



High temperature

**Gawe**  
low voltage electrical material





## Fire rated switch disconnectors

Ventilation and smoke extraction systems aim to help safe working conditions on building evacuation and fire rescue operations, diminishing roof temperatures and delaying lateral fire expansion in order to permit an effective fight against fire expansion.

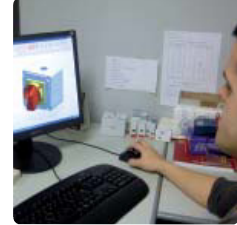
Standard EN- 12101-3 applies to **Smoke and heat control systems** detailing on part 3 specifications for powered smoke and heat exhaust fans. In order to guarantee installation safety under emergency conditions all ventilation system components must comply with this standard requirements, carrying test sequences according to details specified on the standard.

Gawe engineering team has developed a product for these stringent conditions and passed laboratory testing during a 200min. period. These tests endorse product qualifying under class F300, F400 and F600 according to Table 2 paragraph 6.1.3 on standard EN 12101-3.

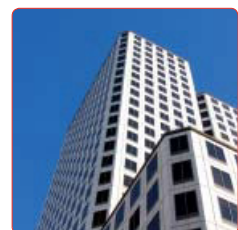
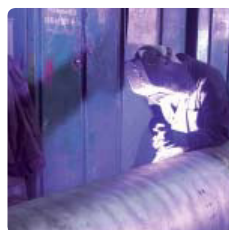
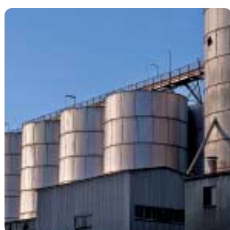
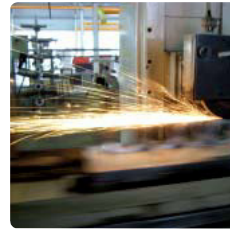
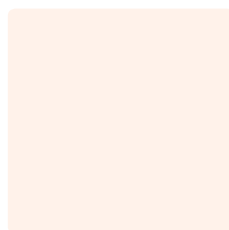
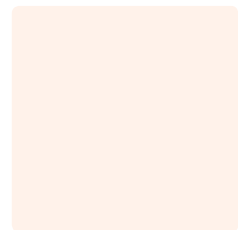
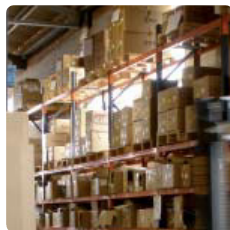
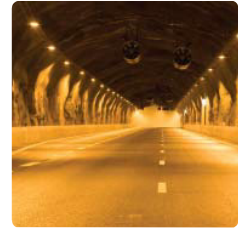
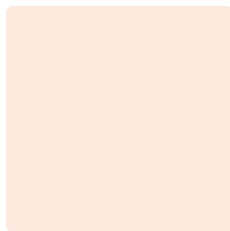
## Design and innovation

A rapidly changing environment with increasing **standard requirements** on design and installation characteristics, motivates a technical team used to work on product **solutions**.

The employment of innovative engineering techniques, use of **advanced engineering** tools, and operation with the latest manufacturing process, guarantee an excellent final outcome.



## Application



# Certification

**AFITI LICOF** Centre for Fire Testing and Research  
 Association for the Promotion of Research and Fire Safety Technology

**Test Certificate**  
 Nº: C8650/12-7  
 English Version

**Applicant:** GAVE ELECTRO, S.L.  
 C/ Alfred Nobel nº 16  
 Pol. Ind. Valloriolíf  
 08430 - La Roca del Vallés (BARCELONA)

**Building Element:** Switch disconnector  
 Manufacturer: Gave Electro, S.L.

**Reference:**

AB55625F3	AL55625F3
AB55225F3	AL55225F3
AB55641F3	AL55641F3
AB55241F3	AL55241F3

**Test:** Test protocol based on EN 12101-3:2002 "Smoke and heat control systems. Part 3: Specifications for powered smoke and heat exhaust ventilators"

