

Fupact

Catalogue 2018

Fusegear range from 32 to 1250 A

schneider-electric.com

Life Is On

Schneider
Electric





Green Premium™

Endorsing eco-friendly products in the industry



Green Premium™
Product

Green Premium is the only label that allows you to effectively develop and promote an environmental policy whilst preserving your business efficiency. This ecolabel guarantees compliance with up-to-date environmental regulations, but it does more than this.

Over 75% of Schneider Electric manufactured products have been awarded the Green Premium ecolabel



Discover what we mean by green ...

Check your products!

Schneider Electric's Green Premium ecolabel is committed to offering transparency, by disclosing extensive and reliable information related to the environmental impact of its products:

RoHS

Schneider Electric products are subject to RoHS requirements at a worldwide level, even for the many products that are not required to comply with the terms of the regulation. Compliance certificates are available for products that fulfil the criteria of this European initiative, which aims to eliminate hazardous substances.

REACH

Schneider Electric applies the strict REACH regulation on its products at a worldwide level, and discloses extensive information concerning the presence of SVHC (Substances of Very High Concern) in all of its products.

PEP: Product Environmental Profile

Schneider Electric publishes complete set of environmental data, including carbon footprint and energy consumption data for each of the lifecycle phases on all of its products, in compliance with the ISO 14025 PEP ecopassport program. PEP is especially useful for monitoring, controlling, saving energy, and/or reducing carbon emissions.

EoLI: End of Life Instructions

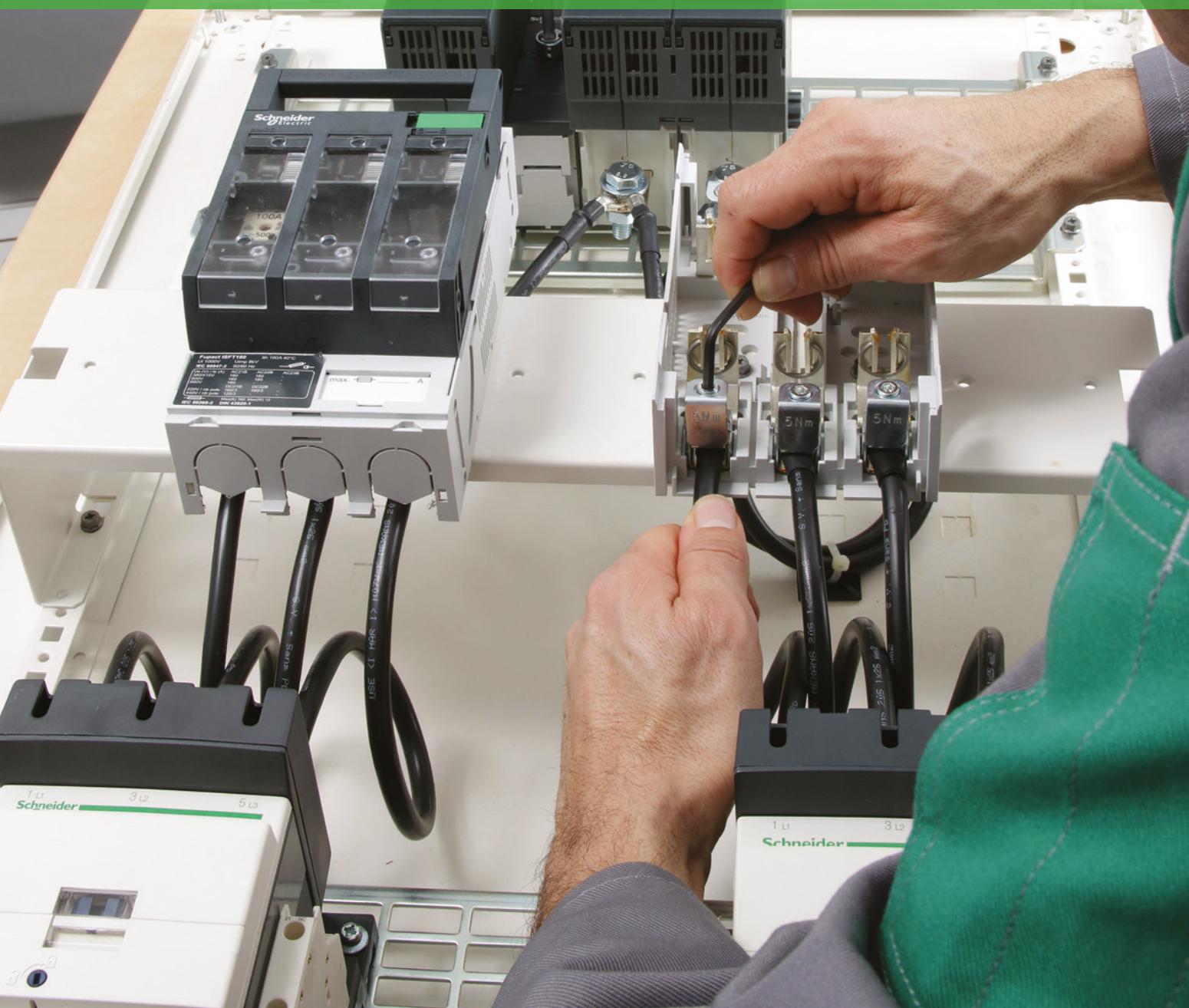
Available at the click of a button, these instructions provide:

- Recyclability rates for Schneider Electric products.
- Guidance to mitigate personnel hazards during the dismantling of products and before recycling operations.
- Parts identification for recycling or for selective treatment, to mitigate environmental hazards/ incompatibility with standard recycling processes.

Life Is On

Schneider
Electric

An alternative approach to electrical protection



The essentials of electrical protection

Schneider Electric is committed to bringing you the most flexible and comprehensive fuse device offer on the market. We bring you essential functions combined with advanced features such as measurement and turnable hooks to deliver a “best in class” solution that guarantees electrical protection for your industrial applications with single and double breaking switch fuses.

Fuse devices are designed to perform the three essential functions of electrical protection:

- Switch function for circuit on-load control
- Fuse function against short-circuits and overloads
- Isolation from the power circuit.

A complete solution	Simple and flexible	Designed for safety	Fully compatible	Fully certified
Schneider Electric offers complete electrical protection for distribution systems including fuse devices that fully integrate in Schneider's functional and universal enclosures (Prisma P and G, Prisma iPM), and busbar trunking systems (Canalis KSA, KSB)	<ul style="list-style-type: none"> • Easy to install and flexible in terms of footprint, cable connections, and product position. Includes mounting plates or can be mounted directly onto busbars or DIN rail. • Easy to operate and simple to maintain 	Interlocking to prevent access to fuses when the switch is in closed position, high IP and IK level	Fusegear solutions have been designed to be used with all fuse-links and complying with standard: <ul style="list-style-type: none"> • IEC 60269-1 and -2 	Fuse offer complies with international standards, certifications and markings: <ul style="list-style-type: none"> • IEC 60947-1 and -2 • CCC certificates • EAC certificates



Fupact ISFL
160 to 1250 A

Fupact ISFT
100 to 630 A

Single breaking offer: Fuse switch disconnectors

Functions:

- Short-circuit and overload protection
- Isolation
- On-load switching of circuits



- High level of reliability against short-circuits
- High flexibility on busbar systems thanks to its turnable hooks
- Opening and closing operations are dependent on the operator's action

Components that work great together by design

All Schneider Electric components, from electrical devices and busbars, to splitter blocks and switchboards, work together for optimal performance. Their electrical and mechanical functions and communications features integrate seamlessly.

Our range of fuse devices ensure:

- People and property safe are protected
- Energy quality and availability
- Performance and high uptime
- Easy operation, thanks to standard operating process and simple maintenance.

Combine efficiency and intelligent control thanks to the fuse monitor

Available for the complete Fupact ranges, the fuse monitor is more than just an accessory. Its protection and monitoring functions makes it indispensable:

- A common monitoring solution for the complete range
- Automatic reset of the fuse monitor once blown fuse is replaced
- Auxiliary contacts for different functions: alarm, tripping of a remote device
- No need for striker fuses, leading to a significant cost reduction



Fupact INF
32 to 800 A

Double breaking offer: Switch disconnector fuses

Functions:

- Short-circuit and overload protection
- Isolation
- On-load switching of circuits



- High level of safety thanks to upstream and downstream double breaking
- Fast opening and closing
- Opening and closing operations occur independently of the operator's action



SINGLE BREAKING FUSE SOLUTIONS FUPACT ISFT - FUSE SWITCH DISCONNECTORS

Fupact ISFT devices are evolving!

The new Fupact ISFT generation helps you remain competitive in today's market. Its new features offer more flexibility in terms of mounting and cabling. ISFT also has the smallest product of the market at just 53 mm width for NH 000 fuse-links (100A).

Fuse switch disconnectors can be mounted and fixed effortlessly!

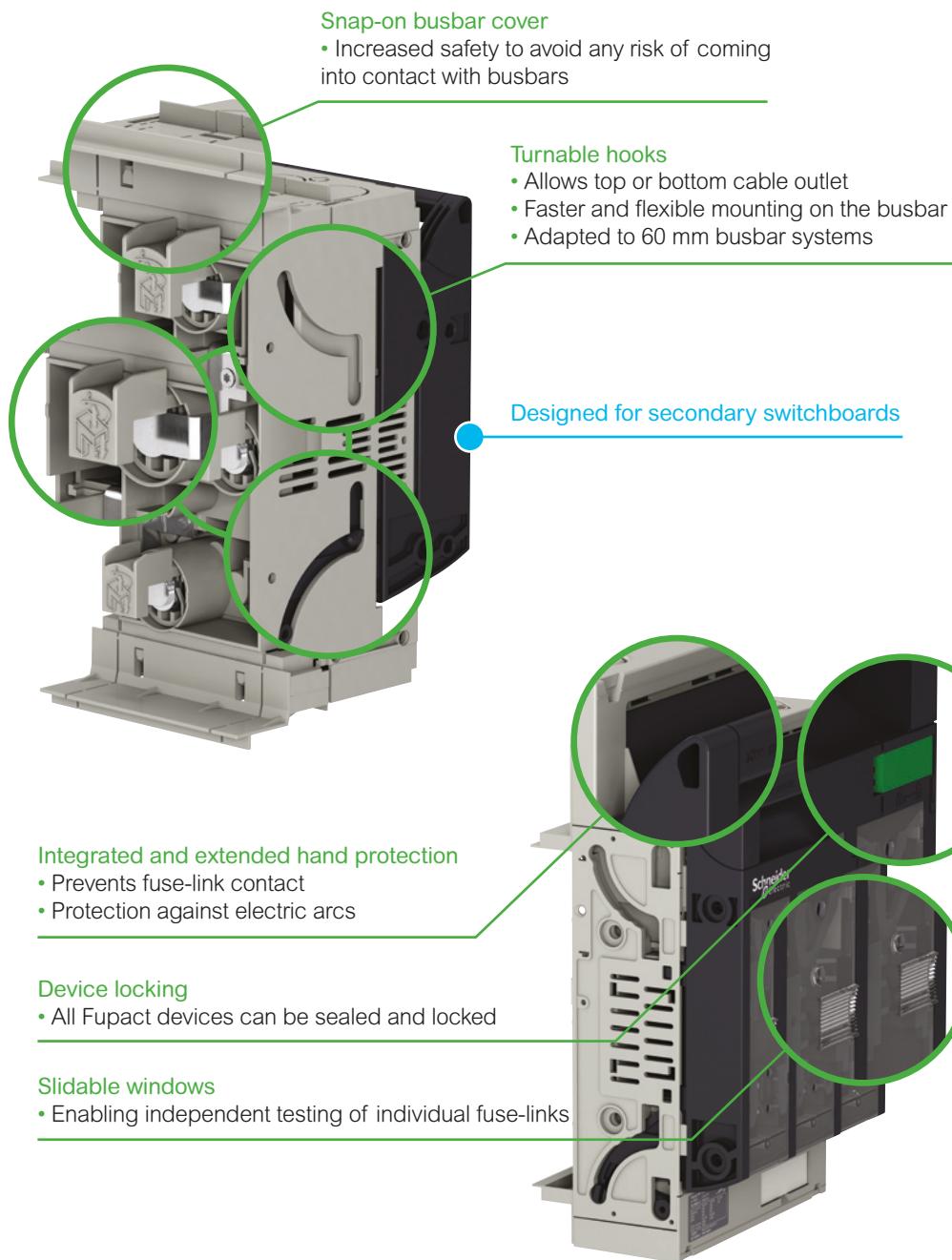
- **Less stock:** new ISFT range includes turnable hooks to enable downstream or upstream distribution with the same product.
- **Save time:** less assembling steps. The product can be fixed very quickly for a faster mounting.
- **More safety:** the product offers optimized user protection against arc flash.



The smallest product of the market
ISFT 100N (100A)



Less space needed
(53 mm width instead of standard 106 mm)



Fupact ISFT and ISFL combine efficiency and intelligent control and reduce costs:

The fuse monitor ensures:

- Precise location and fast correction of short-circuit and overload faults
- No need of striker-type fuses
- Auxiliary contacts for different functions: alarm, tripping of a remote device, etc.
- Automatic reset of the fuse monitor after blown fuse is replaced





SINGLE BREAKING FUSE SOLUTIONS **FUPACT ISFL** - FUSE SWITCH DISCONNECTORS

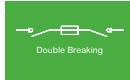
More flexibility with Fupact ISFL

Fupact ISFL is one of the most efficient vertical fuse switch disconnectors ever designed with compact form and a modular system.

Thanks to its size, Fupact ISFL doesn't require extra space for current transformer installation. Its interface is standardized for all types of measurement devices.



Same lenght and depth for size 00 (160A) to size 3 (630A)



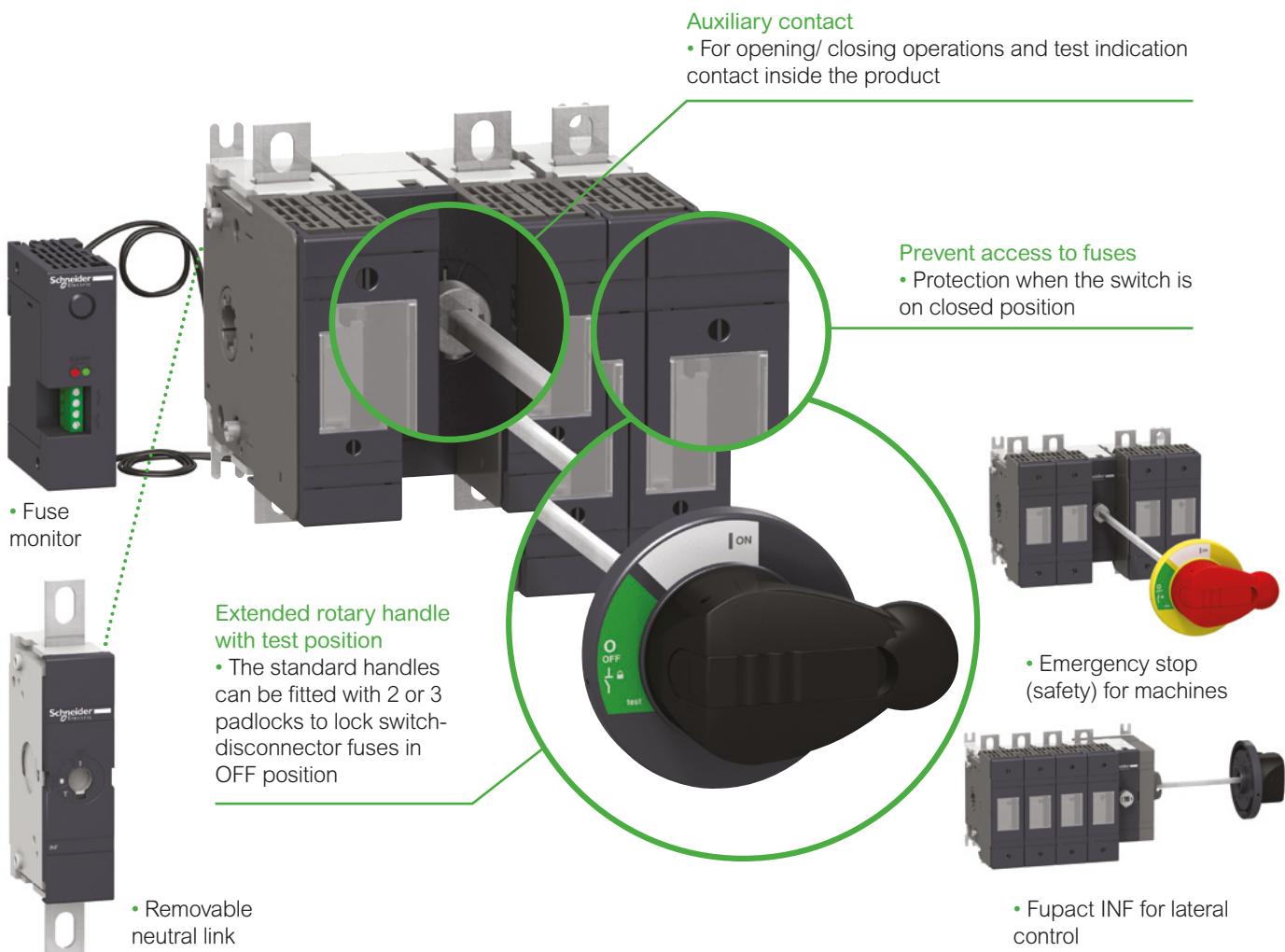
DOUBLE BREAKING FUSE SOLUTIONS FUPACT INF - SWITCH DISCONNECTOR FUSES

High performance ensured with Fupact INF

Fupact INF offer provides reliable protection for personnel thanks to its double isolation, upstream and downstream when switch is open.

It also ensures high system availability in buildings, infrastructure and even in industrial plants.

It is compatible with fuse-links BS, NFC and NH.



Ensure your power distribution with Fupact INF

- Distribution switchboards.
- Disconnection, isolation, locking and primary control of incoming circuits.
- Categories AC21/AC22 for electrical distribution, AC23 for motor feeders.

Power and control your industrial motors with Fupact INF

- Motor starters: DOL, Star-Delta, softstarters.
- Variable speed starters with frequency converters.
- Machine types: HVAC units, industrial cranes, hoists.
- Industries: paper, steel, ports, automotive, power, mining, rail, oil & gas.

A complete fuse-link offer

Schneider Electric provides a fuse-link offer with NH fuses to ensure a complete solution for our customers.

All fuse-links are provided under 500V and 690V, from 25A to 800A.

We offer fuse-links with different curves, available with and without strikers:



- **Fuse-links type aM**

Ensure the protection of equipment with current peaks like motor applications.



- **Fuse-links type gG**

Offers protection of circuits without significant electrical distribution current peaks.

Most of fuse-links are delivered without strikers because Fupact offer includes Fuse monitor devices which offer significant cost reductions.

Functional installation in Prisma product range

Easy implementation

Fupact fusegear can be installed on mounting plates or mounted directly on the busbar from 60 to 185 mm.

Installation is made easy by special components for each type of mounting and clear instructions in accordance with standard working practices.

Multiple combinaisons in switchboard

Fupact ISFL devices can be installed in the same rows with all the different ratings.

Same accessories are existing to have the same lenght and new products have been developped to have same lenght and depth.

Depending on the rating, 6 to 9 devices can be installed per row.



Simplified distribution in switchboard

Fupact ISFT100 and 160 can be supplied via feeding busbars connected to the main busbars.

All Fupact ISFT range (except 630 A rating) could be supplied directly by busbars with connection by hook-on.

Full functional-unit performance

For INF, ISFT and ISFL fusegear, a complete set of mounting plates, front plates and prefabricated connection accessories offer all the advantages of the Prisma installation in terms of safety and ease of installation.

General contents

Fupact

Presentation

2

Functions and characteristics

A

Installation recommendations

B

Dimensions and connection

C

Wiring diagrams

D

Technical characteristics

E

Catalogue numbers

F

General description of Fupact fusegear

2

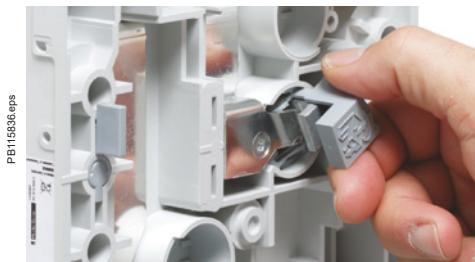


PB107274_15.eps



PB115835.eps

ISF• fuse-switch disconnectors.



ISFT with turnable hooks.



INF• switch-disconnector fuses.



INS switch-disconnectors.



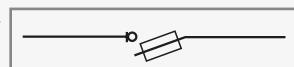
Fuse-link.

2

Fupact ISF• (ISFT and ISFL)

ISFT horizontal fuse-switch disconnectors and ISFL vertical fuse-switch disconnectors have the following functions:

- on-load switching of circuits. The speed and force of the operation of this type of fusegear are dependent on the action of the operator
- the fuse-link blades form the moving contacts of the switch
- the fuse-links are mounted in a fuse-carrier assembly
- via the handle, the fuse-carriers operate the main moving contacts
- isolation when the fuse-carrier assembly is in the open position (OFF)
- protection against short-circuits and overloads on distribution circuits. This function is provided by DIN blade-type industrial fuse-links (NH).
- possibility for ISFL vertical fuse-switch disconnectors to have a 1-pole or 3-pole variant.
- Turnable contact hooks which is advantage in terms of installation. Possibility to have an upstream or downstream distribution with the same product.



ISF• fuse-switch disconnectors

Fupact INF• (INFC, INFD and INFB)

INF• switch-disconnector fuses provide the following functions:

- on-load switching of circuits. The speed and force of the operation of this type of fusegear are independent of the action of the operator (fast opening and closing)
- isolation with positive contact indication when the switch is in the open position (OFF). The fuse-link is completely isolated from the power circuit (double breaking technology)
- protection against short-circuits and overloads on distribution circuits. This function is provided by industrial fuse-links (NFC, DIN, BS) used in conjunction with the switch-disconnector fuse device
- safety or emergency stop (red/yellow rotary handle option).

Fupact operating modes

The Fupact range integrates control, isolation and fuse-carrier functions in a single device.
These functions can also be implemented by combining separate components.



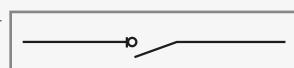
INF• switch-disconnector fuses

Solutions combining separate components

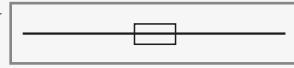
It is also possible to protect distribution circuits and/or motors by combining switch-disconnectors with fuse-links mounted on separate fuse-carriers.

The functions provided by each component are:

- on-load switching of circuits (opening and closing) and isolation (switch-disconnector)
- protection against overloads and short-circuits (fuse).
- The combination can implement Compact INS or INV switch-disconnectors from 40 to 2500 A.



Control.



Protection.

2

General description of Fupact fusegear

Compliance with standards

Fupact fusegear complies with international standards and recommendations:

- IEC 60947-1: general rules
- IEC 60947-3: switches, disconnectors
- IEC 60947-5.1 and following: control-circuit devices and switching elements; automatic control components.

These standards and recommendations are applied in most countries.

Fupact fusegear and auxiliaries comply with International standards (IEC 60947-1 and IEC 60947-3).

Fupact INF● and Fupact ISF● are designed for use with industrial fuse-links complying with the following standards:

- IEC 60269
- BS 88 (only for Fupact INF●)
- DIN 43620 / VDE 0636.

Fupact INF● switch-disconnector fuses are suitable for the control of machine-tools:

- they comply with the requirements of the new machine directive IEC 60204 (EN 60204)
- they comply with French standard NF C 79-130 and the recommendations issued by the CNOMO organisation.

Climatic environment

Fupact fusegear meets climatic requirements as defined in the following standards:

- IEC 60068-2-30: damp-heat tests under off-load conditions, 95 % relative humidity at 55 °C (hot and humid climate conditions)
- IEC 60068-2-52: salt-mist tests, KB severity 2 tests
- IEC 60068-2-56: damp-heat tests under on-load conditions for 48 hours, environment category C2 following Schneider quality specifications.

The fusegear can therefore be used in all climates.

Degree of pollution

Fupact fusegear is certified for operation in pollution-degree 3 environments as defined by IEC 60947 standard applying to industrial environments.

Ambient temperature

The Fupact range can be used between -25 °C and +70 °C. Above 40 °C, you will have to take account of the derating indicated in the documentation.

The devices must be commissioned at the ambient temperature indicated above. Exceptionally, they can be commissioned at an ambient temperature of between -35 °C and +70 °C.

The Fupact range must be stored in its original packaging at a temperature of between -50 °C and +85 °C.

Degree of protection

For Fupact fusegear with terminal shield, the degree of protection against direct contact complies with standard IEC 60529 (IP index of protection) and IEC 62262:

- with direct rotary handle: IP20/IK07
- with extended rotary handle (Fupact INF): IP65/IK10.

Positive contact indication

IEC 60947-3 standard defines isolation with positive contact indication as follows:

- the isolation position corresponds to the O (OFF) position
- the operating handle cannot indicate the OFF position unless the main contacts are not totally opened
- locking in the OFF position is not possible unless the main contacts are actually open.

INF● switch-disconnector fuses are suitable for isolation with positive contact indication.

Installation of an extended handle on INF● fusegear does not alter the suitability for isolation.

The isolation with positive contact indication function is certified by tests guaranteeing:

- the mechanical reliability of the position-indication system
- the absence of leakage currents
- overvoltage withstand capacity between upstream and downstream connections.

Fupact ISFT160			I _{th} 160A 40°C
Ui 1000V	U _{imp} 8kV		
IEC 60947-3 50/60 Hz			
U _e (V) / I _e (A)	AC21B	AC22B	AC23B
380/415V	160	160	-
500V	160	160	-
690V	160	-	-
	DC21B	DC22B	
220V / nb pole	160/3	160/3	-
440V / nb pole	125/3	-	-
	Max(A) 160 Max(W) 12		
	HD 60269-2	DIN 43620-1	

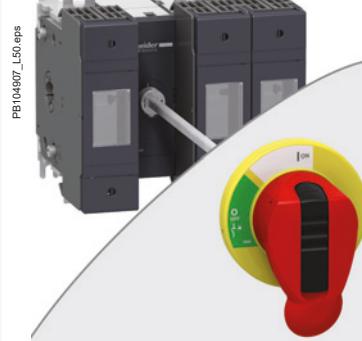
ISFT label.



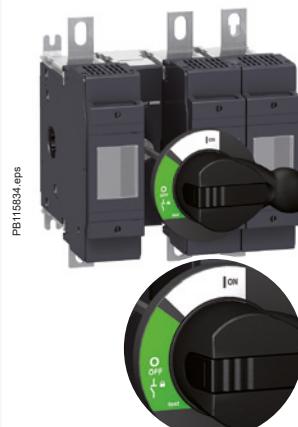
PB10734_21.eps



PB11535.eps



Fusegear in an enclosure or cabinet (extended handle);
INF● only.
IP65 and IK10.



Positive contact indication.

A



ISFT100N



ISFT100



ISFT160



ISFT250
ISFT400
ISFT630

Fupact ISFT

Fuse switch-disconnector selection	
Fupact ISFT100N to ISFT630.....	A-2
Accessories and auxiliaries	
Fupact ISFT100N	A-6
Fupact ISFT160.....	A-8
Fupact ISFT250 to ISFT630	A-9
General characteristics: ISFT	
Fupact ISFT100N to ISFT630.....	A-10
ISFT installation	
Fupact ISFT100N to ISFT630	A-12
Connection and accessories	
Fupact ISFT100N to ISFT630 - Connection.....	A-14
Fupact ISFT160 to ISFT630 - Reverse distribution.....	A-16
Fupact ISFT100 and ISFT160 - Connection, coupling.....	A-17
Fupact ISFT100N, ISFT160 to ISFT400 - Different installation systems	A-18
Fuse monitor	
Fupact ISFT160 to ISFT630	A-20
Insulation	
Fupact ISFT100N to ISFT630.....	A-22
Fuse-link monitoring and testing	
Fupact ISFT160 to ISFT630	A-23
Control, locking and operation	
Fupact ISFT100N to ISFT630.....	A-24
Auxiliary contacts and indications	
Fupact ISFT100N to ISFT630.....	A-26

A

Other chapters

Presentation	2
Installation recommendation	B-1
Dimensions and connection	C-1
Wiring diagrams.....	D-1
Technical characteristics	E-1
Catalogue numbers	F-1

Fuse switch-disconnector selection

Fupact ISFT100N to ISFT630



ISFT100N.



ISFT100.



ISFT160.



ISFT250-400-630.

Fuse switch-disconnectors

Number of poles / type of fuse-link	IEC 60269-2-1 Section 1	
Electrical characteristics as defined by IEC 60947-1 / IEC 60947-3		
Conventional thermal current (A)	In free air Maximum fuse power dissipation (W)	I_{th} at 40 °C
	In enclosure Maximum fuse power dissipation (W)	I_{the} at 40 °C
Rated insulation voltage (V)	U_i	AC 50/60 Hz / DC
Rated impulse withstand voltage (kV)	U_{imp}	
Rated operational voltage (V)	U_e	AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)	U_e	
Rated operational current (A)	I_e	AC 50/60 Hz 220/240 V 380/415 V 440/480 V ^[1] 500 V 660/690 V
DC/poles in series		
220 V / no. of poles		
440 V / no. of poles		
Rated duties	Uninterrupted duty	
Rated short-circuit breaking capacity (kA rms)/Rated short-circuit making capacity (kA peak)/Fuse-link In (A) ^[2]	$I_{cn}/I_{cm}/I_n$	415 V 500 V 690 V
Endurance (category B) (CO cycles)	Mechanical Electrical AC	AC22B 415 V AC23B 415 V AC22B 500V AC21B 500V AC22B 690V AC21B 690 V
Suitability for isolation		
Positive contact indication		
Pollution degree		

Control

Direct front rotary handle (operator-dependent opening and closing)

Locking	Padlocks Lead seal
---------	-----------------------

Indication auxiliaries

Auxiliary contacts

Fuse monitor

Installation and connection accessories

Possible mounting positions	Horizontal
	Vertical

Bare cable connectors

Other connectors	For bare Cu/Al cables For flexible bars
------------------	--

Distribution connectors

Lugs for copper cables

Incoming connector for feeding busbars

Terminal shields

Dimensions and weight

Overall dimensions H x W x D (mm)	3P
Approximate weight without fuse-links (kg)	3P

[1] Suitable for 480 V NEMA.

[2] Fuse-switch disconnectors with fuse-links.

[3] AC23B 160A

[4] AC23B 250 A

[5] AC23B 400 A

[6] AC23B 630 A

Note: Connecting two NS-fuse switches reduces the utilization category to AC22B to 80 kA.

Fuse switch-disconnector selection

Fupact ISFT100N to ISFT630

ISFT100N	ISFT100	ISFT160	ISFT250	ISFT400	ISFT630
3P/DIN (NH)	3P/DIN (NH)	3P/DIN (NH)	3P/DIN (NH)	3P/DIN (NH)	3P/DIN (NH)
100	100	160	250	400	630
9	9	12	23	34	48
100	100	160	250	400	630
9	9	12	23	34	48
1000	800	1000	1000	1000	1000
6	6	8	8	8	8
690	690	690	690	690	690
440	440	440	440	440	440
800	800	800	800	800	800
AC21B	AC22B	AC21B	AC22B	AC21B	AC22B
100	100	100	100	160 [3]	250 [4]
100	100	100	100	160 [3]	250 [4]
100	100	100	-	160	250
100	100	100	-	160	250
100	-	100	-	160	250
DC21B	DC22B	DC21B	DC22B	DC21B	DC22B
100/3	100/3	100/3	-	160/3	160/3
100/3	100/3	100/3	-	125/3	-
80/5.1kA peak/100 A	80/ 3 kA/100 A	80/ 5 kA peak /160 A	80/ 15 kA peak /250 A	80/ 22.1 kA peak /400A	80/ 25.2 kA peak /630 A
80/5.1kA peak/100 A	50/ 3 kA/100 A	80/ 5 kA peak /160 A	80/ 15 kA peak /250 A	80/ 22.1 kA peak /400A	80/ 25.2 kA peak /630 A
80/5.1kA peak/100 A	50/ 3 kA/ 100 A	80/ 5 kA peak /160 A	80/ 15 kA peak /250 A	50/ 22.1 kA peak /400A	80/ 25.2 kA peak /630 A
2000	2000	1600	1600	1000	1000
300	300	200	200	200	200
300	-	200	200	200	200
300	-	200	200	200	200
-	300	-	-	-	-
-	-	-	200	200	-
300	300	200	200	200	200
3	3	3	3	3	3
216 x 53 x 80	141 x 89 x 71	206 x 106 x 80	306 x 184 x 110	306 x 210 x 130	306 x 250 x 130
0.54	0.46	0.60	2.00	2.00	3.50

A

Fuse switch-disconnector selection

Fupact ISFT100N to ISFT630



ISFT100N.



ISFT100.



ISFT160.



ISFT630.

Fuse switch-disconnectors

Type of fuse-link

DIN/NH000
DIN/NH00
DIN/NH1
DIN/NH2
DIN/NH3

Installation and connection

Symmetrical rail

Direct connection on backplate

Hook-on connection to 60 mm busbars

Tightening torque (Nm)

Temperature derating (with gG fuse-link) [1] [2]

"Vertical mounting" fuse-links in vertical position	I _{th} (A)	40 °C
		45 °C
		50 °C
		55 °C
		60 °C
		65 °C
		70 °C

"Horizontal mounting" fuse-links in horizontal position	I _{th} (A)	40 °C
		45 °C
		50 °C
		55 °C
		60 °C
		65 °C
		70 °C

Degree of protection (from the front face and inclosed position)	IP3X
Mechanical shock	IK07

[1] Derating data is based on:

- the maximum rating for fuse-links intended for the device,
- maximum power dissipation.

[2] For installation on a ceiling, derate an additional 10 %.

Note: Connecting two NS-fuse switches reduces the utilization category to AC22B to 80 kA.

A

PB115837.eps

PB115838.eps

PB115839.eps

PB115835.eps

Fuse switch-disconnector selection

Fupact ISFT100N to ISFT630

A

ISFT100N	ISFT100	ISFT160	ISFT250	ISFT400	ISFT630
●	●	-	-	-	-
-	-	●	-	-	-
-	-	-	●	-	-
-	-	-	-	●	-
-	-	-	-	-	●
see page B-4					
100	100	160	250	400	630
95	95	152	238	380	599
90	90	144	225	360	567
85	85	136	213	340	536
80	80	128	200	320	504
75	75	120	188	300	473
70	70	112	175	280	441
100	100	160	250	400	630
95	95	152	238	380	599
90	90	144	225	360	567
85	85	136	213	340	536
80	80	128	200	320	504
75	75	120	188	300	473
70	70	112	175	280	441
●	●	●	●	●	●
●	●	●	●	●	●

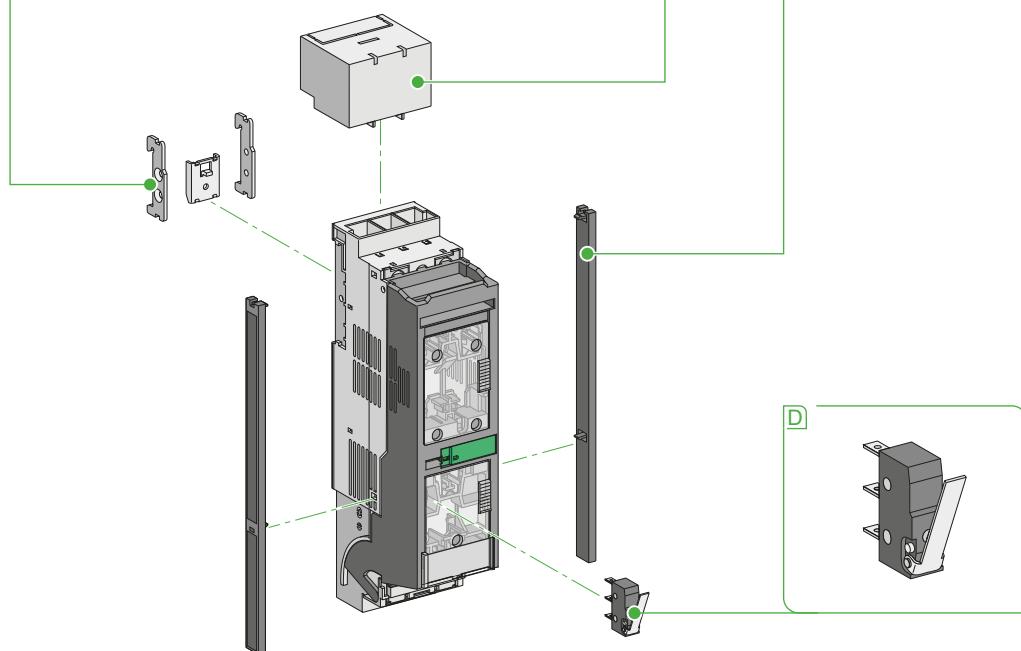
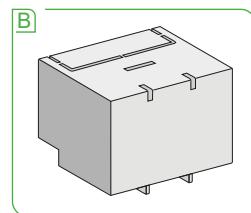
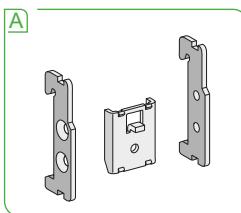
Accessories and auxiliaries

Fupact ISFT100N

Fupact ISFT100N

DB430652.ai

A



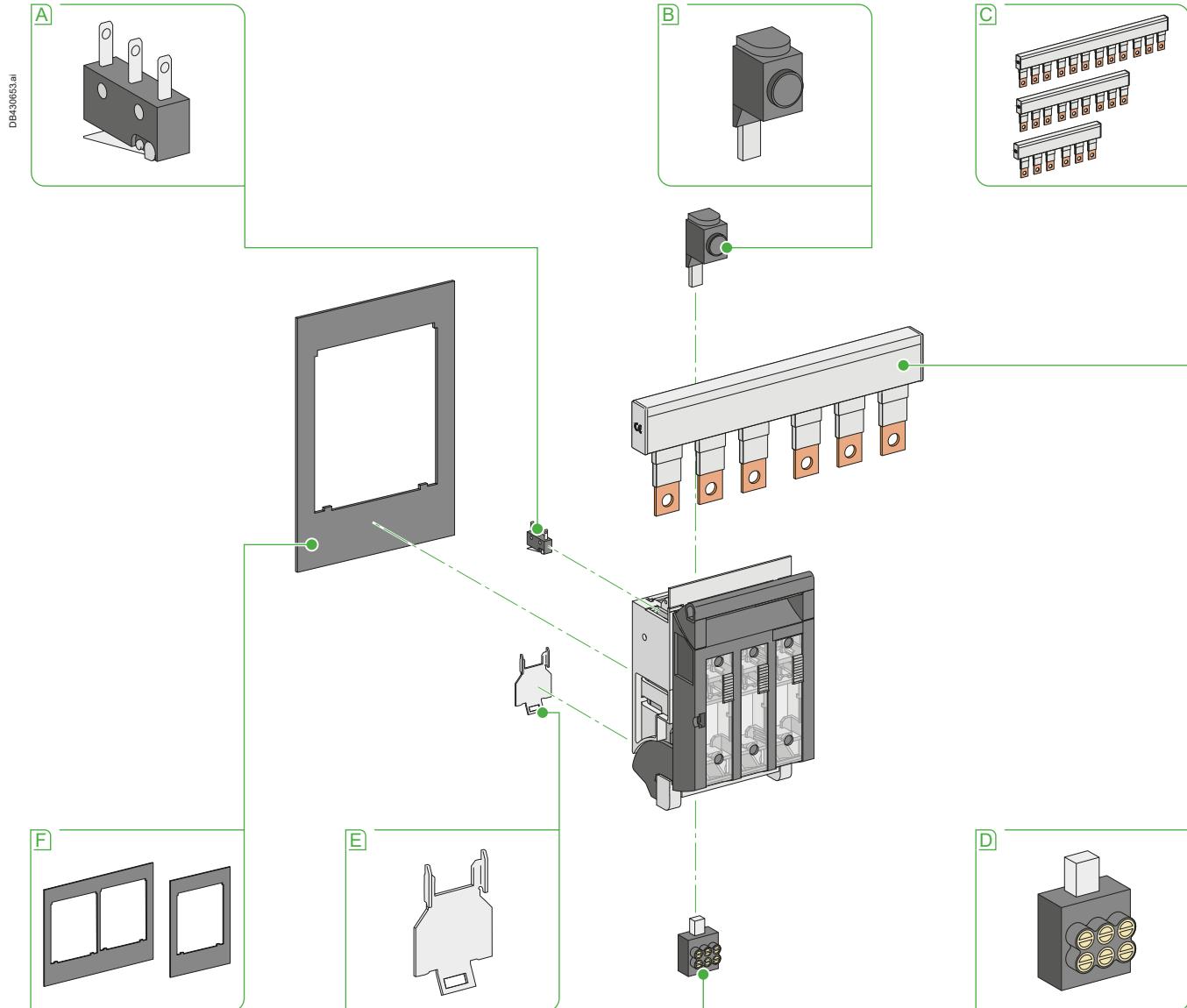
A [A] DIN rail fixing kit

B [B] Terminal cover

C [C] Laterally attachable support profile

D [D] NO + NC auxiliary changeover contacts

Functions and characteristics
Accessories and auxiliaries
Fupact ISFT100



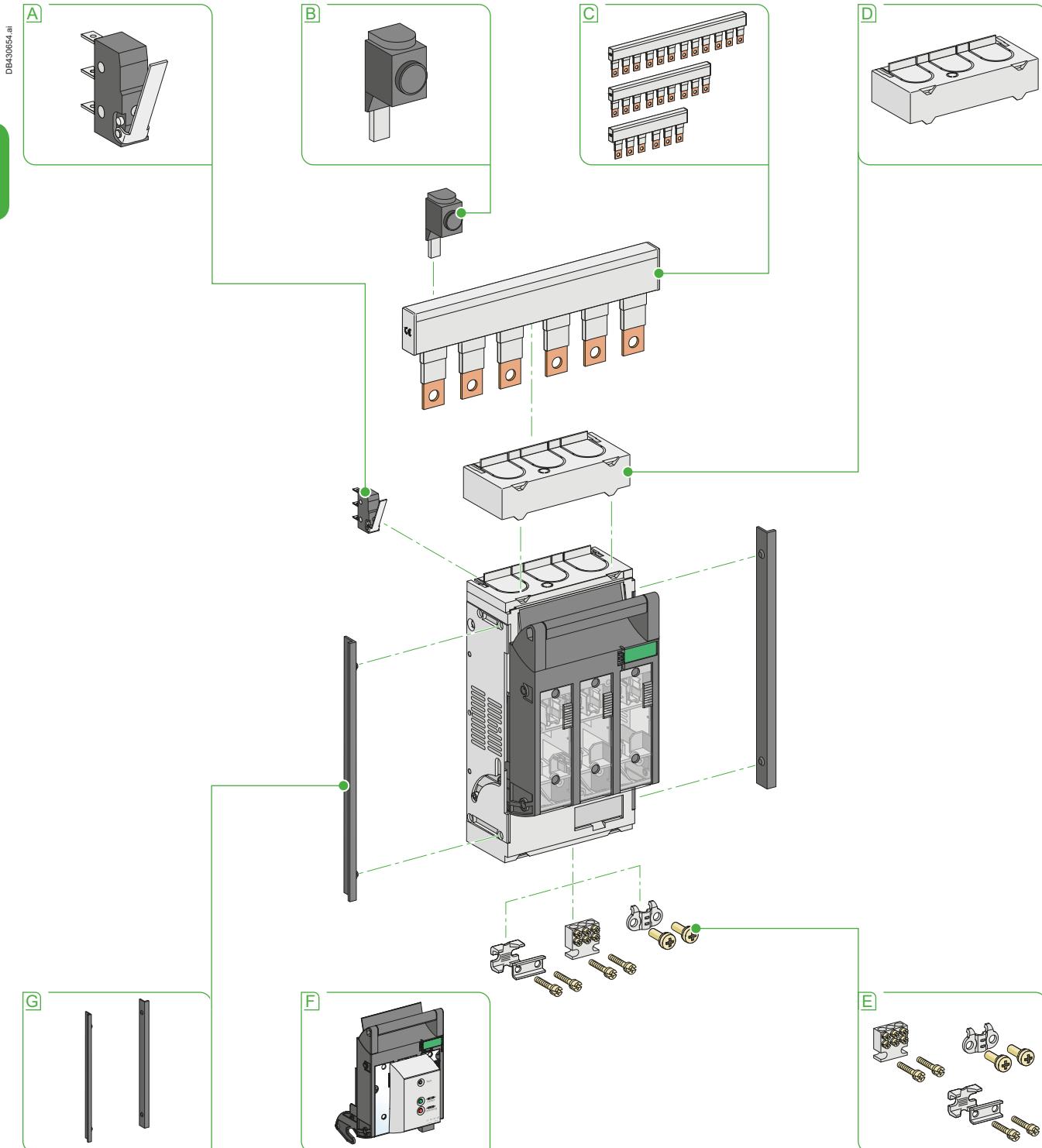
A NO + NC auxiliary changeover contacts
B Incoming connector for feeding busbars

