F PROTEC

Fire rated switch disconnectors

Gewe

low voltage electrical manufacturer

F PROTEC

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.

Gave 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.

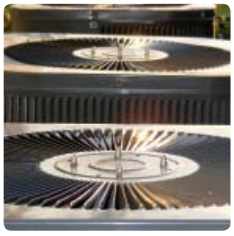
Design and innovation

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

Car Parks and tunnels



Warehouse and industries

Workshops, industrial and public buildings

Certification

Test Certificate

Nº: C8650/12-7

English Version

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

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

Reference:

AB55625F3	AL55625F3
AB55225F3	AL55225F3
AB5564IF3	AL5564IF3
AB5524IF3	AL5524IF3

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: 03rd-Feb-12

Certificate for the reports: Test report nr 8650/12-3 (issued by AFITI-LICOF on 22nd-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, 22nd of October of 2012

Signed: Agustín Garzón Cabrerizo
Technical Director
Fire Resistance Laboratory
Technical Director of LICOF

Test Certificate

Nº: C8650/12-8

English Version

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

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

Reference:

AB5524IF4	AL5524IF4
AB5522IF4	AL5522IF4
AB5564IF4	AL5564IF4
AB5562IF4	AL5562IF4
AB5566IF4	AL5566IF4
AB5526IF4	AL5526IF4

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: 03rd-Feb-12

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

Fire Resistance Classification: F400 (120)

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

Arganda del Rey, 22nd of October of 2012

Signed: Agustín Garzón Cabrerizo
Technical Director
Fire Resistance Laboratory
Technical Director of LICOF

Test Certificate

Nº: C8834/13-3

English Version

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

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

Reference:

AB5566IF4	AL5566IF4
AB5526IF4	AL5526IF4
AB5567IF4	AL5567IF4
AB5527IF4	AL5527IF4
AB5569IF4	AL5569IF4
AB5529IF4	AL5529IF4

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: 12th-Feb-13

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

Fire Resistance Classification: F400 (120)

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

Arganda del Rey, 19th of February of 2013

Signed: Agustín Garzón Cabrerizo
Technical Director of LICOF

Signed: Guillermo Rodríguez López
Technician of
Fire Resistance Laboratory

Test Certificate

Nº: C8834/13-2

English Version

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

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

Reference:

AB5566IF6	AL5566IF6
AB5526IF6	AL5526IF6
AB5567IF6	AL5567IF6
AB5527IF6	AL5527IF6
AB5569IF6	AL5569IF6
AB5529IF6	AL5529IF6

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: 12th-Feb-13

Certificate for the reports: Test report nr 8834/13 (issued by AFITI-LICOF on 18th-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

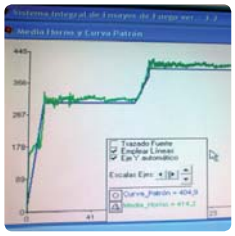
Arganda del Rey, 18th of February of 2013

Signed: Agustín Garzón Cabrerizo
Technical Director of LICOF

Signed: Guillermo Rodríguez López
Technician of
Fire Resistance Laboratory

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*

Reference system

Serie	Electrical scheme		F Class	
A	B	XXX	41	F4 - A

Padlockable handle

B	Padlockable in position 0
L	Padlockable in position 0 and 1

F Class

F3	F-300 (only 25A)	F4	F-400
		F6	F-600

Rating

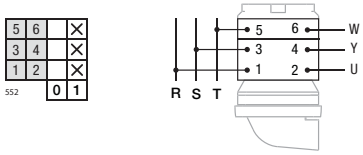
25	25A (only F-300)	91	125A
21	25A	A1	160A
41	40A	B1	200A
61	63A	C1	250A
71	100A		

Auxiliary contacts (12A)

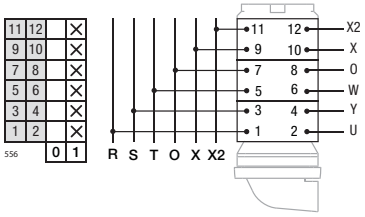
A	1 N.O. auxiliary contact
D	2 N.O. auxiliary contacts
G	1 N.O. + 1 N.C. auxiliary contacts