**Test Date:** 03<sup>rd</sup>-Feb-12

**Certificate for the reports:** Test report nr 8650/12-3 (issued by AFITI-LICOF on 22<sup>nd</sup>-Oct-2012).

**Fire Resistance Classification:** **F300**

Classification taking as reference what is stated in §6.1.3. table 2 of the standard UNE-EN 12101-3:2002

Arganda del Rey, 22<sup>nd</sup> of October of 2012

Signed: Agustín Garzón Cabrero  
 Technical Director of LICOF

Ministry of Industry, Energy and Tourism  
 LICOF Official Laboratory for Fire Testing  
 R.D. 1614/1983 on 1st of August  
 R.G. on 21st of May of 1991

**AFITI LICOF** Centre for Fire Testing and Research  
 Association for the Promotion of Research and Fire Safety Technology

**Test Certificate**  
 Nº: C8834/13-3  
 English Version

**Applicant:** GAVE ELECTRO, S.L.  
 C/ Alfred Nobel nº 16  
 Pol. Ind. Valloriolíf  
 08430 - La Roca del Vallés (BARCELONA)

**Building Element:** Switch disconnector  
 Manufacturer: Gave Electro, S.L.

**Reference:**

AB55661F4	AL55661F4
AB55261F4	AL55261F4
AB55671F4	AL55671F4
AB55271F4	AL55271F4
AB55691F4	AL55691F4
AB55291F4	AL55291F4

**Test:** Test protocol based on EN 12101-3:2002 "Smoke and heat control systems. Part 3: Specifications for powered smoke and heat exhaust ventilators"

**Test Date:** 12<sup>th</sup>-Feb-13

**Certificate for the reports:** Test report nr 8834/13 (issued by AFITI-LICOF on 18<sup>th</sup>-Feb-2013).

**Fire Resistance Classification:** **F400 [I20]**

Classification taking as reference what is stated in §6.1.3. table 2 of the standard UNE-EN 12101-3:2002

Arganda del Rey, 19<sup>th</sup> of February of 2013

Signed: Agustín Garzón Cabrero  
 Technical Director of LICOF

Signed: Guillermo Rodríguez López  
 Technician of Fire Resistance Laboratory

Ministry of Industry, Energy and Tourism  
 LICOF Official Laboratory for Fire Testing  
 R.D. 1614/1983 on 1st of August  
 R.G. on 21st of May of 1991

**AFITI LICOF** Centre for Fire Testing and Research  
 Association for the Promotion of Research and Fire Safety Technology

**Test Certificate**  
 Nº: C8834/13-2  
 English Version

**Applicant:** GAVE ELECTRO, S.L.  
 C/ Alfred Nobel nº 16  
 Pol. Ind. Valloriolíf  
 08430 - La Roca del Vallés (BARCELONA)

**Building Element:** Switch disconnector  
 Manufacturer: Gave Electro, S.L.

**Reference:**

AB55661F6	AL55661F6
AB55261F6	AL55261F6
AB55671F6	AL55671F6
AB55271F6	AL55271F6
AB55691F6	AL55691F6
AB55291F6	AL55291F6

**Test:** Test protocol based on EN 12101-3:2002 "Smoke and heat control systems. Part 3: Specifications for powered smoke and heat exhaust ventilators"

**Test Date:** 12<sup>th</sup>-Feb-13

**Certificate for the reports:** Test report nr 8834/13 (issued by AFITI-LICOF on 18<sup>th</sup>-Feb-2013).

**Fire Resistance Classification:** **F600**

Classification taking as reference what is stated in §6.1.3. table 2 of the standard UNE-EN 12101-3:2002