C Feeding busbars to supply :
■ 2 devices
■ 3 devices
■ 4 devices
D Distribution connector

E Accessory for mounting on DIN rail
F Escutcheons for:
■ 1 device
■ 2 devices

Accessories and auxiliaries

Fupact ISFT160



A NO + NC auxiliary changeover contacts

B Incoming connector for feeding busbars

C Feeding busbars to supply :

- 2 devices
- 3 devices
- 4 devices

D Long terminal shield

E Connectors for :

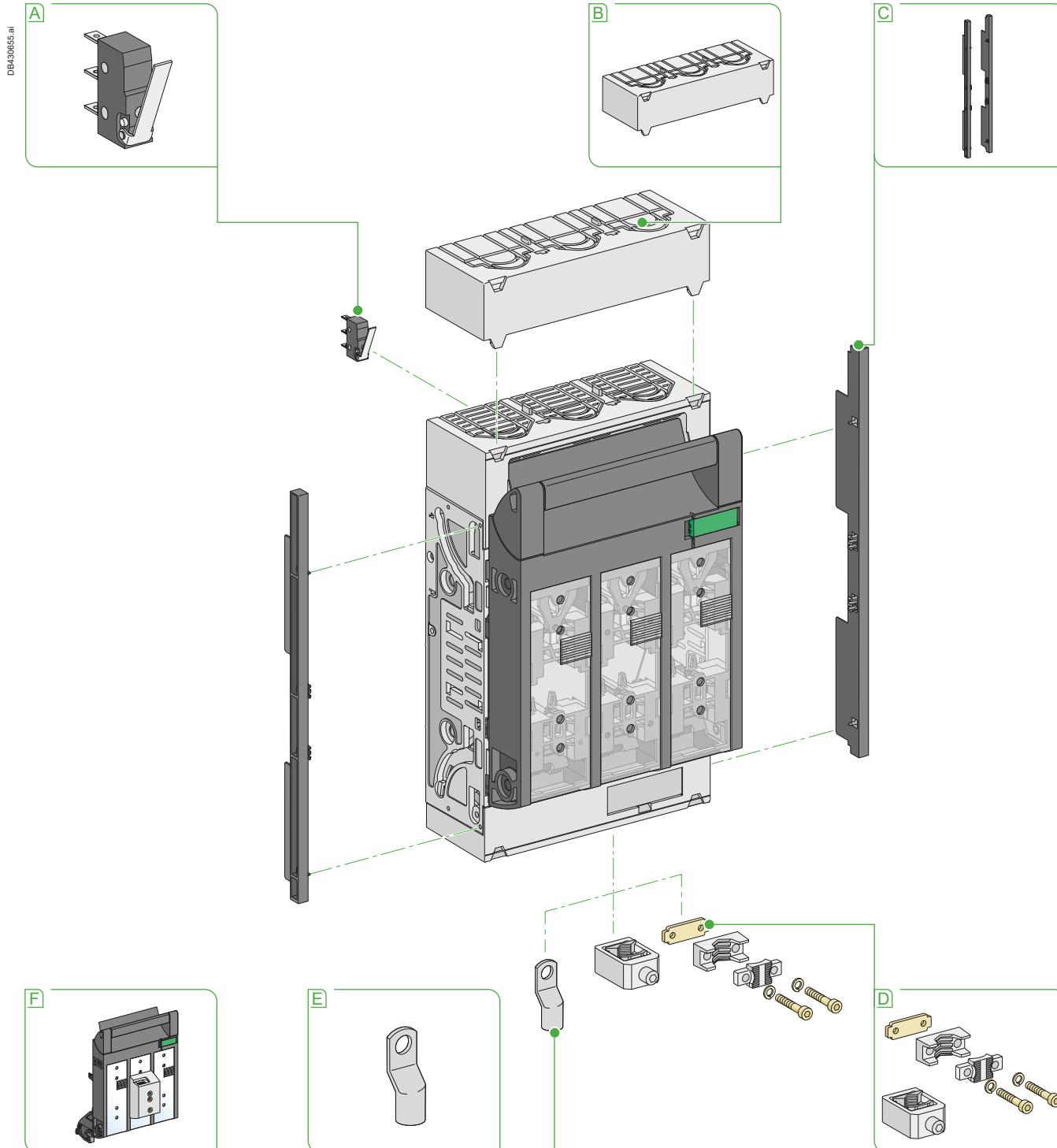
- bare cable
- distribution
- flexible bar

F Fuse monitor

G Laterally attachable support profile

Accessories and auxiliaries

Fupact ISFT250 to ISFT630



- A** NO + NC auxiliary changeover contacts
B Long terminal shield
C Laterally attachable support profile

- D** Connectors for bare cable
E Lug for copper cable
F Fuse monitor

General characteristics: ISFT

Fupact ISFT100N to ISFT630

PB115835.eps



PB115837.eps



PB117723_L54.eps



PB115845.eps



A

Presentation

With this new Fupact ISFT generation, customers will have a range of devices provided with a range of features that will help them remain competitive in the face of ever tougher market requirements. After all, modern approaches to power distribution demand modular switchgear that is simple to install and safe and reliable in operation. A cost-benefit ratio in line with the market and ease of service are absolute musts.

Fupact ISFT offers innovative solutions

On the new Fupact ISFT models for mounting on base plates and for bus mounting, the entire covers can be easily removed while the switching cover is closed, thus eliminating the need for elaborate trim frames and extensions.

Integrated hand protection and a sliding viewing window enable voltage tests to be conducted on contact blades or strap handles.

Besides reliable connection are provided such as cable lug or clamp connector for copper and aluminum conductors. It has the dual advantage of reducing the connection installation time and eliminating the need for cable lugs.

All Fupact ISFT can be sealed and fitted with a locking mechanism.

Another unique feature is the patented system of turnable hooks for converting the outgoing arrangement from top to bottom and vice versa. A few simple adjustments are all that is needed.

The fuse-switch-disconnectors can be attached, positioned and tightened effortlessly.

Smallest 100 A solution on market: ISFT100N

Fupact ISFT has two possibilities to propose a 100 A rating.

- The basic one (without conversion on busbar system) which has a width of 106 mm.
- The narrow product which is the smallest 100 A solution on the market (connection on busbar system possible) with a width of 53 mm.

Objectives of this product is to reduced installation space and to propose two 100 A (106 mm width) replace one 160 A product (106 mm width also).

Fupact ISFT for mounting on base plates

The disconnectors for mounting on base plates, sizes 000, 00, 1, 2 and 3, come with a number of predrilled fastening holes that allow these models to be used on base plates or on profiles. With the appropriate accessories, the sizes 000 and 00 can be mounted on DIN rail.

Accessories

Support Profile Laterally attachable

This accessory allows to enlarge the cut-out tolerances of the cover plates while also supporting these plates.

- Latchable bracket on the side.
- Allows greater cutting tolerances.

Switching cover position indicator:

- 1 close contact and 1 open contact.

Intelligent measurement

Electronic Fuse-Monitoring - Everything under control

Thanks to the electronic Fuse Monitor, technician could receive an information to localize a short circuit or overload. Maintenance will be more reactive to change fuse which is broken.

Fupact ISFT range from size 00 to 3 has an electronic fuse monitor.

The electronic fuse monitor is directly attached to the switching cover.

This installation depth is 28 mm.

A light-emitting diode starts blinking red the moment the fuses fail. A test button and a 4-pole connector for remote indication are attached to the housing.

Note: for more technical informations, see page A-22.

General characteristics: ISFT

Fupact ISFT100N to ISFT630

Safety

Fupact ISFT is the most reliable horizontal fuse-switch thanks to:

- Protection against accidental contact in the standard model:
- terminal housing closed
- simple break-out for all versions
- terminal shield needed for specific application (> 500 V)
- IP3X
- life part are covered.
- Reliable switching with integrated and extended hand protection feature:
- prevents fuse-unit contact
- protection against electric arc.
- Ideal voltage test: slidable windows
- windows are independant easy to measure with total safety.
- Snap-on busbar cover to protect against direct contact.
- Locking cover with sealing facility:
- locking mechanism for switching cover for non-instructed individuals
- switching cover is sealable.



A

Fast connection with variable box terminals

For Fupact 160 A size 00

- Advantageous box terminals:
- Cu conductor from 2,5 to 95 mm²
- no cable lug needed.
- Or universal screw terminal for M8 cable lug.

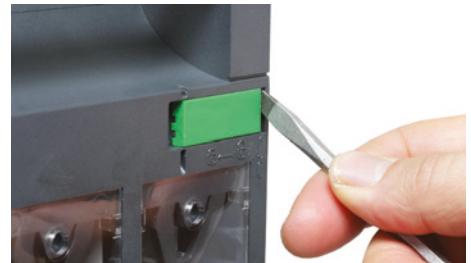


Options

- Prism clamp 6...70 mm² Cu/Al.
- Terminal 3 x 16 mm².

For Fupact 250 to 630 A sizes 1–3

- The standard version:
- size 1 and 2 for M10 cable lug
- size 3 for M12 cable lug.
- Easy to change the various types of connection.



Options

- Prism clamp for Cu.
- Prism clamp for Cu/Al (1x cable).
- Prism clamp for Cu/Al (2x cables).

Turnable contacts hooks

Fupact ISFT is the first horizontal fuse switch-disconnector to propose turnable contacts hooks. This makes it much easier to mount Fupact ISFT on the busbar in addition to being much more flexible. Due to its symmetry, Fupact ISFT can be turned around at any time. Terminal top or bottom can be chosen freely. Thus, only one version needs to be placed on stock.

- One universal solution for top or bottom cable outlet.
- Reduced stock.
- Universal to busbar thickness.
- More installation flexibility.



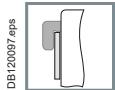
ISFT installation

Fupact ISFT100N to ISFT630

ISFT fusegear is installed on a mounting plate, DIN rail or on busbars, depending on the power rating. Connections are made via cables or directly to the busbars via hook-on.



ISFT100N (hook-on connection).



Hook-on connection to busbars:
the device tightly hooks on to the busbars via three hooks that ensure both electrical connection and secure mechanical mounting. The connection systems can also be reversed to supply distribution circuits via the upstream terminals.

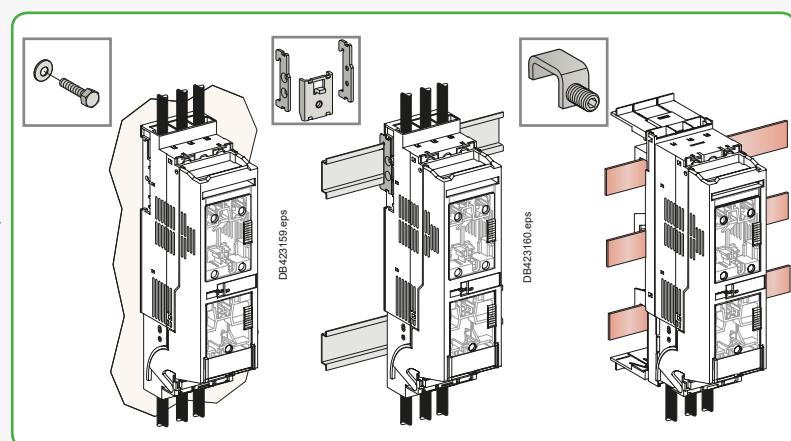
This system ensures direct contact of the power circuit to the busbars (no cables, no bars, no drilling, etc.) and traditional connections for downstream distribution (bare cable connectors, lugs, bars, distribution connectors, etc.).

ISFT100N fusegear

Installation on a mounting plate, on busbars 60 mm or DIN rail on busbars with:

- cables or flexible bars
- hook-on connection to 60 mm busbars.

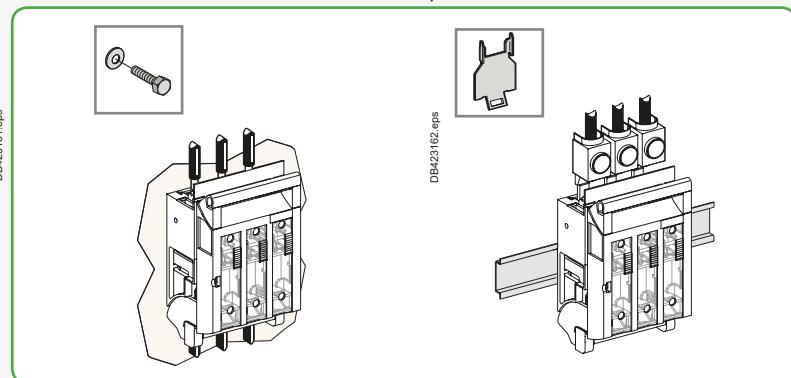
Upstream or downstream connection of distribution circuits requires cables or flexible bars.



ISFT100 fusegear

Installation on a mounting plate or symmetrical DIN rail.

Power and distribution circuit connections require cables and built-in connectors.



Functions and characteristics

ISFT installation

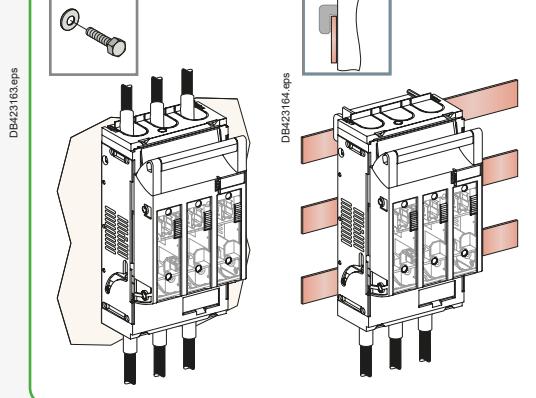
Fupact ISFT100N to ISFT630

ISFT160 fusegear

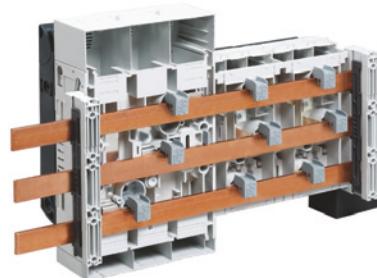
Installation on a mounting plate or on busbars with:

- cables or flexible bars
- hook-on connection to 60 mm busbars

Downstream connection of distribution circuits requires cables or flexible bars.



A



Hook-on connection
(ISFT250 and 2 x ISFT160).

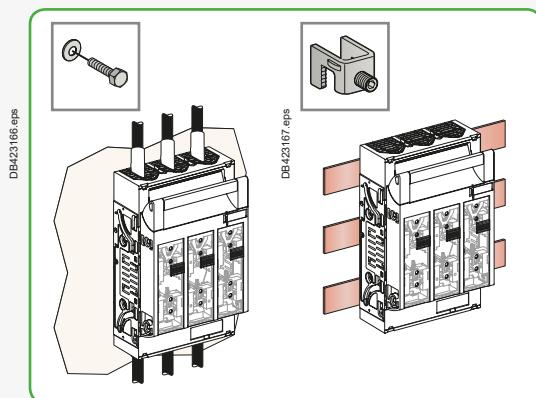
PB115844.eps

ISFT250 to ISFT630 fusegear

Installation on a mounting plate or on busbars with:

- cables or flexible bars
- hook-on connection to 60 mm busbars (except ISFT630)

Downstream connection of distribution circuits requires cables or flexible bars.



Connection and accessories

Fupact ISFT100N to ISFT630 - Connection

Fupact fuse-switch disconnectors can supply distribution circuits via either the upstream or downstream terminals. Devices intended for connection to busbars are configured as standard for distribution via the downstream terminals.

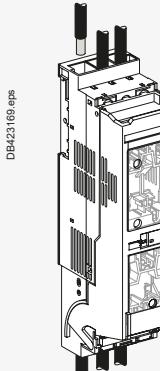
ISFT fusegear is equipped as standard with connectors or terminals for front connection of:

- bare cables for ISFT100N to ISFT160 devices
- cables with lugs for ISFT160 to 630 devices
- flexible bars for ISFT160 to 630 devices.

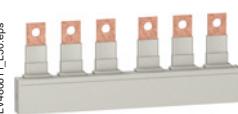
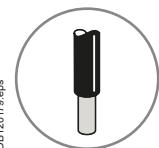
A

	ISFT100N	ISFT100	ISFT160	ISFT250	ISFT400	ISFT630
Cables						
Connector (as standard)	2.5 to 50 mm ²	1.5 to 50 mm ²	-			
Lug to terminal	-	-	120 to 185 mm ²		120 to 300 mm ²	
Connector to terminal	-	-	2.5 to 95 mm ²	6 to 150 mm ²	6 to 240 mm ²	
box clamp re/se rm/sm			6 to 50 mm ²	35 to 150 mm ²	95 to 300 mm ²	
			6 to 25 mm ²	50 to 150 mm ²	120 to 300 mm ²	
Pressure Plate						
Connector	-	-	6 to 70 mm ²	70 to 150 mm ²	120 to 240 mm ²	150 to 300 mm ²

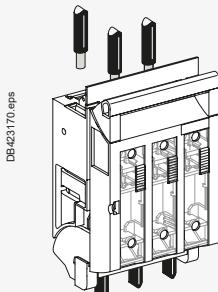
ISFT100N fusegear



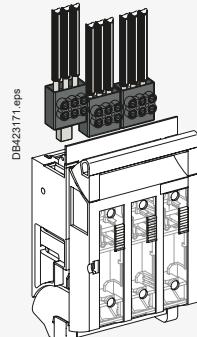
DB4243169.eps



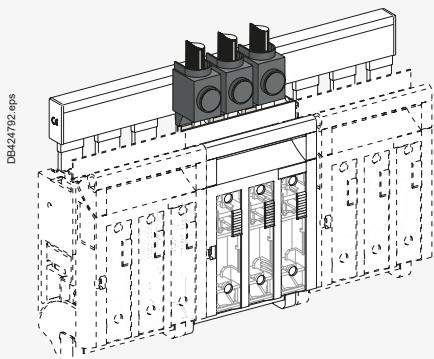
ISFT100 fusegear



DB423170.eps



DB423171.eps



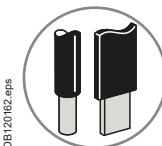
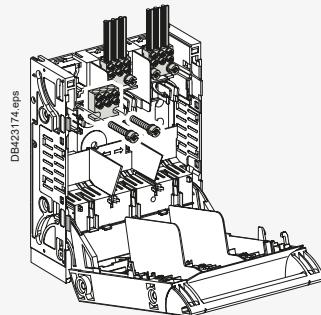
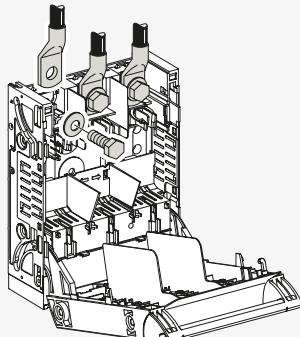
DB424792.eps

Connection and accessories

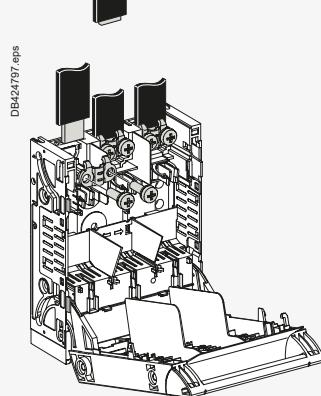
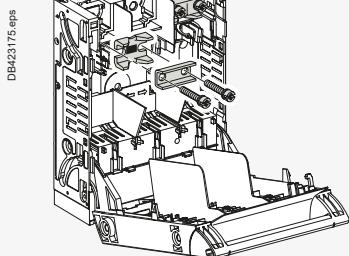
Fupact ISFT100N to ISFT630 - Connection

A

ISFT160 fusegear



Lug for copper cables.



Distribution connector.

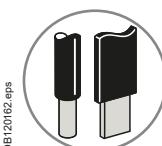
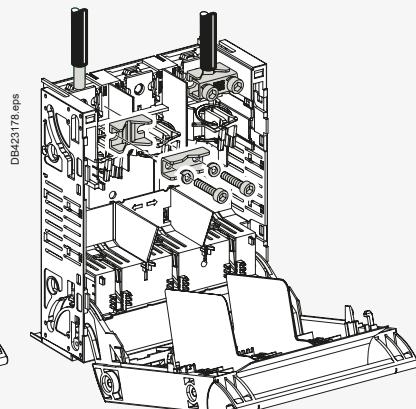
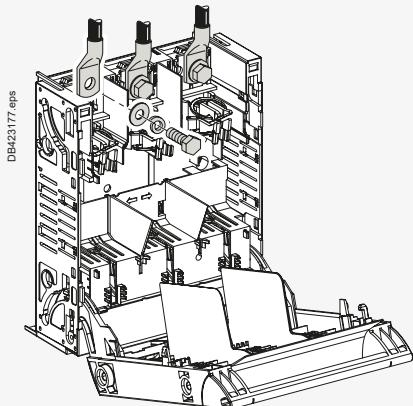


Connector for bare Cu/Al cables.

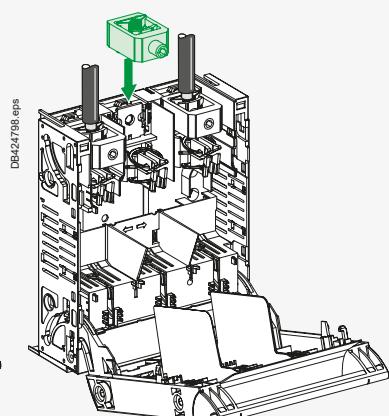
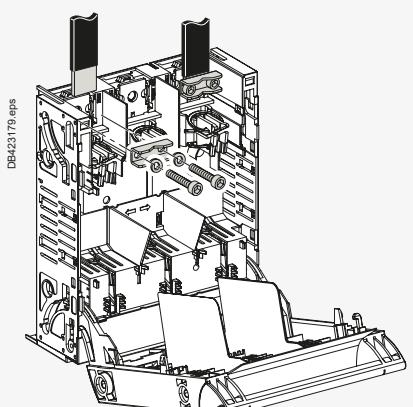


Connector for flexible bars.

ISFT250/400/630 fusegear



Lug for copper cables.



Connector for bare Cu/Al cables.



Connector for flexible bars.

Connection and accessories

Fupact ISFT160 to ISFT630 - Reverse distribution

Fupact fuse-switch disconnectors designed for connection to busbars supply distribution circuits via the downstream terminals as standard. In the case of ISFT160 to ISFT630 devices, simple installation operations allow power to be supplied to the distribution circuits from upstream. In the case of ISFT100N devices, the method of distribution cannot be reversed simply by changing the direction of the mounting. There are separate references for each particular case.

A

To reverse supply, depending on the model, simply turn 180°:

- either the base with its connection kit
- or the connection kit alone.

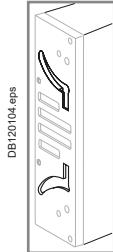
For fusegear with a fuse monitor, the fuse monitor cover must be changed given that different versions are used depending on whether supply is via the upstream or downstream terminals.

Operation to reverse supply (upstream/downstream terminals)

	180° rotation	Base	Turnable hooks	Change
		DB40353.eps	DB401355.eps	DB425101.eps
ISFT160 to 400	yes	yes	yes	yes
ISFT630	yes	no	-	yes
ISFT160	yes	-	-	yes
ISFT250	yes	-	-	yes



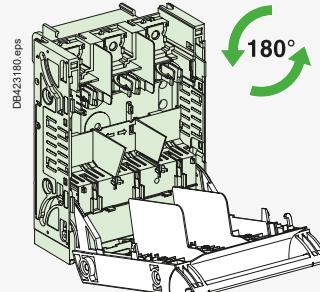
Hook-on connection: the orientation of the hooks on the busbars is always the same, whether the distribution circuits are connected to the upstream or downstream terminals. The fuse-switch disconnectors must physically hang on the busbars.



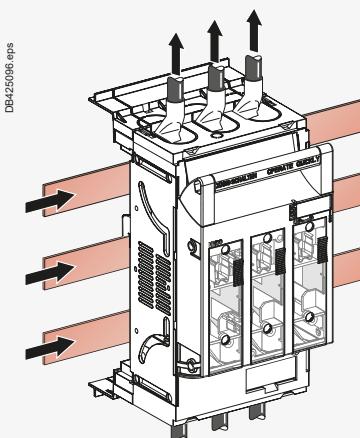
Symmetrical slots on the side of the base make it possible to raise and lower the cover that forms the fuse-carrier.

Fusegear with hook-on connection

ISFT160/400



Turnable hooks



Connection and accessories

Fupact ISFT100 and ISFT160 - Connection, coupling

It could be possible to supply a number of ISFT100 and ISFT160 fusegear devices by using feeding busbars via a single incomer.

Supplying a number of devices via feeding busbars

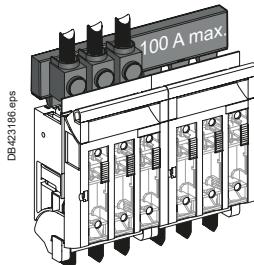
Incoming connectors are used for the upstream power cables.

Power is distributed to the other devices via feeding busbars or a combination of feeding busbars.

Downstream connection of distribution circuits is done via cables.

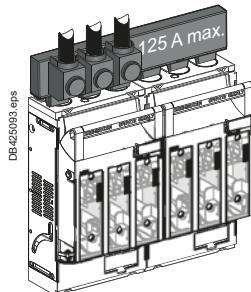
ISFT100

2 devices

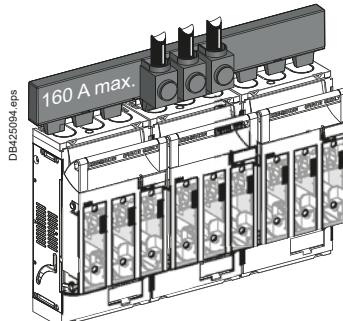
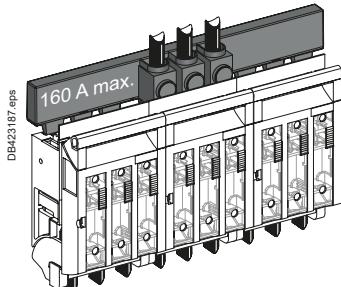


ISFT160

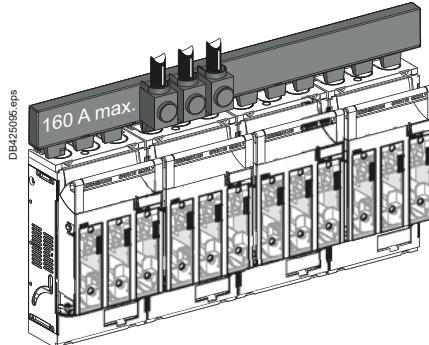
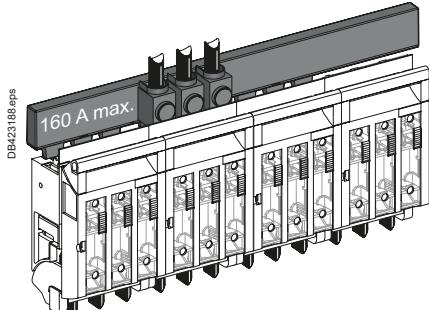
2 devices



3 devices



4 devices



Combinations:

- 2 devices:
- 1 incomer for 2 outgoing
- 3 devices [1]:
- 1 incomer for 3 outgoing
- 4 devices [1]:
- 1 incomer for 4 outgoing.

If the feed is connected at the center of the busbar, the total outgoing current of each busbar branch must not exceed the maximum busbar current I_s /phase.

[1] For combinations of more than 2 ISFT100 devices, it is recommended to connect incoming power to the second device to reduce temperature rise.

Note: Connecting two NS-fuse switches reduces the utilization category to AC22B to 80 kA.

Feeding busbars

Maximum operating voltage	690 VAC
Insulation coordination	overvoltage category III / pollution degree 2
Busbar cross-section	35 mm ²

Maximum busbar current I_s /phase when feed connected at busbar start or end 125 A.

Maximum busbar current I_s /phase when feed connected at any other position 160 A.

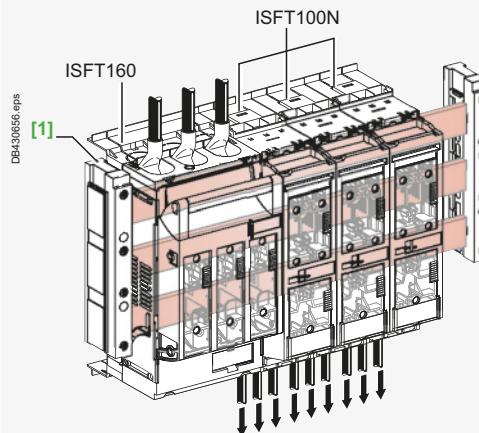
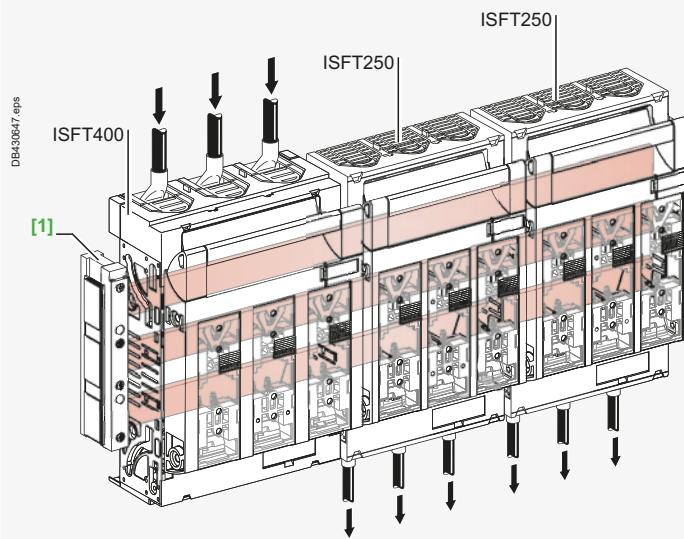
Connection and accessories

Fupact ISFT100N, ISFT160 to ISFT400 -
Different installation systems

A

Many connection and supply possibilities

Supplying a set of busbars from an incoming device



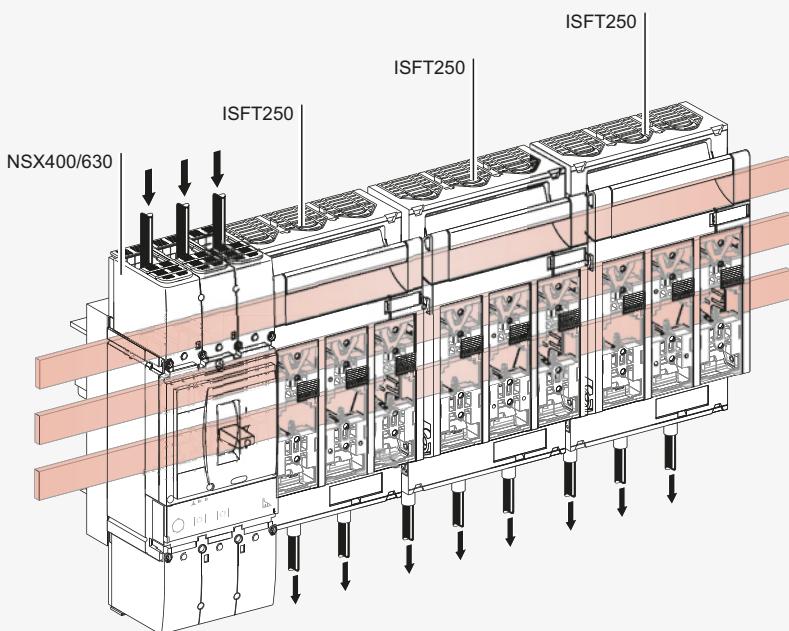
[1] Linergy BZ busbar system: for more technical informations, see page B-12.

Connection and accessories

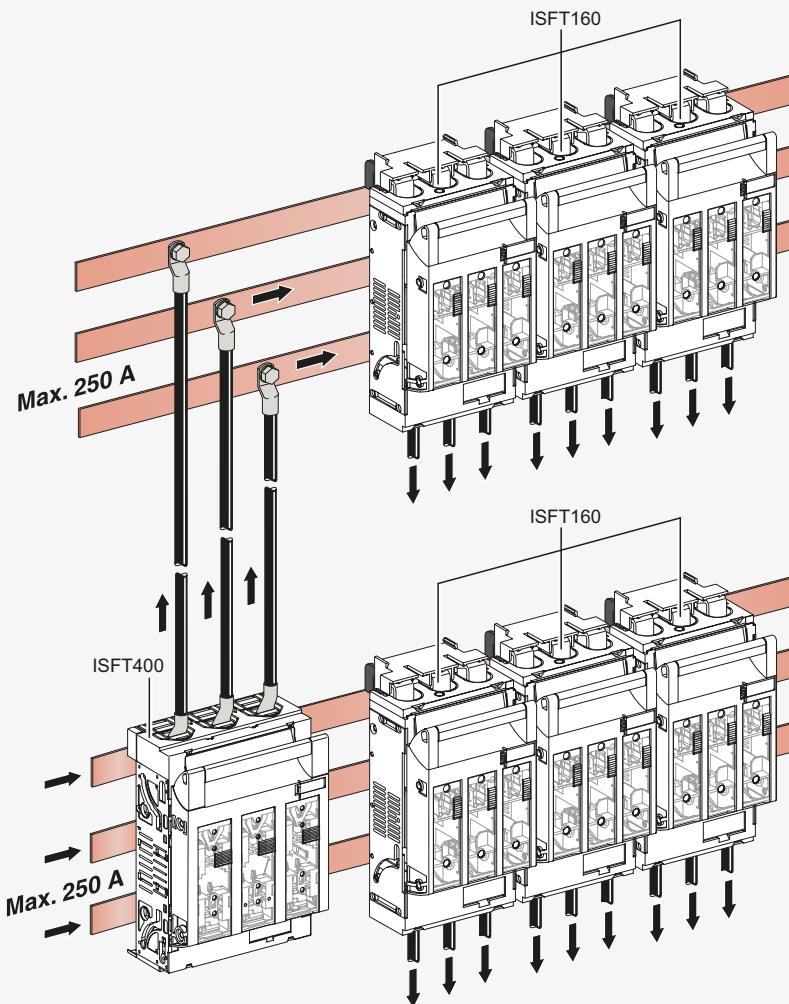
Fupact ISFT100N, ISFT160 to ISFT400 - Different installation systems

Supplying a set of busbars from an incoming device

DB430649.eps



DB430685.eps



A

Fuse monitor

Fupact ISFT160 to ISFT630



ISFT160 fuse monitor.

A

Functions

This device provides remote indication of the status of standard fuses (without strikers). It serves to:

- signal a blown fuse
- prevent the risks of abnormal voltages on the neutral.

Standards

- Compliance with international standard IEC 60947-5-1.
- Compliance with:
 - EN 50204
 - EN 61000 for electromagnetic compatibility (EMC).

Description

- Characteristics:
 - operation with DIN fuses.
 - degree of protection: IP20.
 - May be used on capacitor bank circuits.
 - Simplified power supply:
 - does not require a specific power supply
 - operates with unbalanced phases
 - supplied via connection to the fuse terminals on the fusegear devices
 - operational voltage: 400...690 V AC, ±10 %, 50/60 Hz.
 - Tested for electromagnetic compatibility (EMC).
 - Mounting:
 - connected to the fuse-carrier assembly forming the cover.
 - The package consists of:
 - a fuse-carrier/handle and fuse monitor sub-assembly supplied as a kit composed of:
 - fuse monitor equipped with one NO contact and one NC contact
 - fuse-carrier with the handle
 - the customer must remove his fuse-carrier/handle assembly from his product and replace it with this kit.
 - Characteristics:
 - IP20 degree of protection
 - product with fuse monitor must be integrated inside switchboards and not in front face in case of customers wants to have a complete class II insulation.
- Class II insulation with switchboard in front face is ensured only when Fupact ISFT is in closed position and with a door or a protection behind the fuse monitor.

Operation

Reset

The device is automatically reset when the fuse-links are replaced.

Indications

- Normal operation:
 - the green LED is ON when voltage is present at the fuse terminals
 - the contacts are in the rest position.
- Operation when a fuse blows:
 - the green LED goes off and the red LED goes on
 - the contacts are actuated:
 - the NO contact is for remote fault indication
 - the NC contact may be used, for example, to control an undervoltage device in order to shut down equipment that may be sensitive to single-phasing.

> Fupact ISFT160 to 630 fuse monitor
Instruction sheet



NVE88766

Functions and characteristics

Fuse monitor

Fupact ISFT160 to ISFT630

A

Electrical characteristics

Power circuit

Rated operational voltage	400 to 690 V AC 50/60 Hz ±10 %
Consumption	< 3 VA
Rated frequency	50/60 Hz
Measurement impedance	> 1000 Ω/V
Rated impulse withstand voltage (1.2 / 50 μs)	8 kV

Auxiliary contact output terminals

Terminal indications	NO	13 - 14
	NC	21 - 22
Cable capacity	Flexible	≤ 1.5 mm ² Cu
	Rigid	≤ 2.5 mm ² Cu

Output contact characteristics (1NO + 1NC)

Conventional thermal current I _{th} (A)	5
Rated insulation voltage (V)	250
Minimum load	10 mA at 24 V

Characteristics

Utilisation category (IEC 60947-5-1)	AC		DC	
	AC12	AC15	DC12	DC13
Operational current (A)				
24 V	-	3	-	2
48 V	-	3	-	-
110 V	-	3	-	-
220/240 V	-	3	-	-
250 V	-	3	-	-
380/415 V	-	-	-	-
440 V	-	-	-	-
660/690 V	-	-	-	-

Rated operational voltage / max. breaking voltage (VAC) 250/440

Breaking capacity (VA) 2000

General characteristics

Operating temperature range (°C)	-25...+55 (≤ 500 V)	-25...+45 (> 500 V)
Storage and transport temperature range (°C)	-40...+70	
Fuse blowing detection time (s)	< 2	
Overvoltage category / degree of pollution	IEC 60947-1 3	
Dielectric test voltage (between power circuit and output terminals)	5 kV rms / 1 min 50 Hz	

Electromagnetic compatibility - emission

Conducted	EN 55022 Class B
Radiated	EN 55022 Class B
Harmonic currents	EN 61000-3-2 Class A

Electromagnetic compatibility - immunity

Electrostatic discharge (ESD)	EN 61000-4-2 category B level 2/3
Radiated field susceptibility (RF)	EN 61000-4-3 category A level 3
Surge immunity test	EN 61000-4-5 level 4
Conducted low energy susceptibility (EFT)	EN 61000-4-4 category B level 3
Conducted high energy susceptibility (RF)	EN 61000-4-6 category A level 3
Radio-frequency interference (GSM)	ENV 50204 category A

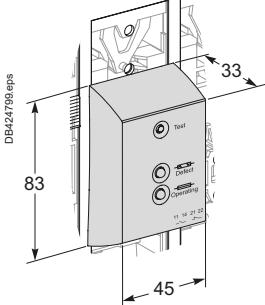
Magnetic field immunity

Continuous	EN 61000-4-8 level 5
------------	----------------------

Mechanical characteristics

Degree of protection	IP20
Weight (fuse monitor alone) (kg)	0.2

Dimensions



Insulation

Fupact ISFT100N to ISFT630

Some accessories for insulation are used to protect people against direct contacts with the main circuits.

For ISFT100, we have single and double escutcheon (with 1 free slot). These escutcheons, which could be used in combination, allow one type of cut-out on the front panel of switchboard. But in case of feeding busbars, it's not compliant to use escutcheon. In this case, it's up to the switchboard manufacturer to ensure protection.

For ISFT100N and ISFT160 to 630, side profiles (or laterally attachable) ensure vertical IP level across the door. The switchboard manufacturer must provide the horizontal IP.

For those products, it's mandatory to use terminal shield when voltage is upper or equal to 500 V.

A

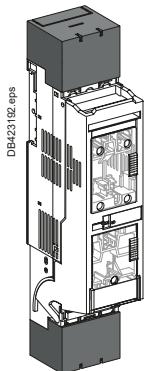
Insulation of live parts

Escutcheon

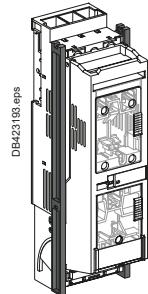
Clipped on the device, escutcheons ensure IP20 and IK07 degrees of protection.

Type	Escutcheon type			Terminal shield
ISFT100N				
ISFT100	-			-
ISFT160		-	-	
ISFT250		-	-	
ISFT400		-	-	
ISFT630		-	-	

ISFT100N fusegear - Terminal shield and escutcheon



ISFT100 fusegear - Escutcheon



Escutcheon.

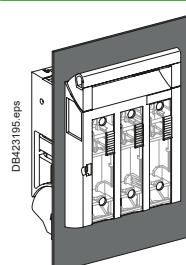
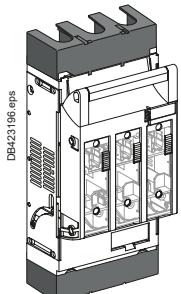


Terminal shields.



Escutcheon.

ISFT160 to ISFT630 fusegear - Terminal shields and escutcheon



Laterally attachable support profile.