Electrical schemes

552 Switch 3P

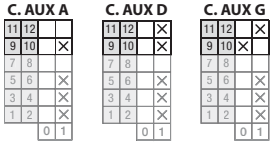


556 Switch 6P



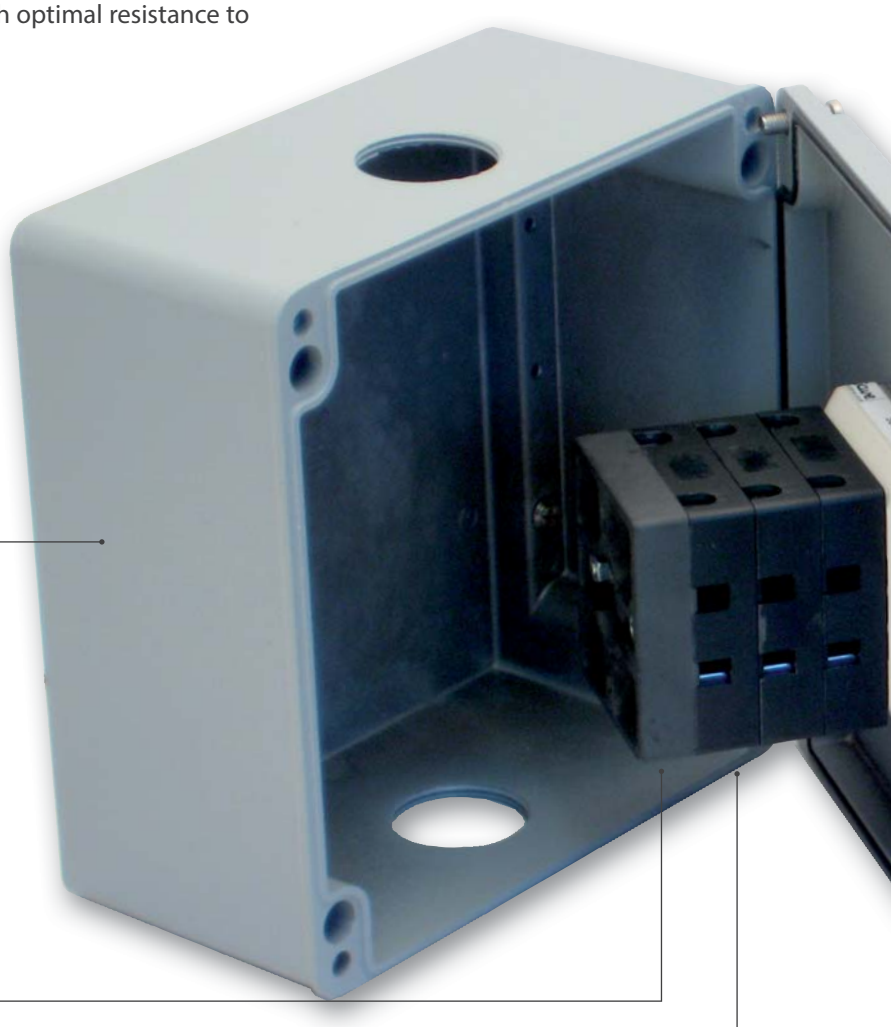
Auxiliary contacts

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



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 identifies by its white colour.

