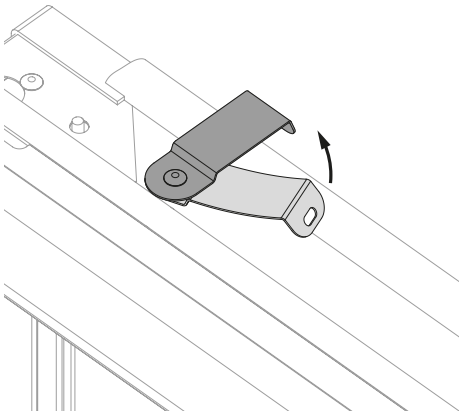
2. The mounting frame should always be fastened to the concrete duct with screws and dowels (Ø 6 x minimum 60 mm, steel or stainless steel).
Two fixing lugs are provided at the bottom and at the top of the mounting frame: fold these against the duct and fasten the mounting frame with 4 screws Ø 6 x 60 mm, taking care not to misshape it. These screws can be inserted through any of the punched holes in the lugs, depending on the thickness of the duct wall.
The finished opening must have the same size as the mounting frame (W+10) x (H+10) mm.

3



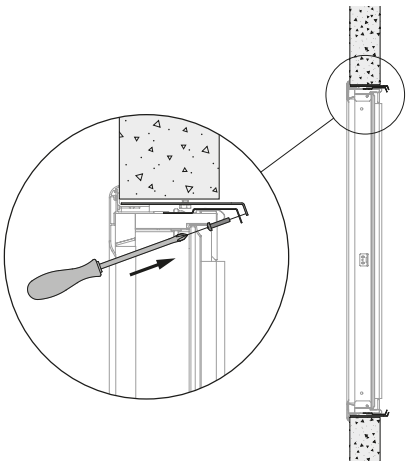
3. Put aside the screws that are affixed to one of the cross slats, then unscrew the 4 cross slats of the mounting frame and fold the 8 fastening plates in the frame.
When the EASY-KGC AP mounting frame is used, unfold the drop-guard grid (90°) in the duct.

4



4. Rotate the four fastening plates on the damper 90° (to the upright position).

5

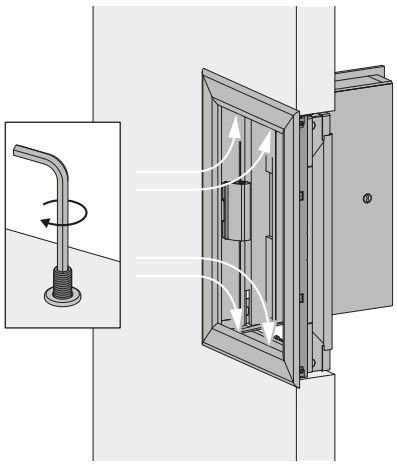


5. Open the shutter and position it in the mounting frame. Fasten the shutter onto the mounting frame with the 4 screws supplied, as shown in the drawing. Tightening the screws pulls the shutter towards the wall until its final position.
You can also slightly correct the angle of the shutter with respect to the mounting frame.
Connect the mechanism according to the wiring diagram.

⚠ Caution: Connecting the frame to an uneven surface can lead to distortion of this frame. Check whether the slack between the frame and the surface of the door is still acceptable.

Check the mobility of the shutter.

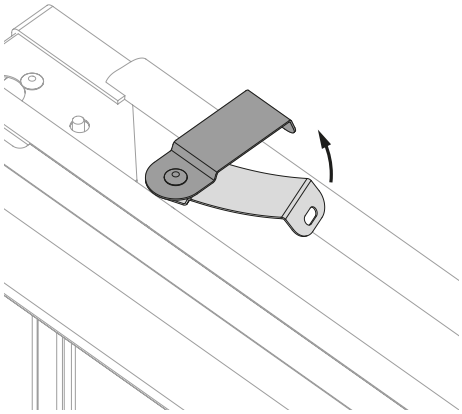
6



6. Tighten the postion screws until just against the shaft, without distorting the frame. These screws prevent the Kamouflage AP from sagging in the opening.