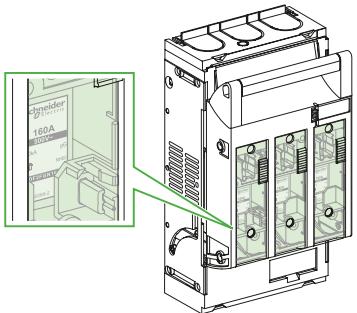
Fuse-link monitoring and testing

Fupact ISFT160 to ISFT630

Monitoring

ISFT 160 to 630 fuse-switch disconnectors are equipped with independant large windows so that the fuse-link technical characteristics are clearly visible.

DB423198.eps



PB115839.eps

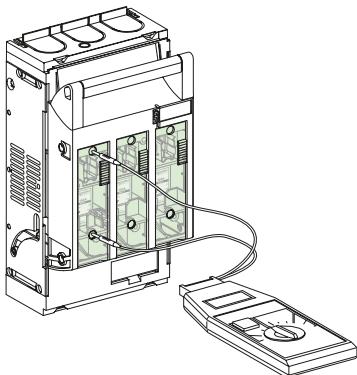


A

ISFT160.

Testing

DB423200.eps



PB115846.eps



Independant sliding covers on the front panel provide access to the fuse-link status test points while maintaining the IP20 protection index.

Control, locking and operation

Fupact ISFT100N to ISFT630

The main moving contacts are controlled by the pivoting fuse-carrier assembly forming the cover for the ISFT devices
In open position, the fuse-switch disconnector fuse-carrier assembly guarantees isolation with visible break.

A



ISFT100N.

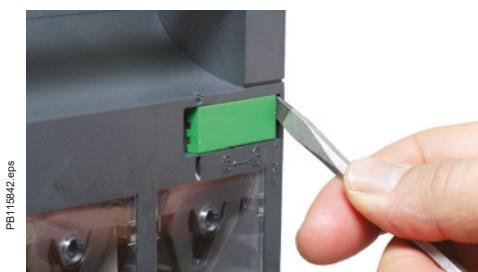


ISFT400.

Access to the fuse-links:

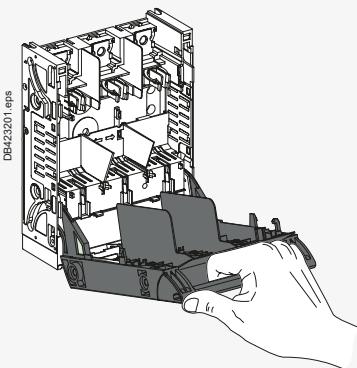
- may be protected by lead seals on the ISFT devices

To lock the fuse-switch disconnector in closed (ON) position, the fuse-carrier is equipped as standard with a locking part.



PB115942.eps

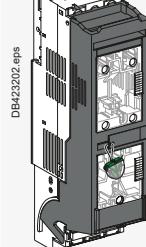
Control



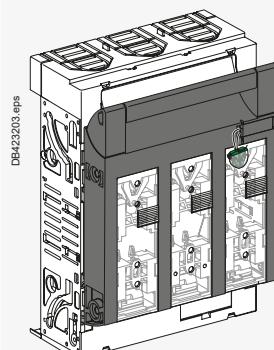
Locking



ON



Lead-seal locking for the ISFT100N.



Lead-seal locking for the ISFT100 to ISFT630 devices.

Locking in open (OFF) position guarantees isolation as defined by IEC 60947-3.

Type	Function	Means	Accessory
ISFT100N	Device locking in closed (ON) position	Lead seal	Built-in
ISFT100			
ISFT160			
ISFT250 to ISFT630			

Control, locking and operation

Fupact ISFT100N to ISFT630

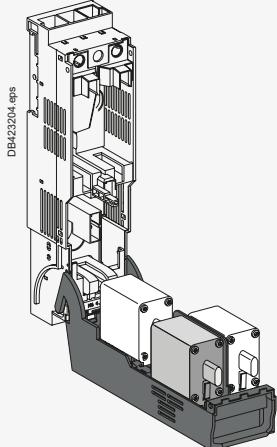
For ISFT fusegear devices, the fuse-carrier assembly is used both to control the device and house the fuse-link.

■ ISFT100N: the pivoting fuse-carrier assembly accepts two fuse-links side by side and a third situated under the first two fuse-links.

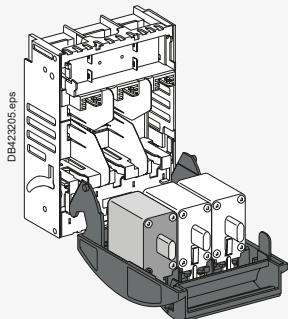
■ ISFT100 to ISFT630: the pivoting fuse-carrier assembly accepts the three fuse-links side by side.

Fuse-carriers

Compatibility between ISFT fuse-switch disconnectors and fuse-links (NH)



Pivoting fuse-carrier assembly for the ISFT100N.



Pivoting fuse-carrier assembly for the ISFT100 to ISFT630 devices.

Type of DIN fuse-link	NH000	NH00	NH1	NH2	NH3
ISFT100N	●	-	-	-	-
ISFT100	●	-	-	-	-
ISFT160	-	●	-	-	-
ISFT250	-	-	●	-	-
ISFT400	-	-	-	●	-
ISFT630	-	-	-	-	●

Insertion and removal of fuse-links

Fuse-links are held in place by clips behind the front panel of the fuse-carriers, thus making removal possible without touching the fuse-links.

A

Auxiliary contacts and indications

Fupact ISFT100N to ISFT630

The optional auxiliary contacts carry out indication functions. They provide remote indication of the fuse-switch disconnector status. They may also be used to indicate and carry out automatic functions such as electrical interlocking.

Standards: compliance with international recommendation IEC60947-5-1.
Description: NC/NO changeover contact.

A

Functional table of contact status

	Auxiliary changeover contact		Maximum number
	4	1	
	2		
ISFT100N	○		1
ISFT100	○		2
ISFT160	○		2
ISFT250	○		2
ISFT400	○		2
ISFT630	○		2

Auxiliary changeover contact for ISFT100N and ISFT160

Conventional thermal current I_{th} (A)	2			
Rated insulation voltage (V)	250			
Minimum load	100 mA at 24 V			
		AC	DC	
Load		AC12	AC15	DC12 DC13
Rated operational current (A)	24 V	6	-	3 -
	48 V	6	-	1 -
	110 V	6	-	0.5 -
	220/240 V	6	-	0.25 -

Auxiliary changeover contact for ISFT100 and ISFT250 to 630

Conventional thermal current I_{th} (A)	2			
Rated insulation voltage (V)	250			
Minimum load	100 mA at 24 V			
		AC	DC	
Load		AC12	AC15	DC12 DC13
Rated operational current (A)	24 V	2	-	0.2 -
	48 V	2	-	0.2 -
	110 V	2	-	0.2 -
	220/240 V	2	-	0.2 -

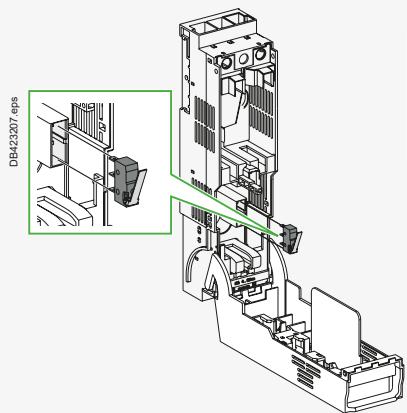
Auxiliary contacts and indications

Fupact ISFT100N to ISFT630

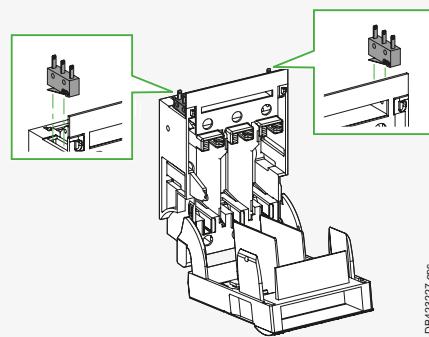
A

Position of auxiliary contacts for ISFT devices

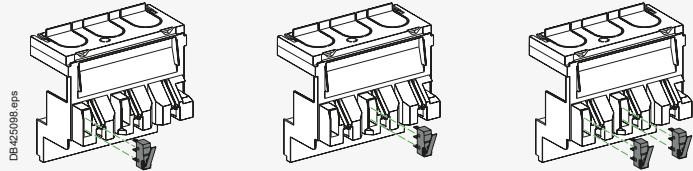
ISFT100N



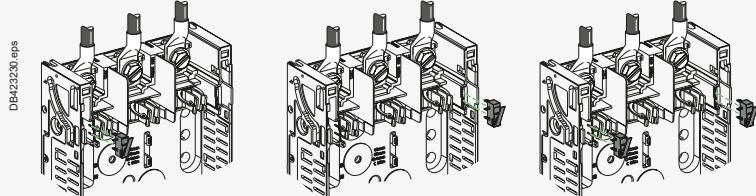
ISFT100



ISFT160



ISFT250/400/630



Auxiliary contact for ISFT100.



Auxiliary contact for ISFT100N/160.



Auxiliary contact for ISFT250/400/630.

A

D



ISFL160



ISFL250/400/630/1250



Fupact ISFL

Fuse switch-disconnector selection	
Fupact ISFL160 to ISFL1250	A-30
Accessories and auxiliaries	
Fupact ISFL160 - 3P	A-34
Fupact ISFL250 to ISFL630	A-36
Fupact ISFL1250.....	A-37
General characteristics: ISFL	
Fupact ISFL160 to ISFL1250	A-38
ISFL installation	
Fupact ISFL160.....	A-40
Fupact ISFL250 to ISFL1250	A-41
Connection and accessories	
Fupact ISFL160 to ISFL1250 - Connection	A-42
Fupact ISFL160 to ISFL630 - Connection, coupling	A-44
Fupact ISFL160 to ISFL630 - Reverse distribution.....	A-46
Fupact ISFL1250 - Reverse distribution	A-47
Insulation	
Fupact ISFL160 to ISFL630	A-48
Fupact ISFL250 to ISFL1250	A-49
Fuse monitor	
Fupact ISFL160 to ISFL1250	A-50
Measurement accessory	
Fupact ISFL160 to ISFL1250	A-52
Fuse-link monitoring and testing	
Fupact ISFL160 to ISFL1250	A-54
Control, locking and operation	
Fupact ISFL160 to ISFL1250	A-55
Auxiliary contacts and indications	
Fupact ISFL160 to ISFL1250	A-57
Fupact ISFL160 to ISFL630	A-58
Intelligent measurement	
Fupact ISFL160 to ISFL630	A-60

Other chapters

Presentation.....	2
Installation recommendation.....	B-1
Dimensions and connection	C-1
Wiring diagrams.....	D-1
Technical characteristics	E-1
Catalogue numbers	F-1

A

Fuse switch-disconnector selection

Fupact ISFL160 to ISFL1250

A



ISFL160 - 3P.

PB107274_11.eps



ISFL160 - 3 x 1P.

PB107275_20.eps



ISFL250 - 3P.



ISFL250 - 3 x 1P.

Fuse switch-disconnectors

Number of poles / type of fuse-link

IEC60 269-2-1 Section 1

Electrical characteristics as defined by IEC 60947-1 / IEC 60947-3 and EN 60947-1 / EN 60947-3

Conventional thermal current (A)	In free air	I_{th}	at 40 °C
	Maximum fuse power dissipation (W)		
In enclosure	I_{the}	at 40 °C	
	Maximum fuse power dissipation (W)		
Rated insulation voltage (V)	U_i	AC 50/60 Hz / DC	
Rated impulse withstand voltage (kV)	U_{imp}		
Rated operational voltage (V)	U_e	AC 50/60 Hz	
Rated operational voltage AC20 and DC20 (V)	U_e		
Rated operational current (A)	I_e	AC 50/60 Hz	
		220/240 V	
		380/415 V	
		440/480 V ^[1]	
		500 V	
		660/690 V	
DC/poles in series			
		125 V /nbr of poles	
		220 V /nbr of poles	
		440 V /nbr of poles	

Rated duties

Uninterrupted duty

Rated short-circuit breaking capacity (kA rms)/ Rated short-circuit making capacity (kA peak)/ Fuse-link In (A) ^[2]	I_{cn}/I_{cm}/In	415 V
		500 V
		690 V

Endurance (category B) (CO cycles)

Mechanical

Electrical AC	AC23B 415 V
	AC22B 500 V
	AC21B 690 V

Suitability for isolation

Positive contact indication

Pollution degree

Control

Direct handle (operator-dependent opening and closing)

Locking	Padlocks
	Lead seal

Indication auxiliaries

Auxiliary contacts

Current transformer

Installation and connection accessories

Possible mounting position

Horizontal

Vertical

Connector

For bare Cu/Al cables

For flexible bars

Lugs for Cu/Al cables

Terminal shields

Dimensions and weight

Overall dimensions H x W x D (mm)

3P

Approximate weight without fuse-links (kg)

3P

^[1] Suitable for 480 V NEMA.^[2] Fuse-switch disconnectors with fuse-links.^[3] Only for ISF160 with direct connection to the busbars.^[4] AC22B 690 V.

Fuse switch-disconnector selection

Fupact ISFL160 to ISFL1250

A

ISFL160	ISFL250	ISFL400	ISFL630	ISFL1250
3 x 1P or 3P/DIN (NH)	3P/DIN (NH)			
160	250	400	630	1250
12	23	34	48	2 x 48
160	250	400	630	1250
12	23	34	48	2 x 48
1000	1000	1000	1000	1000
8	8	8	8	8
690	690	690	690	690
800	800	800	800	800
AC22B	AC23B	AC21B	AC22B	AC23B
160	160	250	250	250
160	160	250	250	250
160	-	250	250	-
160	-	250	250	-
100	-	250	-	-
DC21B	DC22B	DC21B	DC22B	DC21B
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
○	○	○	○	○
100 / 210 / 160	120 / 250 / 250	120 / 250 / 400	120 / 250 / 630	120 / 250 / 630
100 / 210 / 160	120 / 250 / 250	120 / 250 / 400	120 / 250 / 630	120 / 250 / 630
100 / 210 / 160	100 / 210 / 200	100 / 210 / 315	100 / 210 / 500	100 / 210 / 500
1400	1400	800	800	800
200	200	200	200	200
200 [4]	200	200	200	200
200	200	200	200	200
○	○	○	○	○
○	○	○	○	○
3	3	3	3	3
○	○	○	○	○
○	○	○	○	○
-	-	-	-	-
○	○	○	○	○
○ [3]	○	○	○	○
○	-	-	-	-
○	○	○	○	○
○	○	○	○	○
○	-	-	-	-
○	-	-	-	-
○	-	-	-	-
included	included	included	included	included
405 x 50 x 123	741 x 100 x 190	741 x 100 x 190	741 x 100 x 190	834 x 200 x 190
1.30	4.70	5.00	5.60	15.20

Fuse switch-disconnector selection

Fupact ISFL160 to ISFL1250

A

PB107274_11.eps



ISFL160 - 3P.



ISFL160 - 3 x 1P.



ISFL250 - 3P.



ISFL250 - 3 x 1P.

PB113884-R8.eps

Fuse switch-disconnectors

Type of fuse-link

DIN NH000
DIN NH00
DIN NH1
DIN NH2
DIN NH3

Installation and connection

ISFL160 for 60 mm busbar hook-on contact mounting with multiple use terminal (screw M8)

ISFL160 for 60 mm busbar hook-on contact mounting with box terminal 95 mm²

ISFL160 for 100 mm busbar hook-on contact mounting with multiple use terminal (screw M8)

ISFL160 for 100 mm busbar hook-on contact mounting with box terminal 95 mm²

Conversion kit for 185 mm busbar direct contact mounting (for 1 or 2 x ISFL160)

ISFL160 for 185 mm busbar 1-pole switchable direct mounting

ISFL160 for 185 mm busbar 1-pole switchable hook-on mounting

Terminal tightening torque (Nm)

Temperature derating (with gG fuse-link) ^[1]

"Vertical mounting" fuse-links in vertical position	I _{th} (A)	40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C
"Horizontal mounting" fuse-links in horizontal position	I _{th} (A)	40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C

[1] Derating data is based on:

- the maximum rating for fuse-links intended for the device
- maximum power dissipation.

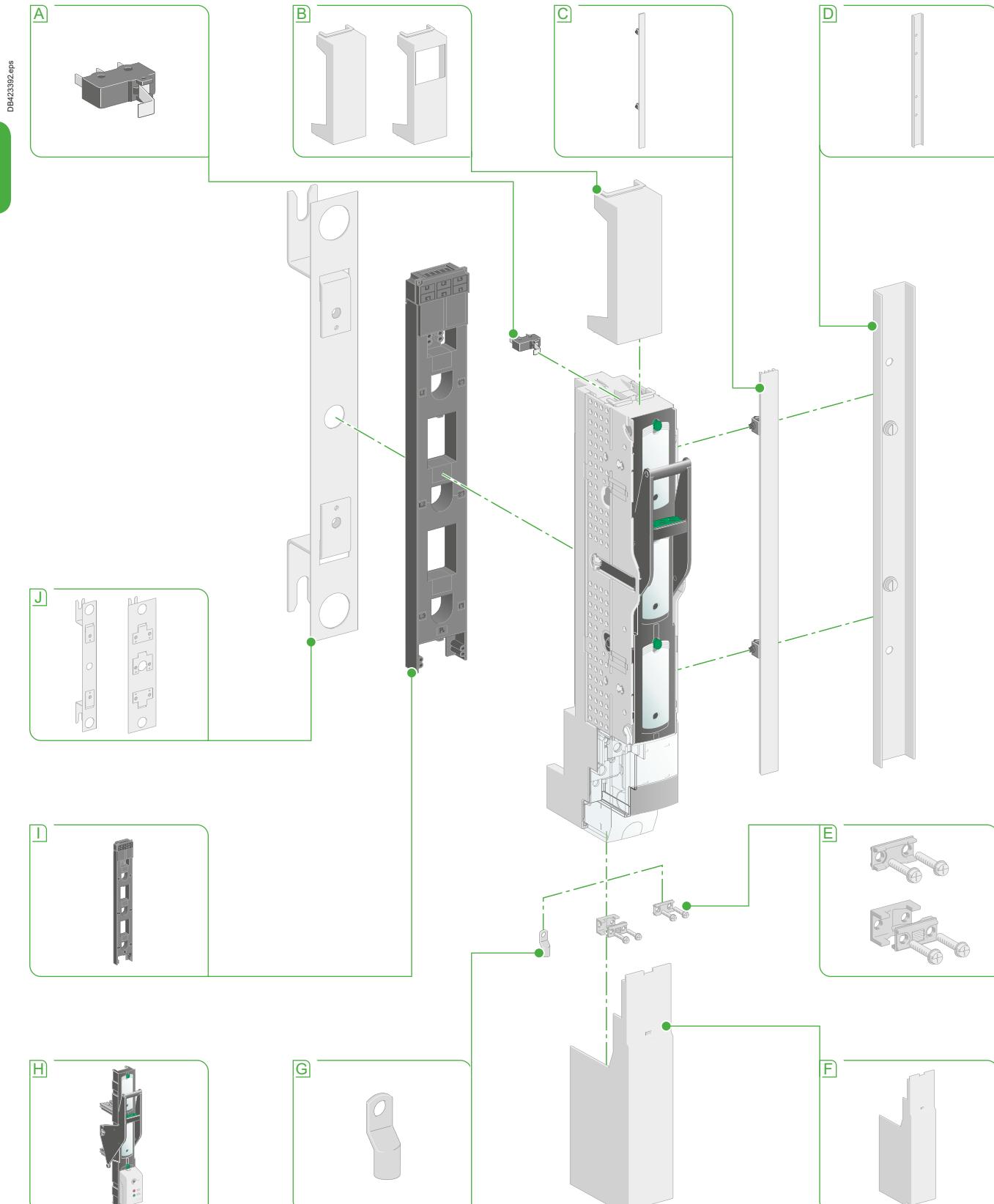
Fuse switch-disconnector selection

Fupact ISFL160 to ISFL1250

ISFL160	ISFL250	ISFL400	ISFL630	ISFL1250
○	-	-	-	-
○	-	-	-	-
-	○	-	-	-
-	-	-	-	-
-	-	○	-	-
-	-	-	○	-
-	-	-	-	○
A				
○	-	-	-	-
○	-	-	-	-
○	-	-	-	-
○	-	-	-	-
○	-	-	-	-
○	○	○	○	○
○	○	○	○	○
see page B-4				
160	250	400	630	1250
150	240	380	600	1200
145	225	360	570	1130
135	215	340	535	1070
130	200	320	500	1000
120	190	300	475	940
110	175	280	440	880
160	-	-	-	-
150	-	-	-	-
145	-	-	-	-
135	-	-	-	-
130	-	-	-	-
120	-	-	-	-
110	-	-	-	-

Accessories and auxiliaries

Fupact ISFL160 - 3P



A NO + NC auxiliary changeover contacts

B Length adapter

C Side cover for front panel cut-out

D Blank panel cover for free slot

E Connectors for :
bare cable
flexible bars

F Length adapter

G Lug for copper cable

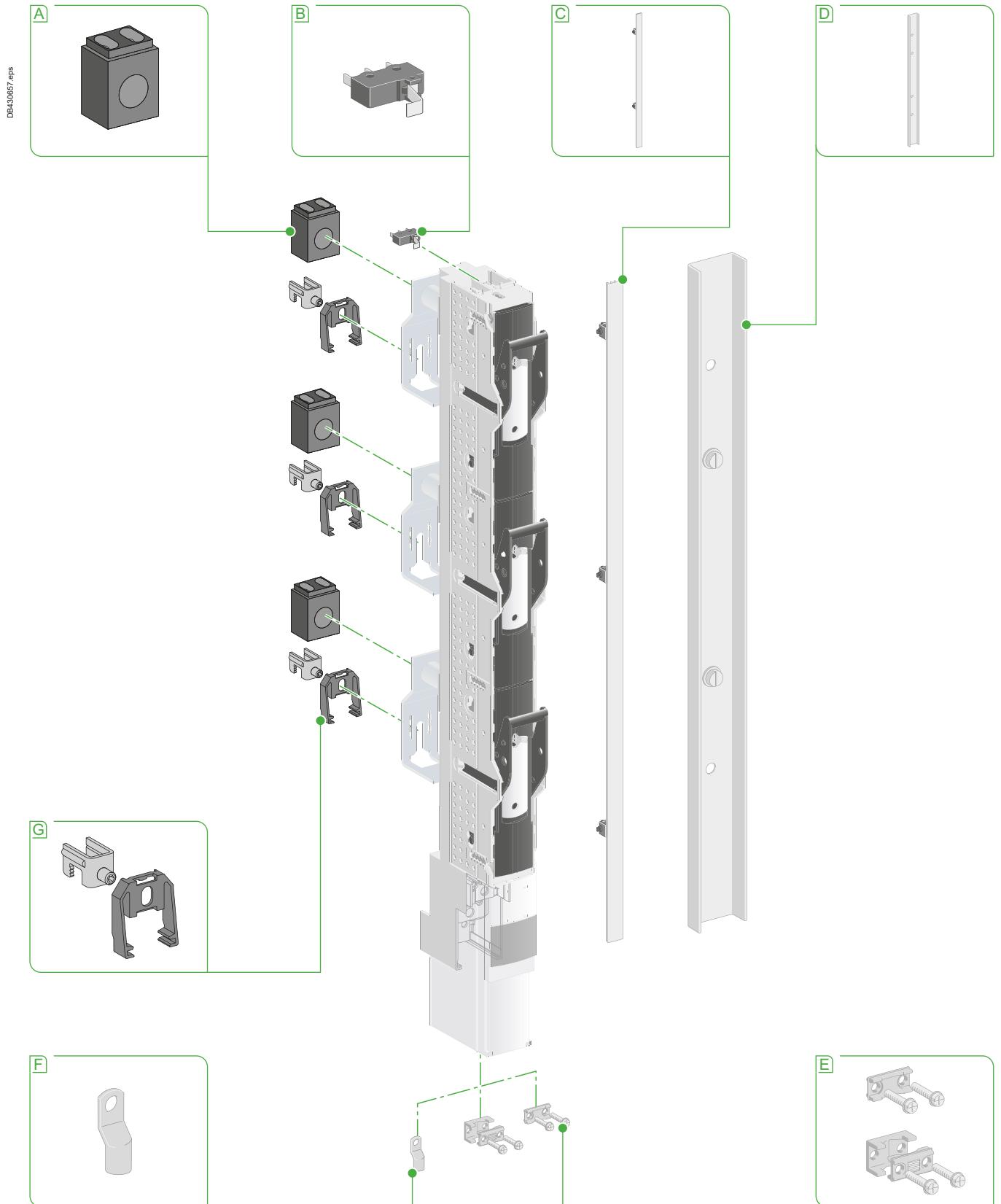
H Fuse monitor

I Current transformer

J Conversion kit for direct connection to
185 mm busbars

Accessories and auxiliaries

Fupact ISFL160 - 3 x 1P



A Current transformer

B NO + NC auxiliary changeover contacts

C Side cover for front panel cut-out

D Blank panel cover for free slot

E Connectors for :

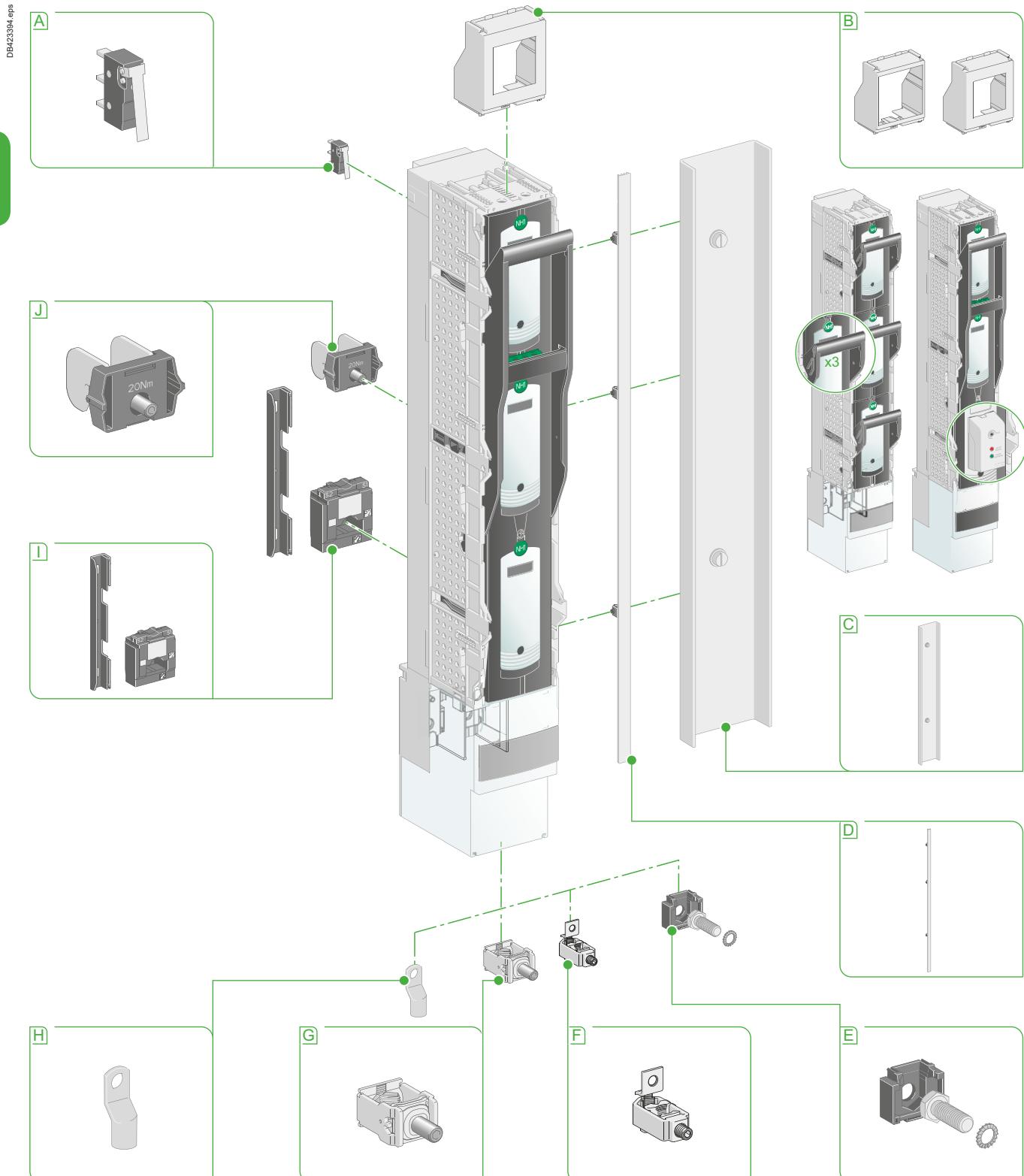
- bare cable
- flexible bars

F Lug for copper cable

G Hooks

Accessories and auxiliaries

Fupact ISFL250 to ISFL630



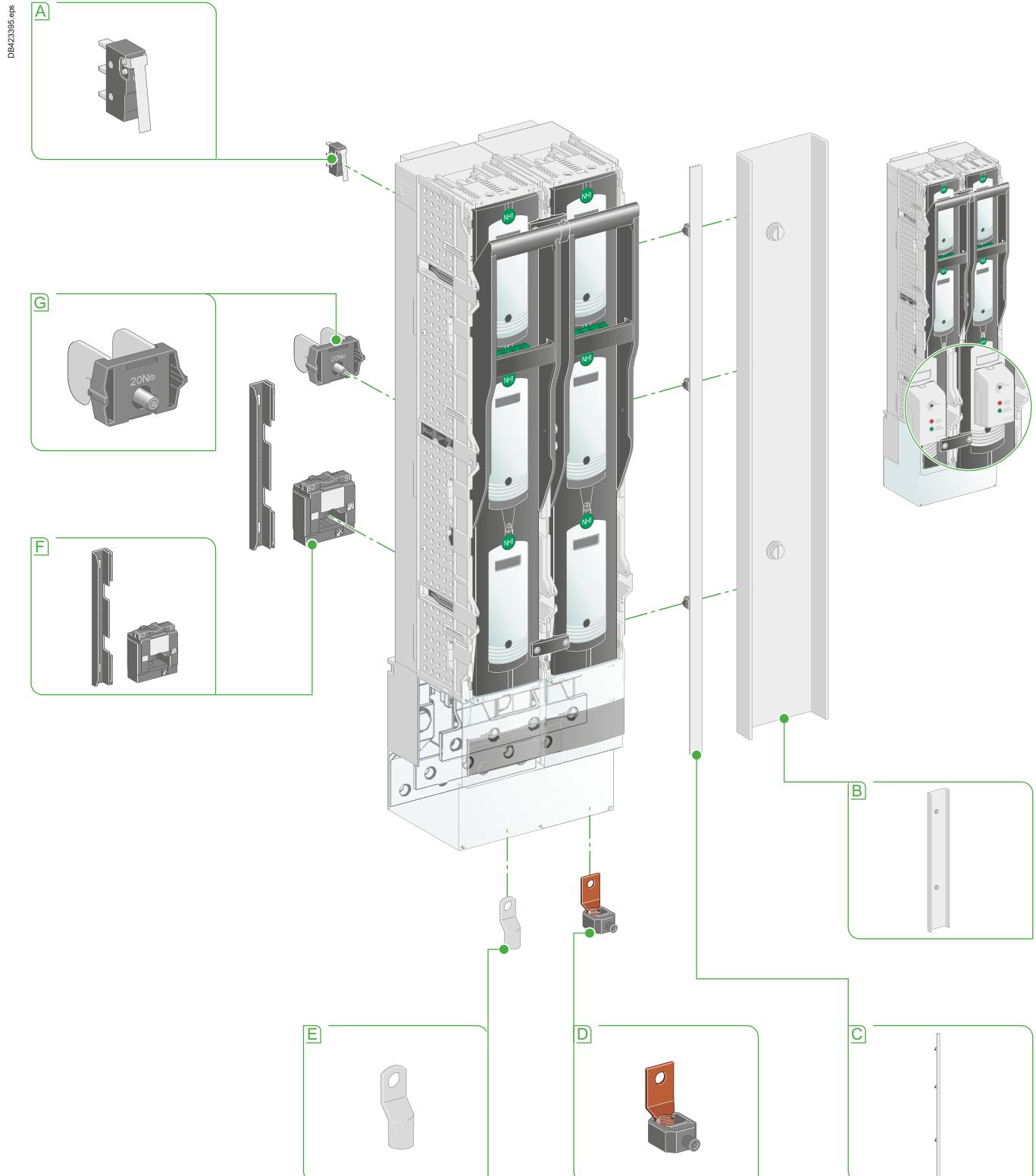
- [A] NO + NC auxiliary changeover contacts
- [B] Empty plastic box
- [C] Blank panel cover for free slot
- [D] Side cover for front panel cut-out

- [E] Screws with plastic support
- [F] Connector for Cu/Al bare cables 2 x 50 to 185 mm²
- [G] Connector for Cu/Al bare cables 1 x 35 to 300 mm²

- [H] Lug for copper cable
- [I] Current transformer
- [J] Hooks

Accessories and auxiliaries

Fupact ISFL1250

**A** NO + NC auxiliary changeover contacts**B** Blank panel cover for free slot**C** Side cover for front panel cut-out**D** Connector 4 x 240 mm²**E** Lug for copper cable**F** Current transformer**G** Hooks

General characteristics: ISFL

Fupact ISFL160 to ISFL1250



ISFL turnable hooks.

A

With Fupact ISFL, you have one of the most efficient vertical NH fuse switch-disconnectors ever designed with compact dimensions, a modular system and an elegant design. Your benefit are as follows:

Future proof

The trend is moving from simple power distribution stations to more intelligent power distribution stations. Fupact ISFL is made for the future: with interfaces for measurement and control equipment which can be integrated in a space-saving manner.

Reduced heat development

Safeguarding high currents requires one thing above all: keeping a cool head. This is where Fupact ISFL leads the pack. They feature one of the lowest heat development values of all products available on the market. This pays off for your entire facility: reduced energy loss, improved operating safety and durability.

Faster mounting

All installation and connecting components of the Fupact ISFL were optimised and the number of assembling steps was reduced. This puts your switch "on the track" even more quickly and saves you time.

Safety at its best

The switch gears are very user friendly and provide optimal user protection due to parallel switching. Two disconnected positions per phase produce two smaller electrical arcs. This causes only half the arc voltage.

Turnable contact hooks

Fupact ISFL fuse-switches, vertical design, 00/60 are the first of its kind to feature turnable contact hooks. This makes it much easier to mount the NH Fuse-Switch on the busbar in addition to being much more flexible. Due to its symmetry, the NH Fuse-Switch can be turned around at any time. Terminal top or bottom can be chosen freely. Thus, only one version needs to be placed on stock.

Fast connection – with variable box terminals

High currents require large cable cross-sections. At the same time, modern switchboard cabinets are becoming more and more compact. They accommodate three cables of up to 95 mm² in the smallest possible. No one else can do that with a Fupact ISFL 160 A. This is possible only due to the stepped and slightly offset arrangement of the box terminals. Captive screws enable a quick and reliable securing of the cable.

Perfect back-up with space-saving current-transformer installation

Do you wish to measure currents in addition to safeguarding them? We have redefined space for you. Our new current transformers can be installed behind the Fupact ISFL, vertical design, without an alteration of installation depth. After removing the break-out-pieces form the socket, the current transformers is simply plugged on – ready for use. With or without a current transformer, the Fupact ISFL always has the same installation depth, so no adaptors are required.

General characteristics: ISFL

Fupact ISFL160 to ISFL1250

A

The elegant solution

To obtain the same installation depth with surrounding devices, the Fupact ISFL vertical design, size 00/185 does not only come with conventional adapters but also features raised busbar connections. This makes it easy to mount the fuse-switch adjacent to devices of size 1 to 3. Simply hook the elevated feeding bracket onto the pre-mounted bolts or attach it with the contact hooks.

There is no need for drilling. This allows the same installation depth for all sizes, giving the front face a clear uniform look.

No trouble with large cross-sections

Standard universal terminals allow the direct connection of cable lugs as well as cables with cross-sections up to 300 mm². Easy-to-install terminal hardware gives you great flexibility. No other small-sized Fupact ISFL can do that.

Appealing at first sight

Rotating nameplates turn your installation possibilities into a real eye-catcher. No matter if the terminal is located on top or at the bottom, technical data and installation labels of all Fupact ISFL are always correctly aligned. Don't take any risks when it comes to making the first impression.

Secure turn-off-position – up to three padlocks

Even fuse-protection-devices need to be protected: from electricity-theft, manipulation and unauthorised use. This is why every 3-pole Fupact ISFL, vertical design, may be locked with up to three locks. This is possible in both, the closed and the secure park lock position.

Intelligent measurement

The future belongs to more intelligent switchboards. Fupact ISFL is well prepared for the future: it offer standardised interface for measurement devices.

Contemporary power management

Fupact ISFL measuring devices offers a large selection of measuring and monitoring options: from basic current measurements and power metering, harmonic wave analysis to remote management and alarm relays, and many more. All electrical parameters are visualised on an LCD and can be centralised. EM measuring devices are normally installed separately in the switchboard. Fupact ISFL offer an integrated solution which can simply be plugged on.

Electronic Fuse-Monitoring - Everything under control

You know what happens and where it happens almost instantly to a notification, technician receives the information required to precisely locate and quickly correct short-circuits and overloads. Your technician will be faster to analyse and change fuse which is broken. This makes to have network highly effective while at the same time being extremely reliable.



Fupact ISFL160 - 3 x 1P.



Fupact ISFL630 with fuse monitor.

PB115409_L31.eps

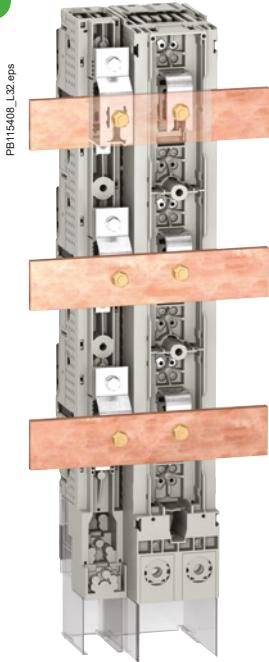
PB107276.eps

ISFL installation

Fupact ISFL160

Fupact ISFL fusegear is installed vertically and connected directly to the busbars.
The connection is bolted or could be made by the hook-on connection.

A



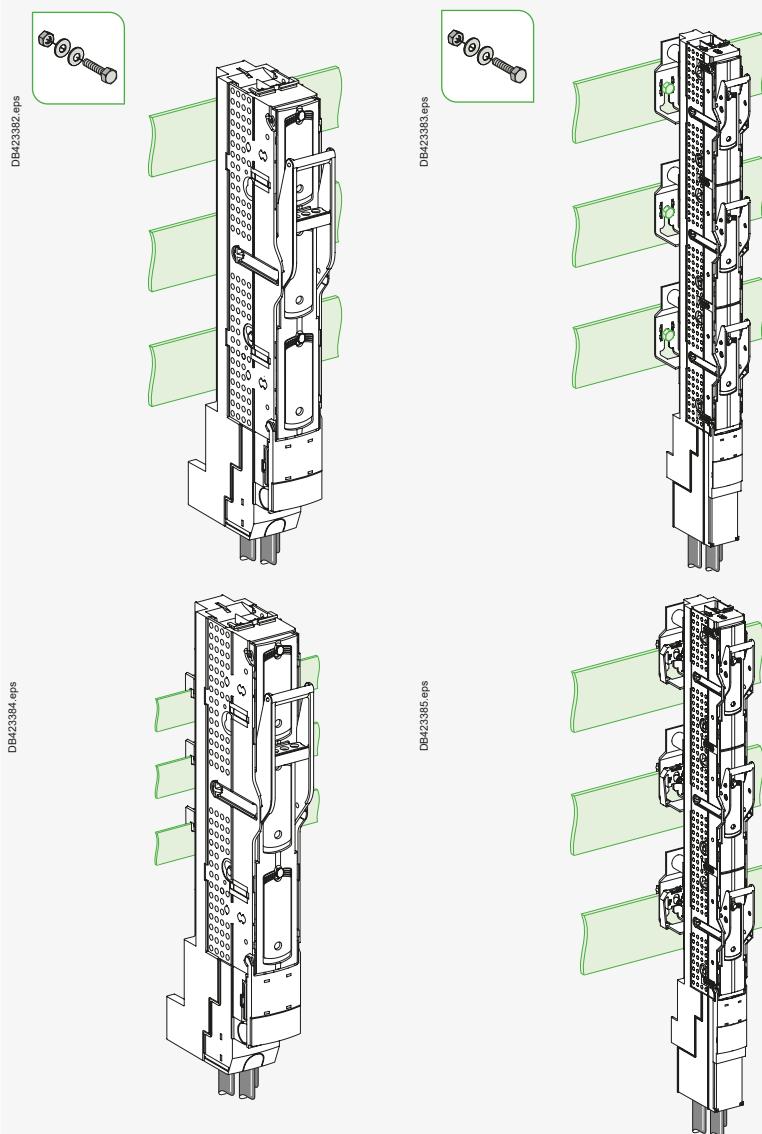
Direct connection to the busbars
(ISFL160 and ISFL400).

ISFL160 fusegear

Connection to busbars.

The power circuit is connected:

- either directly to the 100 mm busbars for 3-pole version or to the 185 mm busbars for 1-pole version
 - or using a hook-on connection to 60 mm busbars (3-pole version)
 - or via a conversion kit for connection to 185 mm busbars (3-pole version)
 - or via a conversion kit for two devices and for connection to 185 mm busbars.
- Downstream connection of distribution circuits requires cables (3-pole version).



Functions and characteristics

ISFL installation

Fupact ISFL250 to ISFL1250

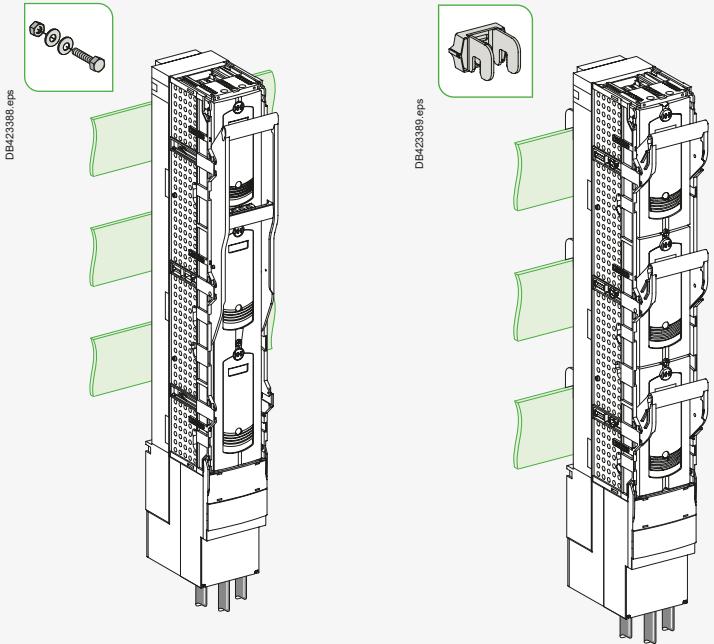
A

ISFL250/400/630 fusegear

Connection to busbars.