Auxiliary contacts

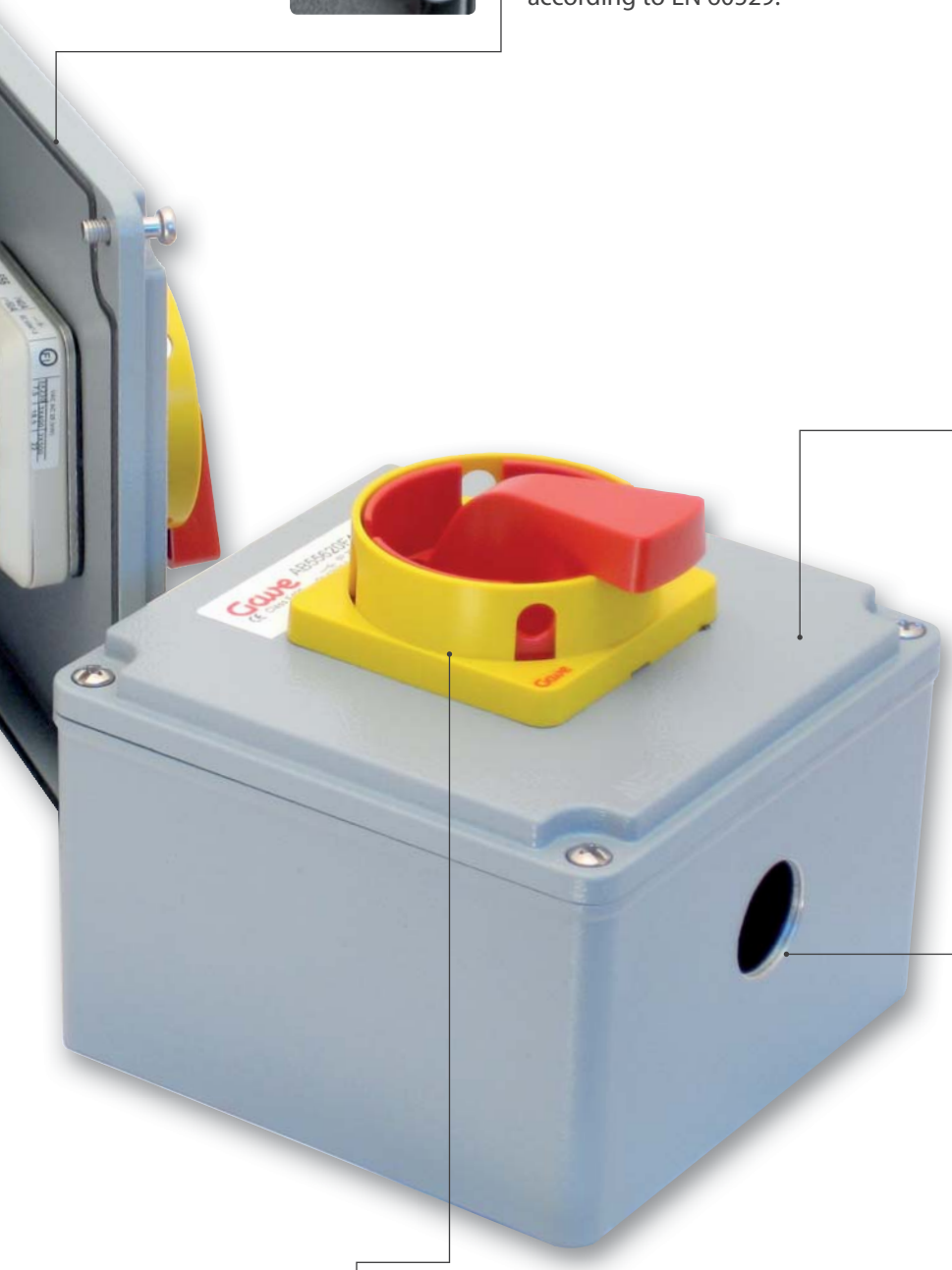
Maximum reliability, contact cams operated with the same shaft of main contacts. Construction with the same materials as main contacts avoids temperature related unbalance.

IP65 protection

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

Surface finish

Enclosure coated with epoxi 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 (25-125A) switch disconnectors share the aluminium enclosures that offer a high IP and IK rating. Higher ratings (160-250A) use sheet steel enclosures for easy handling and installation.

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 an specific contact block on this class type. Mechanical components also must be modified in order to pass product testing sequence.