Arganda del Rey, 18<sup>th</sup> of February of 2013

Signed: Agustín Garzón Cabrero  
 Technical Director of LICOF

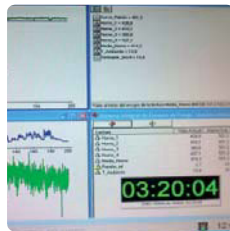
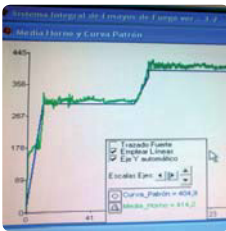
Signed: Guillermo Rodríguez López  
 Technician of Fire Resistance Laboratory

Ministry of Industry, Energy and Tourism  
 LICOF Official Laboratory for Fire Testing  
 R.D. 1614/1983 on 1st of August  
 R.G. on 21st of May of 1991

## Tests



The development of products rated to provide fire resistance in order to guarantee electrical functional integrity under extreme circumstances, does require the employment of **specialist laboratories** capable to reproduce, on a controlled manner, similar conditions to those that take place when a fire occurs.



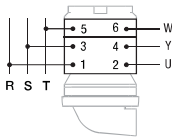
The recognized\* AFITI laboratory has facilities that allow constant pressure and temperature monitoring on the testing area thus ensuring that the **temperature curve** is replicated as established by the standard.

\*ENAC Spanish recognized part of ILAC Cooperation Scheme

## Electrical schemes

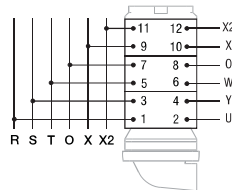
### 552 Switch 3P

5	6	X
3	4	X
1	2	X
		0 1



### 556 Switch 6P

11	12	X
9	10	X
7	8	X
5	6	X
3	4	X
1	2	X
		0 1



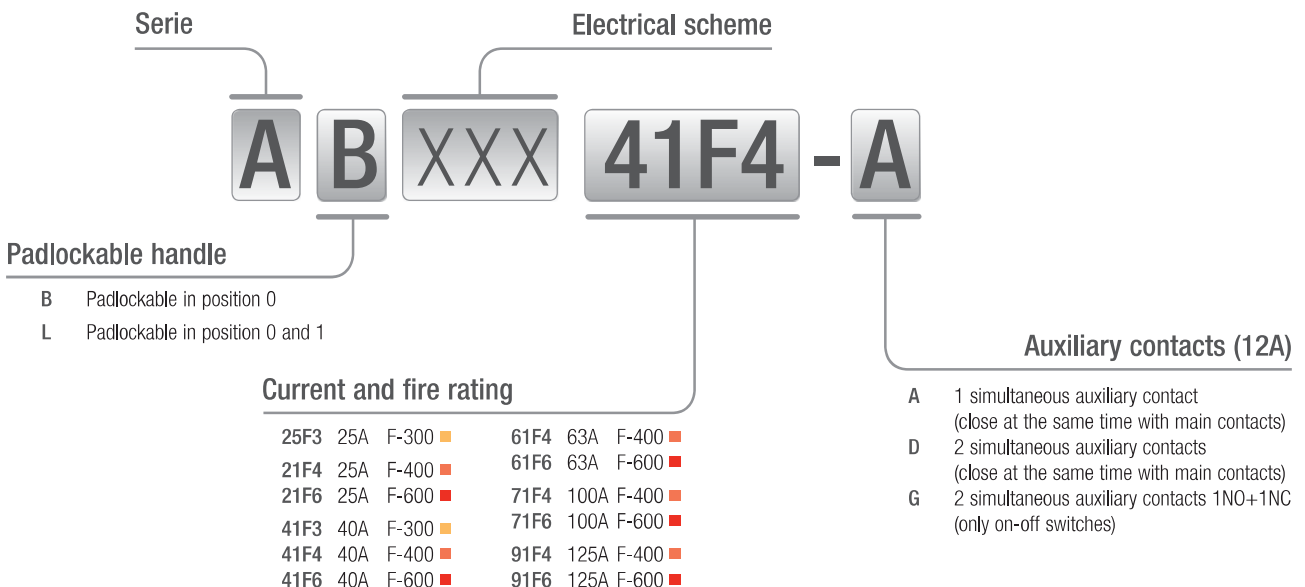
### Auxiliary contacts

Auxiliary contacts are 25A Size 1. Auxiliary contacts identification number change based on the number of switch cells.