The power circuit is connected:

- either directly to the 185 mm busbars for 1-pole and 3-pole version
- or using a hook-on connection to 185 busbars
- downstream connection of distribution circuits requires cables.

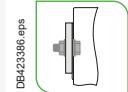
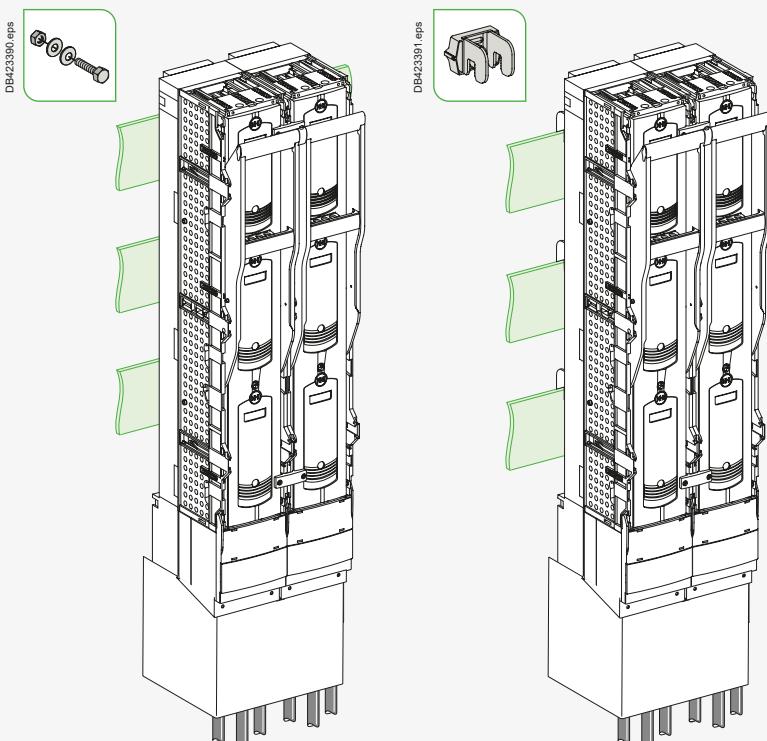


ISFL1250 fusegear

Connection to busbars.

The power circuit is connected:

- either directly to the 185 mm busbars for 3-pole version
- or using a hook-on connection to 185 mm busbars
- downstream connection of distribution circuits requires cables.



Direct connection to the busbars:
the device is bolted to the busbars with one connection point per phase that ensures both electrical connection and secure mechanical mounting.



Hook-on connection to busbars:
the device tightly hooks on to the busbars via three hooks that ensure both electrical connection and secure mechanical mounting.

These two systems ensure direct contact of the power circuit to the busbars and traditional connections for downstream distribution (bare cable connectors, lugs, bars, distribution connectors, etc.).

The two connection systems can also be reversed to supply distribution circuits via the upstream terminals.

Connection and accessories

Fupact ISFL160 to ISFL1250 - Connection

Fupact ISFL fuse-switch disconnectors can supply distribution circuits via either the upstream or downstream terminals.

Devices intended for connection to busbars are configured as standard for distribution via the downstream terminals.

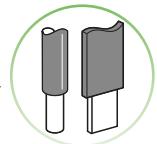
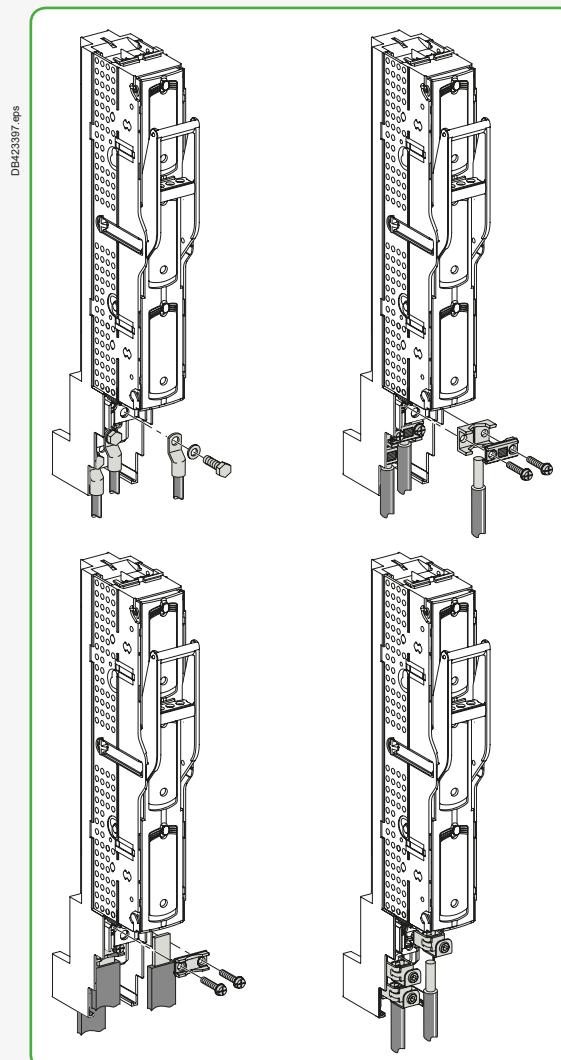
A

ISFL fusegear is equipped as standard with connectors or terminals for front connection of:

- cables with lugs for the ISFL160 and ISFL1250 devices
- flexible bars for the ISFL160 devices
- bare cables for ISFL160 to 630 devices.

	ISFL160	ISFL250	ISFL400	ISFL630	ISFL1250
Cables					
Lug (as standard)	95 mm ²	-	-	-	-
Cable connector to terminal	1.5 to 95 mm ²	1 x 35 to 300 mm ²	-	-	-
Flexible bars					
Connector	12 x 6 mm	-	-	-	-

ISFL160 fusegear [1]



DB42396.eps



Lug for copper cables.



Connector for bare Cu/Al cables.



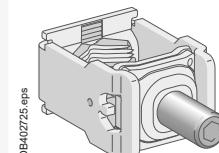
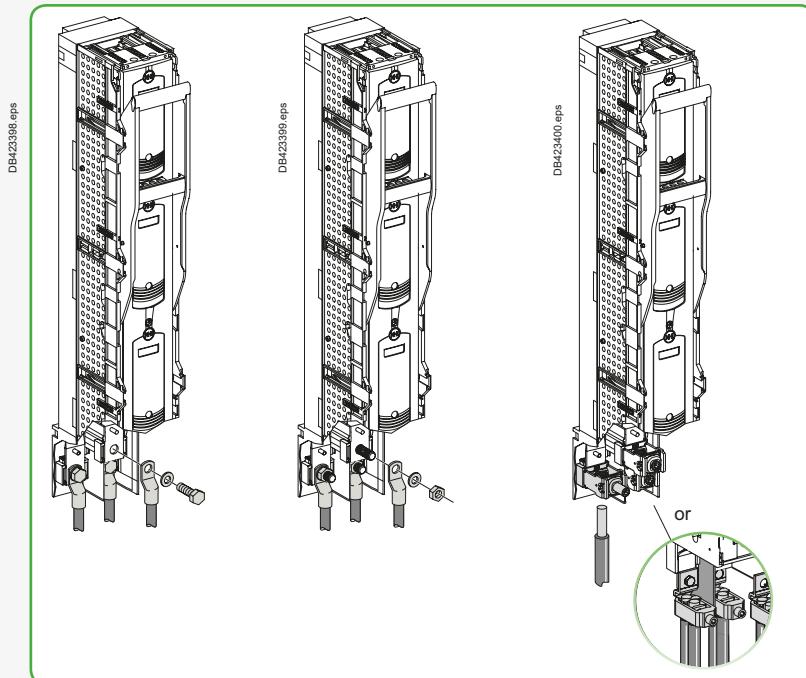
Connector for flexible bars.

[1] Connections and accessories are identical for ISFL single phase.

Connection and accessories

Fupact ISFL160 to ISFL1250 - Connection

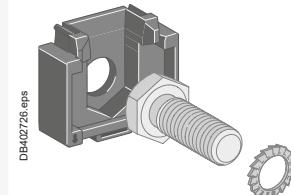
ISFL250/400/630 fusegear [1]



Connector for Cu/Al bare cable 1 x 35 to 300 mm².



Connector for Cu/Al bare cable 2 x 50 to 185 mm².

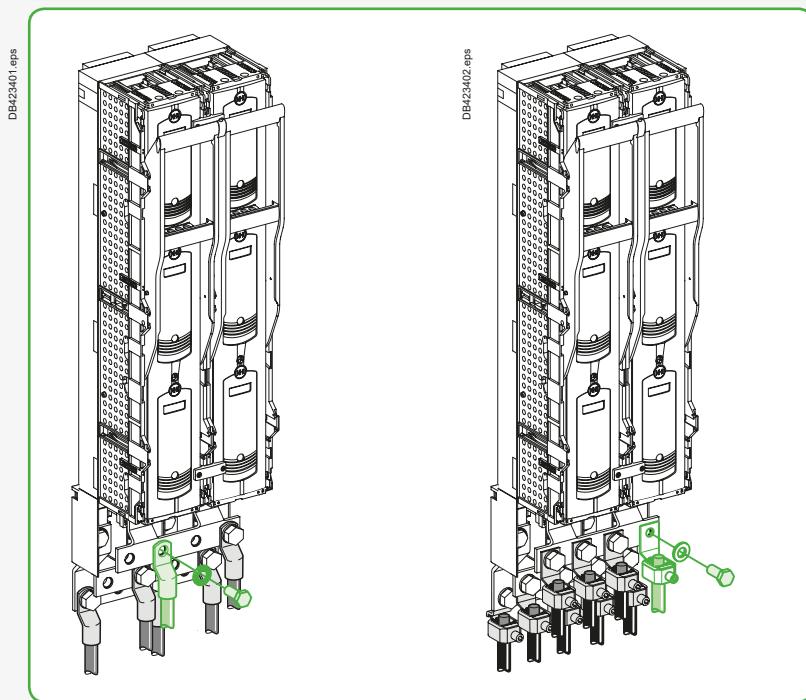


Connector for cables with lugs.



Connector 4 x 240 mm².

ISFL1250 fusegear



[1] Connections and accessories are identical for ISFL single phase.

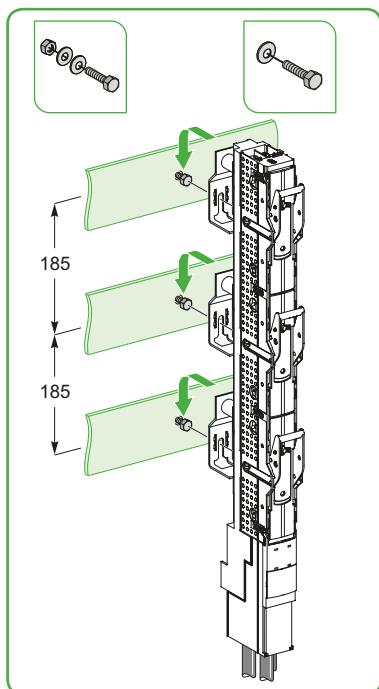
A

Connection and accessories

Fupact ISFL160 to ISFL630 - Connection, coupling

Two conversion kits are available for ISFL160 3-pole switchable to adapt the 100 mm standard fixing centres to 185 mm fixing centres.

Direct connection to 185 mm busbars



ISFL160 1P.

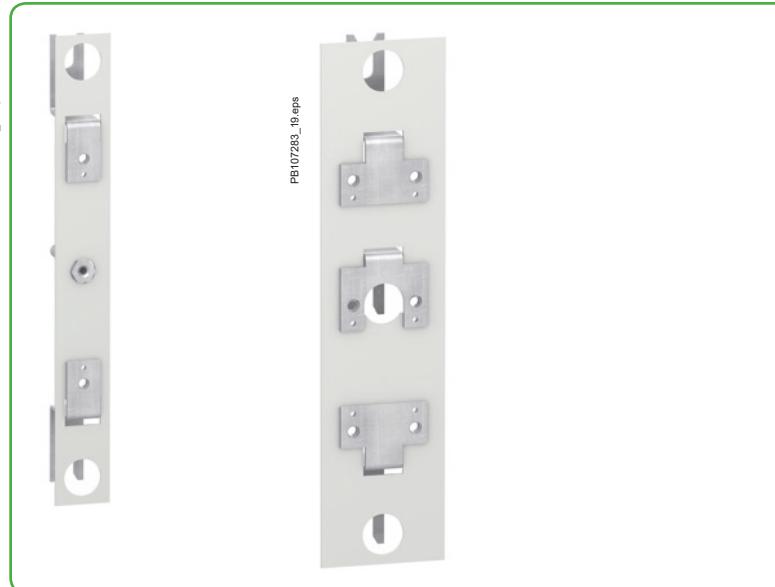
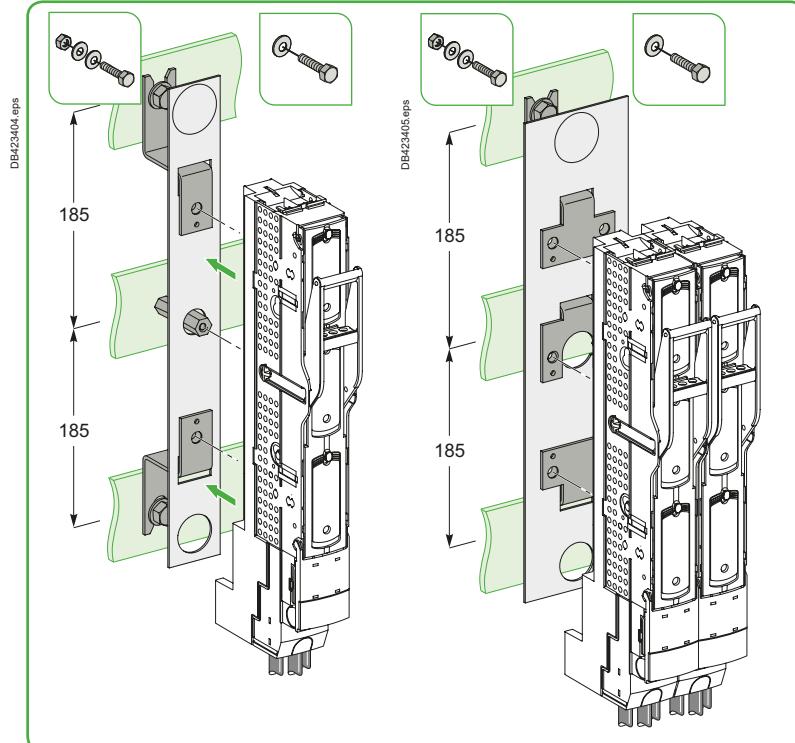
Conversion from 100 to 185 mm

The kit connects to the busbars via hook-on connection.

Conversion kit for 185 mm busbars:

- both electrical and mechanical connection to the busbars is ensured by a set of nuts and bolts.

Electrical and mechanical connection of the device to 100/185 mm conversion kit is ensured by three screws.

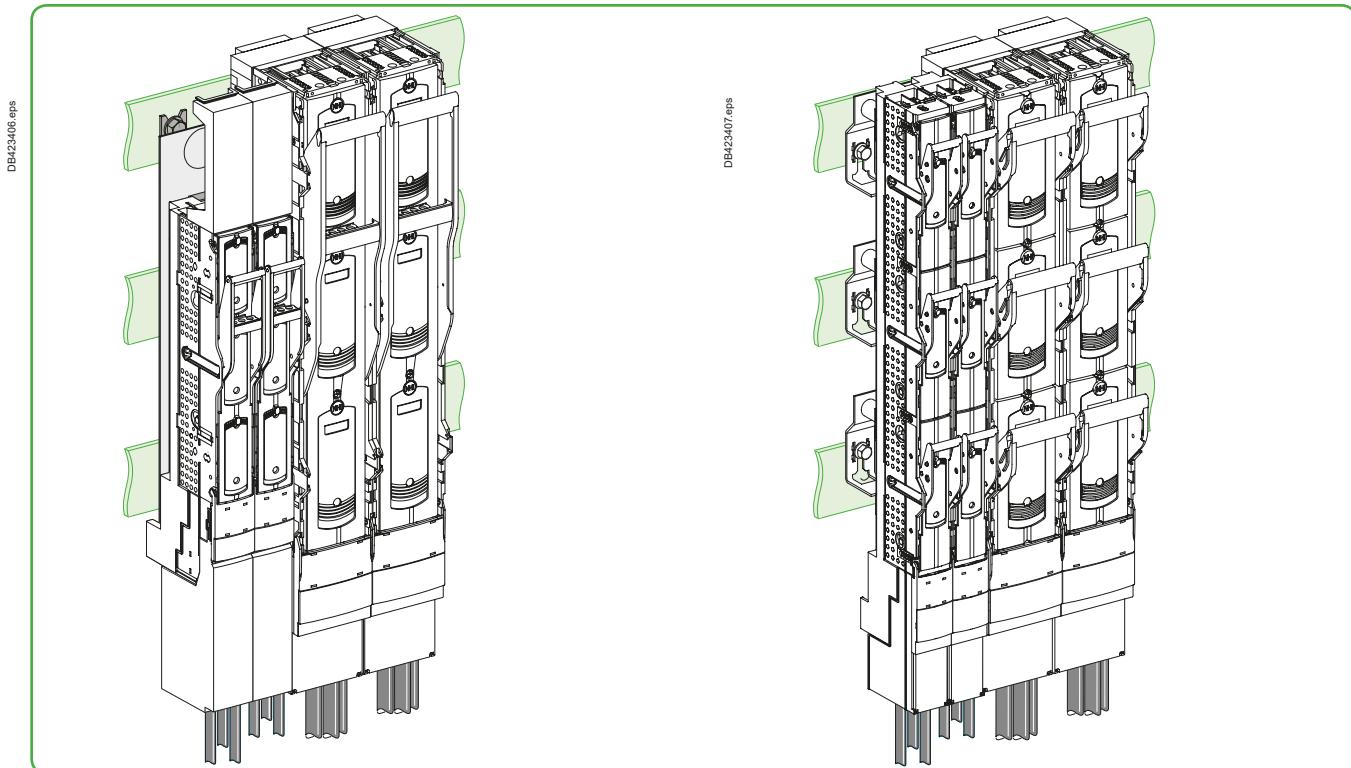


ISFL160 (185 mm kit).

Connection and accessories

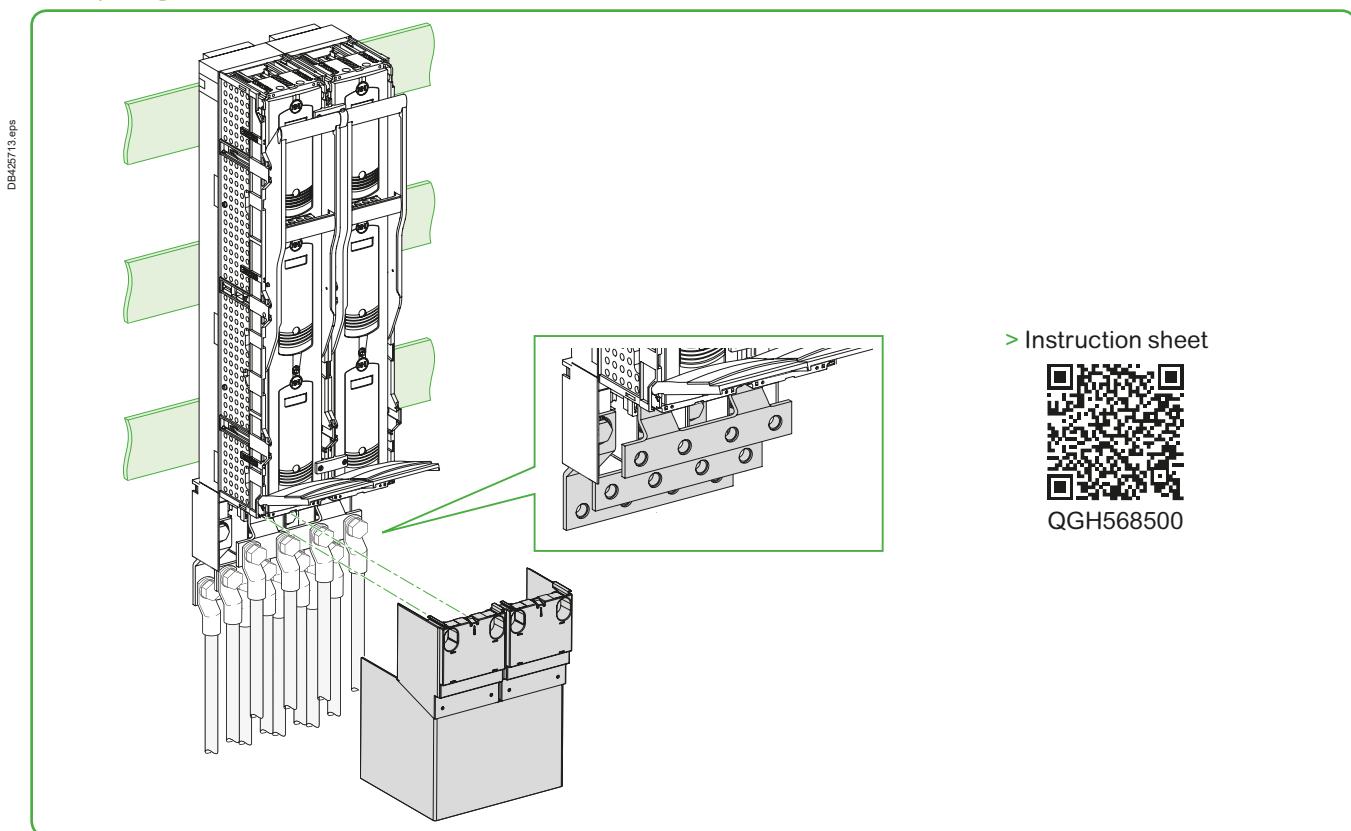
Fupact ISFL160 to ISFL630 - Connection, coupling

Installation of devices with different ratings on a given set of busbars



A

Coupling kit from ISFL250 to ISFL630



Connection and accessories

Fupact ISFL160 to ISFL630 - Reverse distribution

PB115408_L32.eps



Direct connection on 185 mm busbar
(ISFL160 with ISFL630).

A

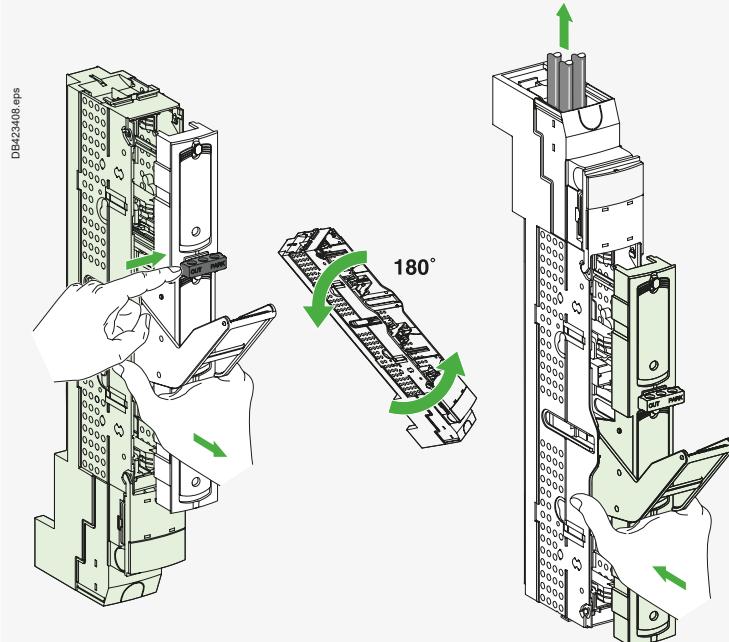
ISFL160 fusegear devices with hook-on connection to 60 mm bars are available in two versions:

- connection via M8 screws
- connection via a 95 mm² terminal.

For each of these versions, the distribution reversal mode is achieved by rotating the hooks located at the rear, which gives the possibility of distribution from upstream. The fuse-carrier assembly does not change position.

All the various connection modes could be reversed also.

ISFL160 fusegear with turnable hooks^[1]



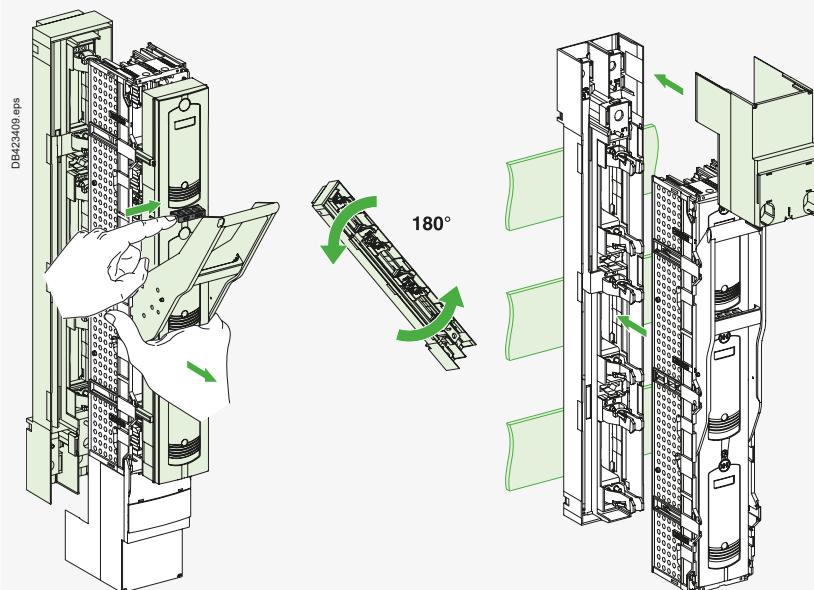
Release tab for the ISFL160:

- with the device in open position, press the release tab :
- down, to remove the fuse-carrier assembly from the base
 - up, lock the device in open (OFF) position.

Release tab for the ISFL250/400/630:

- with the device in open position, press the release tab :
- to remove the fuse-carrier assembly from the base or install it on the base
 - up, lock the device in open (OFF) position.

ISFL250/400/630 fusegear^[1]



^[1] For ISFL 1-pole switchable: identical reversed distribution could be done distribution.

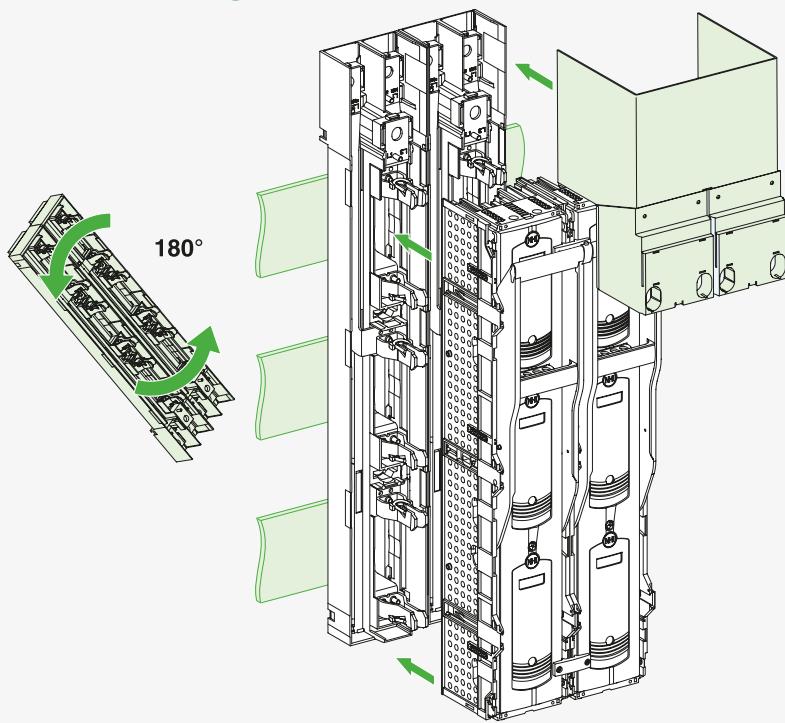
Connection and accessories

Fupact ISFL1250 - Reverse distribution

ISFL1250 fusegear devices can be reversed to have the possibility of distribution from upstream.

ISFL1250 fusegear

DB42410.eps



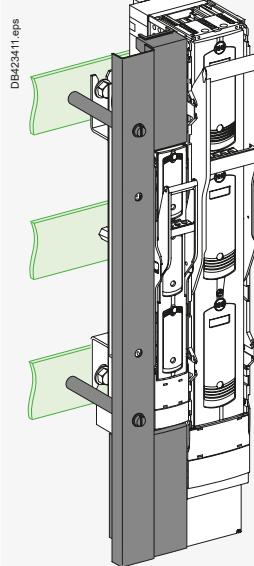
A

Insulation

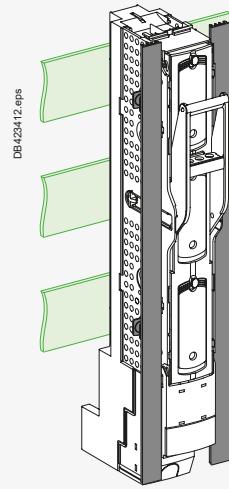
Fupact ISFL160 to ISFL630

Length adapter.
PB107288_24.epsSideframe door
cut out.
PB107286_10.epsSidewise angle bracket
for side frame.
PB107287_18.eps

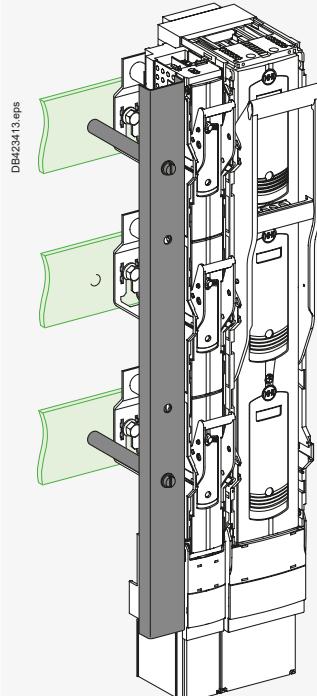
ISFL160 fusegear



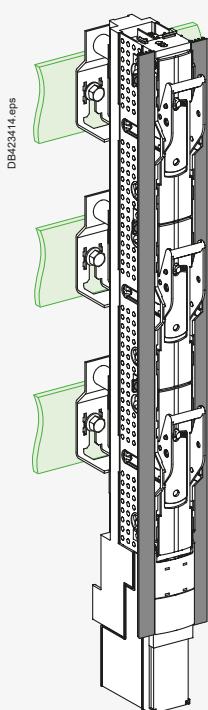
DB423411.eps



DB423412.eps



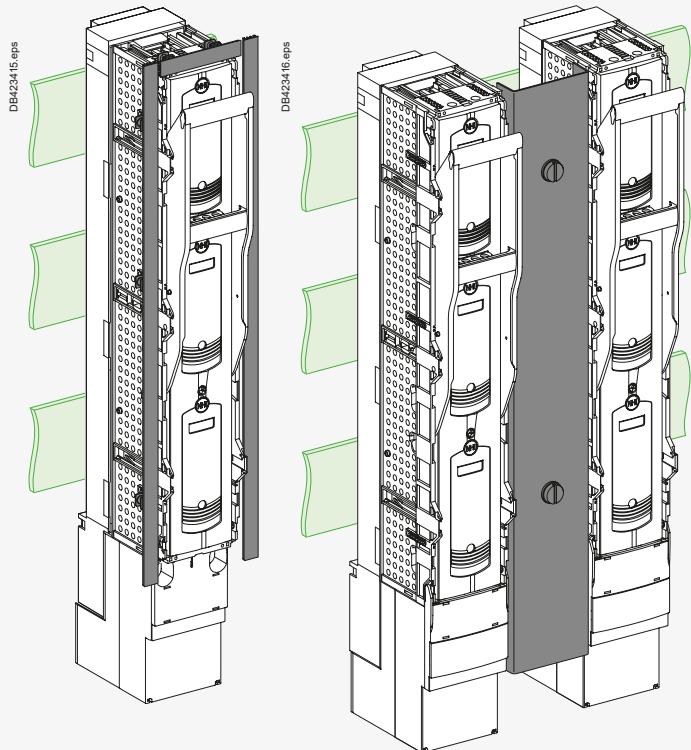
DB423413.eps



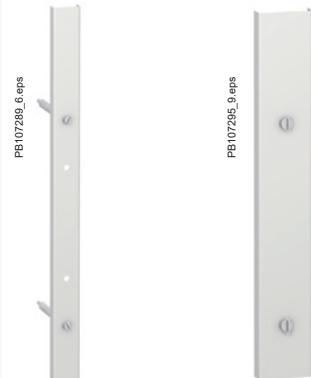
DB423414.eps

Functions and characteristics
Insulation
Fupact ISFL250 to ISFL1250

ISFL250/400/630 fusegear^[1]



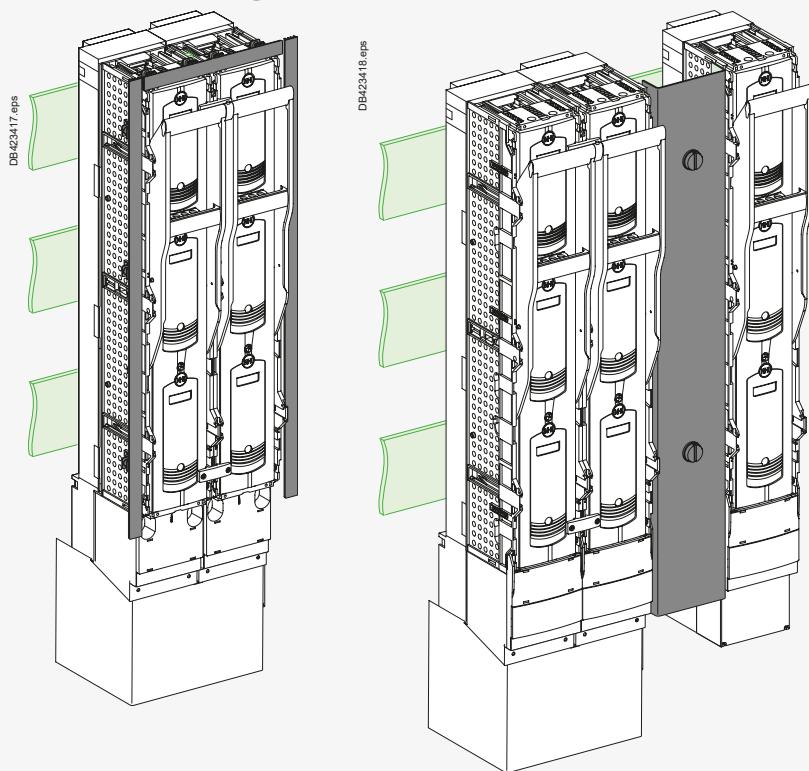
[1] Accessories are identical for ISFL 1-pole switchable.



Blank panel cover.

A

ISFL1250 fusegear



Fuse monitor

Fupact ISFL160 to ISFL1250



A



A-50

Life Is On

Functions

The device provides remote indication of the standard fuse status (without strikers).

It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation.

Standards

- Compliance with international standard IEC 60947-5-1.

- Compliance with:

- EN 50204

- EN 61000 for electromagnetic compatibility (EMC).

Description

- Fuse monitor function only for 3P.

- Operation with DIN fuses.

- May be used on capacitor bank circuits.

- Simplified power supply:

- does not require a specific power supply

- operates with unbalanced phases

- supplied via connection to the fuse terminals on the switch-disconnector fuse

- operational voltage 400...690 V AC, ±10 %, 50/60 Hz.

- Tested for electromagnetic compatibility (EMC).

- ISFL160:

- it is a fuse-carrier/handle and fuse monitor sub-assembly supplied as a kit composed of:

- fuse monitor equipped with one NO contact and one NC contact
- fuse-carrier with the handle

- the customer must remove his fuse-carrier/handle assembly from his product and replace it with this kit.

- ISFL250 to 1250:

- in this case, customer needs to order directly fuse monitor mounted on a product

- Characteristics:

- IP20 degree of protection

- product with fuse monitor must be integrated inside switchboards and not in front face in case of customers wants to have a complete class II insulation.

Class II insulation with switchboard in front face is ensured only when Fupact ISFL is in closed position.

Note: lugs for connection to the fuse-carrier are not supplied.

Operation

Reset

The device is automatically reset when the fuse-links are replaced.

Indications

- Normal operation:

- the green LED is ON when voltage is present at the fuse terminals

- the contacts are in the rest position

- Operation when a fuse is blown:

- the green LED goes off and the red LED goes on

- the contacts are actuated:

- the NO contact is for remote fault indication

- the NC contact may be used, for example, to control an undervoltage device in order to shut down equipment that may be sensitive to single-phasing.

Functions and characteristics

Fuse monitor

Fupact ISFL160 to ISFL1250

A

Electrical characteristics

Power circuit

Rated operational voltage	(Ue)	400 to 690 V AC 50/60 Hz ±10 %
Consumption		< 3 VA
Rated frequency		50/60 Hz
Measurement impedance		> 1000 Ω/V
Rated impulse withstand voltage (1.2 / 50 μs)	(Uimp)	8 kV

Auxiliary contact output terminals

Terminal indications	NO	13 - 14
	NC	21 - 22
Cable capacity	Flexible	≤ 1.5 mm ² Cu
	Rigid	≤ 2.5 mm ² Cu

Output contact characteristics (1NO + 1NC)

Conventional thermal current I _{th} (A)	5
Rated insulation voltage (V)	250
Minimum load	10 mA at 24 V

Characteristics

Utilisation category (IEC 60947-5-1)	AC12	AC15	DC12	DC13
Operational current (A)				
24 V	-	3	-	2
48 V	-	3	-	-
110 V	-	3	-	-
220/240 V	-	3	-	-
250 V	-	3	-	-
380/415 V	-	-	-	-
440 V	-	-	-	-
660/690 V	-	-	-	-

Rated operational voltage / max. breaking voltage (VAC) 250/440

Breaking capacity (VA) 2000

General characteristics

Operating temperature range (°C)	-25...+55 (≤ 500 V)	-25...+45 (> 500 V)
Storage and transport temperature range (°C)	-40...+70	
Fuse blowing detection time (s)	< 2	
Overvoltage category / degree of pollution	IEC 60947-1 3	
Dielectric test voltage (between power circuit and output terminals)	5 kV rms / 1 min 50 Hz	

Electromagnetic compatibility - emission

Conducted	EN 55022 Class B
Radiated	EN 55022 Class B
Harmonic currents	EN 61000-3-2 Class A

Electromagnetic compatibility - immunity

Electrostatic discharge (ESD)	EN 61000-4-2 category B level 2/3
Radiated field susceptibility (RF)	EN 61000-4-3 category A level 3
Surge immunity test	EN 61000-4-5 level 4
Conducted low energy susceptibility (EFT)	EN 61000-4-4 category B level 3
Conducted high energy susceptibility (RF)	EN 61000-4-6 category A level 3
Radio-frequency interference (GSM)	ENV 50204 category A

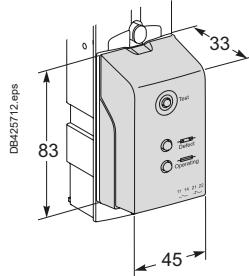
Magnetic field immunity

Continuous	EN 61000-4-8 level 5
------------	----------------------

Mechanical characteristics

Degree of protection	IP20
Weight (fuse monitor alone) (kg)	0.2

Dimensions



Measurement accessory

Fupact ISFL160 to ISFL1250

The current transformers (CTs) produce a current (1 - 5 A) on the secondary winding that is proportional to the current measured on the primary winding.

They can therefore be used in conjunction with measurement devices (ammeters, energy meters), load-shedding devices, control relays, etc.

A



Single block current transformer for ISFL160 (1 or 3 CTs).



Current transformer for ISFL160 (1-pole version).



Current transformer for ISFL250/400/630/1250.

Operation and implementation

Fupact ISFL160 to 1250 fusegear can be equipped with tube-unit current transformers (CT).

The CT modules are available in two versions:

- 3-pole module with one or three CTs for ISFL160 fusegear (3-pole version):
- 1 rating 150 A
- Single-pole module with one CT for ISFL160 (1-pole version) /250/400/630/1250 fusegear:
 - 4 ratings from 150 to 600 A
 - the CT modules clip onto the back of the fusegear
 - connections are made:
 - via terminal blocks for the 3-pole modules (ISFL160) with output current of 1 A
 - via cables directly connected with output current of 5 A.
 - via lugs for the single-pole modules (ISFL 160 (1 pole version)/250/400/630/1250).

Selection table

ISFL160

class 1

1-pole version

Ip/5	Ip/1	Power (VA)
150/5	-	5

ISFL160 accuracy class 1			ISFL250 to 1250 class 1	
3-pole version			1 and 3-pole version	
Ip/5	Ip/1	Power (VA)	Ip/5	Power (VA)
150/5	-	1.5	150/5	2.5
	150/1	2.5	250/5	5
			400/5	5
			600/5	5

Environment

- Compliance with standards: IEC 60044-1, NFC 42502, VDE 0414, BS 7626 and IEC 60038-1.
- Degree of protection: IP20.
- Operating temperature range: -25 °C to +70 °C, relative humidity 95 %.
- Storage temperature range: -40 °C to +80 °C.

Technical characteristics

CT electrical characteristics:

- maximum operational voltage: 800 V
- secondary current: 5 A and 1 A
- frequency: 50 to 60 Hz
- continuous overload current: 1.2 In
- safety factor: $F_s \leq 5$.

Transformation ratio:

- Ip/5 A.

Select the ratio just above the measured current (In).

Example: $In = 550 \text{ A} \rightarrow$ select a ratio of 600/5.

CT accuracy class:

- the accuracy class depends on the transformer rating and the consumption of the measurement system. Consumption must take into account the devices and cables
- for a given accuracy class, measurement system consumption must not exceed the transformer rating.

Caution:

- never open the secondary circuit of a current transformer when the primary winding is energised
- before any work on the secondary circuit, the terminals of the transformer secondary must be short-circuited.

Measurement accessory Fupact ISFL160 to ISFL1250

A

CT accuracy class:**Measurement system**

Schneider Electric device	Consumption in VA
72 x 72 mm ammeter	1.1
Analogue ammeter	1.1
Digital IM ammeter	0.5
Digital ammeter	0.3
PM/CM Power Meter	0.15
PM9	0.55

Primary copper cross-section in mm ²	Rating in VA per meter of double wire at 20 °C
1	1
1.5	0.685
2.5	0.41
4	0.254
6	0.169
10	0.0975

For each ten-degree increase in temperature, the power drawn by the cables increases by 4 %.