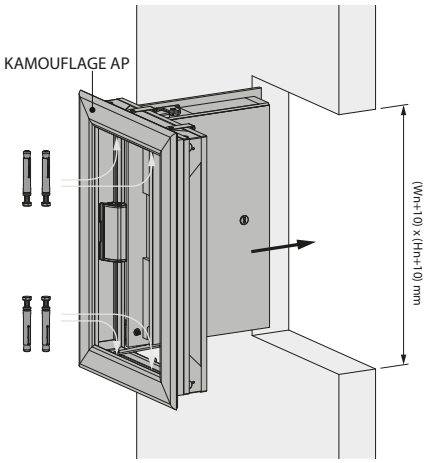
Installation into vertical concrete shaft without mounting frame

1



1. Rotate the four fastening plates on the damper 90° (to the upright position).
The fastening plates are not used for an installation without a mounting frame.

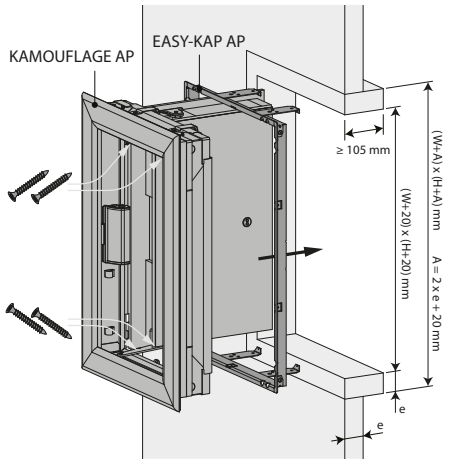
2



2. Make an opening with dimensions (W+10) x (H+10) mm.
Fix the shutter in the opening using 4 screws and dowels Ø6 x 60 mm.
Connect the mechanism according to the wiring diagram.
Check the mobility of the shutter.

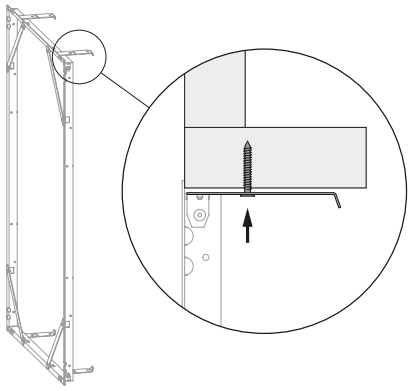
Installation into vertical duct with built-in mounting frame: general instructions for all types of ducts (other than concrete)

1



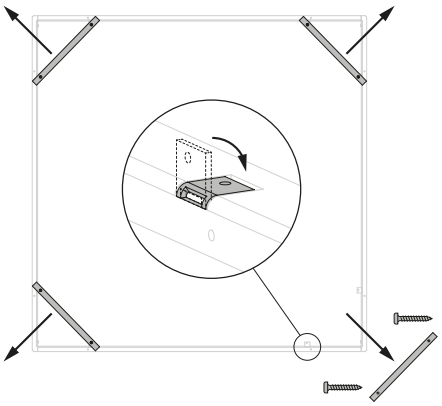
1. Make an opening with dimensions (W+A) x (H+A) mm.
A = 2 x thickness sleeve (e) + 20 mm .
Fit a sleeve of the same type of material and thickness as the duct (thickness e) of minimum 105 mm deep in the opening.

2



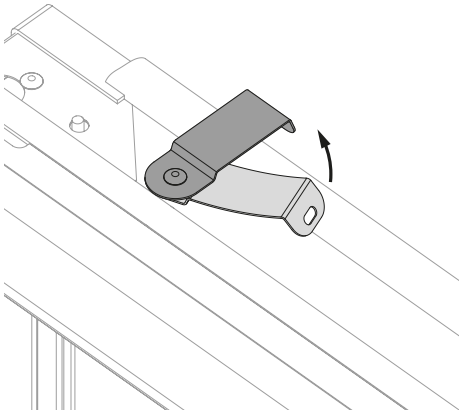
2. Two fixing lugs are provided at the bottom and at the top of the mounting frame: fold these against the sleeve.
Screw the mounting frame to the sleeve using screws Ø 6 x e mm (e-thickness of the sheet material). These screws can be fixed in one of the openings provided for this purpose, depending on the depth of the sleeve.
Take care not to misshape the frame during its installation. The finished opening must have the same size as the mounting frame (W+10) x (H+10) mm.