11	12	
9	10	X
7	8	
5	6	X
3	4	X
1	2	X
		0 1

11	12	X
9	10	X
7	8	
5	6	X
3	4	X
1	2	X
		0 1

## Reference system



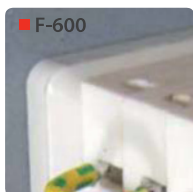
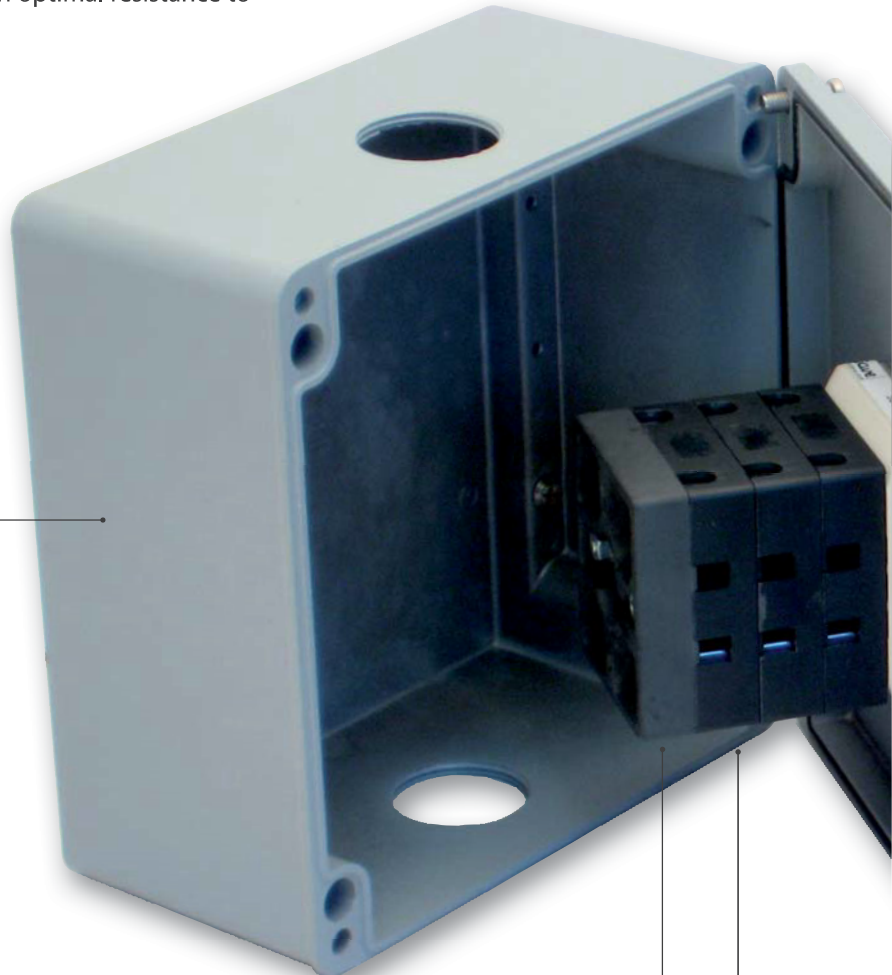
## General characteristics

Stringent requirements according to standards EN 12101-3 have originated a highly demanding research task aiming to reach optimal resistance to high temperature operation



### Enclosure

The enclosure has direct contact with the heating source and acts as a firewall diminishing direct heat into the switch.