Example of measurement system consumption at 40 °C:

4 m of 2.5 mm ² double wire	1.7 VA
PM	+ 0.15 VA
Total consumption	= 1.85 VA

The accuracy class of the CT is determined:

- using the selection table
 - by the fact that consumption must be < the transformer rating:
 - class 1 for a CT with a ratio of 150/5
 - class 0.5 for a CT with a ratio of 200/5.
- If measurement accuracy must be to within 0.5 %, it is necessary to select a CT with a transformation ratio of 200/5.

PB107336_13eps



PB107335_13eps



ISFL160 (with CT).

PB112100-B_26.eps



ISFL250 (with CT).

Fuse-link monitoring and testing

Fupact ISFL160 to ISFL1250

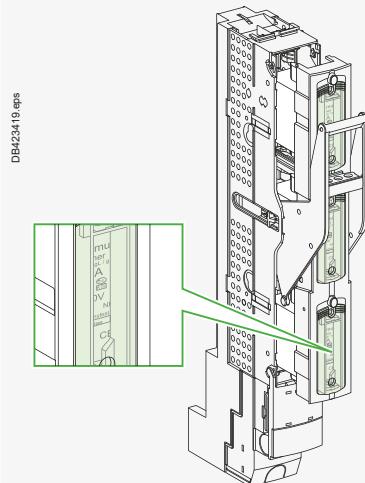
A



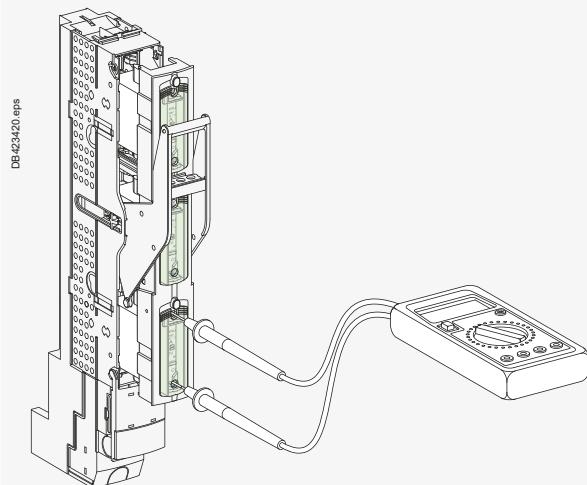
ISFL160.

Monitoring ^[1]

ISFL fuse-switch disconnectors are equipped with large windows so that the fuse-link technical characteristics are clearly visible.



Testing ^[1]



Sliding covers on the front panel provide access to the fuse-link status test points while maintaining the IP20 protection index.

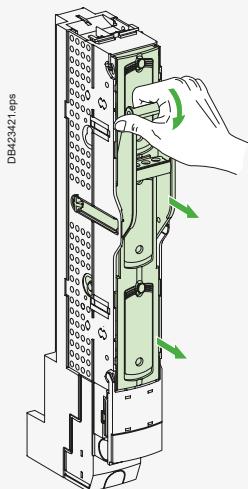
[1] Monitoring and testing function are the same for ISFL 1-pole switchable.

Control, locking and operation

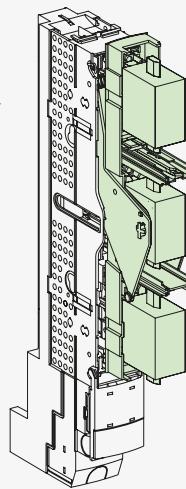
Fupact ISFL160 to ISFL1250

The main moving contacts are controlled by the drawout fuse-carrier assembly for the ISFL devices.
In open position, the fuse-switch disconnector fuse-carrier assembly guarantees isolation with visible break.

Control

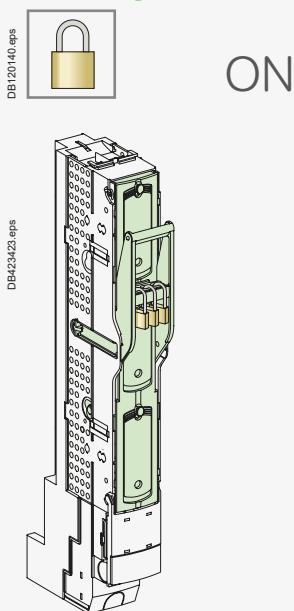


Removed sub-assembly [1]

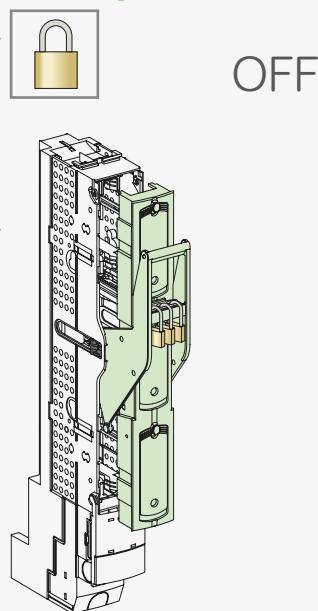


ISFL160.

Locking ON [2]



Locking OFF [2]



Padlocking for the ISFL160 to ISFL630 devices.

[2] Except for ISFL160 - 1P to ISFL630 - 1P.

Locking in open (OFF) position guarantees isolation as defined by IEC 60947-3.

Type	Function	Means	Accessory
ISFL160	Device locking in closed (ON) or open (OFF) position	Padlocks 3 max Ø6	Built-in
ISFL250 to ISFL1250		Padlocks 3 max Ø8	

To ensure safe and visible isolation, for maintenance operations for example, the ISFL fuse switch-disconnector must be put in the "PARK" position by pressing the lock on the front of the product. In this position, the handle is free and the fuses are physically separated from the contacts. The product can then be padlocked (3 x 6 mm dia. padlocks for ISFL160 and 8 mm dia. for other ISFL). Press the lock again to close the product when the padlocks have been removed.

Another solution is to removed the upper sub-assembly by pressing the lock in the "OUT" position. After the sub-assembly must be reversed and put directly on the product.

Access to the fuse-links:

- is automatically blocked on the ISFL devices when the fusegear is closed
- may be protected using padlocks on the ISFL devices.

To lock the fuse-switch disconnector in closed (ON) or open (OFF) position, the fuse-carrier is equipped as standard with lead-seal or padlocking accessories (not supplied).

A

Control, locking and operation

Fupact ISFL160 to ISFL1250

For Fupact ISFL fusegear devices, the fuse-carrier assembly is used both to control the device and house the fuse-link.

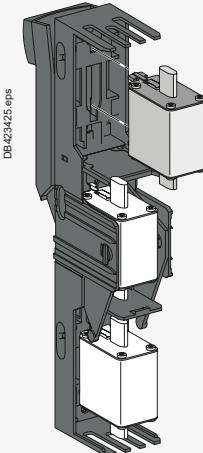
A



ISFL160.

Fuse-carriers [1]

Compatibility between ISFL fuse-switch disconnectors and fuse-links (NH)

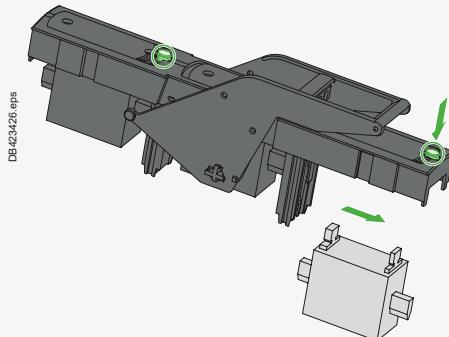


Drawout fuse-carrier assembly for the ISFL160 to 1250 devices.

Type of DIN fuse-link	NH000	NH00	NH1	NH2	NH3
ISFL160	●	●	-	-	-
ISFL250	-	-	●	-	-
ISFL400	-	-	-	●	-
ISFL630	-	-	-	-	●
ISFL1250	-	-	-	-	●

Insertion and removal of fuse-links

Fuse-links are held in place by clips behind the front panel of the fuse-carriers, thus making removal possible without touching the fuse-links.



ISFL160 and ISFL250 to ISFL1250.

[1] Control, locking and operation are the same for ISFL 1-pole switchable.

Auxiliary contacts and indications

Fupact ISFL160 to ISFL1250

A

The optional auxiliary contacts carry out indication functions. They provide remote indication of the fuse-switch disconnector status. They may also be used to indicate and carry out automatic functions such as electrical interlocking.

Standards: compliance with international recommendation IEC60947-5-1.

Description: NC/NO changeover contact.

Functional table of contact status

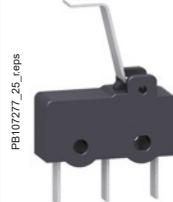
Auxiliary changeover contact		Maximum number
ISFL160	1	2
ISFL250	1	4
ISFL400	1	4
ISFL630	1	4
ISFL1250	1	8

Auxiliary changeover contact for ISFL160 to 1250

Rated thermal current I_{th} (A)	2	
Rated insulation voltage (V)	250	
Minimum load	100 mA at 24 V	
	AC12	DC12
Operational current (A)	24 V	2
	48 V	2
	110 V	2
	220/240 V	2



Auxiliary contact for ISFL160.



ISFL250/400/630/1250.

Auxiliary contacts and indications

Fupact ISFL160 to ISFL630

A



Auxiliary contact for ISFL160 .

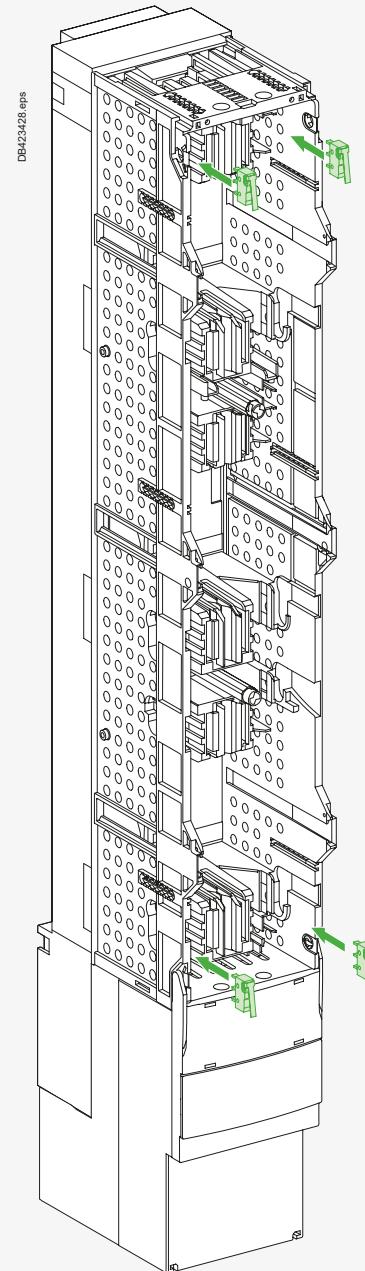
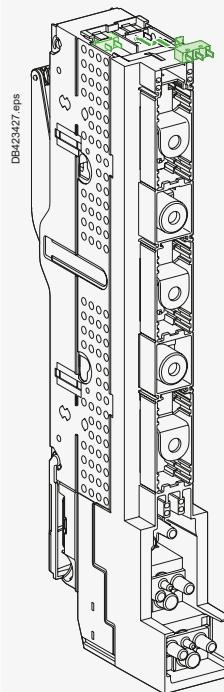


ISFL250/400/630/1250.

Position of auxiliary contacts for ISFL devices

ISFL160

ISFL250/400/630

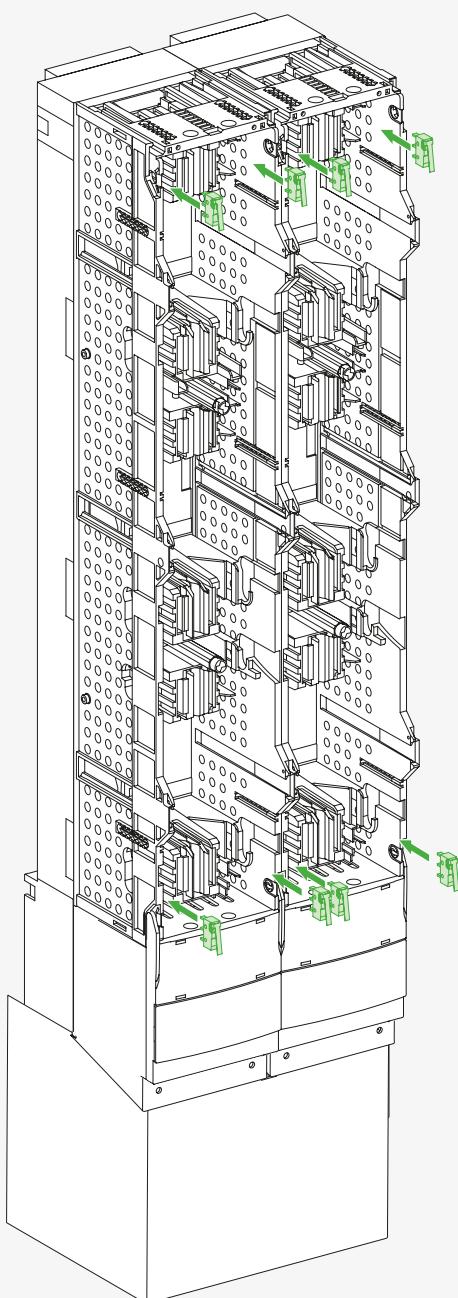


Auxiliary contacts and indications

Fupact ISFL1250

Position of auxiliary contacts for ISFL devices ISFL1250

DBA23429.eps



PB107277_251.eps



ISFL250/400/630/1250.

A

Intelligent measurement

Fupact ISFL160 to ISFL630

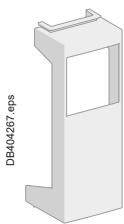
A



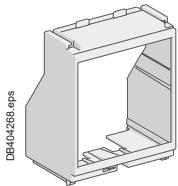
PB104892_1.eps



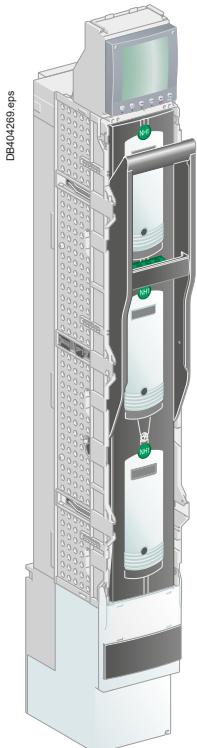
PB104891_1.eps



DBA04287_1.eps



DBA04288_1.eps



ISFL250-630 + Empty box with power meter

The future belongs to more intelligent switchboards. The new ISFL generation, vertical design, are well prepared for the future: they offer standardised interfaces for all types of measurement devices.

Schneider Electric is offering a complete and large offer of metering devices: Powerlogic range.

PowerLogic series meter - Power Meter

The Power Meter serie offers many high-performance capabilities needed to meter and monitor an electrical installation in a compact unit.

All models include an easy-to-read display that presents measurements for all three phases and neutral at the same time, total harmonic distortion (THD) metering, and alarming on critical conditions.

Some models offer an incremental choice of custom logging and power quality analysis capabilities.

Expand any model with field-installable option modules that offer a choice of additional digital inputs and outputs, analog inputs and outputs, and ethernet port.

Flexible measurement options - the amperemeter

Additional measurement options can be realised with an amperemeter which is adjusted onto the new amperemeter-bracket. The installation is incredibly simple and the returns extremely versatile.

How to install device

- For ISFL160, we can add an empty box to include measurement device:
 - plastic box
 - dimension 46 x 46 mm for the cut-out
 - length: the same as the length adaptor to be able to put the ISFL160 beside ISFL250 to ISFL630
 - fixation by mounting it directly to the top of the product.
- For ISFL250 to 630, we can add empty boxes to include measurement devices:
 - plastic box
 - dimension 72 x 72 mm and 96 x 96 mm for the cut-out
 - fixation by mounting it directly to the top of the product.

A

C



INF32



INF63



INF125

A

D



INF40



INF63



INF160



INF200/250



INF400



INF630/800

B



INF32



INF63



INF100/160



INF200/250



INF400



INF630/800

Fupact INF

A

Fuse switch-disconnector selection	
Fupact INF•32 to INF•160	A-64
Fupact INF•200 to INF•800	A-68
Accessories and auxiliaries	
Fupact INF•32	A-72
Fupact INF•100 to INF•160	A-74
Fupact INF•200 to INF•800	A-75
General characteristics: INF	
Fupact INF•32 to INF•800	A-76
Connection and accessories	
Fupact INF•32, INF•40 and INF•63	A-78
Fupact INF•200 to INF•800	A-80
Auxiliary contacts and indications: general	
Fupact INF•32 to INF•800	A-81
Fupact INF•32	A-82
Fupact INF•40 to INF•63	A-84
Fupact INF•100 to INF•160	A-86
Fupact INF•200 to INF•800	A-88
Fuse monitor	
Fupact INF•32 to INF•800	A-90
Rotary handles	
Fupact INF•32 to INF•800	A-92
Protection / locking	
Fupact INF•32 to INF•800	A-93

Other chapters

Presentation	2
Installation recommendation	B-1
Dimensions and connection	C-1
Wiring diagrams	D-1
Technical characteristics	E-1
Catalogue numbers	F-1

Fuse switch-disconnector selection

Fupact INF●32 to INF●160



INF●32.



INF●63.



INF●160.

Fuse switch-disconnectors

Number of poles / type of fuse-link	3 poles / 3 fuse-links 4 poles / 3 fuse-links + switched neutral 4 poles / 4 fuse-links
-------------------------------------	---

Electrical characteristics as defined by IEC 60947-1 / IEC 60947-3 and EN 60947-1 / EN 60947-3

Conventional thermal current (A)	In free air I_{th} at 40 °C
	Maximum fuse power dissipation (W)
In enclosure	I_{the} at 40 °C
	Maximum fuse power dissipation (W)
Rated insulation voltage (V)	Ui AC 50/60 Hz / DC
Rated impulse withstand voltage (kV)	U_{imp}
Rated operational voltage (V)	U_e AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)	U_e
Rated operational current (A)	I_e AC 50/60 Hz 220/240 V 380/415 V 440/480 V [1] 500/525 V 660/690 V DC/poles in series 250 V/no. of poles 440 V/no. of poles 750 V/no. of poles
Rated operational power (kW) [3] (motor power given for direct on-line starting)	AC 220/240 V 380/400 V 415 V 500/525 V 660/690 V
Rated duties	Uninterrupted duty Intermittent duty
Rated short-circuit making capacity (kA peak) Switch-disconnector without fuse (refer to single-phase fuse limitation curves)	I_{cm} 415 V 500 V 690 V
Rated short-circuit breaking capacity (kA rms) / Rated short-circuit making capacity (kA peak) [4]	I_{cn} / I_{cm} 415 V 500 V 690 V
Rated short-time withstand current (A rms)	I_{cw} 1 s 3 s 20 s 30 s
Endurance (category A) (CO cycles)	Mechanical Electrical AC AC22A 500 V AC22A 690 V AC23A 500 V AC23A 690 V

Suitability for isolation

Positive contact indication

Pollution degree

Control

Direct front rotary handle

Extended front rotary handle

Extended lateral rotary handle

Locking by padlocks

Operating torque (typical for 3-pole switch-disconnector fuses) (Nm)

Indication auxiliaries

Auxiliary contacts

Blown-fuse indicator

Fuse monitor

Auxiliary contact test position

[1] Suitable for 480 V NEMA.

[2] AC23B.

[3] Some fuse-links limit these values. Motor starting current must be considered separately.

[4] Switch-disconnector combined with fuses.

Fuse switch-disconnector selection

Fupact INF●32 to INF●160

INF●32	INF D40	INF●63	INF B100	INF C125	INF●160
NFC-BS	DIN	NFC-DIN-BS	BS	NFC	DIN-BS
NFC-BS	DIN	NFC-DIN-BS	BS	NFC	DIN-BS
NFC	DIN	NFC-DIN	-	NFC	DIN

32	40	63	100	125	160
3.5	7.5	7.5	12	12	12
32	40	63	100	125	160
3.5	7.5	7.5	12	12	10 12
1000	1000	1000	1000	1000	1000
12	12	12	12	12	12
690	690	690	690	690	690
250	440	440	440	440	440
690	1000	1000	1000	1000	1000
AC22A	AC23A	AC22A	AC23A	AC22A	AC23A
32	32	40	40	63	63
32	32	40	40	63	63
32	32	40	40	63	63
32	32	40	40	63	63
32	32	40	40	63	63 [2]
DC22A	DC23A	DC21B	DC23B	DC21B	DC23B
32/2	32/2	40/2	40/2	63/2	63/2
32/4	32/4	40/4	-	50/4	-
-	-	-	-	-	-
8	18.5	18.5	30	37	45
14	30	30	55	55	75
15	30	30	55	55	75
18	37	37	55	55	90
25	55	55	90	90	132
○	○	○	○	○	○
class 120-60 %					
9	17	17	23	29	29
7.5	17	17	22	22	22
6	13	13	16	16	16
80/176	80/176	80/176	80/176	80/176	80/176
100/220	100/220	100/220	100/220	100/220	100/220
50/105	50/105	50/105	50/105	50/105	50/105
1000	2500	2500	5000	5000	5000
570	1440	1440	2900	2900	2900
220	560	560	1150	1150	1150
180	460	460	950	950	950
10000	10000	10000	10000	10000	10000
1500	1500	1500	1500	1500	1500
1500	1500	1500	1500	1500	1500
1500	1500	1500	1500	1500	1500
1500	1500	1500	1500	1500	1500
○	○	○	○	○	○
○	yes	yes	yes	yes	yes
3	3	3	3	3	3

○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
3	5	5	7	7	7

○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○

A

Fuse switch-disconnector selection

Fupact INF●32 to INF●160



A

INFB32.



INFC63.



INF160.

Fuse switch-disconnectors

Type of fuse-link

NFC	10 x 38
	14 x 51
	22 x 58
DIN (NH)	NH000
	NH00
BS (fixing centres in mm) ^[2]	A1 (44.5)
	A2 (73.0)
	A3 (73.0)
	A4 (93.7)

Installation and connection

Fixed front connection

Terminal tightening torque (Nm)

Fuse-link bolt tightening torque (Nm)

Installation and connection accessories

Bare cable connectors

Terminals

Neutral link

Terminal shields

Dimensions and weight

Overall dimensions H x W x D (mm)	3P
Front DIN/NFC version	4P
Overall dimensions H x W x D (mm)	3P
Lateral DIN/NFC version	4P
Overall dimensions H x W x D (mm)	3P
Front BS version	4P
Overall dimensions H x W x D (mm)	3P
Lateral BS version	4P
Approximate weight without fuse and without accessory (kg)	3P 4P

Enclosure dimensions for Ithe

H x W x D (mm)

Temperature derating^{[3][4]}

"Vertical mounting" fuse-links in vertical position	Ith (A)	40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C
"Horizontal mounting" fuse-links in horizontal position	Ithe (A)	35 °C 40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C

^[1] Maximum fuse body diameter: Ø32 mm.^[2] A: fuse-link with centre bolted tags.^[3] Derating data is based on:

- the maximum rating for fuse-links intended for the device
- maximum power dissipation.

^[4] For installation on a ceiling, derate an additional 10 %.

Fuse switch-disconnector selection

Fupact INF●32 to INF●160

A

INF●32	INFD40	INF●63	INFB100	INFC125	INF●160
○ ○ -	- -	- ○ ○ -	- ○ -	- ○ -	- ○ -
○ ○ -	○ -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ ○ -	- -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ ○ -	- -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ ○ -	- -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ ○ -	- -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ ○ -	- -	○ ○ -	- ○ ○ -	- ○ -	○ ○ -
○ 2 2	○ 4 3.5	○ 4 3.5	○ M8 x 25 M5: 3.5	○ M8 x 25 M5: 3.5	○ M8 x 25 M5: 3.5
○ (standard) -	○ (standard) -	○ (standard) -	○ (optional) ○ -	○ (optional) ○ -	○ (optional) ○ -
97 x 106 x 105 97 x 142 x 105 97 x 129 x 105 97 x 165 x 105 97 x 106 x 105 97 x 142 x 105 97 x 129 x 105 97 x 165 x 105 0.7 0.9	100 x 114.5 x 120.5 100 x 138 x 120.5 100 x 146.5 x 132.5 100 x 170 x 132.5 100 x 114.5 x 105.5 100 x 138 x 105.5 100 x 146.5 x 120.5 100 x 170 x 120.5 1.1 1.3	100 x 114.5 x 120.5 100 x 138 x 120.5 100 x 146.5 x 132.5 100 x 170 x 132.5 100 x 114.5 x 105.5 100 x 138 x 105.5 100 x 146.5 x 120.5 100 x 170 x 120.5 1.1 1.3	- - - - 140 x 148 x 130 140 x 183 x 130 140 x 181.5 x 142 140 x 216.5 x 142 140 x 148 x 114.5 140 x 183 x 114.5 140 x 181.5 x 126.5 140 x 216.5 x 126.5 1.4 1.8	140 x 148 x 130 140 x 183 x 130 140 x 181.5 x 142 140 x 216.5 x 142 - - - - 1.4 1.8	140 x 148 x 130 140 x 183 x 130 140 x 181.5 x 142 140 x 216.5 x 142 140 x 148 x 114.5 140 x 183 x 114.5 140 x 181.5 x 126.5 140 x 216.5 x 126.5 1.4 1.8
300 x 350 x 200					
NFC-BS	DIN	NFC-DIN-BS	BS	NFC	DIN-BS
32	40	63	100	125	160
30	37	58	93	116	148
29	35	56	89	111	142
27	34	53	85	106	135
26	32	51	80	100	128
25	30	48	76	95	121
24	28	45	71	88	113
32	40	63	100	125	160
30	40	61	96	120	154
28	37	58	93	116	148
27	35	56	89	111	142
25	34	53	85	106	135
24	32	51	80	100	128
22	30	48	76	94	121
21	28	45	71	88	113

Fuse switch-disconnector selection

Fupact INF•200 to INF•800

A



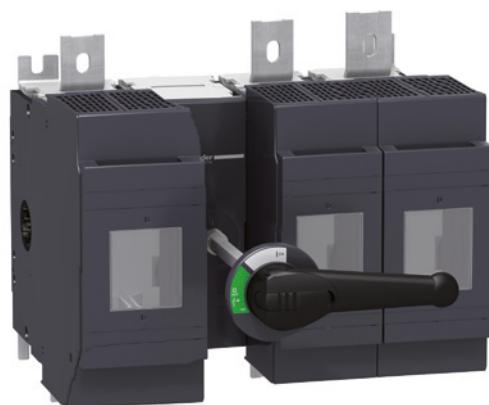
INFD200.

PB105015_129_1.0ps



INFD400.

PB105016_271_1.0ps



INFB800.

PB105017_1.0ps

Fuse switch-disconnectors

Number of poles / type of fuse-link	3 poles / 3 fuse-links 4 poles / 3 fuse-links + switched neutral 4 poles / 4 fuse-links
-------------------------------------	---

Electrical characteristics as defined by IEC 60947-1 / IEC 60947-3 and EN 60947-1 / EN 60947-3

Conventional thermal current (A)	In free air I_{th} at 40 °C
	Maximum fuse power dissipation (W)
In enclosure	I_{the} at 40 °C
	Maximum fuse power dissipation (W)
Rated insulation voltage (V)	U_i AC 50/60 Hz / DC
Rated impulse withstand voltage (kV)	U_{imp}
Rated operational voltage (V)	U_e AC 50/60 Hz DC
Rated operational voltage AC20 and DC20 (V)	U_e
Rated operational current (A)	I_e AC 50/60 Hz 220/240 V 380/415 V 440/480 V ⁽¹⁾ 500/525 V 660/690 V DC/poles in series 125 V/nbr of poles 250 V/nbr of poles 500 V/nbr of poles 750 V/nbr of poles
Rated operational power (kW) ^[2] (motor power given for direct on-line starting)	AC 220/240 V 380/400 V 415 V 500/525 V 660/690 V
Rated duties	Uninterrupted duty Intermittent duty
Rated short-circuit making capacity (kA peak) Switch-disconnector without fuse (refer to single-phase fuse limitation curves)	I_{cm} 415 V 500 V 690 V
Rated short-circuit breaking capacity (kA rms) / Rated short-circuit making capacity (kA peak) ^[3]	I_{cn} / I_{cm} 415 V 500 V 690 V
Rated short-time withstand current (A rms)	I_{cw} 1 s 3 s 20 s 30 s
Endurance (category A) (CO cycles)	Mechanical Electrical AC AC22A 500 V AC22A 690 V AC23A 500 V AC23A 690 V

Suitability for isolation

Positive contact indication

Pollution degree

Control

Direct front rotary handle

Extended front rotary handle

Extended lateral rotary handle

Locking by padlocks

Operating torque (typical for 3-pole switch-disconnector fuses) (Nm)

Indication auxiliaries

Auxiliary contacts

Blown-fuse indicator

Fuse monitor

Auxiliary contact test position

[1] Suitable for 480 V NEMA.

[2] Some fuse-links limit these values.

Motor starting current must be considered separately.

[3] Switch-disconnector combined with fuses.

[4] Category B.

[5] Only for DIN fuse-links.

Fuse switch-disconnector selection

Fupact INF●200 to INF●800

INF●200		INF●250		INF●400		INF●630		INF●800	
DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS
DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
200		250		400		630		800	
17		23		45		60		65	
200	180	250	230	400	360	570		720	
15	18	20	27	30	37	50		55	
1000		1000		1000		1000		1000	
12		12		12		12		12	
690		690		690		690		690	
750		750		750		750		750	
1000		1000		1000		1000		1000	
AC22A	AC23A	AC22A	AC23A	AC22A	AC23A	AC22A	AC23A	AC22A	AC23A
200	200	250	250	400	400	630	630	800	800
200	200	250	250	400	400	630	630	800	800
200	200	250	250	400	400	630	630	800	800
200	200	250	250	400	400	630	630	800	800
200	200	250	250	400	400	630	630	800	800
DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A	DC22A	DC23A
200/1	200/1	250/1	250/1	400/2	400/2	630/1	630/1	800/1	800/1
200/2	200/2	250/2	250/2	400/3	400/3	630/2 ^[4]	630/2 ^[4]	800/2 ^[4]	800/2 ^[4]
200/3	200/3	250/3	250/3	400/4 ^[4]	400/4 ^[4]	630/3 ^[4]	630/3 ^[4]	720/3 ^[4]	720/3 ^[4]
180/4	180/4	230/4	230/4	400/4 ^[4]	400/4 ^[4]	630/4 ^[4]	630/4 ^[4]	720/4 ^[4]	720/4 ^[4]
60		75		132		200		250	
110		140		220		355		450	
110		145		230		355		450	
132		170		280		450		560	
200		250		400		630		710	
○	○	○	○	○	○	○	○	○	○
class 120-60 %	class 120-60 %	class 120-60 %	class 120-60 %	class 120-60 %	class 120-60 %				
35	40.5		59		77		77		
37.5	37.5		63.5		83		83		
28	28		48		55		55		
80/176	80/176		80/176		80/176		80/176		
100/220	100/220		100/220		100/220		100/220		
80/176	80/176		80/176		80/176		80/176		
8000	8000		14000		18000		18000		
4620	4620		8080		10400		10400		
1790	1790		3130		4000		4000		
1460	1460		2550		3300		3300		
10000	10000		8000		5000		5000		
1000	1000		1000		1000		500		
1000	1000		1000		1000		500		
1000	1000		1000		1000		500		
○	○		○		○		○		
○	○		○		○		○		
3	3		3		3		3		
○	○		○		○		○		
○	○		○		○		○		
-	-		-		-		-		
7	7		19		38		38		
○	○		○		○		○		
○ [5]	○ [5]		○ [5]		○ [5]		○ [5]		
○	○		○		○		○		

A

Fuse switch-disconnector selection

Fupact INF•200 to INF•800

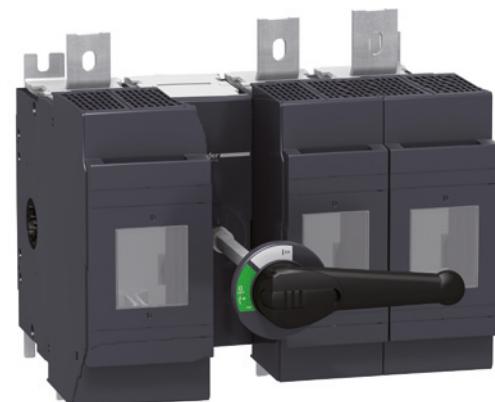


A

INF•200.



INF•400.



INF•800.

Fuse switch-disconnectors

Type of fuse-link

DIN (NH)	NH (0) NH (0, 1) NH (0, 1, 2) NH (3)
BS (fixing centres in mm) ^[1]	B1 (111) B2 (111) B3 (111) B4 (111) C1 (133) C2 (133) C3 (133)

Installation and connection

Fixed front connection

Terminal tightening torque (Nm)

Fuse-link bolt tightening torque (Nm)

Installation and connection accessories

Bare cable connectors

Terminals

Neutral link

Terminal shields

Dimensions and weight

Overall dimensions H x W x D (mm)	3P (DIN) 3P (BS) 4P (DIN) 4P (BS)
Approximate weight without fuses (kg)	3P 4P

Enclosure dimensions for Ithe

H x W x D (mm)

Temperature derating^{[2] [3]}

"Vertical mounting" fuse-links in vertical position	I _{th} (A)	40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C
"Horizontal mounting" fuse-links in horizontal position	I _{th} (A)	35 °C 40 °C 45 °C 50 °C 55 °C 60 °C 65 °C 70 °C

^[1] B: fuse-link with offset bolted tags.^[2] Derating data is based on:

- the maximum rating for fuse-links intended for the device
- maximum power dissipation.

^[3] For installation on a ceiling, derate an additional 10 %.^[4] Maximum fuse body diameter: Ø 52 mm.^[5] Maximum fuse body diameter: Ø 62 mm.

Fuse switch-disconnector selection

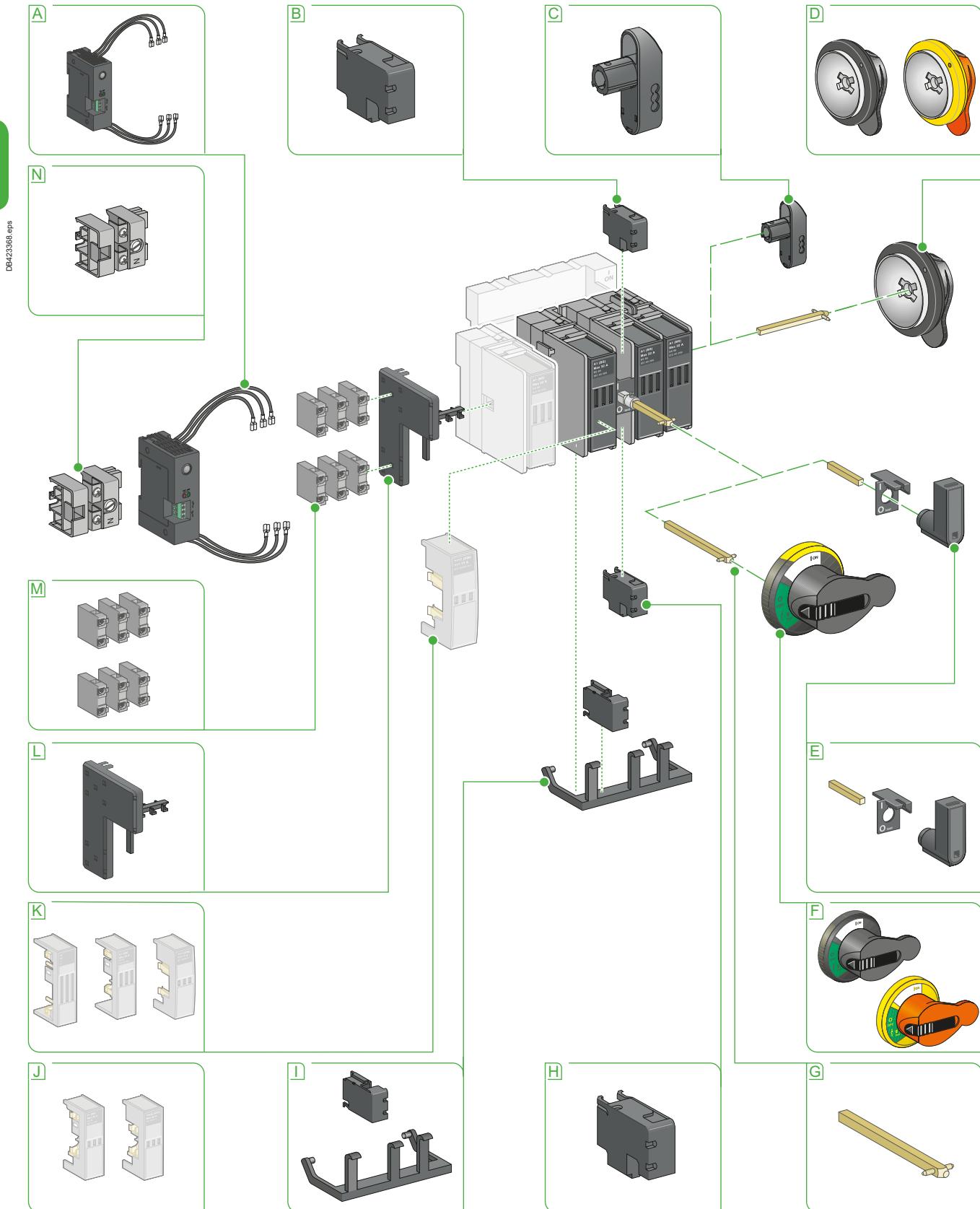
Fupact INF●200 to INF●800

A

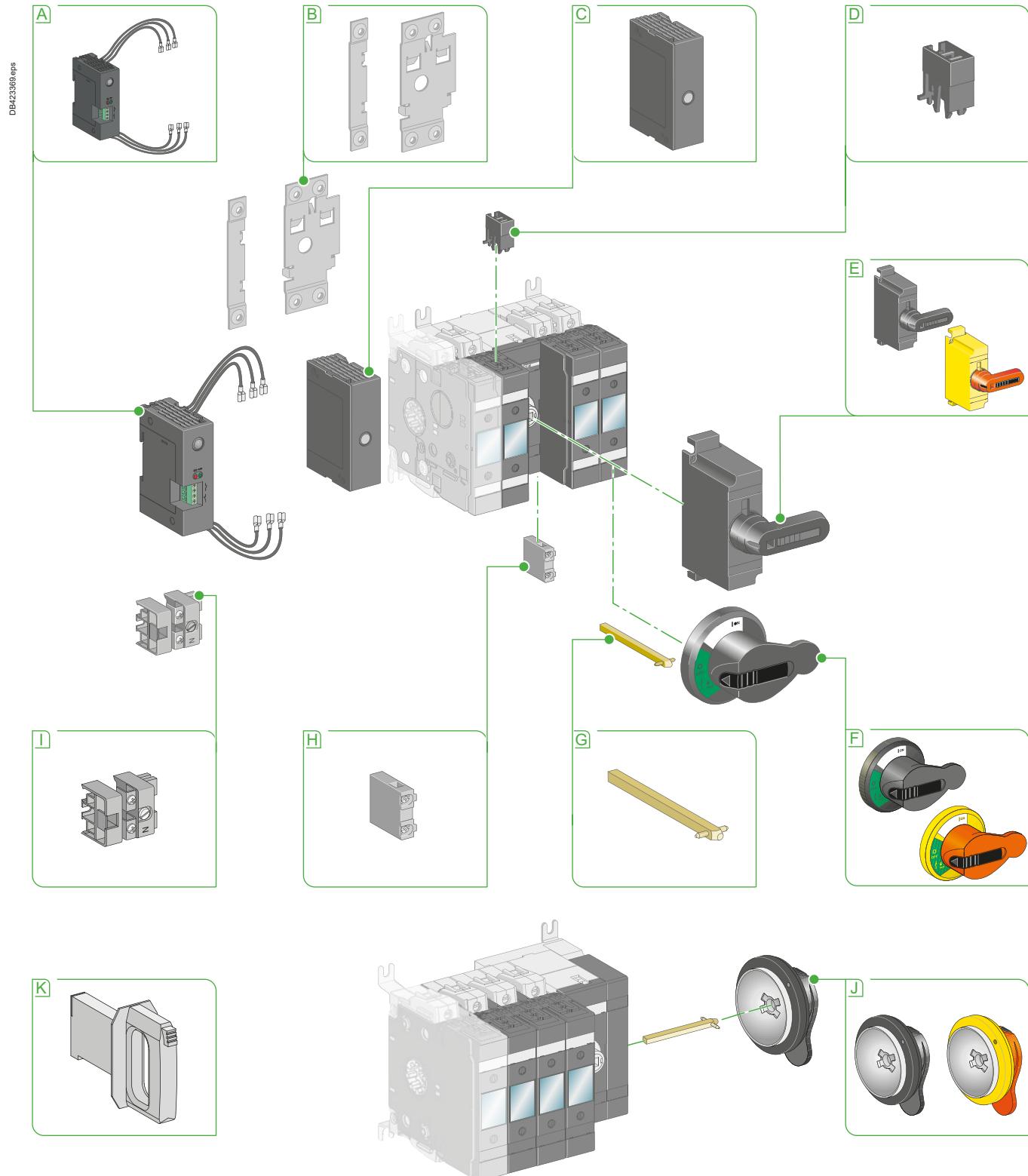
INF●200	INF●250	INF●400	INF●630	INF●800
○	-	-	-	-
-	○	-	-	-
-	-	○	-	-
○	○	○	-	-
○	○	○	-	-
-	[4]	○ [5]	-	-
-	-	-	○	-
-	-	-	○	○
-	-	-	-	○
○	○	○	○	○
15-22	30-44	30-44	50-75	50-75
4	5	20	M10 : 30	M12 : 40
○ (optional)	○ (optional)	○ (optional)	○ (optional)	○ (optional)
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
199 x 175.5 x 149	193 x 206 x 154	230 x 254 x 193	306 x 341 x 233	306 x 341 x 233
199 x 175.5 x 130		230 x 254 x 176		
199 x 219 x 149	193 x 260 x 154	230 x 318 x 193	306 x 429 x 233	306 x 429 x 233
199 x 219 x 130		230 x 318 x 176		
2.6	3.1	5.7	11.5	11.5
3.6	4.1	7.7	14.4	14.4
600 x 350 x 300	800 x 400 x 330	610 x 508 x 254	800 x 1000 x 330	800 x 1000 x 330
DIN-BS	DIN-BS	DIN-BS	DIN-BS	DIN-BS
200	250	400	630	800
185	232	370	583	741
177	222	355	558	709
169	211	338	532	676
160	200	321	505	641
151	189	302	476	605
141	177	283	446	566
200	250	400	570	720
193	241	385	549	694
185	231	370	528	667
177	222	355	505	638
169	211	338	482	609
160	200	321	457	577
151	189	302	431	544
141	177	283	403	509

Accessories and auxiliaries

Fupact INF●32

**A** Fuse monitor**B** NO/NC auxiliary contact**C** Direct lateral handle**D** Extended lateral handles**E** Direct front handle**F** Extended front handles**G** 430 mm extension shaft**H** NO/NC auxiliary contact**I** Blown-fuse indicator**J** NFC fuse-carriers**K** BS fuse-carriers**L** Contact support**M** NO or NC auxiliary contacts