3



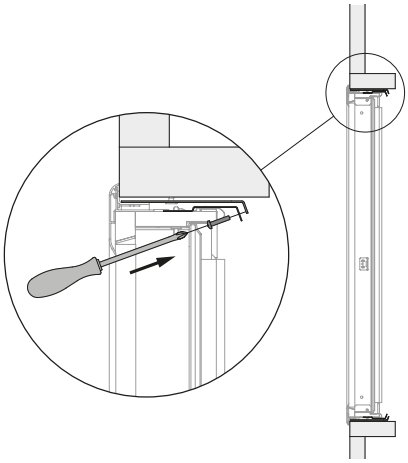
3. Put aside the screws that are affixed to one of the cross slats, then unscrew the 4 cross slats of the mounting frame and fold the 8 fastening plates in the frame.
When the EASY-KGC AP mounting frame is used, unfold the drop-guard grid (90°) in the duct.

4



4. Rotate the four fastening plates on the damper 90° (to the upright position).

5

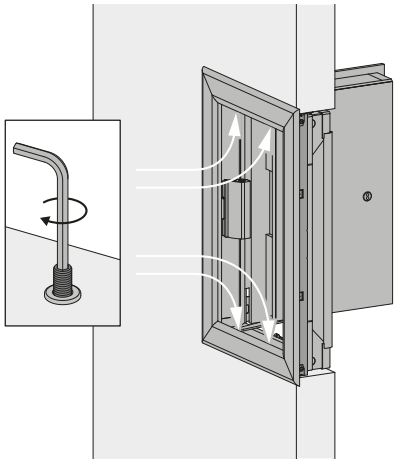


5. Open the shutter and position it in the mounting frame. Fasten the shutter onto the mounting frame with the 4 screws supplied, as shown in the drawing. Tightening the screws pulls the shutter towards the wall until its final position.
You can also slightly correct the angle of the shutter with respect to the mounting frame.
Connect the mechanism according to the wiring diagram.

⚠ Caution: Connecting the frame to an uneven surface can lead to distortion of this frame. Check whether the slack between the frame and the surface of the door is still acceptable.

Check the mobility of the shutter.

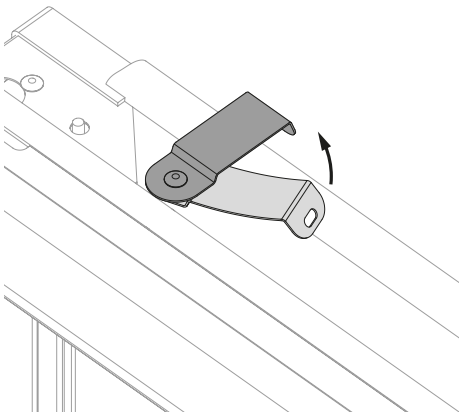
6



6. Tighten the postion screws until just against the shaft, without distorting the frame. These screws prevent the Kamouflage AP from sagging in the opening.

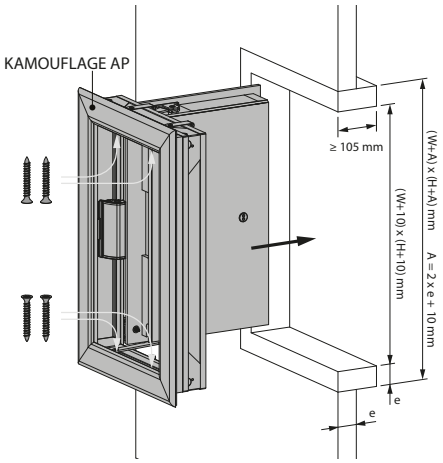
Installation into vertical duct (without a mounting frame): general instructions for all types of ducts (other than concrete)

1



1. Rotate the four fastening plates on the damper 90° (to the upright position).
The fastening plates are not used for an installation without a mounting frame.

2

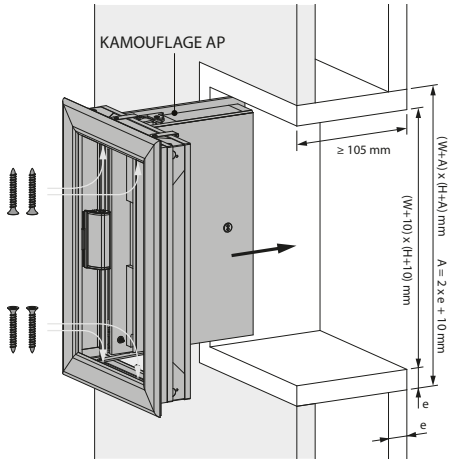


2. Make an opening with dimensions (W+A) x (H+A) mm.
A = 2 x thickness sleeve (e) + 10 mm.
Fit a sleeve of the same type of material and thickness as the duct (thickness e) of minimum 105 mm deep in the opening.
Place the shutter in the opening.
Ensure the cables are not trapped at this stage.
Fix the shutter in the opening using 4 screws Ø6 x 40 mm.