### Advanced materials

High performance polymers mixed with additives succeed to obtain high temperature switches able to resist erosion while offering stable dimensions under high temperature conditions (controlled CTE) while keeping component lubricity and mechanical performance.

- F300 switch can be identified by its Light brown exterior colour. Employed materials offer excellent characteristics to temperature changes.
- The switch body on the F400 and F600 present a larger size containing specific mechanical elements on materials resistant to high temperatures.
- We recognise F400 switches by its external black colour whereas class F600 switches are identified by its white colour.



### Auxiliary contacts

Maximum reliability, contact cams operated with the same shaft of main contacts. Construction with the same materials as main contacts avoids temperature related unbalance.



### IP65 protection

Sealing injected on the enclosure lid ensuring an IP65 degree of protection according to EN 60529.



### Surface finish

Enclosure coated with epoxy polyester powder grey colour (RAL 7032 aluminium -7035 steel) semi-gloss textured made by electrostatic projection and high temperature oven dry. This treatment provides excellent protection against chemical agents.



### Cabling

Connection is made through two threaded metric entries placed one on the enclosure top face and the other on the bottom face.



### Handle

Safety/emergency handle with padlockable facility (up to 4 padlocks) on the disconnect position in order to guarantee safety during maintenance operations. Optionally padlockable in all positions.









## F-300 / F-400

The range of F300 and F400 switch disconnectors share the aluminium enclosures that offer a high IP and IK rating.

The stringent requirements on class F400 under fire conditions requires the use of special materials that must combine good resistance to high temperatures while maintaining electrical characteristics requirements

under IEC 947-3 when operating on normal conditions. To guarantee insulation characteristics we need the use of a specific contact block on this class type. Mechanical components also must be modified in order to pass product testing sequence.

### Technical characteristics

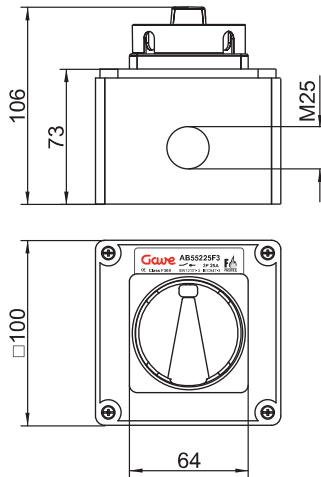
		Size 5	Size 1					
		25A (F3)	25A (F4)	40A	63A	100A	125A	
thermal rating	Ith A	30	30	50	70	100	125	
max. fuse protection (gG-aM)	In (A)	25	25	40	80	125	125	
connecting screws		M4	M5	M5	M8	M8	M8	
terminals								
flexible wire	mm <sup>2</sup>	6	6	10	16	35	50	
impulse voltage	Uimp KV	4	4	4	4	4	4	
conditional shortcircuit current	Icc KA	6	6	6	8	8	8	
operating voltage	Ue V~	690	690	690	690	690	690	
insulating voltage	V~	690	690	690	690	690	690	
operating rating	Ie A	25	25	40	63	100	125	
screw torque	Nm	1,6	1,6	1,8	2,4	2,4	2,4	
AC 23	kW	3 x 230V	4	4	7,5	15	18,5	18,5
	motor load VA kW	3 x 400V	7,5	7,5	18,5	22	30	37
	0,45 <cosφ <0,65 kW	3 x 500V	11	11	22	30	37	45