Functions and characteristics
Accessories and auxiliaries
Fupact INF40 - INF●63



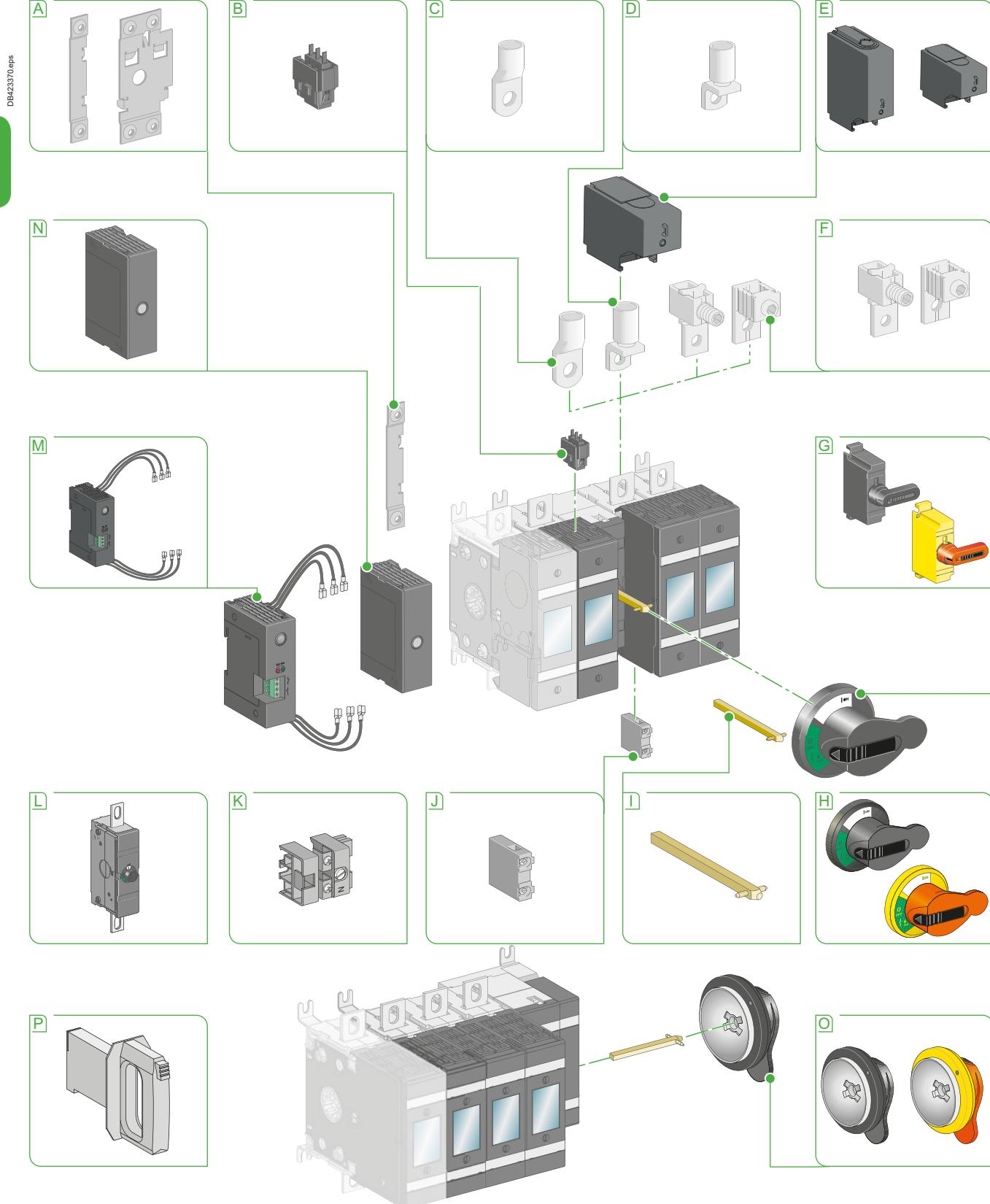
- A** Fuse monitor
B DIN rail
C Module for auxiliary contact
D Blown-fuse indicator

- E** Direct front handle
F Extended front handles
G 430 mm extension shaft
H NO or NC auxiliary contacts

- I** External neutral link
J Extended lateral handles
K Fuse replacement handle

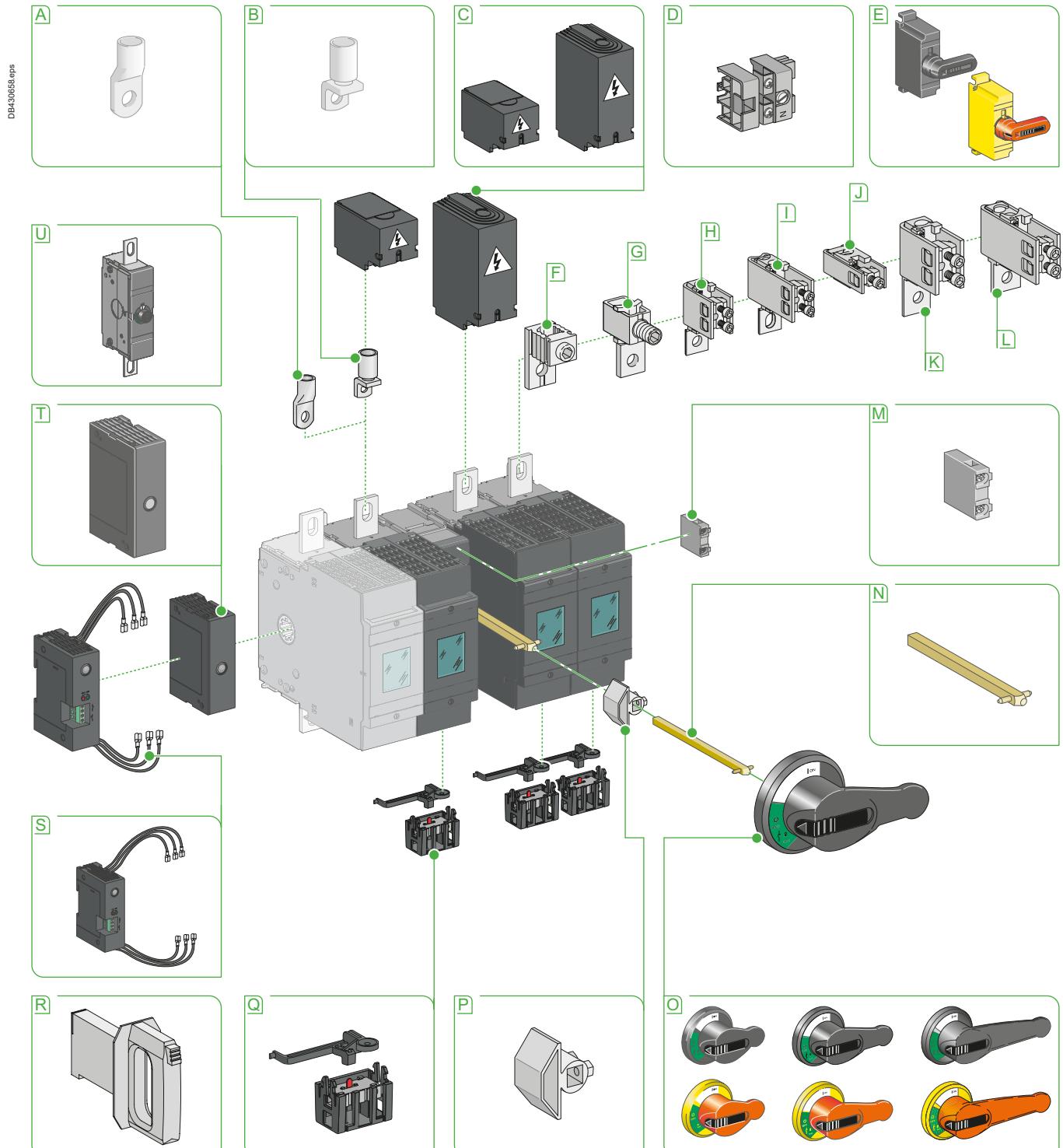
Accessories and auxiliaries

Fupact INFB100 to INF●160

**A-74**

Accessories and auxiliaries

Fupact INF●200 to INF●800



- [A] Lug for copper cables
- [B] Lug for aluminium cables
- [C] Terminal shield
- [D] External neutral link
- [E] Direct front handle
- [F] Bare cable connector 6 to 95 mm² Al
- [G] Bare cable connector 25 to 95 mm² Steel
- [H] Bare cable connector 95 to 185 mm² Al/Cu

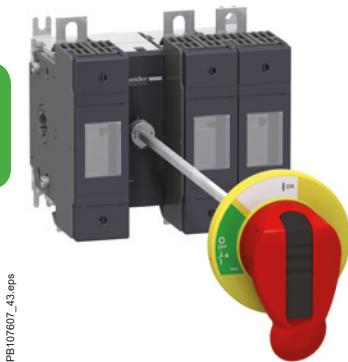
- [I] Bare cable connector 2 x 95 to 185 mm² Al/Cu
- [J] Bare cable connector 95 to 240 mm² Al/Cu
- [K] Bare cable connector 95 to 300 mm² Al/Cu
- [L] Bare cable connector 2 x 185 to 300 mm² Al/Cu
- [M] NO or NC auxiliary contacts
- [N] 430 mm extension shaft
- [O] Extended front handles
- [P] Handle locking by keylock

- [Q] Blown-fuse indicator
- [R] Fuse replacement handle
- [S] Fuse monitor
- [T] Module for auxiliary contact
- [U] Removable neutral link

General characteristics: INF

Fupact INF•32 to INF•800

A



Emergency-off switch-disconnector fuse.

PB107607_43.eps



_MG_6514_68.eps



_MG_6511_64.eps

Emergency-off (safety) switch-disconnector fuses

The Fupact switch-disconnector fuses can be used as emergency-off devices. For this application, it must be easily visible, accessible and identifiable (see standards and rules concerning the safety of machines: VDE 0660, VDE 0113, CNOMO...).

For easy identification, the emergency-off switch-disconnector fuses use special colours stipulated by the standards and different from those of the standard version:

- yellow for the front face of the device or the control plate
- red for the handle.

The performance characteristics of the Fupact emergency-off switch-disconnector fuse are the same as those of the standard version.

The emergency-off switch-disconnector fuses are available:

- for extended handle versions:
- on the front for the entire range
- at the side for ratings < 200 A
- for direct front control models from INF•200 to INF•800.

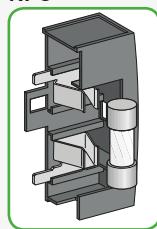
Compatible fuse-links

Fupact switch-disconnector fuses can be used with all fuse-links found on IEC markets (NFC, DIN, BS).

Switch-disconnector fuse	Type of fuse-link		
	NFC	DIN	BS
INF•32	●	-	●
INF•40 to INF•63	●	●	●
INF•100 to 160	● ^[1]	●	●
INF•200 to 800	-	●	●

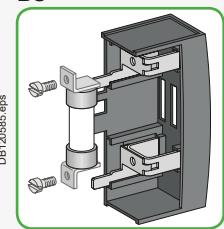
[1] Up to 125 A.

NFC

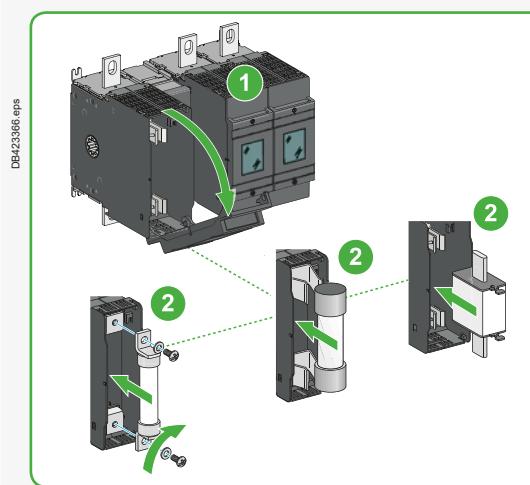


Fuse-carrier for INF•C32.

BS



Fuse-carrier for INF•B32.



INF•D40 to INF•800.

Note: for ratings ≤ 63 A, the fuse-carriers are different for each type of fuse-link.
For ratings ≥ 100 A, the switch-disconnector fuses are different for each type of fuse-link.

General characteristics: INF

Fupact INF•32 to INF•800

Fuse replacement handle

For Fupact INF, it could be possible to use fuse replacement handle. This handle allows to remove fuse when they are blown. In this case, customer use this handle to deplug fuse from blades without risks of burns and without using a tool not dedicated. All fuses NH type could be removed from size 000 to type 4. A push button is actionned when customer wants to put old fuses in bin for recycling.

Total user safety

Switch-disconnector fuses equipped with terminal shields offer IP20 protection.

They are totally protected against accidental direct contact.

Access to the fuses is:

- blocked when INF•32 to INF•800 switch-disconnector fuses are in the ON position (the fuse-carriers and the fuse-covers INF-D40 to INF•800 are maintained)
- only possible when the handle is in the OFF position.
- when product is in the ON position with door closed, nevertheless, it's possible to unlock best with a specific tool (please refer to your support sales).

The double-isolation feature of the switch-disconnector fuse ensures isolation of the fuse-link and, if necessary, its replacement without any risk.

The switch-disconnector fuses have high making and breaking capacities (see page A-64). The operating mechanism (opening and closing) features is independent from a manual operation (speed and force independent of operator action).



A

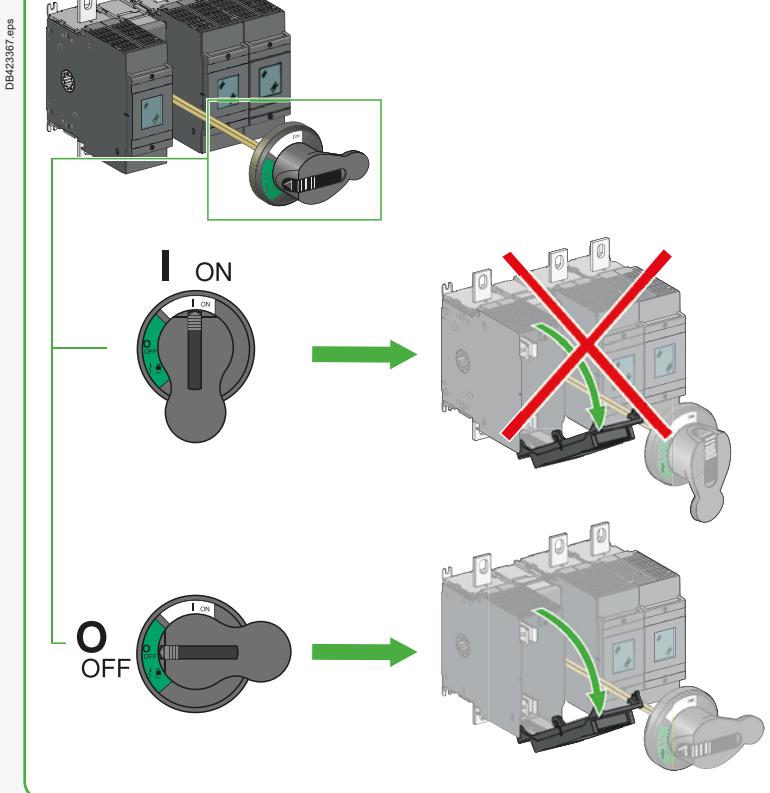
PB115849.eps



PB115848.eps



Fuse replacement handle



Protection against access to live fuses.

Connection and accessories

Fupact INF●32, INF●D40 and INF●63

A



INF●32.



External neutral link.



INF●D40 and INF●63.



External neutral link.

Fixed front connection is possible on Fupact devices. Incoming power to Fupact switch-disconnector fuses may be via the top or bottom terminals. The standard connection method depends on the rating of the device.

Fupact INF●32

Connection of bare cables

Fupact INF●32 devices are equipped with built-in connectors for bare copper or aluminium cables of the following types:

- 0.5 to 10 mm² flexible cables
- 0.5 to 10 mm² rigid cables.

External neutral link

Three-pole devices may be optionally equipped with an external neutral link that is mounted either on the side of the switch-disconnector fuse, or on the backplate or the DIN rail. Copper cables ≤ 16 mm² may be connected.

Fupact INF●D40 and INF●63

Connection of bare cables

Fupact INF●D40 and INF●63 devices are equipped with built-in connectors for bare copper or aluminium cables of the following types:

- 2.5 to 25 mm² flexible cables
- 2.5 to 25 mm² rigid cables.

External neutral link

The 3-pole or 4-pole devices can be fitted with an external neutral link, which is either fixed to a panel or to a DIN rail.

It can be connected by 16 to 35 mm² cables.

Connection and accessories

Fupact INF●100 to INF●160

A

Front connection of bars or cables with lugs

Fupact INF●100/125/160 devices are equipped as standard with 20 mm wide terminals and M8 screws and nuts for direct connection of bars or cables with lugs.

Lugs

Lugs are different for copper and aluminium cables. They are compatible with the long terminal shields.

- The narrow lugs for copper cables may be used for cables with cross-sectional areas of 120, 150 or 185 mm².
- Crimping by hexagonal barrels or punching.
- The narrow lugs for aluminium cables may be used for cables with cross-sectional areas of 150 or 185 mm².
- Crimping by hexagonal barrels.

Terminal shields for bars or cables with lugs

- Maintain IP20 protection.
- Clip-on with knock-outs.
- One shield per connection.
- Terminal shield short or long.

Front connection of bare cables

The optional connectors may be used for both copper and aluminium cables with cross-sectional areas of 25 to 95 mm².

1-cable connectors

These connectors facilitate auxiliary connections with a special connection point for cables with cross-sectional areas of 1.5 to 4 mm². They snap directly onto the device terminals.

Terminal shields for devices equipped with connectors

Terminal shields ensure IP20 protection.

External neutral link

The 3-pole or 4-pole devices can be fitted with an external neutral link, which is either fixed to a panel or to a DIN rail.

It can be connected by 16 to 35 mm² cables.

Removable neutral link

The 3-pole or 4-pole devices can be fitted with an removable neutral link, which is either fixed to a panel.

It can be connected by < 16 mm² cross-section copper cables.

Another type of neutral can be fixed to the side of the product or to a panel.

In this case, the removable neutral link is fixed, but it can be detached by removing the cover.



INF●160.

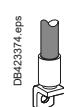


DB423372.eps



DB423373.eps

Narrow lug for copper cable.

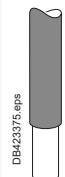


Narrow lug for aluminium cable.



PB107329_12.eps

Terminal shield for bars and cables with lugs.



0589934_1-5.eps

Bare cable connector.



_MG_6524_11.eps

External neutral link.



PB104219A.eps

Removable neutral link.

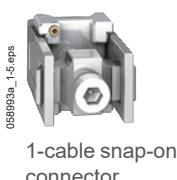
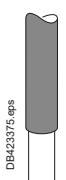
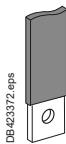
Connection and accessories

Fupact INF●200 to INF●800

A



INF●800.



Front connection of bars or cables with lugs

Fupact INF●200 to 800 devices are equipped as standard with terminals and screws and nuts for direct connection of bars or cables with lugs:

- 200 and 400 ratings have 25 mm² terminals with M10 screws and nuts
- 630 and 800 ratings have 40 mm² terminals with M12 screws and nuts.

Lugs

Lugs are different for copper and aluminium cables. They are compatible with the long terminal shields.

- The narrow lugs for copper cables may be used for cables with cross-sectional areas of 240 or 300 mm². Crimping by hexagonal barrels or punching.
- The narrow lugs for aluminium cables may be used for cables with cross-sectional areas of 240 or 300 mm². Crimping by hexagonal barrels.

Terminal shields for lug connections

Separate references for each rating:

- short terminal shield
- long terminal shield.

Front connection of bare cables

The optional connectors may be used for both copper and aluminium cables:

1-cable snap-on connectors for Fupact INF●200 to INF●400

The connectors snap directly onto the device terminals: cross-sectional areas of 120 to 240 mm².

1-cable connectors for Fupact INF●200 to INF●800

The connectors are screwed to the device terminals:

- 200/250 A ratings: cross-sectional areas of 6 to 185 mm²
- 400 A rating: cross-sectional areas of 95 to 300 mm²

2-cable connectors for Fupact INF●200 to INF●800

The connectors are screwed to the device terminals:

- 200/250 A ratings: cross-sectional areas of 2 x (95 to 185) mm²
- 400 A rating: cross-sectional areas of 2 x (95 to 185) mm²
- 630/800 A ratings: cross-sectional areas of 2 x (185 to 300) mm.

Removable neutral link

Three-pole devices may be optionally equipped with a removable neutral link mounted on the left side of the device or separately.

Three models:

- one with 250 A thermal current I_{th} for the 200 and 250 A ratings
- one with 400 A thermal current I_{th} for the 400 A rating
- one with 800 A thermal current I_{th} for the 630 and 800 A ratings.

Auxiliary contacts and indications: general

Fupact INF•32 to INF•800

A

Auxiliary contacts

Auxiliary contacts can be used to remotely indicate the switch-disconnector fuse status and for automated functions such as electrical interlocking.

Functions

- OF (NO/NC): indicates the position of the switch-disconnector fuse poles
- CAM (early-make or early-break function): indicates the position of the switch-disconnector fuse handle.

Used in particular for:

- CAO early-break contact (auxiliary contacts open before the main contacts), used for example to automatically open a circuit breaker or a contactor before opening the switch-disconnector fuse
- CAF early-make contact (auxiliary contacts closed before the main contacts)
- Testing of the control/monitoring circuit with power off. Simulates the closed position poles for the switch-disconnector fuse auxiliaries.

Standards

Compliance with international standard IEC 60947-5-1.

Description

- NO contacts (positive opening).
- NC contacts.
- NC/NO changeover contacts.
- With just seven different auxiliary contact blocks, it is possible to implement all the functions mentioned above. They are mounted on the switch-disconnector fuses.

Blown-fuse indicator

Fuses with strikers (NFC or DIN) must be used with this device, which provides remote indication of the fuse status. It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

Fuse monitor

This device is used to remotely indicate the status of standard fuses (without strikers). It provides the following functions:

- signalling a blown fuse
- protecting motors from overloads caused by single-phase operation
- preventing the risks of abnormal voltages on the neutral.

The optional auxiliary contacts are used for the following functions:

- indications
- early make and early break
- testing of the control/monitoring circuit with power off.

The optional fuse monitor signals blowing of standard fuses without strikers.



OF auxiliary contact (INF•32).



Contact support (INF•32).



NO or NC auxiliary contact (INFD40 to INF•800).



NO or NC auxiliary contact module (INFD40 to INF•800).

Auxiliary contacts and indications

Fupact INF●32

A



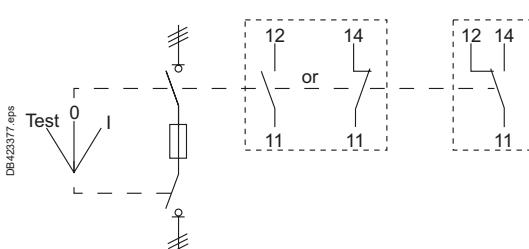
OF contacts and test.



NO and NC contacts.



Possible combinations.



OF auxiliary contacts indicating the device ON/OFF/Test positions

- Consists of one contact per block.
- Mounted between the device poles.
- Possible configuration: one or two changeover blocks.
If the blown-fuse indicator is used, there is only one free location because the other is taken up by the similar contact supplied with the indicator.

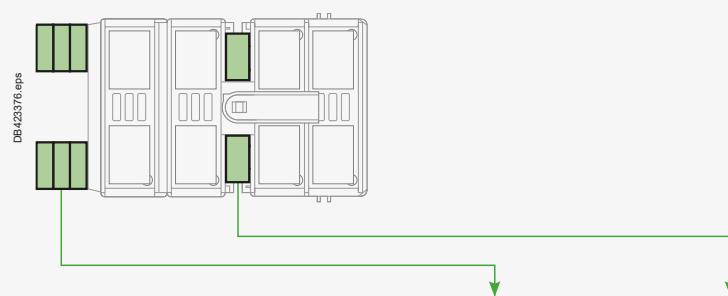
NO or NC auxiliary contacts indicating the device ON/OFF positions

- Mounting:
 - left-hand side
 - snap-on
 - requires the contact support (ordered separately)
- Possible configuration: one to six contact blocks.
If the fuse monitor is used, only three contact blocks may be mounted because the remaining space is taken up by the fuse monitor.

Description

- Consists of one contact per block.
- NO contact (positive opening) or NC contact.
- IP20 degree of protection.
- Connection terminals for cables with cross-sectional areas between 0.75 and 2 x 2.5 mm².

Functional table of contact status



Position of operating handle	Status of poles	Status of auxiliary contacts		Status of OF auxiliary contact
		NO	NC	
I		-	-	14 12 - 11
O		-	-	12 14 - 11
Test		-	-	14 12 - 11
Function	ON / OFF			ON / OFF / Test

Possible combinations

Front or lateral handle

Maximum block configuration	OF and Test	NO or NC
INF● alone	2	6
With blown-fuse indicator	1	6
With fuse monitor	2	6

Auxiliary contacts and indications

Fupact INF•32

A

Electrical characteristics of OF contacts

ON / OFF / Test positions (OF and test) and blown-fuse indicator

Mounting between poles

Electrical characteristics

Conventional thermal current I_{th} (A)	10			
Rated insulation voltage (V)	690			
Minimum load	100 mA at 24 V			
Utilisation category (IEC 60947-5-1)	AC	DC		
Operational current (A)	AC12	AC15	DC12	DC13
24 V	10	8	-	5
48 V	10	8	-	-
110 V	10	8	-	1.1
220/240 V	10	6	-	0.55
250 V	-	-	-	0.55
380/415 V	-	4	-	-
440 V	-	-	-	-
660/690 V	-	2	-	-



OF auxiliary contact (INF•32).

Electrical characteristics of NO or NC auxiliary contacts

ON/OFF positions

Side mounting

Electrical characteristics

Conventional thermal current I_{th} (A)	16			
Rated insulation voltage (V)	690			
Minimum load	10 mA at 24 V			
Utilisation category (IEC 60947-5-1)	AC	DC		
Operational current (A)	AC12	AC15	DC12	DC13
24 V	-	6	10	2
48 V	-	6	4	0.8
110 V	-	6	2	0.55
220/240 V	-	6	0.55	-
250 V	-	6	0.55	0.27
380/415 V	-	4	0.1	-
440 V	-	-	0.1	-
660/690 V	-	2	-	-



NO or NC contact.

Blown-fuse indicator

Fuses with strikers must be used with this device, which provides remote indication of the fuse status. It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

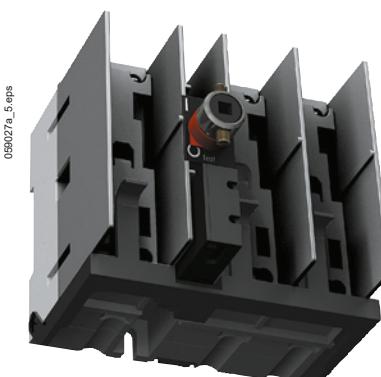
Description

Two models for size 100/160 (22 x 58) NFC:

- three-pole (3P) INF•32 switch-disconnector fuses
- four-pole (4P) INF•32 switch-disconnector fuses.

The indicator is made up of:

- a mechanical transmission system
- an OF auxiliary contact block (identical to the OF block for ON/OFF/Test position indication).



Blown-fuse indicator.

Mounting possibilities

INFC32	Yes
INFB32	No

Fuse monitor

See page A-90.

Auxiliary contacts and indications

Fupact INF40 to INF●63

The same auxiliary contact is used for the ON/OFF/Test and “Test indication” functions. The function is determined by where the contact is installed in the switch-disconnector fuses.

A



ON/OFF NO or NC auxiliary contacts.



ON/OFF and “Test indication” NO or NC auxiliary contacts.

Description

- Composition: 2 contacts max. per block
- Positive opening NO contact (breaks on opening) or NC contact (makes on closing)
- IP20 degree of protection
- Connection terminals for cables with cross-sectional areas between 0.75 and 2 x 2.5 mm².

Auxiliary contacts indicating the device ON/OFF positions

For INF40 to INF●63

- Installation: on the left-hand side of the device.
- Possible configuration: 1 to 8 NO or NC contacts.

Auxiliary contacts indicating the device ON/OFF/Test positions

For INF40 to INF●63

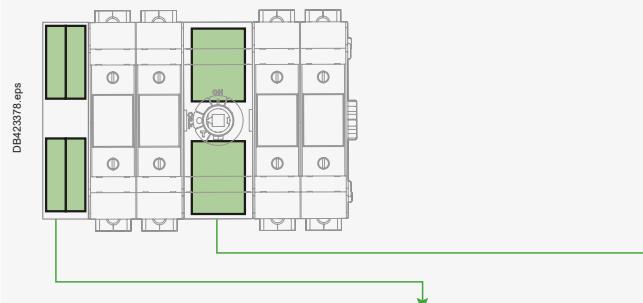
- Installation: between the poles of the device, at the top and bottom.
- Possible configuration: 1 to 2 NO or NC contacts (depending on the contact installation).

“Test indication” auxiliary contacts

For INF40 to INF●63

- Installation: between the poles of the device, at the top.
- Possible configuration: 1 to 2 NO or NC contacts (depending on the contact installation).

Functional table of contact status



Position of operating handle	Status of poles	Status of auxiliary contacts		Status of auxiliary contacts	
		NO	NC	NO	NC
I		—	—	—	—
O	—	—	—	—	—
Test	—	—	—	—	—
Function		ON / OFF		ON / OFF / Test	

Possible combinations

Product Maximum block configuration	INF40 to INF●63		
	ON / OFF / Test	Test indication	ON / OFF
INF● alone	2	2	8
	4	0	8
With blown-fuse indicator	2	2	8
	4	0	8
With fuse monitor	2	2	8
	4	0	8

Auxiliary contacts and indications

Fupact INF40 to INF●63

A

Electrical characteristics of NO or NC auxiliary contacts

ON/OFF/Test positions, ON/OFF positions and blown-fuse indicator

Electrical characteristics

Conventional thermal current I _{th} (A)	16		
Rated insulation voltage (V)	690		
Minimum load	10 mA at 24 V		
	AC	DC	
Utilisation category (IEC 60947-5-1)	AC15	DC12	DC13
Operational current (A)			
24 V	6	10	2
48 V	6	4	0.8
110 V	6	2	0.55
220/240 V	6	0.55	0.27
250 V	6	0.55	-
380/415 V	4	0.1	-
440 V	-	0.1	-
660/690 V	2	-	-

Blown-fuse indicator

Fuses with strikers must be used with this device, which provides remote indication of the fuse status. It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

Description

Two models for:

- three-pole (3P) INF●50 switch-disconnector fuses
- four-pole (4P) INF●50 switch-disconnector fuses.

The indicator is made up of:

- a mechanical transmission system
- an NO and NC auxiliary contact block identical to the NO and NC contacts described on page A-84 (a mounting adapter is supplied).

Mounting possibilities

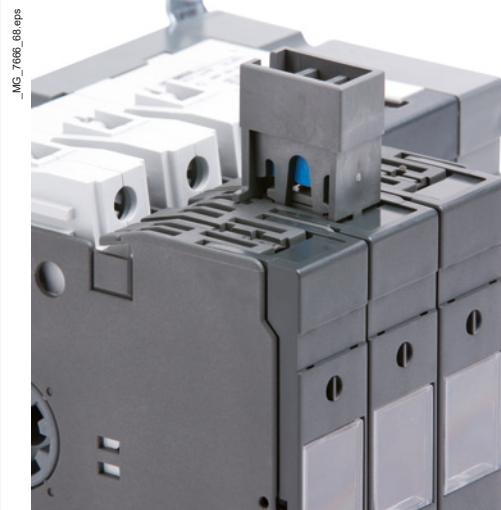
INFC50	Yes
INF40/63	No
INFB63	No

Fuse monitor

See page A-90.



NO or NC contact.



Blown-fuse indicator.

Auxiliary contacts and indications

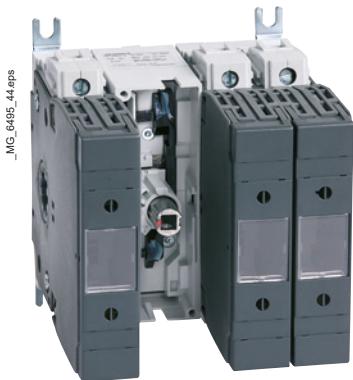
Fupact INFB100 to INF●160

The same auxiliary contact is used for the ON/OFF/Test and “Test indication” functions. The function is determined by where the contact is installed in the switch-disconnector fuses.

A



ON/OFF NO or NC auxiliary contacts.



ON/OFF and “Test indication” NO or NC auxiliary contacts.

Description

- Composition: 2 contacts max. per block.
- Positive opening NO contact (breaks on opening) or NC contact (makes on closing).
- IP20 degree of protection.
- Connection terminals for cables with cross-sectional areas between 0.75 and 2 x 2.5 mm².

Auxiliary contacts indicating the device ON/OFF positions

For INFB100 to INF●160

- Installation: on the left-hand side of the device.
- Possible configuration: 1 to 8 NO or NC contacts.

Auxiliary contacts indicating the device ON/OFF/Test positions

For INFB100 to INF●160

- Installation: between the poles of the device, at the top and bottom.
- Possible configuration: 1 to 2 NO or NC contacts (depending on the contact installation).

“Test indication” auxiliary contacts

For INFB100 to INF●160

- Installation: between the poles of the device, at the top.
- Possible configuration: 1 to 2 NO or NC contacts (depending on the contact installation).

Functional table of contact status

DB42379.eps

The diagram shows a cross-section of the internal mechanism of the switch-disconnector. It features two main vertical columns of contacts. The top row consists of two sets of contacts, each with a green frame. The bottom row also has two sets of contacts, also with green frames. These contacts are positioned between the main poles of the switch. A green line connects the top set of contacts to the first column of the functional table below, and another green line connects the bottom set of contacts to the second column.

Position of operating handle	Status of poles	Status of auxiliary contacts		Status of auxiliary contacts	
		NO	NC	NO	NC
I					
O					
Test					
Function		ON / OFF		ON / OFF / Test	

Auxiliary contacts and indications

Fupact INF100 to INF●160

A

Electrical characteristics of NO or NC auxiliary contacts

ON/OFF/Test positions, ON/OFF positions and blown-fuse indicator

Electrical characteristics

Conventional thermal current I_{th} (A)	16
Rated insulation voltage (V)	690
Minimum load	10 mA at 24 V
Utilisation category (IEC 60947-5-1)	AC DC DC13
Operational current (A)	AC15 DC12
24 V	6 10 2
48 V	6 4 0.8
110 V	6 2 0.55
220/240 V	6 0.55 0.27
250 V	6 0.55 -
380/415 V	4 0.1 -
440 V	- 0.1 -
660/690 V	2 - -

Blown-fuse indicator

Fuses with strikers must be used with this device, which provides remote indication of the fuse status. It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

Description

Two models for:

- three-pole (3P) INFC63/125 switch-disconnector fuses
- four-pole (4P) INFC63/125 switch-disconnector fuses.

The indicator is made up of:

- a mechanical transmission system
- an NO and NC auxiliary contact block identical to the NO and NC contacts described on [page A-86](#) (a mounting adapter is supplied).

Mounting possibilities

INFC63/125	Yes
INFD160	No
INF100/160	No

Fuse monitor

See [page A-90](#).



NO or NC contact.



Blown-fuse indicator.

Auxiliary contacts and indications

Fupact INF•200 to INF•800

The same auxiliary contact is used for the ON/OFF/Test and “Test indication” functions. The function is determined by where the contact is installed in the switch-disconnector fuses.

A

PB/04235A.eps



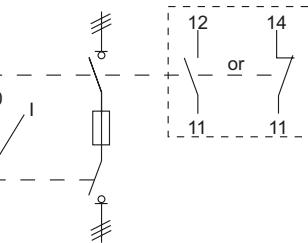
ON/OFF NO or NC auxiliary contacts.

PB/04231A.eps



ON/OFF and “Test indication” NO or NC auxiliary contacts.

DB/23391.eps



Description

- Composition: 2 contacts max. per block.
- Positive opening NO contact (breaks on opening) or NC contact (makes on closing).
- IP20 degree of protection.
- Connection terminals for cables with cross-sectional areas between 0.75 and 2 x 2.5 mm².

Auxiliary contacts indicating the device ON/OFF positions

For INF•200 and INF•800

- Installation: on the left-hand side of the device.
- Possible configuration: 1 to 8 NO or NC contacts.

Auxiliary contacts indicating the device ON/OFF/Test positions

For INF•200 to INF•250

- Installation: between the poles of the device, at the top and bottom.
- Possible configuration: 1 to 4 NO or NC contacts (depending on the contact installation).

For INF•400 to INF•800

- Installation: between the poles of the device, at the top only.
- Possible configuration: 1 to 4 NO or NC contacts.

“Test indication” auxiliary contacts

For INF•200 and INF•250

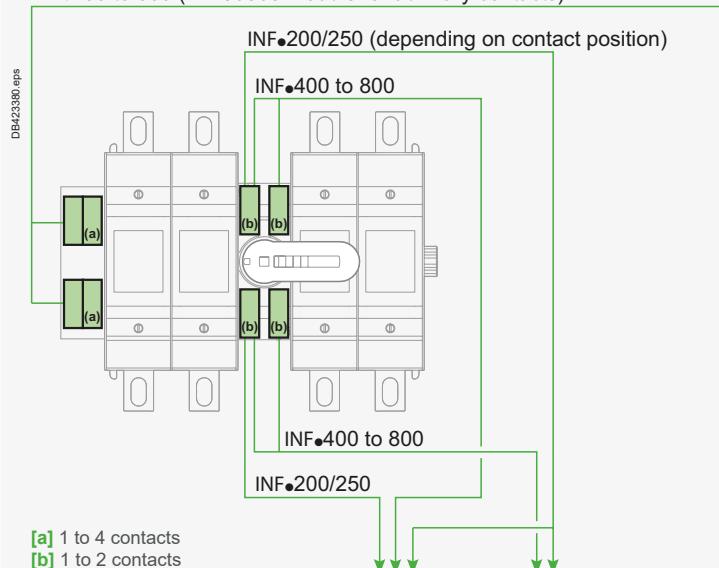
- Installation: between the poles of the device, at the top.
- Possible configuration: 1 to 2 NO or NC contacts (depending on the contact installation).

For INF•400 to INF•800

- Installation: between the poles of the device, at the bottom only.
- Possible configuration: 1 to 4 NO or NC contacts.

Functional table of contact status

INF•200 to 800 (LV480565 module for auxiliary contacts)



Position of operating handle	Status of poles	Status of auxiliary contacts		Status of auxiliary contacts		Status of auxiliary contacts		
		NO	NC	NO	NC	NO	NC	
I	—	—	—	—	—	—	—	
O	—	—	—	—	—	—	—	
Test	—	—	—	—	—	—	—	
Function	ON / OFF / Test		Test indication		ON / OFF			

Auxiliary contacts and indications

Fupact INF•200 to INF•800

A

Possible combinations

Product	INF•200 and INF•250			INF•400 to INF•800		
	ON / OFF / Test	Test indication	ON / OFF	ON / OFF / Test	Test indication	ON / OFF
INF• alone	2 4	2 0	8 8	4	4	8
With blown-fuse indicator	2 4	2 0	8 8	4	4	8
With fuse monitor	2 4	2 0	8 8	4	4	8

Electrical characteristics of NO and NC auxiliary contacts

ON/OFF positions, ON/OFF/Test positions, "Test indication" and blown-fuse indicator

Electrical characteristics

Conventional thermal current I _{th} (A)	16
Rated insulation voltage (V)	690
Minimum load	10 mA at 24 V
	AC DC
Utilisation category (IEC 60947-5-1)	AC15 DC12 DC13
Operational current (A)	
24 V	6 10 2
48 V	6 4 0.8
110 V	6 2 0.55
220/240 V	6 0.55 -
250 V	6 0.55 0.27
380/415 V	4 0.1 -
440 V	- 0.1 -
660/690 V	2 - -

Blown-fuse indicator

Fuses with strikers must be used with this device, which provides remote indication of the fuse status. It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

Description

Two models for INF•200/800 switch-disconnector fuses:

- three-pole (3P)
- four-pole (4P).

The indicator is made up of a mechanical transmission system and mounting adapter with 1 x NO + 1 x NC contacts.

Fuse monitor

See page A-90.



NO or NC contact.

PB104232A.eps



Blown-fuse indicator.

Fuse monitor

Fupact INF•32 to INF•800



A

Fuse monitor: DIN rail or backplate mounted.



Fuse monitor: can be fixed on the left-hand side of INF•D40 to INF•800 devices.

Functions

The device provides remote indication of the standard fuse status (without strikers).

It is used to:

- signal a blown fuse
- protect motors from overloads caused by single-phase operation
- prevent the risks of abnormal voltages on the neutral.

Standards

- Compliance with international standard IEC 60947-5-1
- Compliance with:
 - EN 50204
 - EN 61000 for electromagnetic compatibility (EMC).

Description

- Operation with standard fuses: NFC, DIN and BS
 - May be used on capacitor bank circuits
 - Simplified power supply:
 - does not require a specific power supply
 - operates with unbalanced phases
 - supplied via connection to the fuse terminals on the switch-disconnector fuse
 - operational voltage for two distinct versions:
 - either 100...260 V AC, ±10 %, 50/60 Hz
 - or 380...690 V AC, ±10 %, 50/60 Hz
 - Tested for electromagnetic compatibility (EMC)
 - Small size, can be mounted on the entire range of switch-disconnector fuses
 - Mounting:
 - DIN rail or backplate mounted, using the mounting brackets provided
 - can be screwed directly on to the left-hand side of the INF•40 to INF•800 devices.
 - Characteristics:
 - IP20 degree of protection
 - weight: 140 g.
 - Product with fuse monitor doesn't have a class II insulation as this product isn't installed on the front face of the switchboard.
 - The package consists of:
 - the fuse monitor equipped with one NO contact and one NC contact
 - mounting brackets.
- Note:** lugs for connection to the fuse-carrier are not supplied.

Operation

Reset

The device is automatically reset when the fuse-links are replaced.

Indications

- Normal operation:
 - the green LED is ON when voltage is present at the fuse terminals
 - the contacts are in the rest position
- Operation when a fuse blows:
 - the green LED goes off and the red LED goes on
 - the contacts are actuated:
 - the NO contact is for remote fault indication
 - the NC contact may be used, for example, to control an undervoltage device in order to shut down equipment that may be sensitive to single-phasing.