⚠ Caution: make sure that the screws don't exceed the sleeve's thickness!
Connect the mechanism according to the wiring diagram.

Check the mobility of the shutter.

3



3. Example of mounting in a branch of a vertical duct, with a pre-wall finish.

Product maintenance

Smoke control dampers must form part of a professionally designed Smoke and Heat Exhaust Ventilation System (SHEVS) that will be specially suited to an individual buildings size, usage and structure. SHEVS are Fire Safety Installations and it is essential they are subject to the routine inspection and maintenance requirements of the country of installation of the SHEV system. For example, BS7346 part 8, NF S 61-933 and EN 13306.

Kamouflage AP dampers are virtually maintenance free, however, they will require occasional operation and maintenance as part of a system specific routine operational test and maintenance procedure. It is recommended that as part of the system testing and maintenance procedure that different individual dampers are operated at each system test such that each damper within a system is inspected, checked and tested at least once in any 6-month period.

The following instructions are a general guide and our recommendations to the procedures required:

a) Operate each ventilator at least once; checking that the unit opens and closes fully.

b) Visually observe the control mechanisms ensuring the devices are in place and are not obviously damaged or obstructed.

c) Inspect each ventilator in its open position to check that the intumescent fire seals and smoke seals between the vent frame and doors are not damaged and are securely attached. Wipe any dirt build up from the seals. Inspect the door leading and trailing edge seals and lightly lubricate with a machine oil and a silicone grease to the release latch.

Maintenance

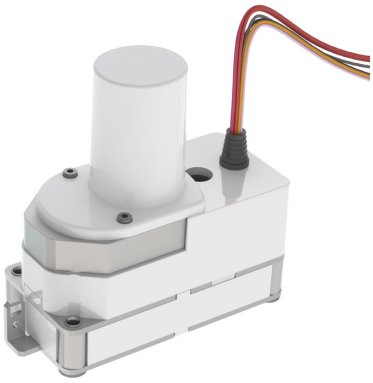
- No specific maintenance required.
- Schedule at least 2 visual checks each year.
- Remove dust and all other particles before use.
- Follow local maintenance regulations (i.e. BS9999 Annex V; NF S 61-933) and EN13306.

Operation and mechanisms

Operation and mechanisms

VA AP MEC Mechanism for remote controlled unlocking and resetting.

Mechanism for the smoke control shutters KAMOUFLAGE AP. Remote controlled unlocking and resetting.



Unlocking

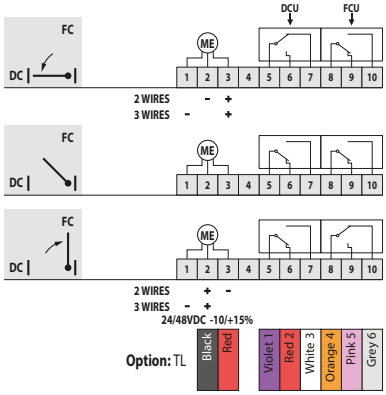
- **manual unlocking**: with the key (delivered in the bag together with the installation guidelines)
- **automatic unlocking**: n/a
- **remote unlocking**: remote by connection of 24 V DC or 48 V DC

Resetting

- **manual resetting**: turn the key 20° anti-clockwise. Push the actuating arm in the direction of the arrow and pull the shutter into its closed position. Turn the key 15° clockwise. The key blocks in the lock and the door can be pulled into its lock.
- **motorised resetting**: remote controlled by reversing (2-wire) control or alternating (3-wire) control of the voltage to the motor. After the unlocking or rearmament is complete, the voltage on the motor may be stopped.