## Dimensions

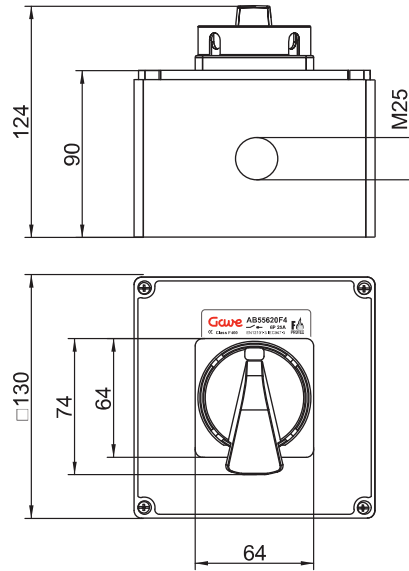
### Box size 1AL

- F-300 25A



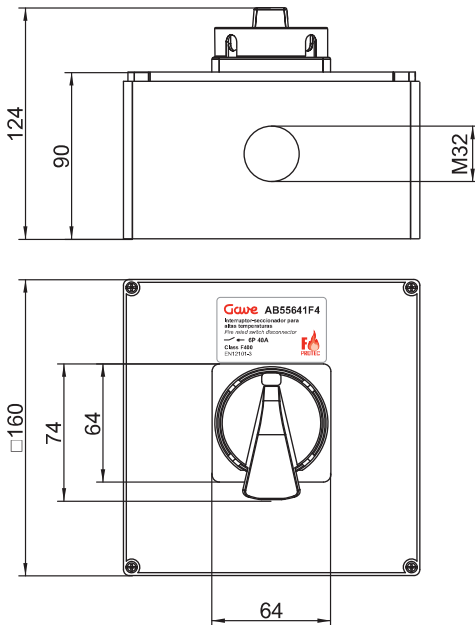
### Box size 2AL

- F-300 40A
- F-400 25A



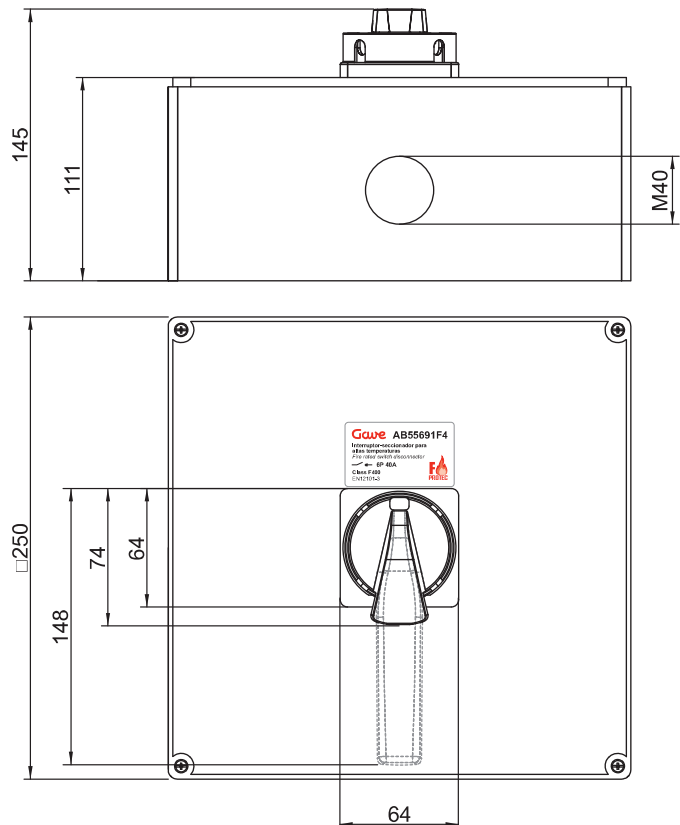
### Box size 3AL

- F-400 40A-63A 3P



### Box size 4AL

- F-400 63A 6P / 100-125A










## F-600

Constructing F600 switch disconnectors does require the use of very special materials able to overcome the extreme conditions under this category. The enclosure is on cold-laminated steel resistant to 600°C temperature.

Developing a particular mechanical block for high temperature has also improved switch behaviour when shortcircuit occurs while keeping the electrical characteristics when operating under normal conditions.