Fuse monitor

Fupact INF•32 to INF•800

A

Electrical characteristics

Power circuit

Rated operational voltage	(Ue)	100 to 260 V AC 50/60 Hz ±10 % 380 to 690 V AC 50/60 Hz ±10 %
Upstream connection (1, 3, 5)		Double insulated Cu conductor 0.75 mm ² , length 60 cm
Downstream connection (2, 4, 6)		Standard Cu conductor 0.75 mm ² , length 60 cm
Consumption		< 3 VA
Rated frequency		50/60 Hz
Measurement impedance		> 1000 Ω/V
Rated impulse withstand voltage (1.2 / 50 µs)	(Uimp)	8 kV

Auxiliary contact output terminals

Terminal indications	NO	11 - 14
	NC	21 - 22
Cable capacity	Flexible	≤ 1.5 mm ² Cu
	Rigid	≤ 2.5 mm ² Cu

Output contact characteristics (1NO + 1NC)

Conventional thermal current I _{th} (A)	4
Rated insulation voltage (V)	440
Minimum load	10 mA at 24 V
Characteristics	
Utilisation category (IEC 60947-5-1)	AC
Operational current (A)	AC15
24 V	3
48 V	3
110 V	3
220/240 V	3
250 V	3
380/415 V	-
440 V	-
660/690 V	-
Rated operational voltage / max. breaking voltage (V AC)	250/440
Breaking capacity (VA)	2000

General characteristics

Operating temperature range (°C)	-25...+55
Storage and transport temperature range (°C)	-40...+70
Fuse blowing detection time (s)	< 2
Oversupply category / degree of pollution	IEC 60947-1
Dielectric test voltage (between power circuit and output terminals)	5 kV rms / 1 min 50 Hz

Electromagnetic compatibility - emission

Conducted	EN 55022 Class B CISPR 16-2-1 ; CISPR 16-1-2
Radiated	EN 55022 Class B CISPR 16-2-3
Harmonic currents	EN 61000-3-2 Class A

Electromagnetic compatibility - immunity

Electrostatic discharge (ESD)	EN 61000-4-2 criteria B level 2/3
Radiated field susceptibility (RF)	EN 61000-4-3 criteria A level 3
Conducted low energy susceptibility (EFT)	EN 61000-4-4 criteria B level 3
Conducted high energy susceptibility (RF)	EN 61000-4-6 criteria A level 3
Radio-frequency interference (GSM)	ENV 50204 criteria A (< 1 GHz)

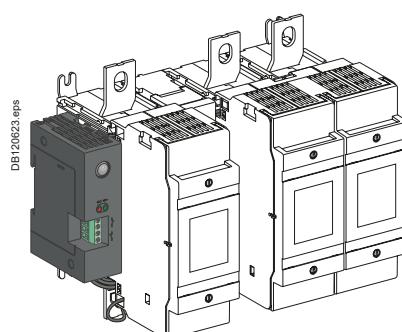
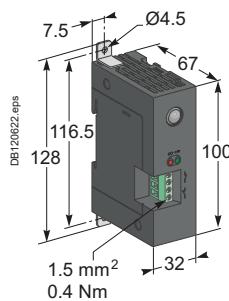
Magnetic field immunity

Continuous	EN 61000-4-8 level 5
------------	----------------------

Mechanical characteristics

Degree of protection	IP20
Weight (kg)	0.16

Dimensions



DIN rail or backplate mounting (lugs provided).

Can be fixed on the left-hand side of INF•200 to INF•800 devices.

Rotary handles

Fupact INF•32 to INF•800



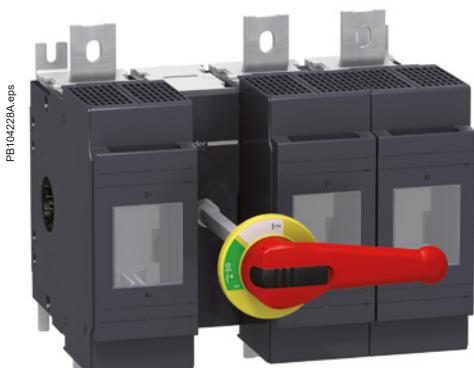
Switch-disconnector fuses with extended front rotary handle.
PB107593_40_91ps



Emergency-off switch-disconnector fuses with extended lateral rotary handle.
PB107602_52.eps



Switch-disconnector fuses with direct rotary handle.
PB104223A.eps



Emergency-off switch-disconnector fuses with extended front rotary handle.
PB104223B.eps

	INF•32	INF•40 INF•63	INF•100/125/160	INF•200/400 INF•630/800
Rotary control with black handle				
Direct front	Optional	Optional	Optional	Optional
Direct lateral	No	No	No	No
Extended front	Optional	Optional	Optional	Optional
Extended lateral	Optional	Optional	Optional	No
Rotary control with red and yellow handle for emergency-off switch-disconnector fuses				
Direct front	No	Optional	Optional	Optional
Direct lateral	No	No	No	No
Extended front	Optional	Optional	Optional	Optional
Extended lateral	Optional	Optional	Optional	No

Direct rotary control

Direct rotary control is available only for front handles.

Degree of protection: IP20.

- **INF•32:**

- switch locking in OFF (O) position for INF•32 using 1 or 2 padlocks (not supplied) with 5 to 6 mm shackle diameter

- "Test O I" indication plate

- **INF•40 to INF•250:**

- switch locking in OFF (O) position for INF•40 to 250 using 1 to 3 padlocks (not supplied) with 5 to 6 mm shackle diameter

- "Test O I" indication plate

- versions:

- standard with black handle
- emergency-off version with red handle and yellow front plate.

- **INF•400 to INF•800:**

- switch locking in OFF (O) position for INF•400 to 800 using 1 to 3 padlocks

- versions:

- standard with black handle
- emergency-off version with red handle and yellow front plate.

Extended rotary handle

It makes it possible to operate switch-disconnector fuses installed at the back of a switchboard from outside the switchboard.

The extended rotary handle may be installed on the front or the side of the switch-disconnector fuses.

Degree of protection: IP65.

Operation

- Suitability for isolation is maintained

- Door opening is prevented when the switch-disconnector fuses are in the ON position (for front handle only). Door interlocking can be defeated by authorised personnel for servicing purposes.

- The switch-disconnector fuses may be locked in the OFF (O) or ON (I) position by one to three padlocks (not supplied) with 5 to 10 mm shackle diameter. Locking prevents opening of the switchboard door (for front handle only).

Versions

- Standard with black handle.

- Emergency-off version with red handle and yellow front plate.

- "Test O I" indication plate:

- test function as standard for basic INF•32 to INF•800 switch-disconnector fuses

- the test function makes it possible to test the control and monitoring circuits when the power circuit off (see page A-23). We put the handle in the test position to operate the auxiliary test contacts.

Installation

The extended rotary handle is made up of:

- an extension shaft that can be cut to the right length (a 430 to 465 mm shaft is available as an option)

- a handle and front plate assembly that is installed on the door or the side of the switchboard.

To satisfy installation standards and practices, the handles of electrical switchgear devices indicate:

- ON position (main contacts closed) when vertical

- OFF position (main contacts open) when horizontal.

Fupact extended rotary handles can be installed parallel or at 90° with respect to the device to comply with installation standards and practices whether the device is mounted horizontally or vertically.

Protection / locking

Fupact INF•32 to INF•800

Protection to prevent fuse access

The Fupact range includes a system designed to maintain the fuse-carriers or fuse compartment covers when the switch-disconnector fuses are in the ON (I) position.

Padlocking

To lock switch-disconnector fuses in ON or OFF position, the standard handles can be fitted with 2 or 3 padlocks (not supplied).

Locking in the OFF (O) position ensures isolation complying with standard IEC 60947-3.

Type of locking	Type of rotary control	Direct front	Extended front	Extended lateral
Locking by 3 padlocks in position:	ON (I)	[1]	[1]	[1]
	OFF (O)	[1]	[1]	
Door interlock	ON (I)		[1]	
Door interlock defeat	ON (I)		[2]	
Door locking with switch-disconnector fuses padlocked	OFF (O)		[3]	

[1] After a simple modification.

[2] Using a special tool.

[3] Cannot be defeated.



Padlocking.

A

B



Installation recommendations

Possible installation positions and mounting

Fupact ISFT100N to ISFT630.....	B-2
Fupact ISFL160 to ISFL1250	B-2
Fupact INF●32 to INF●800	B-3

Implementation and power dissipation

Fupact ISFT, ISFL and INF	B-4
---------------------------------	-----

Installation in Prisma

General.....	B-6
Fupact ISFT.....	B-7
Fupact ISFL.....	B-8
Fupact INF - Direct front rotary handle.....	B-9

Tap-off units for fuse switch-disconnectors

From 125 to 400 A.....	B-10
------------------------	------

Tap-off units for Fupact INF fuses switch-disconnectors

From 160 to 400 A.....	B-11
Linergy	B-12

B

Other chapters

Presentation.....	2
Functions and characteristics	A-1
Dimensions and connection	C-1
Wiring diagrams.....	D-1
Technical characteristics	E-1
Catalogue numbers	F-1

Possible installation positions and mounting

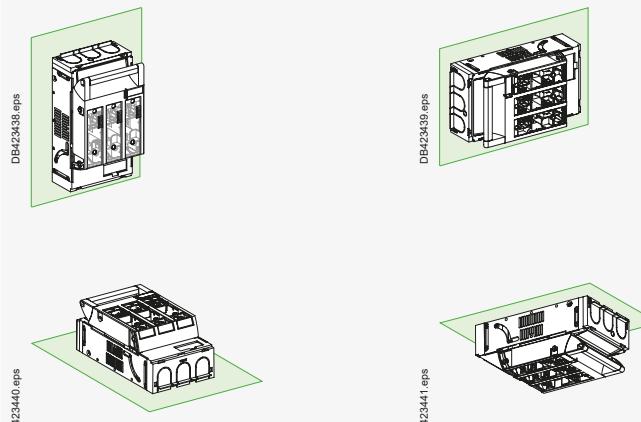
Fupact ISFT100N to ISFT630

Fupact ISFL160 to ISFL1250

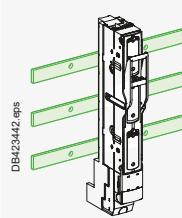
B

Possible installation positions

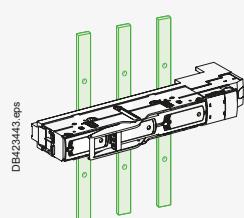
ISFT100N to ISFT630



ISFL160 to 1250

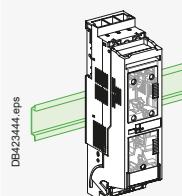


ISFL160 to 630



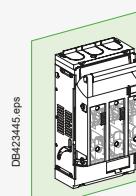
Possible mounting

ISFT100N and ISFT100



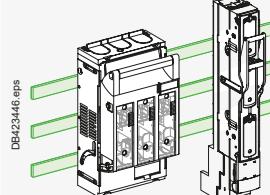
DIN rail.

ISFT100N to ISFT630



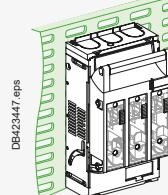
Plain mounting plate.

ISFT100N ISF•160 to ISF•630 ISFL1250



Secured to busbars.

ISFT100N to ISFT630



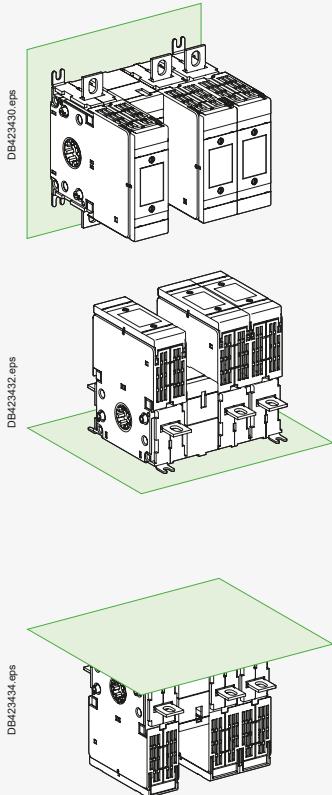
Slotted mounting plate.

Possible installation positions and mounting

Fupact INF●32 to INF●800

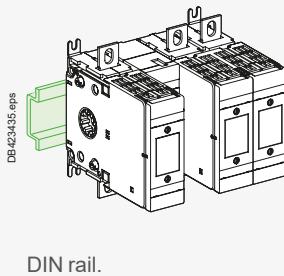
Possible installation positions

INF●32 to INF●800



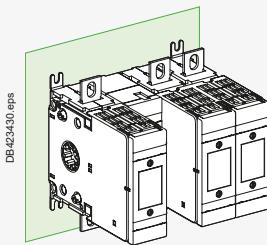
Possible mounting

INF●32 to INF●160



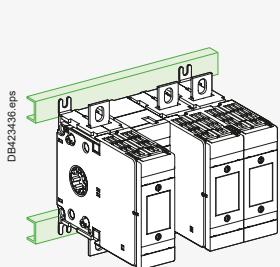
DIN rail.

INF●32 to INF●800



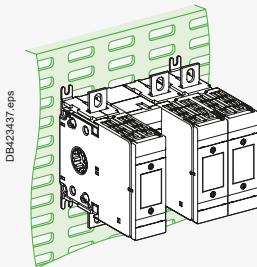
Plain mounting plate.

INF●32 to INF●800



Rails.

INF●32 to INF●800

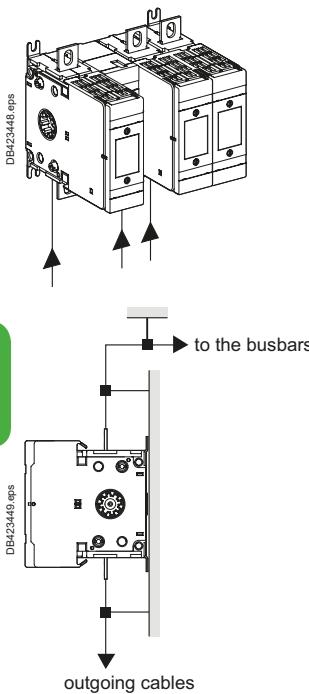


Slotted mounting plate.

B

Implementation and power dissipation

Fupact ISFT, ISFL and INF



Reverse supply

Fupact fusegear may be supplied equally well via the upstream or downstream terminals, without any reduction in performance.

Neutral pole position for INF fusegear

On Schneider Electric fusegear ranges, the neutral pole is traditionally located on the left-hand side.

On the INF•32 to INF•800 ranges, the 4 poles are identical in the case of a 4P/4F product. The neutral pole can therefore be located on the right-hand side, simply by adding a label. This is not possible with a 4P/3F product.

Conductor materials and electrodynamic forces

Fupact fusegear may be connected using either bare copper, tinned copper or tinned aluminium conductors (flexible or rigid bars, cables).

In the event of a short-circuit, thermal and electrodynamic forces are exerted on the conductors. The conductors must therefore be adequately sized and suitably supported.

Note that the terminals of electrical devices (switch-disconnectors, contactors, circuit breakers, etc.) should not be considered to contribute to the support of the conductors.

Cable ties and flexible bars

The table below indicates the maximum distances between cable ties depending on the prospective short-circuit current.

Care must be taken not to exceed a distance of 400 mm between ties mechanically secured to the switchboard frame.

Type of tie	"Panduit" type			"Sarel" type			
	Width: 4.5 mm	Max. load: 22 kg	Colour: white	Width: 9 mm	Max. load: 90 kg	Colour: black	
Max. distance between ties (mm)	200	100	50	350	200	100	70
Short-circuit current (kA rms)	10	15	20	20	27	35	45
							50 (double ties)
							100

Note: for cables $\geq 50 \text{ mm}^2$, 9 mm wide ties must be used.

Tightening torque for ISFT and ISFL with screw connection

	Type	Torque (Nm)
ISFT	ISFT100N mounted on backplate with connection terminals	4.5
	ISFT100N with hook-on connection to 60 mm busbars	4.5
	ISFT100 mounted on backplate with connection terminals	3
	ISFT160 mounted on backplate with connection terminals	12
	ISFT160 with hook-on connection to 60 mm busbars	12
	ISFT250 mounted on backplate with connection terminals	20
	ISFT250 with hook-on connection to 60 mm busbars	20
	ISFT400 mounted on backplate with connection terminals	20
	ISFT400 with hook-on connection to 60 mm busbars	20
ISFL	ISFT630 mounted on backplate with connection terminals	20
	ISFL160 1-pole version with direct connection to 185 mm busbars	14
	ISFL160 1-pole version with hook-on connection to 185 mm busbars	14
	ISFL160 3-pole version with direct connection to 100 mm busbars	14
	ISFL160 3-pole version with hook-on connection to 60 mm busbars	6
	ISFL160 3-pole version with direct connection to 185 mm busbars with kit	14
	ISFL160 3-pole version with connectors for flexible bars	4
	ISFL160 3-pole version with connectors for bare Cu/Al cables	4
	ISFL250 1-pole and 3-pole version with direct connection to 185 mm busbars	32
	ISFL400 1-pole and 3-pole version with direct connection to 185 mm busbars	32
	ISFL630 1-pole and 3-pole version with direct connection to 185 mm busbars	32
	ISFL1250 3-pole version with direct connection to 185 mm busbars	32

Implementation and power dissipation

Fupact ISFT, ISFL and INF

Power dissipated by ISFT and ISFL fuse-switch disconnectors

Power dissipated per pole

	Rating (A)	Switchgear Model	Resistance per pole ($\mu\Omega$)	Power dissipated per pole (W)	Fuse-link		Total Total power dissipated per pole (W)	
					Max. power dissipated	Rat. (A)		
Fixed front-connected device (without conversion kit)	100	ISFT100N	0.33	3.3	100	7.5	11	
	100	ISFT100	0.150	3.6	100	7.5	11	
	160	ISFT100	0.151	3.8	160	8.2	12	
	160	ISFT160	0.117	3.0	160	12	15	
	250	ISFT 250	0.056	6	250	23	29	
	400	ISFT400	0.046	10	400	34	44	
	630	ISFT630	0.045	19	630	48	67	
Device bolted directly to busbars (without conversion kit)	160	ISFL160	1-pole 3-pole	0.268	6.7	160	12	19
	250	ISFL250	1-pole 3-pole	0.144	9.0	250	32	32
	400	ISFL400	1-pole 3-pole	0.117	18.7	400	45	53
	630	ISFL630	1-pole 3-pole	0.093	37	630	48	85
	1250	ISFL1250	3-pole	0.093	37	630	48	85
With conversion kit	60 mm hook-on connection	100	ISFT100N	0.37	3.7	100	7.5	11
	60 mm hook-on connection	160	ISFT160	0.220	5.6	160	12	17
	60 mm hook-on connection	250	ISFT250	0.086	6.7	250	23	30
	60 mm hook-on connection	400	ISFT400	0.075	5.3	400	34	46
With conversion kit		160	ISFL160	0.230	5.9	160	12	18

Power dissipated by INF switch-disconnector fuses

Power dissipated per pole

Rating (A)	Switchgear Model	Resistance per pole ($\mu\Omega$)	Power dissipated per pole (W)	Fuse-link		Total Total power dissipated per pole (W)
				Max. power dissipated	Rat. (A)	
16	INFC / INFB32	2.03	0.5	16	3.5	4
20	INFC / INFB32	2.03	0.8	20	3.5	4.3
25	INFC / INFB32	2.03	1.3	25	3.5	4.8
32	INFC / INFB	2.03	2	32	3.5	5.5
40	INF D40	1.00	1.6	40	4.5	6.1
50	INFC	1.00	2.5	50	7.5	10
63	INFB / INF D63	1.00	4	63	7.5	11.5
	INFC	0.35	1.4	63	7.5	8.9
100	INFB100	0.35	4	100	12	16
125	INFC125	0.35	5	125	12	17
160	INFB / INF D160	0.35	9	160	12	21
200	INFB / INF D200	0.2	8	200	17	25
250	INFB / INF D250	0.21	13	250	23	36
400	INFB / INF D400	0.19	30	400	45	75
630	INFB / INF D630	0.12	46	630	60	106
800	INFB / INF D800	0.12	75	800	65	140

B

Installation recommendations

Installation in Prisma

General

www.schneider-electric.com

Prisma is the Schneider Electric installation system for distribution switchboards in commercial and industrial buildings. Whatever the switchboard configuration, Prisma solutions are tested to guarantee the safety of life and property. Positioning and mounting of the devices in the switchboard and the percentage of space occupied take into account temperature rise, short-circuit withstand capacities, clearances, etc. Everything has been taken into account, tested and certified. Front plates with cut-outs make it possible to change fuse-links without any risk of direct contact with live parts.

B



PB115851eps



PB115816.eps

Prisma functional system

- Mounting of Schneider Electric devices guarantees correct operation of installations.
- The supplied configuration complies with standard IEC 60439-1 and -2 and the system has been tested in the most difficult configurations.
- The panel builder can use prefabricated, tested solutions for connections upstream and downstream of the switchboard, connections from the busbars to devices and from devices to busbars, main distribution or distribution to a row of outgoing devices.
- Selection of enclosures depends on the characteristics of the installation premises.
- The user can upgrade or expand the switchboard.

Prisma includes two ranges

Prisma G wall-mount and floor-standing enclosures up to 630 A

IP index	IP20 [1] / IP30/31/43	IP55
IK index	IK07/08	IK10
Height (mm)	11 heights Wall-mount from 330 to 1380 Floor-standing from 1530 to 1830 (including the plinth)	7 heights Wall-mount enclosures from 450 to 1750
Width of cable ducts (mm)	305	305
Depth (mm)	205/250	230/290
Frameworks	Can be combined side by side and one on top of the other	Can be combined side by side and one on top of the other

Prisma P cubicles up to 3200 A

IP index	IP20 [1] / IP30/31/IP55
IK index	IK08/IK10
Height (mm)	2000
Width of cable ducts (mm)	300/400
Depth (mm)	400/600
Frameworks	Can be combined side by side and back to back

[1] Fupact installed, doors open.

Fupact in Prisma

As for all switchgear used in electrical distribution, Fupact devices are easy to install in Prisma tested switchboards.

The fusegear fits perfectly in the enclosure without any risk of disturbing the other devices.

Depending on the model, fusegear can be installed horizontally or vertically in the switchboard, in the device compartment or in a lateral duct.

Prefabricated connections provide a safe and easy way to supply Fupact fusegear from the busbars.

Installation recommendations

Installation in Prisma

Fupact ISFT

ISFT100 fusegear can be supplied by feeding busbars connected to the main busbars. The ISFT100N and ISFT160 to ISFT630 products can be directly supplied by a busbar, by hook-on contact. The busbar is connected to the main busbar by a prefabricated link.

Fusegear concerned

ISFT100N to 250 for Prisma G wall-mount or floor-standing enclosures.
ISFT100N to 630 for Prisma P cubicles.

Types of Prisma enclosures and cubicles

Prisma G wall-mount and floor-standing enclosures and Prisma P cubicles.

B

Fusegear installation

Installation in Prisma G wall-mount and floor-standing enclosures

Vertical or horizontal mounting (incomer)

- Horizontal mounting (ISFT160, ISFT250):
 - 1 device per row, six 50 mm modules (300 mm), for ISFT160
 - 1 device per row, six 50 mm modules (300 mm), for ISFT250
 - mounting plates secured to the back of wall-mount enclosures
 - upstream connections via cables
 - downstream connections are made by the panel builder.
- Vertical mounting:
 - depending on the rating, one to eight devices can be installed per row.

Rating	Number of devices	Number of modules
100 A (ISFT100N) (on mounting plate)	8	8
100 A (ISFT100) (on mounting plate)	5	6
100 A (ISFT100) (on busbars)	6	8
160 A (on mounting plate)	4	8
160 A (on busbars)	4	8
160 A (in duct)	1	6
250 A (in duct)	1	9

- Installation of devices:
 - ISFT100N and ISFT100, on mounting plates secured to the back of wall-mount enclosures
 - ISFT160 equipped with terminal shields, on mounting plates secured to the back of wall-mount enclosures or ducts, or on lateral cross-members with direct connection to busbars (60 mm fixing centres).

ISFT100 devices can be supplied by feeding busbars.

Connections are made by the panel builder.

Front plates with cut-outs can be used as blanking plates to maintain the degree of protection IPxxB.

Installation in Prisma P cubicles

■ Vertical mounting:

- depending on the rating, one to eight devices can be installed per row

Rating	Number of devices	Number of modules
100 A (ISFT100N) (on mounting plate)	8	8
100 A (ISFT100) (on mounting plate)	5	7
100 A (ISFT100) (on busbars)	6	8
160 A (on mounting plate)	4	6
160 A (on busbars)	4	6
250 A (on mounting plate)	2	9
400 A (on mounting plate)	2	9
630 A (on mounting plate)	1	10

- devices are installed on mounting plates secured to lateral cross-members
- ISFT100 devices can be supplied by feeding busbars
- a connection kit comprising busbar supports (60 mm fixing centres), bars for direct supply of devices and a connector for Linergy busbars is available for ISFT160 devices.



PB115766_L8.eps



PB115767_L38.eps



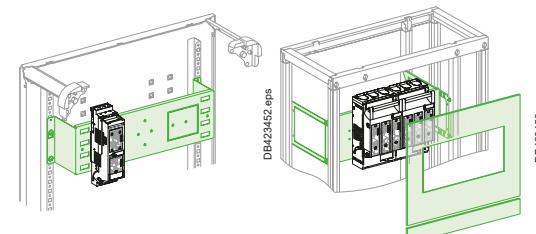
PB115768_L16.eps



PB115820_L13.eps



PB115817.eps



DB423452.eps

DB42453.eps

Installation in Prisma

Fupact ISFL

ISFL devices with different ratings can be installed in the same row. Depending on the rating, six to nine devices can be installed per row.



Fusegear concerned

ISFL160 1-pole and 4P switchable,
ISFL 250 to 630 1P-3P,
ISFL 1250 3P.

Types of Prisma cubicles

Prisma P cubicles only.

Fusegear installation

Installation in Prisma P cubicles

Vertical mounting only.

Rating	Number of modules		Number of devices	
	Standard front plate	2/3 front plate	Standard front plate	2/3 front plate
160 A	11	24	9	10
250 A	-	24	-	5
400 A	-	24	-	5
630 A	-	24	-	5
1250 A	-	24	-	2

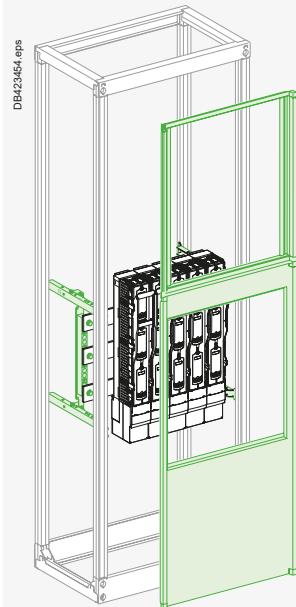
A row may contain devices with different ratings.

Devices can be installed:

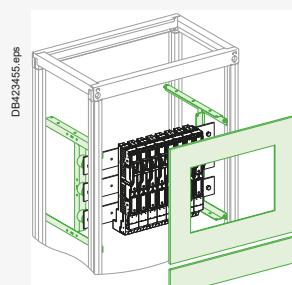
- behind front plate supports (with cut-outs or plain), with or without a door
- behind a front plate support door.
- Installation of devices:
- ISFL160 on busbars (100 mm fixing centres) mounted on lateral cross-members
- ISFL250, ISFL400 and ISFL1250 on busbars (185 mm fixing centres) mounted on lateral cross-members.

CTs can be installed behind the ISFLs.

Blanking plates are available to maintain the degree of protection IP.



Mounting through standard front plate with cut-outs.



Mounting through 2/3 front plate with cut-outs.

Installation recommendations

Installation in Prisma

Fupact INF - Direct front rotary handle

The same auxiliary contact is used for the ON/OFF/Test and “Test indication” functions. The function is determined by where the contact is installed in the switch-disconnector fuses.

Fusegear concerned

INF•63 to 160 for Prisma G wall-mount and floor-standing enclosures
INF•32 to 800 for Prisma P cubicles

Types of Prisma enclosures and cubicles

Prisma G wall-mount and floor-standing enclosures and Prisma P cubicles.

Fusegear installation

Installation in Prisma G wall-mount and floor-standing enclosures

Vertical or horizontal mounting.

Depending on the rating, one to four devices can be installed per row.

Rating	Vertical		No. of modules	Horizontal		No. of modules
	3P	4P		3P	4P	
32/40 A	4	3	3	1	1	3
63 A	3	2	5	1	1	5
100/160 A	2	2	7	1	1	7

Devices are installed on mounting plates secured to the back of the enclosures.

Connections are made by the panel builder.

Installation in Prisma P cubicles

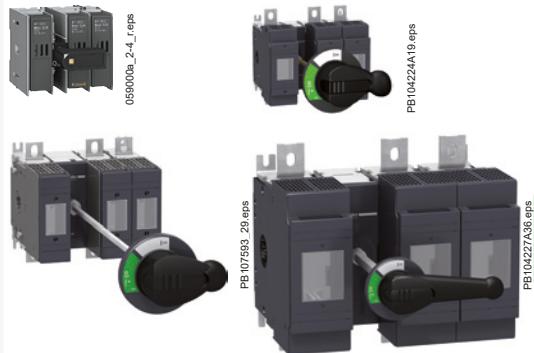
Vertical or horizontal mounting.

Depending on the rating, one to four devices can be installed per row.

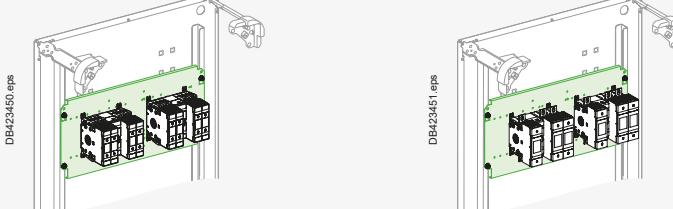
Rating	Vertical		No. of modules	Horizontal		No. of modules
	3P	4P		3P	4P	
32/40 A	4	3	3	1	1	3
63 A	3	2	5	1	1	5
100/160 A	2	2	5	1	1	5
200 A	1	1	9	1	1	7
250 A	1	1	9	1	1	7
400 A	1	1	9	1	1	8
630/800 A	1	1	11	1	1	11

Devices are installed on mounting plates secured to lateral cross-members.

Connections are made by the panel builder.



B



Tap-off units for fuse switch-disconnectors

From 125 to 400 A

For rapid connection of loads or secondary lines, tap-off units can be handled and removed under off-load conditions with the trunking energized. They are automatically disconnected by opening and closing the cover. When the cover is opened no live parts are accessible.

Fupact products are integrated in this offer with two types of tap-off:

- tap-off units for Fupact ISFT from 125 A to 400 A
- tap-off units for Fupact INF from 160 A to 400 A.

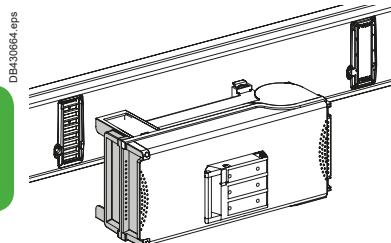
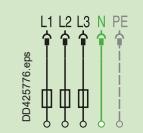
IP30 tap-off units for fuses

Disconnection by unplugging the tap-off unit.

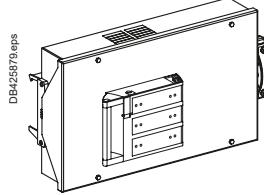
TT - TNS - TNC - IT [1]

TT - TNS - TNC - IT [1]

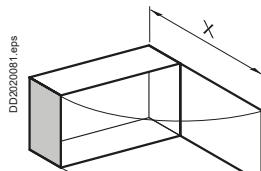
3L + N + PE [2]



KSB125HD5



KSA●●●HD502



X = 622.5 (KSB125HD5)
X = 763 (KSA●●●HD502)

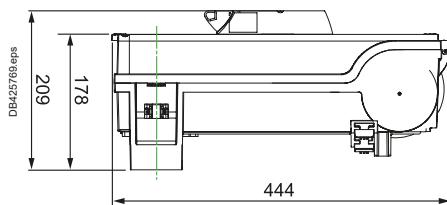
Rating (A)	Fuses (not supplied)	Connection	Max. size (mm ²)	Cable gland [3] (mm)	Dim. (mm)	Weight (kg)	Catalogue numbers
			Flexible	Rigid	A		
125	NHL 00 IN U5U5 Type 00	Cable clamp terminals	50	50	ISO 63	2	KSB125HD5
260	NHL 1 IN U5U5 Type 1	Cable clamp terminals	185	185		42	KSA25HD502
400	NHL 00 IN U5U5 Type 2	Cable clamp terminals	240	240		50	KSA40HD502

[1] The neutral must be not distributed (3L + PE) for the IT system.

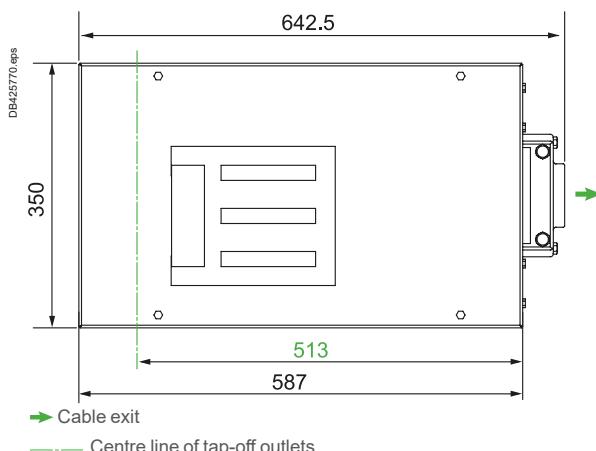
[2] Also suitable for tap-off unit 3L + PE (N not distributed, IT system also possible only if N not distributed).

[3] Cable gland not supplied. Maximum diameter for a multipolar cable.

KSB125HD5



KSA●●●HD502



Tap-off units for Fupact INF fuses switch-disconnectors

From 160 to 400 A

Tap-off units for Fupact INF, fixed, front-connected switch-disconnector fuses

The cover of the tap-off unit may be opened only when the INF is in the off position.

Earthing system of the busbar trunking

TT - TNS - TNC - IT [1]TNC

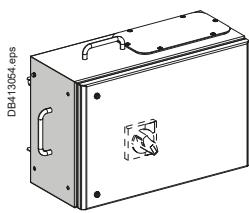
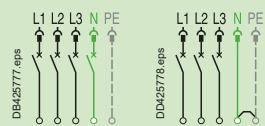
Earthing system of the tap-off unit:

TT - TNS - TNC - IT [1]TNC

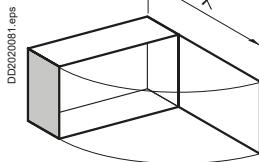
Tap-off polarity

3L + N + PE [2] 3L + PEN

Tap-off diagram (e.g. circuit-breaker protection)



KSB●●●SDF●



X = 577.5 (KSB160SDF●)

X = 726.5 (KSB250SDF●)

X = 976.5 (KSB400SDF●)

Rating (A)	Type of Fupact (not supplied)	Conn.	Max. size Cable gland [3] (mm ²)	Weight (kg)		Catalogue numbers	
				Flexible	Rigid		
160	INF160 or INF250 with extended rotary handle	INF	70	70	ISO 32	9	KSB160SDF4 KSB160SDF5
250	INF250 or INF250 with extended rotary handle 49619	INF	70	150	ISO 32	12.5	KSB250SDF4 KSB250SDF5
400	INF400 or INF400 with extended rotary handle LV480540	INF	150	240	ISO 40	18	KSB400SDF4 KSB400SDF5

[1] The neutral must be protected or not distributed (3L + PE) for the IT system.

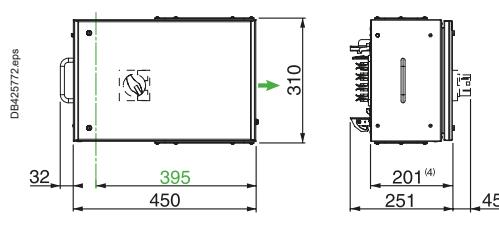
[2] Also suitable for tap-off unit 3L + PE (N not distributed, IT system also possible).

[3] Cable gland not supplied. Maximum diameter for a multipolar cable.

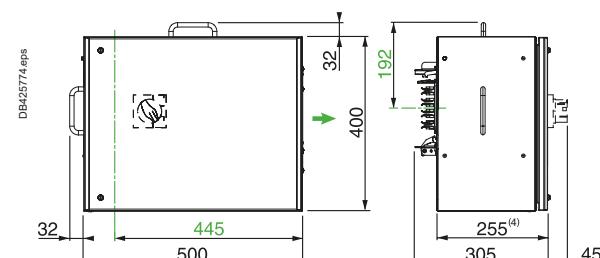
Fupact INF to be mounted on Canalis KS tap-off units

Rating (A)	4P/3F		3P/3F	
	Fupact INF B	Fupact INF D	Fupact INF B	Fupact INF D
160	LV480422	LV480417	LV480421 + LV480562	LV480416 + LV480562
250	LV480518	LV480504	LV480517 + LV480562	LV480503 + LV480562
400	LV480520	LV480507	LV480519 + LV480563	LV480506 + LV480563

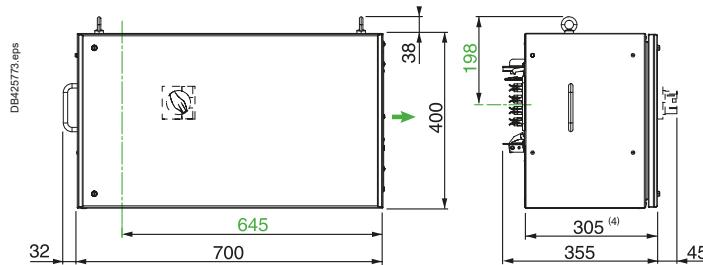
KSB160SDF4



KSB250SDF4



KSB400SDF4



→ Cable exit
— Centre line of tap-off outlets
[4] Protruding

Installation in Prisma Linergy

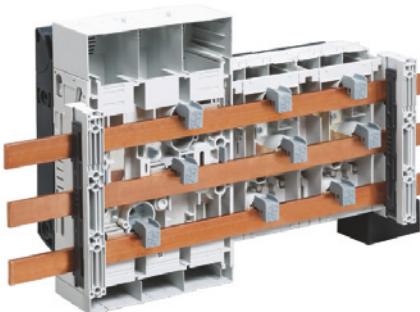
Linergy BZ is a multistandard power busbar system up to 630 A which combines ease of installation and space saving in enclosures:

- quick connection and disconnection
- components are directly mounted on the busbar.

PB119120.eps



PB115844.eps



B

Linergy BZ could be mounted on busbars with Fupact ISFT. Objective is to limit space on busbar system.

In this case benefits are :

- to have more units on one busbars system compare to conventional solution
- smaller enclosure system needed
- best use of entire busbar string.

PB119119.eps



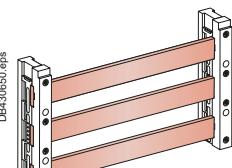
PB119100.eps



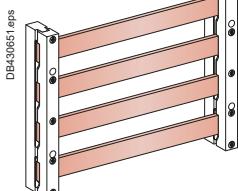
Busbar supports characteristics

		LA9ZX01495 and LA9ZX01485 (IEC 60439-1)							
Bar dimensions compatibility	mm	12 x 5	15 x 5	20 x 5	25 x 5	30 x 5	12 x 10	20 x 10	30 x 10
Max. rated operating current	A	200	250	320	400	450	360	520	630
Min. peak permissible rated current	kA	30	30	30	30	45	35	35	53
Distance max. between 2 busbars supports	mm	570	570	570	570	570	570	570	570
Degree of protection	IP	20 (with cover LA9ZX01244 or LA9ZX01245)							
Thermal resistance	°C	125							
Rated current frequency	Hz	50/60							
Rated insulation voltage	V	690							
Rated operating voltage	V	690							

DB430950.eps



LA9ZX01495



LA9ZX01485

Note: for more details of applications, see page A-18.