Electrical connection

VA AP MEC



DC : Switch closed position smoke evacuation shutter
FC : Switch open position smoke evacuation shutter

MEC	Nominal voltage motor	Nominal voltage magnet	Power consumption (stand-by)	Power consumption (operating)	Standard switches	Resetting time motor
VA AP MEC	24/48 V DC (-10/+15%)	N/A	N/A	Pnom = 4W	1mA...1A 60V	< 60 s

MEC	Running time spring	Noise level motor	Noise level spring	Cable supply / control	Cable auxiliary switch	Protection class
VA AP MEC	–	–	–	–	–	IP 42

Weights

KAMOUFLAGE AP

Hn\Wn [mm]		350	400	450	500	550	600	650	700							
385	kg	12,5	13,7	14,9	16,2	17,4	18,6	19,9	21,1							
415	kg	13,0	14,2	15,4	16,7	17,9	19,1	20,3	21,6							
445	kg	13,5	14,7	16,0	17,2	18,4	19,7	20,9	22,1							
475	kg	14,0	15,3	16,5	17,7	19,0	20,2	21,5	22,7							
505	kg	14,5	15,7	17,0	18,2	19,5	20,7	21,9	23,2							
535	kg	15,0	16,3	17,5	18,8	20,0	21,2	22,5	23,7							
565	kg	15,5	16,8	18,0	19,3	20,5	21,8	23,0	24,3							
595	kg	16,0	17,3	18,5	19,8	21,0	22,3	23,5	24,8							
625	kg	16,6	17,8	19,1	20,3	21,6	22,8	24,1	25,3							
655	kg	17,1	18,3	19,6	20,9	22,1	23,4	24,6	25,9							
685	kg	17,6	18,8	20,1	21,3	22,6	23,9	25,1	26,4							
715	kg	18,1	19,4	20,6	21,9	23,1	24,4	25,7	26,9							
745	kg	18,6	19,9	21,2	22,4	23,7	25,0	26,2	27,5							
775	kg	19,1	20,4	21,6	22,9	24,2	25,4	26,7	28,0							
805	kg	19,6	20,9	22,2	23,4	24,7	26,0	27,3	28,5							
835	kg	20,1	21,4	22,7	24,0	25,3	26,5	27,8	29,1							
865	kg	20,6	21,9	23,2	24,5	25,8	27,0	28,3	29,6							
895	kg	21,2	22,4	23,7	25,0	26,3	27,6	28,9	30,1							
925	kg	21,7	23,0	24,3	25,5	26,8	28,1	29,4	30,7							
955	kg	22,2	23,5	24,7	26,0	27,3	28,6	29,9	31,2							
985	kg	22,7	24,0	25,3	26,6	27,9	29,2	30,5	31,8							
1015	kg	23,2	24,5	25,8	27,1	28,4	29,7	31,0	32,3							
1045	kg	23,7	25,0	26,3	27,6	28,9	30,2	31,5	32,8							
1075	kg	24,2	25,5	26,8	28,1	29,4	30,7	32,0	33,4							
1105	kg	24,7	26,1	27,4	28,7	30,0	31,3	32,6	33,9							
1135	kg	25,2	26,5	27,8	29,2	30,5	31,8	33,1	34,4							
1165	kg	25,8	27,1	28,4	29,7	31,0	32,3	33,6	35,0							