Technical characteristics

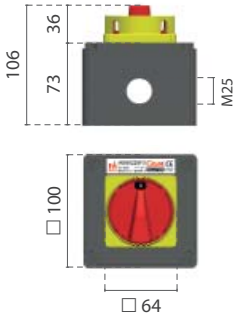
		25A (F3)	25A (F4)	40A	63A	100A	125A	160A	200A	250A
thermal rating	Ith A	25	32	40	70	100	125	160	200	250
max. fuse protection (gG-aM)	In (A)	25	25	40	80	125	125	160	200	250
connectiong screws		M4	M5	M5	M8	M8	M8	M8	M8	M8
terminals										
flexible wire	mm2	6	16	16	50	50	50	70	95	120
impulse voltage	Uimp KV	4	4	4	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	690	690	690
insulating voltage	V~	690	690	690	690	690	690	690	690	690
operating rating	Ie A	25	25	40	63	100	125	160	200	250
screw torque	Nm	1,6	2	2	3,5	3,5	3,5	12	12	12
AC 23 kW	3 x 230V	4	4	7,5	15	18,5	18,5	30	38	55*
motor load VA kW	3 x 400V	7,5	7,5	18,5	22	30	37	52	65	110*
0,45 <cosØ <0,65 kW	3 x 500V	11	11	22	30	37	45	65	80	132*