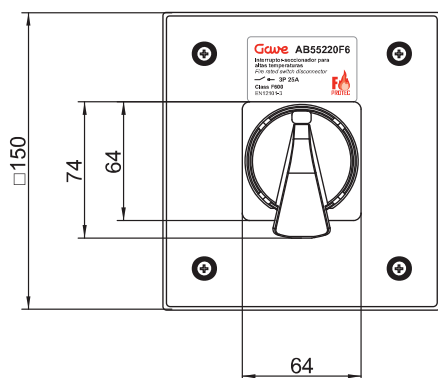
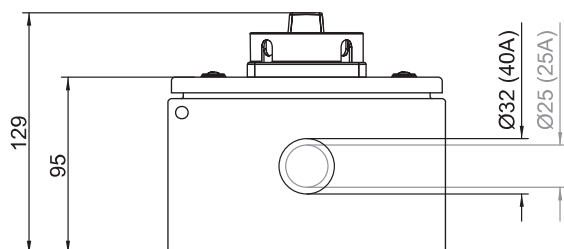
### Technical characteristics

		Size 1					
		25A		40A	63A	100A	125A
thermal rating	Ith A	30		50	70	100	125
max. fuse protection(gG-aM)	In (A)	25		40	80	125	125
connectiong screws		M5		M5	M8	M8	M8
terminals							
flexible wire	mm <sup>2</sup>	6		10	16	35	50
impulse voltage	Uimp KV	4		4	4	4	4
conditional shortcircuit current	Icc KA	6		6	8	8	8
operating voltage	Ue V~	690		690	690	690	690
insulating voltage	V~	690		690	690	690	690
operating rating	Ie A	25		40	63	100	125
screw torque	Nm	1,6		1,8	2,4	2,4	2,4
AC 23	kW	3 x 230V	4	7,5	15	18,5	18,5
	motor load VA kW	3 x 400V	7,5	18,5	22	30	37
	0,45 <cosØ <0,65 kW	3 x 500V	11	22	30	37	45

## Dimensions

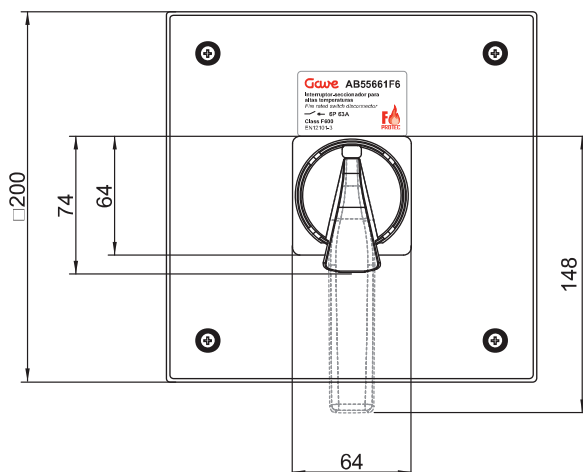
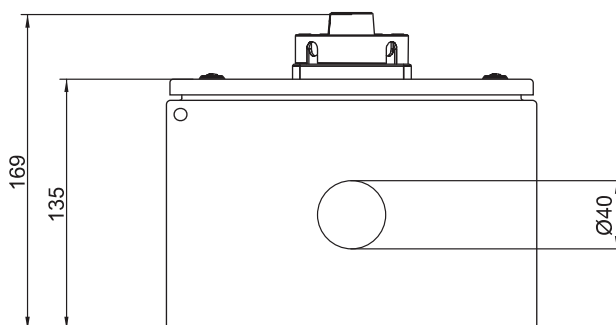
### Box size 1AC

■ F-600 25-40A



### Box size 2AC

■ F-600 63-100-125A



## Special requests

The large variety of installations that require this type of products often demand special product versions to particular needs.

When requiring adaptations such as auxiliary contacts, particular angle positions, specific enclosure surface treatments or colours, cable glands, fixing elements, ... we have at your

disposal a technical office specialised on this type of specific demands.



Offizieller Distributor Schweiz:

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CH-4563 Gerlafingen

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