Selection data

KAMOUFLAGE AP

$$\Delta p = 0{,}6 * v^2 * \zeta$$

KAMOUFLAGE AP 1V60/1V120 - Pressure drop coefficient in supply

Hn\Wn [mm]		350	400	450	500	550	600	650	700		
385	ζ [-]	3,58	3,24	2,98	2,78	2,62	2,49	2,38	2,29		
415	ζ [-]	3,40	3,06	2,81	2,62	2,46	2,33	2,23	2,13		
445	ζ [-]	3,24	2,92	2,67	2,48	2,32	2,20	2,09	2,00		
475	ζ [-]	3,11	2,79	2,55	2,36	2,20	2,08	1,98	1,89		
505	ζ [-]	3,00	2,68	2,44	2,25	2,10	1,98	1,88	1,79		
535	ζ [-]	2,90	2,58	2,34	2,16	2,01	1,89	1,79	1,71		
565	ζ [-]	2,81	2,50	2,26	2,08	1,93	1,81	1,71	1,63		
595	ζ [-]	2,73	2,42	2,19	2,01	1,86	1,74	1,65	1,56		
625	ζ [-]	2,66	2,35	2,12	1,94	1,80	1,68	1,59	1,50		
655	ζ [-]	2,60	2,29	2,06	1,88	1,74	1,63	1,53	1,45		
685	ζ [-]	2,54	2,23	2,01	1,83	1,69	1,58	1,48	1,40		
715	ζ [-]	2,48	2,18	1,96	1,78	1,64	1,53	1,44	1,36		
745	ζ [-]	2,44	2,14	1,91	1,74	1,60	1,49	1,40	1,32		
775	ζ [-]	2,39	2,10	1,87	1,70	1,56	1,45	1,36	1,28		
805	ζ [-]	2,35	2,06	1,84	1,66	1,53	1,42	1,33	1,25		
835	ζ [-]	2,31	2,02	1,80	1,63	1,49	1,38	1,29	1,22		
865	ζ [-]	2,28	1,99	1,77	1,60	1,46	1,36	1,26	1,19		
895	ζ [-]	2,25	1,96	1,74	1,57	1,44	1,33	1,24	1,16		
925	ζ [-]	2,22	1,93	1,71	1,54	1,41	1,30	1,21	1,14		
955	ζ [-]	2,19	1,90	1,68	1,52	1,39	1,28	1,19	1,11		
985	ζ [-]	2,16	1,88	1,66	1,49	1,36	1,26	1,17	1,09		
1015	ζ [-]	2,14	1,85	1,64	1,47	1,34	1,23	1,15	1,07		
1045	ζ [-]	2,11	1,83	1,62	1,45	1,32	1,22	1,13	1,05		
1075	ζ [-]	2,09	1,81	1,60	1,43	1,30	1,20	1,11	1,04		
1105	ζ [-]	2,07	1,79	1,58	1,41	1,28	1,18	1,09	1,02		
1135	ζ [-]	2,05	1,77	1,56	1,40	1,27	1,16	1,08	1,00		
1165	ζ [-]	2,03	1,75	1,54	1,38	1,25	1,15	1,06	0,99		

KAMOUFLAGE AP 1V60/1V120 - Pressure drop coefficient in extraction

Hn\Wn [mm]		350	400	450	500	550	600	650	700		
385	ζ [-]	2,85	2,57	2,36	2,19	2,05	1,93	1,83	1,74		
415	ζ [-]	2,71	2,43	2,21	2,04	1,90	1,78	1,68	1,59		
445	ζ [-]	2,58	2,30	2,09	1,91	1,77	1,65	1,55	1,47		
475	ζ [-]	2,47	2,19	1,98	1,80	1,66	1,54	1,44	1,35		
505	ζ [-]	2,37	2,10	1,88	1,70	1,56	1,44	1,34	1,25		
535	ζ [-]	2,29	2,01	1,79	1,62	1,47	1,35	1,25	1,17		
565	ζ [-]	2,21	1,93	1,71	1,54	1,40	1,28	1,18	1,09		
595	ζ [-]	2,14	1,86	1,64	1,47	1,33	1,21	1,10	1,02		
625	ζ [-]	2,08	1,80	1,58	1,41	1,26	1,14	1,04	0,95		
655	ζ [-]	2,02	1,74	1,52	1,35	1,20	1,08	0,98	0,89		
685	ζ [-]	1,97	1,69	1,47	1,29	1,15	1,03	0,93	0,84		
715	ζ [-]	1,92	1,64	1,42	1,25	1,10	0,98	0,88	0,79		

Hn\Wn [mm]		350	400	450	500	550	600	650	700		
745	ζ [-]	1,88	1,60	1,38	1,20	1,06	0,94	0,83	0,75		
775	ζ [-]	1,84	1,56	1,34	1,16	1,02	0,90	0,79	0,71		
805	ζ [-]	1,80	1,52	1,30	1,12	0,98	0,86	0,75	0,67		
835	ζ [-]	1,76	1,48	1,26	1,09	0,94	0,82	0,72	0,63		
865	ζ [-]	1,73	1,45	1,23	1,05	0,91	0,79	0,69	0,60		
895	ζ [-]	1,70	1,42	1,20	1,02	0,88	0,76	0,65	0,57		
925	ζ [-]	1,67	1,39	1,17	0,99	0,85	0,73	0,63	0,54		
955	ζ [-]	1,65	1,36	1,14	0,97	0,82	0,70	0,60	0,51		
985	ζ [-]	1,62	1,34	1,12	0,94	0,80	0,68	0,57	0,48		
1015	ζ [-]	1,60	1,31	1,09	0,92	0,77	0,65	0,55	0,46		
1045	ζ [-]	1,57	1,29	1,07	0,90	0,75	0,63	0,53	0,44		
1075	ζ [-]	1,55	1,27	1,05	0,87	0,73	0,61	0,50	0,42		
1105	ζ [-]	1,53	1,25	1,03	0,85	0,71	0,59	0,48	0,40		
1135	ζ [-]	1,51	1,23	1,01	0,84	0,69	0,57	0,46	0,38		
1165	ζ [-]	1,50	1,21	0,99	0,82	0,67	0,55	0,45	0,36		