** AC22 values*

Dimensions

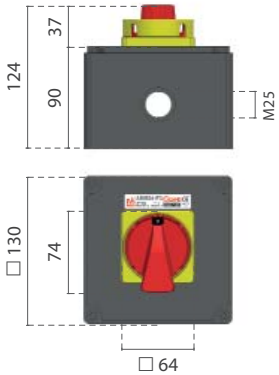
Box **size 1AL**

■ **F-300** 25A 3P/6P



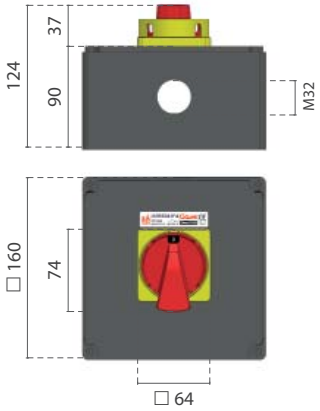
Box **size 2AL**

■ **F-300** 40A 3P/6P
■ **F-400** 25A 3P/6P



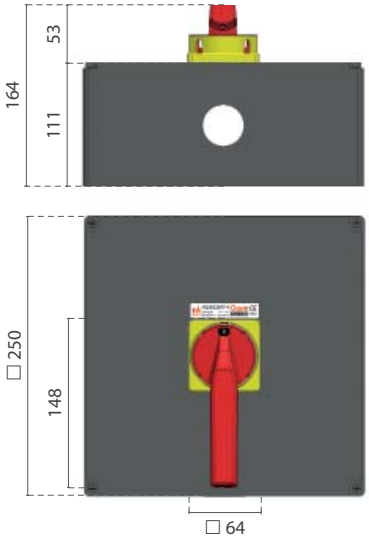
Box **size 3AL**

■ **F-400** 40-63A 3P / 63A 6P



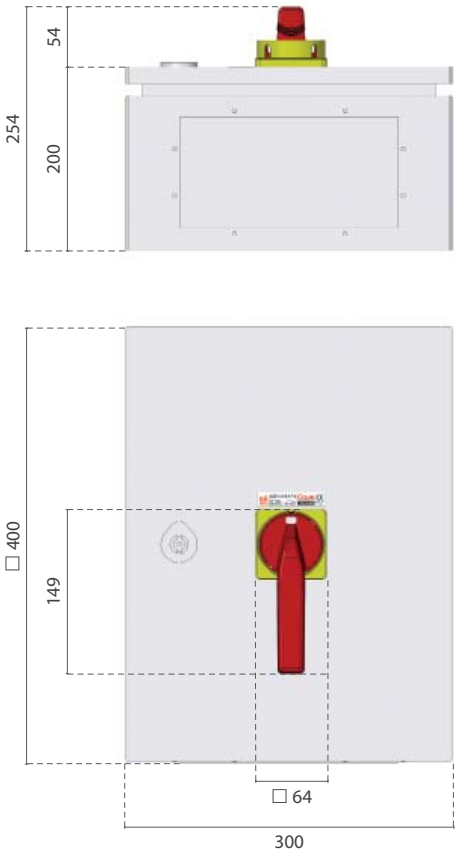
Box **size 4AL**

■ **F-400** 100-125A 3P / 63-100-125A 6P



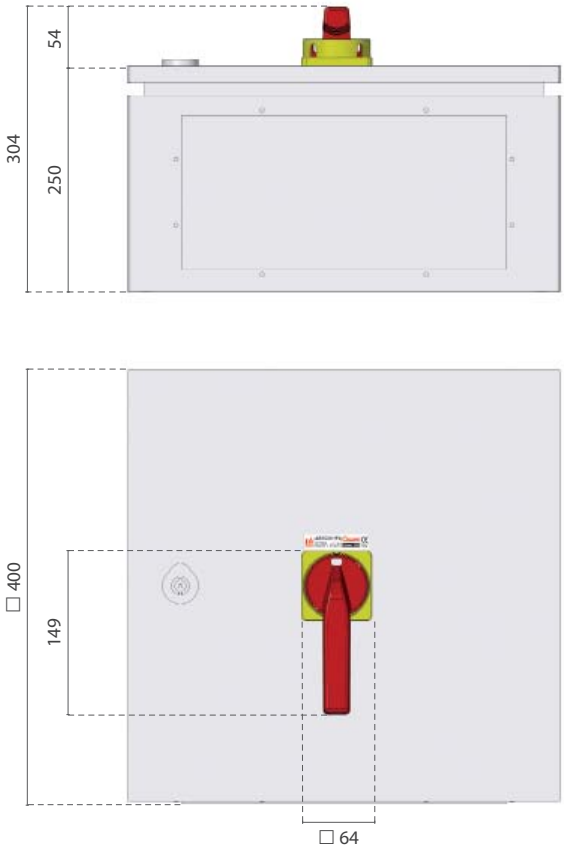
Box **size E3F**

■ **F-400** 160-200A 3P



Box **size E4F**

■ **F-400** 250A 3P / 160-200A-250A 6P



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 600ºC temperature.

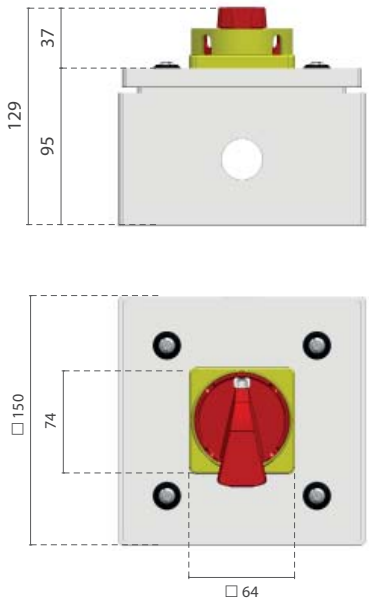
Developing a particular mechanical block for high temperature has also improved switch behaviour when shortcircuit occurs while keeping the electrical characteristics when operating under normal conditions.

Technical characteristics

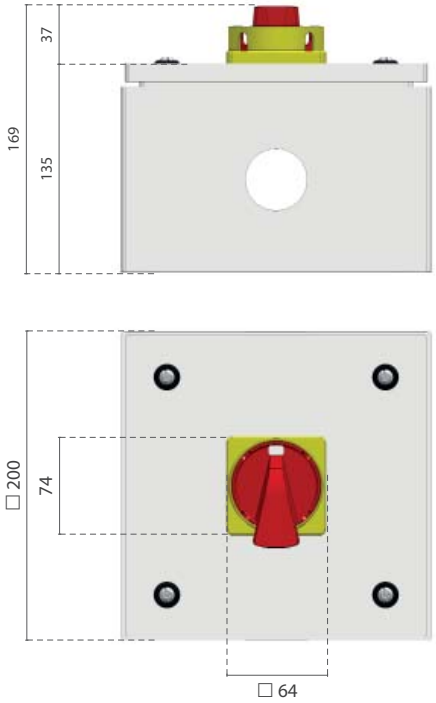
		25A	40A	63A	100A	125A
thermal rating	Ith A	32	40	70	100	125
max. fuse protection(gG-aM)	In (A)	25	40	80	125	125
connectiong screws		M5	M5	M8	M8	M8
terminals						
flexible wire	mm2	16	16	50	50	50
impulse voltage	Uimp KV	4	4	4	4	4
conditional shortcircuit current	Icc KA	6	6	8	8	8
operating voltage	Ue 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	2	2	3,5	3,5	3,5
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 3P/6P



Box **size 2AC**
■ **F-600** 63-100-125A 3P/6P



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

099CA00003.08EN

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