Correction factor on pressure drop coefficient in extraction, due to inflow in the duct: +1,60

KAMOUFLAGE AP 1V60/1V120 - Free air passage

Hn\Wn [mm]		350	400	450	500	550	600	650	700		
385	Sn [m²]	0,1100	0,1270	0,1440	0,1620	0,1790	0,1970	0,2140	0,2320		
415	Sn [m²]	0,1190	0,1380	0,1570	0,1760	0,1950	0,2140	0,2330	0,2520		
445	Sn [m²]	0,1280	0,1490	0,1690	0,1900	0,2100	0,2310	0,2510	0,2720		
475	Sn [m²]	0,1380	0,1600	0,1820	0,2040	0,2260	0,2480	0,2700	0,2910		
505	Sn [m²]	0,1470	0,1710	0,1940	0,2180	0,2410	0,2650	0,2880	0,3110		
535	Sn [m²]	0,1570	0,1820	0,2070	0,2320	0,2560	0,2810	0,3060	0,3310		
565	Sn [m²]	0,1660	0,1930	0,2190	0,2450	0,2720	0,2980	0,3250	0,3510		
595	Sn [m²]	0,1760	0,2030	0,2310	0,2590	0,2870	0,3150	0,3430	0,3710		
625	Sn [m²]	0,1850	0,2140	0,2440	0,2730	0,3030	0,3320	0,3620	0,3910		
655	Sn [m²]	0,1940	0,2250	0,2560	0,2870	0,3180	0,3490	0,3800	0,4110		
685	Sn [m²]	0,2040	0,2360	0,2690	0,3010	0,3340	0,3660	0,3980	0,4310		
715	Sn [m²]	0,2130	0,2470	0,2810	0,3150	0,3490	0,3830	0,4170	0,4510		
745	Sn [m²]	0,2230	0,2580	0,2940	0,3290	0,3640	0,4000	0,4350	0,4710		
775	Sn [m²]	0,2320	0,2690	0,3060	0,3430	0,3800	0,4170	0,4540	0,4910		
805	Sn [m²]	0,2410	0,2800	0,3180	0,3570	0,3950	0,4340	0,4720	0,5110		
835	Sn [m²]	0,2510	0,2910	0,3310	0,3710	0,4110	0,4510	0,4910	0,5310		
865	Sn [m²]	0,2600	0,3020	0,3430	0,3850	0,4260	0,4680	0,5090	0,5500		
895	Sn [m²]	0,2700	0,3130	0,3560	0,3990	0,4420	0,4840	0,5270	0,5700		
925	Sn [m²]	0,2790	0,3240	0,3680	0,4120	0,4570	0,5010	0,5460	0,5900		
955	Sn [m²]	0,2890	0,3350	0,3800	0,4260	0,4720	0,5180	0,5640	0,6100		
985	Sn [m²]	0,2980	0,3450	0,3930	0,4400	0,4880	0,5350	0,5830	0,6300		
1015	Sn [m²]	0,3070	0,3560	0,4050	0,4540	0,5030	0,5520	0,6010	0,6500		
1045	Sn [m²]	0,3170	0,3670	0,4180	0,4680	0,5190	0,5690	0,6200	0,6700		
1075	Sn [m²]	0,3260	0,3780	0,4300	0,4820	0,5340	0,5860	0,6380	0,6900		
1105	Sn [m²]	0,3360	0,3890	0,4430	0,4960	0,5490	0,6030	0,6560	0,7100		
1135	Sn [m²]	0,3450	0,4000	0,4550	0,5100	0,5650	0,6200	0,6750	0,7300		
1165	Sn [m²]	0,3550	0,4110	0,4670	0,5240	0,5800	0,6370	0,6930	0,7500		

Sample order

KAMOUFLAGE AP	120	400	685	TL	BLACK
1	2	3	4	5	6

1. product
2. fire resistance of 60 or 120 minutes
3. width
4. height
5. option: trailing lead 3 m
6. option: black finish

Approvals and certificates

All our products are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of the products.

pending application

Efectis-1812-CPR-2216

pending application

If the product is manipulated in any other way than described in this manual, Rf-Technologies will decline any responsibility and the guarantee will expire!