Dimensions and connection

Fupact ISFT100N

Dimensions and mounting	C-2
Front panel cut-outs - Connection and accessories	C-3

Fupact ISFT100

Dimensions	C-4
Mounting and front panel cut-outs	C-5
Connection and accessories	C-6

Fupact ISFT160

Dimensions	C-8
Mounting and front panel cut-outs	C-9
Connection and accessories	C-10

Fupact ISFT250 to 630

Dimensions and mounting	C-12
Mounting and front panel cut-outs	C-13
Connection and accessories	C-14

Fupact ISFL160 3 x 1P

Dimensions and mounting	C-16
-------------------------------	------

Fupact ISFL160 1 x 3P

Dimensions and mounting	C-18
Connection and accessories	C-20

Fupact ISFL250 to 630 1 x 3P

Dimensions and mounting	C-21
-------------------------------	------

Fupact ISFL1250

Dimensions and mounting	C-23
Connection and accessories	C-25

Fupact INF•32

Dimensions	C-26
Mounting and front panel cut-outs	C-27
Connection and accessories	C-28

Fupact INF•40 and INF•63

Dimensions	C-29
Mounting and front panel cut-outs	C-31
Connection and accessories	C-32

Fupact INF•100 to INF•160

Dimensions	C-33
Mounting and front panel cut-outs	C-35
Connection and accessories	C-36

Fupact INF•200 to INF•800

Dimensions	C-37
Mounting and front panel cut-outs	C-38
Connection and accessories	C-39

Other chapters

Presentation	2
Functions and characteristics	A-1
Installation recommendations	B-1
Wiring diagrams	D-1
Technical characteristics	E-1
Catalogue numbers	F-1

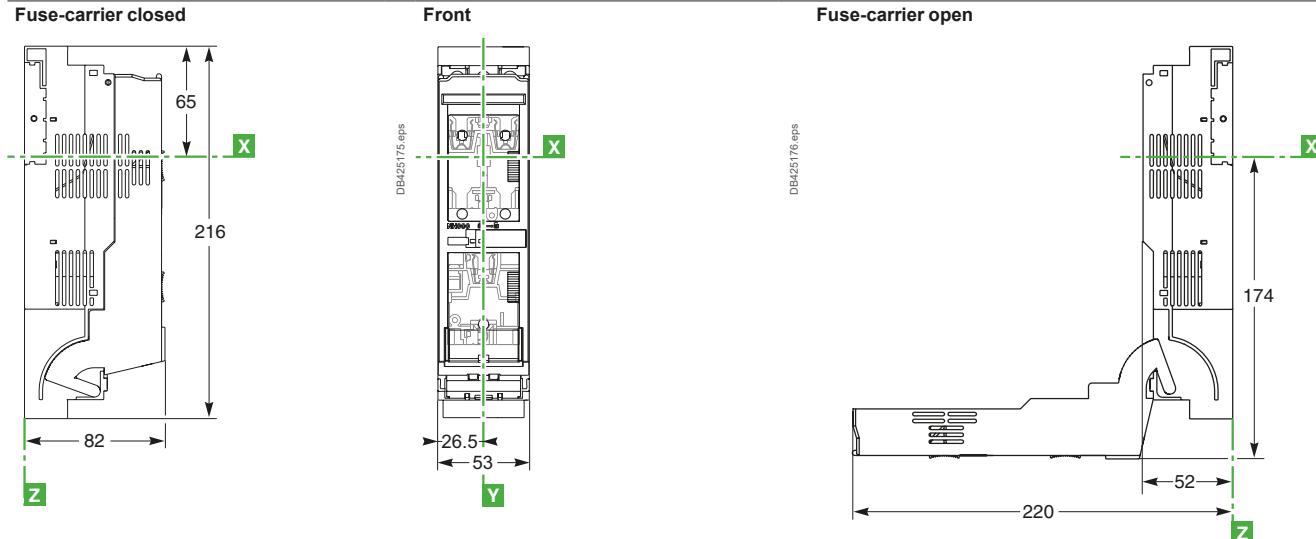
C

Fupact ISFT100N

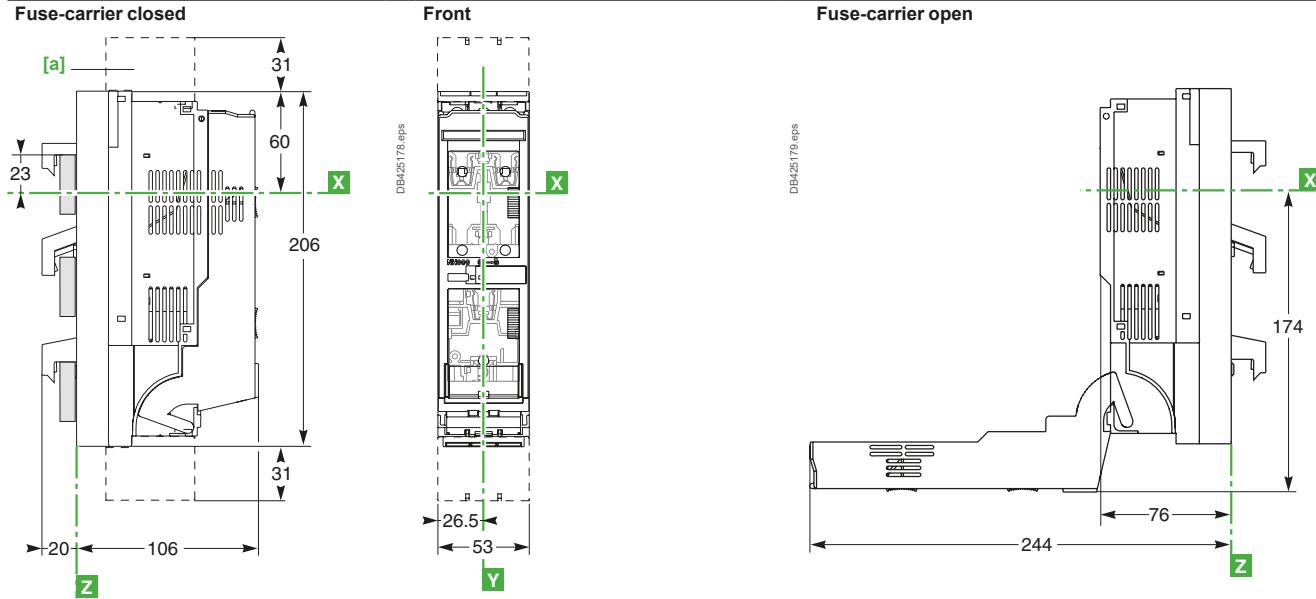
Dimensions and mounting

Dimensions

Device to be installed on a backplate or DIN rail



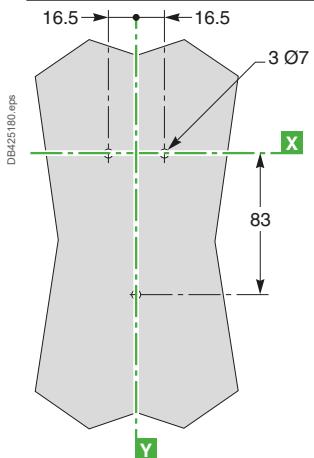
Device to be installed on a busbar



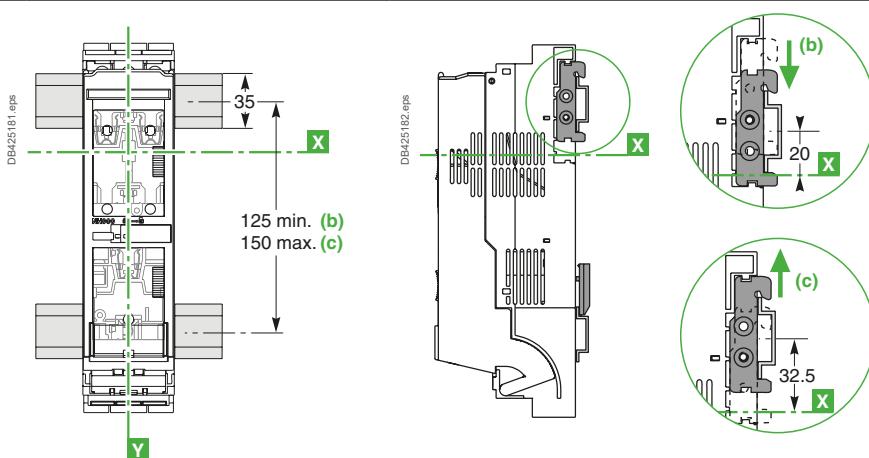
[a] Terminal shields.

Mounting

On backplate



On DIN rail

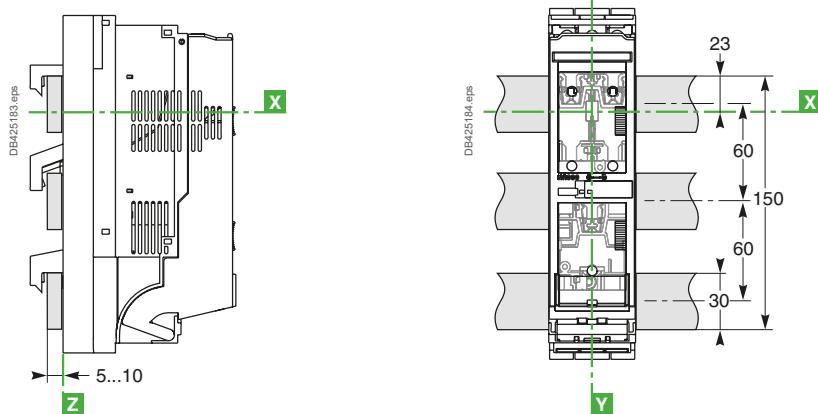


Fupact ISFT100N

Front panel cut-outs - Connection and accessories

Mounting (cont.)

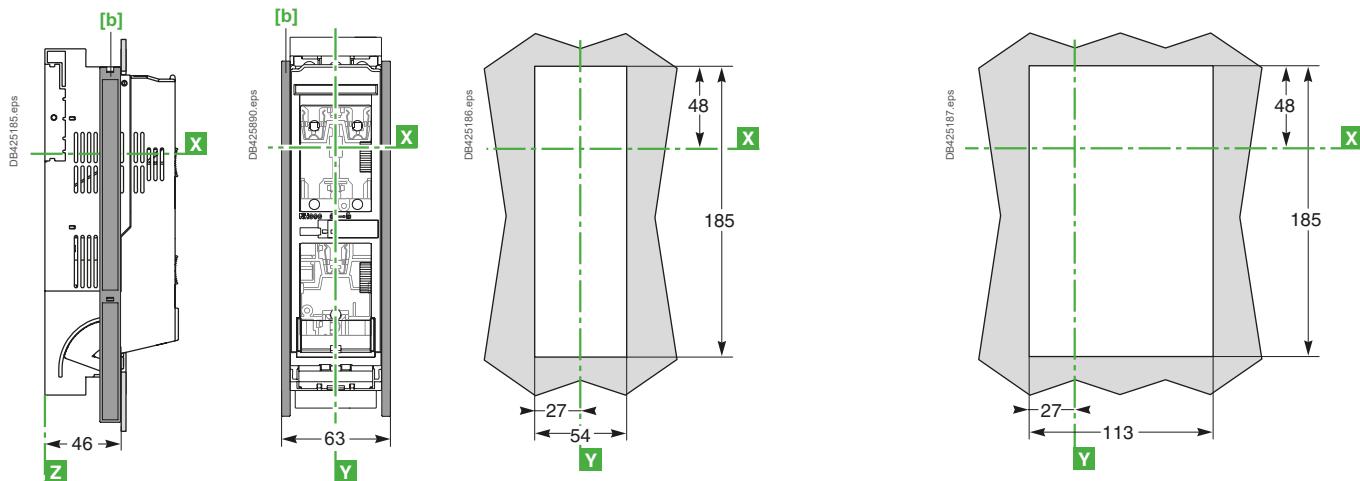
On 60 mm busbars

**Front panel cut-outs**

Device to be installed on a backplate or DIN rail

Cut-out for 1 device^[1]Cut-out for 2 devices^[2]

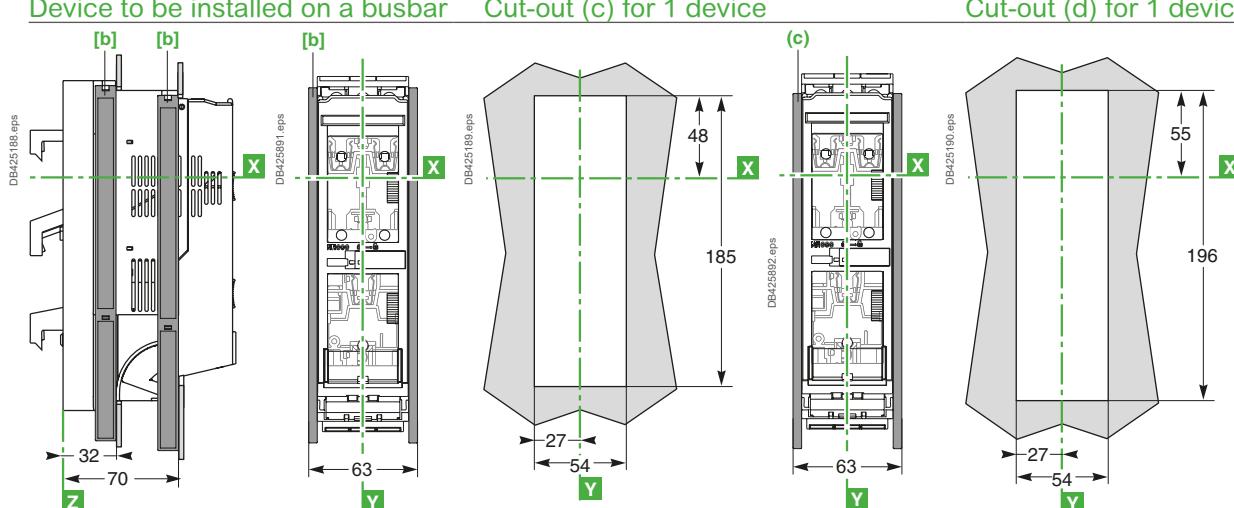
C



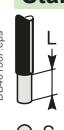
Device to be installed on a busbar

Cut-out (c) for 1 device

Cut-out (d) for 1 device

**Front connection of cables**

Fupact ISFT100N devices are equipped as standard with connectors for bare copper cables from 2.5 to 50 mm² for mounting on backplates.

Standard device

Fupact connectors	L (mm)	18
	S (mm ²)	2.5 to 50 rigid
	Cu/Al	2.5 to 35 flexible
	Torque (Nm)	3

[b] Laterally attachable support profile.

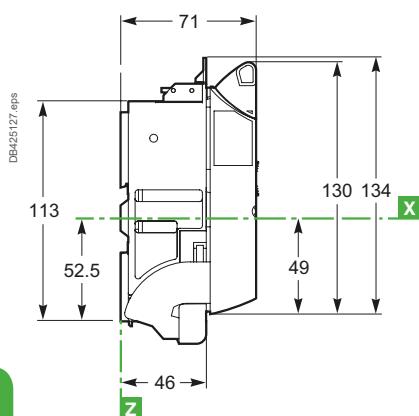
Fupact ISFT100

Dimensions

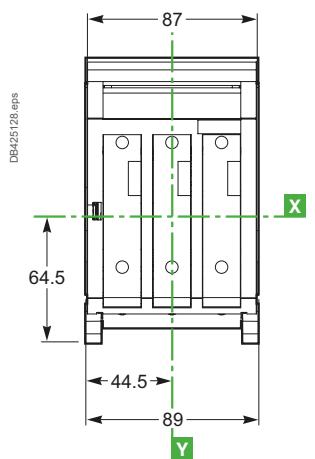
Dimensions

Device to be installed on a backplate or DIN rail

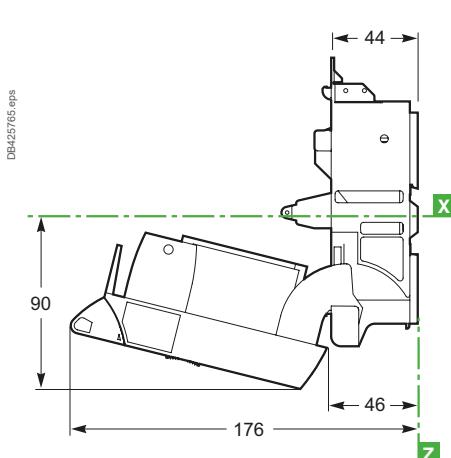
Fuse-carrier closed



Front

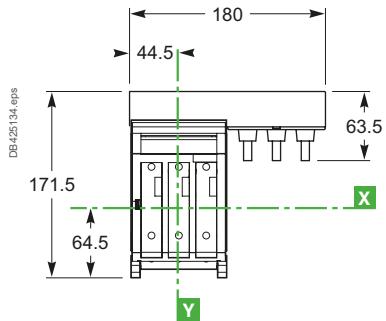


Fuse-carrier open

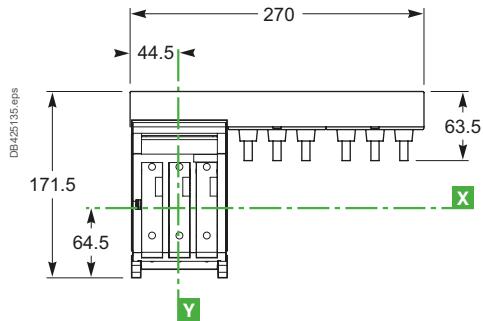


C

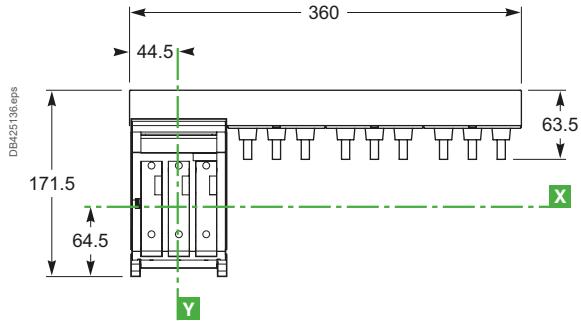
Feeding busbar for 2 ISFT100 devices



Feeding busbar for 3 ISFT100 devices



Feeding busbar for 4 ISFT100 devices

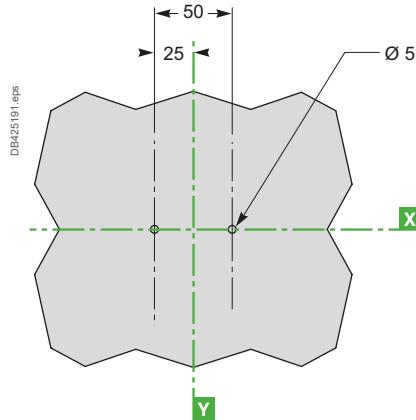


Fupact ISFT100

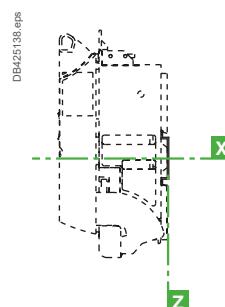
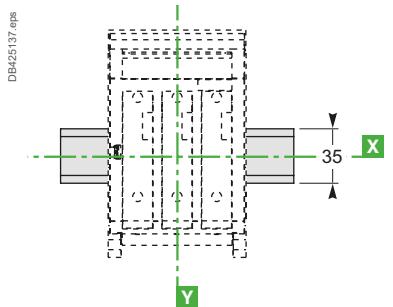
Mounting and front panel cut-outs

Mounting

On backplate

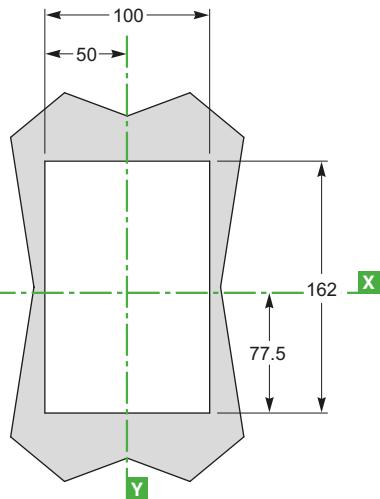
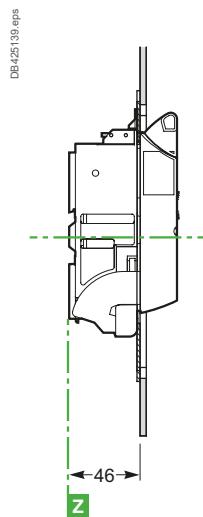


On a symmetrical DIN rail

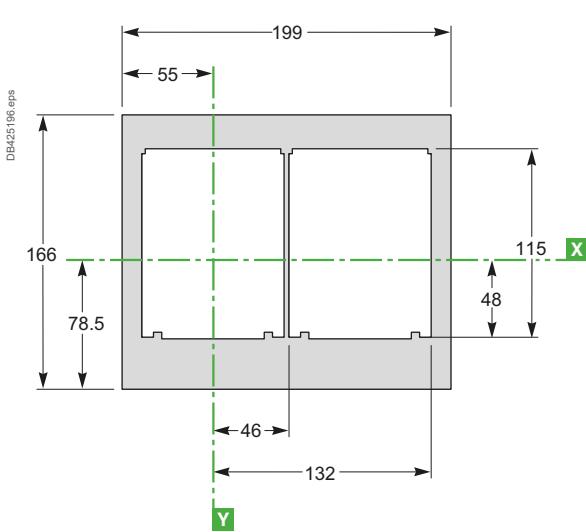
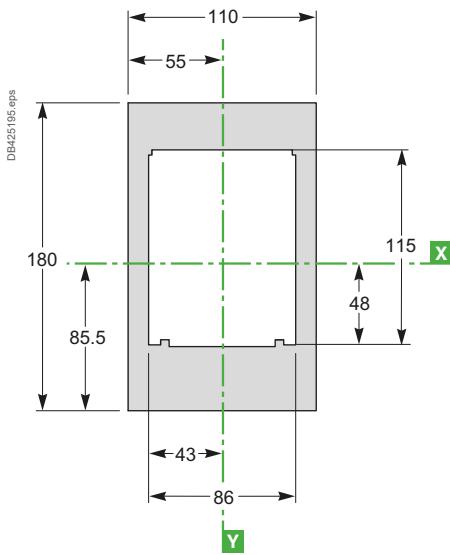
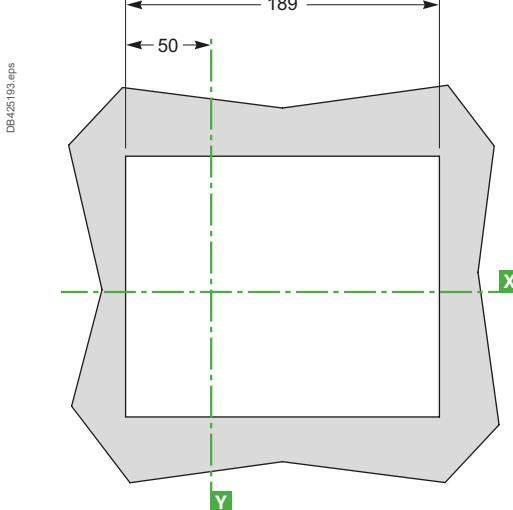


Front panel cut-outs

Cut-out for 1 device

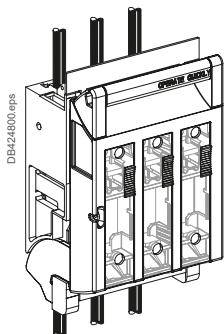


Cut-out for 2 devices

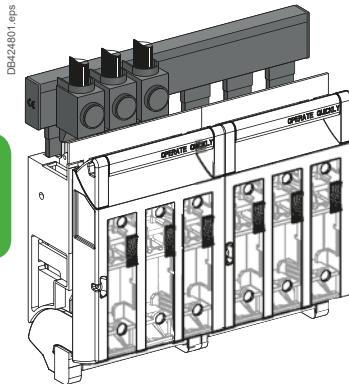


Fupact ISFT100

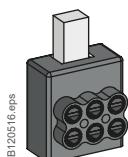
Connection and accessories



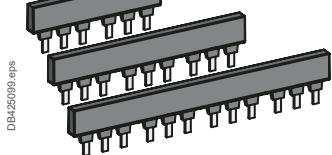
Connection via bare cable connectors.



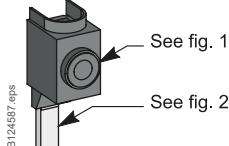
Connection via feeding busbars.



Distribution connector.



Feeding busbars.



Incoming connector for feeding busbars.

Front connection via bare cable connectors

Fupact ISFT100 devices are equipped as standard with connectors for bare copper or aluminium cables from 1.5 to 50 mm² for mounting on backplates.

Standard device



Fupact connectors	L (mm)	18
S (mm ²)	1.5 to 50 rigid	
Cu/Al	1.5 to 35 flexible [1]	
Torque (Nm)	3	

3 x 10 mm² distribution connector



Fupact connectors	L (mm)	18
S (mm ²)	1.5 to 10 rigid	
Cu/Al	1.5 to 6 flexible [1]	
Torque (Nm)	2 (cables)	
	3 (connectors)	

[1] Connection of 2.5 to 4 mm² flexible cables requires crimped or auto-crimping ferrules.

Front connection via feeding busbars

This accessory simplifies connection of cables and can be used to supply two to four Fupact ISFT100 devices.

- Tightening torque 3 Nm.

Incoming connector for feeding busbars



Fupact connectors	L (mm)	18
S (mm ²)	25 to 95 rigid	
Cu/Al	25 to 70 flexible	
Torque (Nm)	10 (cables)	
	3 (connectors)	

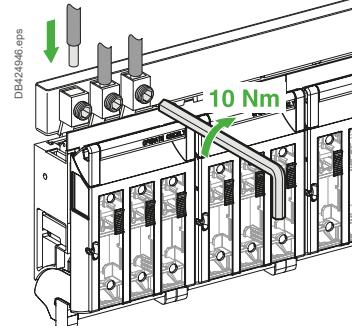


Figure 1.

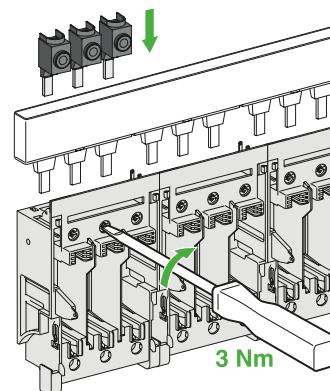
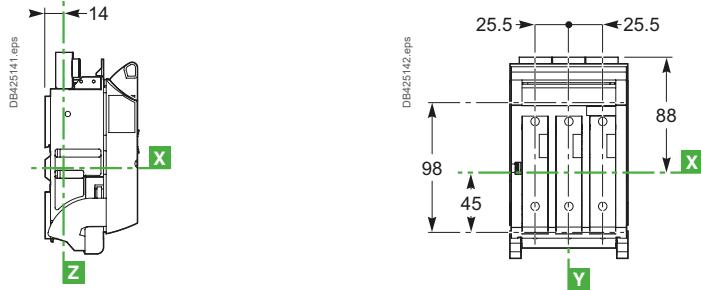
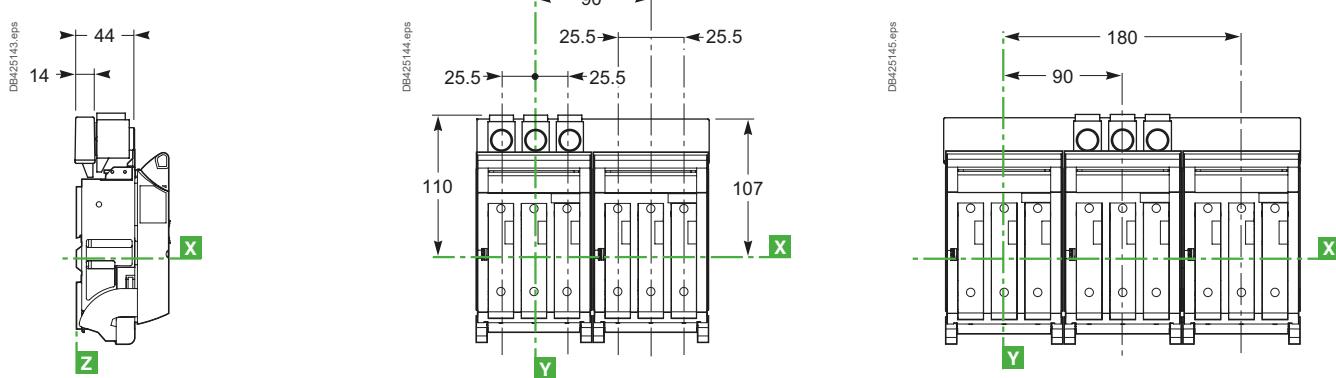


Figure 2.

Basic device with distribution connector option

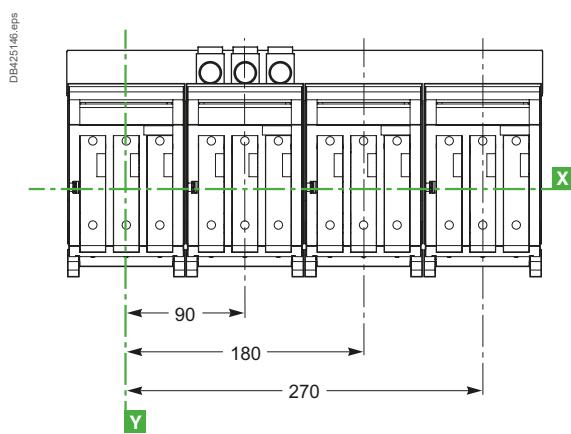


Feeding busbars for two or three ISFT100 devices (with 25 to 95 mm² incoming connector)



C

Feeding busbars for four ISFT100 devices (with 25 to 95 mm² incoming connector)

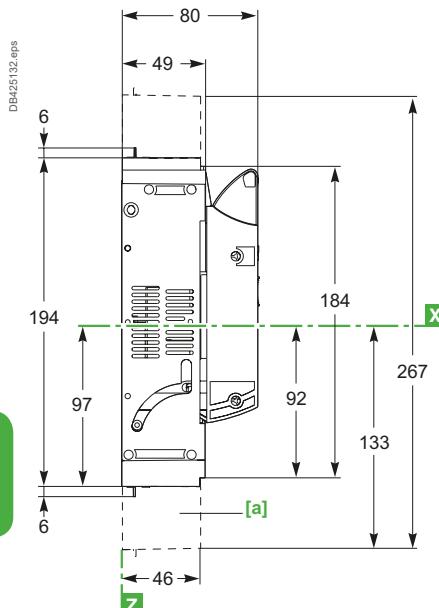


Fupact ISFT160

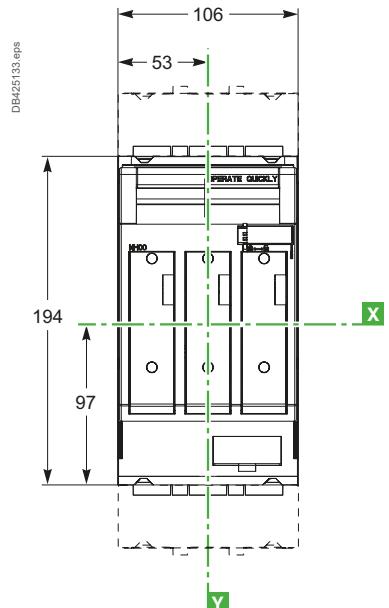
Dimensions

Dimensions

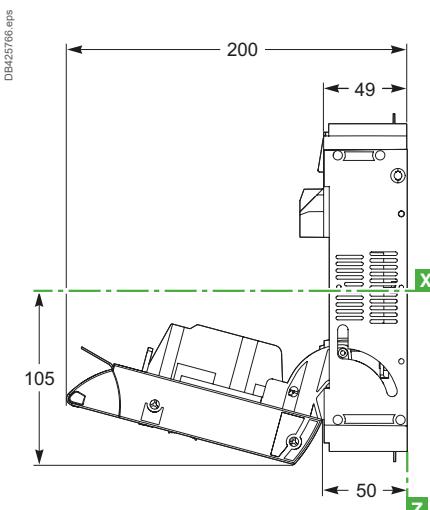
Fuse-carrier closed



Front

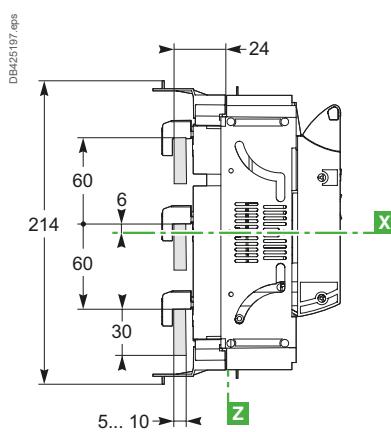


Fuse-carrier open

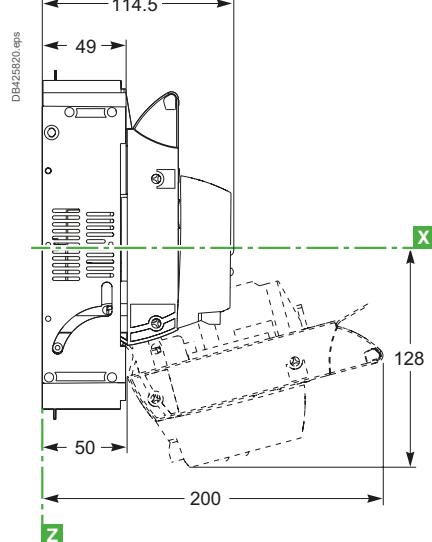


[a] Terminal shields.

With hook-on



With fuse monitor

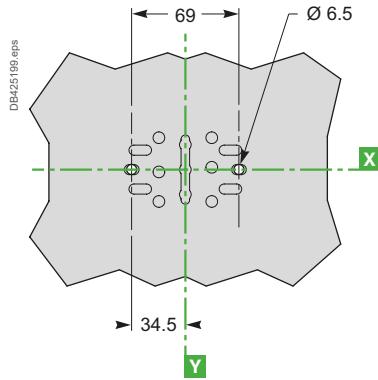
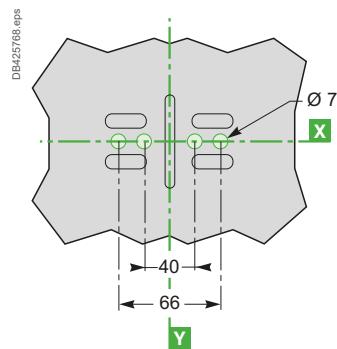
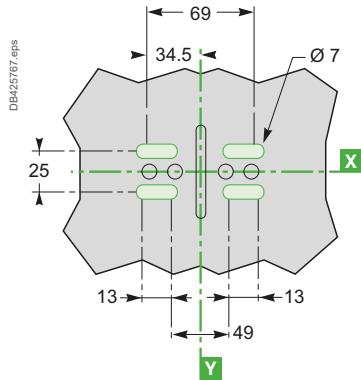


Fupact ISFT160

Mounting and front panel cut-outs

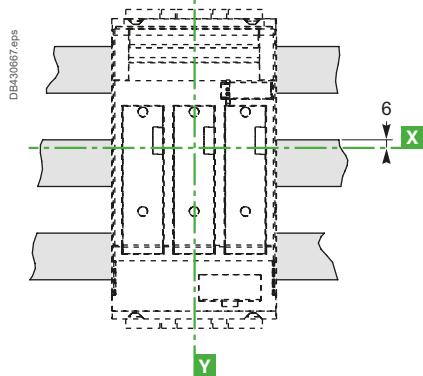
Mounting

On backplate

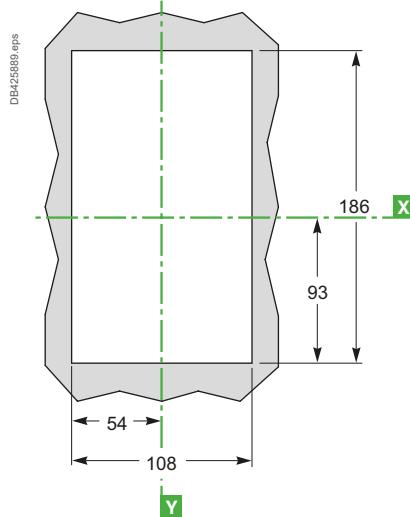
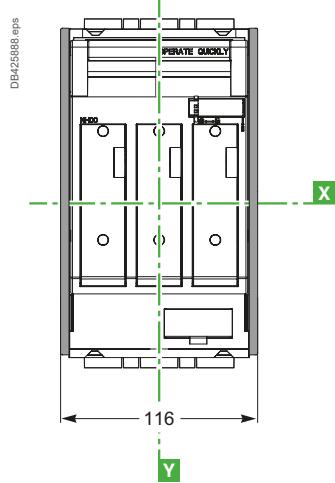
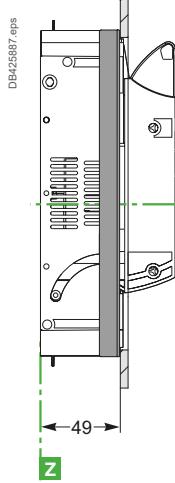


On 60 mm busbars

With hook-on

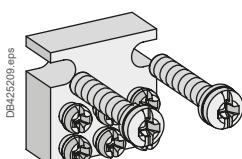
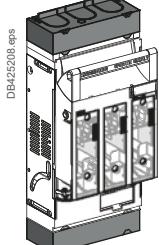
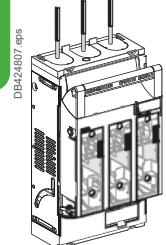
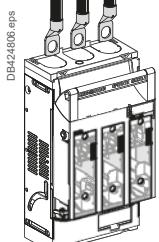
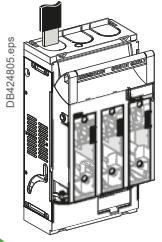
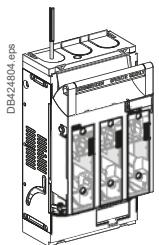
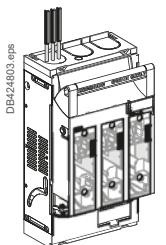


Front panel cut-outs

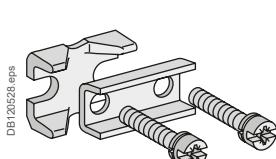


Fupact ISFT160

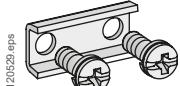
Connection and accessories



Distribution connector.



V-type connector for bare Cu/Al cables.



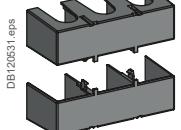
Connector for flexible bars.



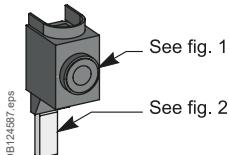
Lug for copper cables.



Short terminal shield.



Long terminal shields.



Incoming connector for feeding busbars.

[1] Connection of 2.5 to 4 mm² flexible cables requires crimped or auto-crimping ferrules.

Connector for flexible bars

L (mm)	20
I (mm)	12
e (Nm)	6
Torque (mm)	4

Used with short terminal shields

Lug for 95 to 185 mm² copper cables

L (mm)	< 12
Ø (mm)	8.2
Torque (Nm)	14

Used with long terminal shields

Front connection to standard M8 terminals

Fupact ISFT160 devices are also equipped with 12 mm wide terminals with holes for M8 screws for the connection methods presented below.

3 x 16 mm² distribution connector

L (mm)	25
S (mm ²)	1.5 to 16 rigid
Cu/Al	1.5 to 10 flexible [1]
Torque (Nm)	2 (cables)
	4 (connectors)

Used with long terminal shields

V-type connector for bare Cu/Al cables

L (mm)	25
S (mm ²)	1.5 to 95 rigid
Cu/Al	1.5 to 70 flexible [1]
Torque (Nm)	4

Used with short terminal shields

Connector for flexible bars

L (mm)	20
I (mm)	12
e (Nm)	6
Torque (mm)	4

Used with short terminal shields

Lug for 95 to 185 mm² copper cables

L (mm)	< 12
Ø (mm)	8.2
Torque (Nm)	14

Used with long terminal shields

Direct front connection to connectors

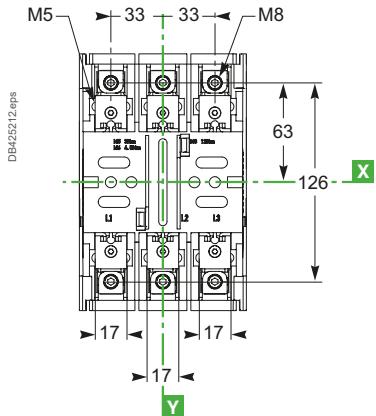
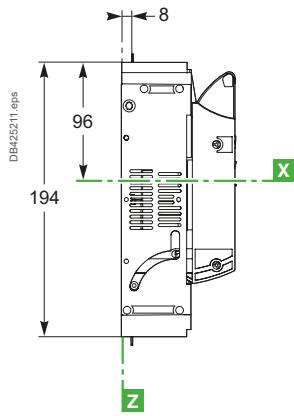
Fupact ISFT160 devices are equipped as standard with connectors for bare copper or aluminium cables from 1.5 to 50 mm² for mounting on backplates.

Standard device

Fupact connectors	L (mm)	25
	S (mm ²)	1.5 to 95 rigid
	Cu/Al	1.5 to 70 flexible
	Torque (Nm)	4

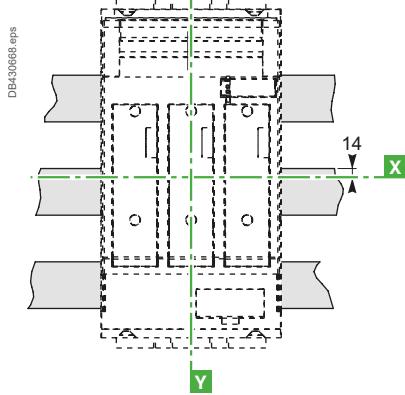
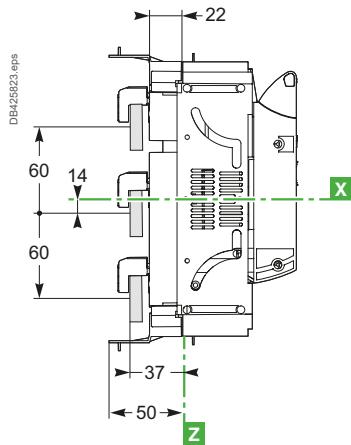
Used with short terminal shields

Connections for mounting on a backplate



Connections for mounting on 60 mm busbars

Hook-on connection



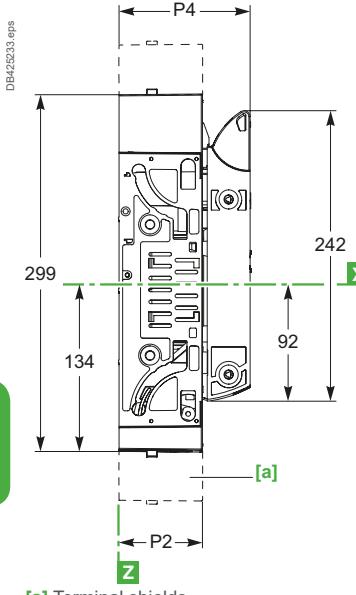
C

Fupact ISFT250 to 630

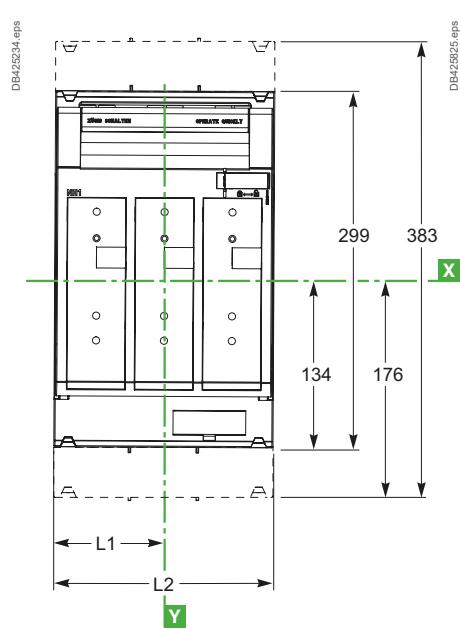
Dimensions and mounting

Dimensions

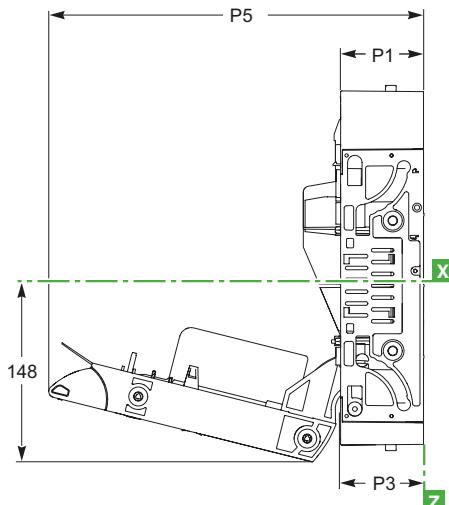
Fuse-carrier closed



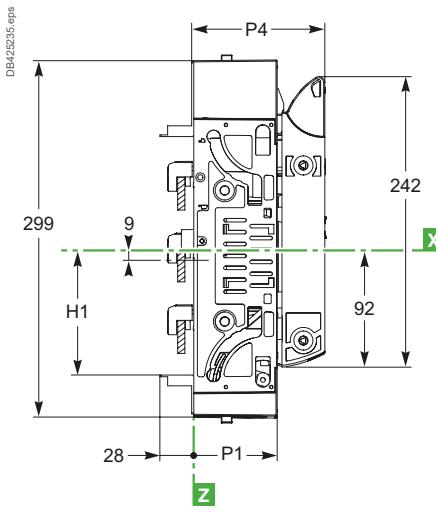
Front



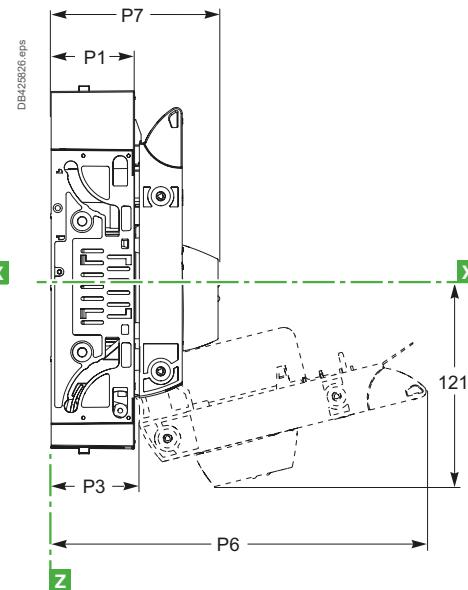
Fuse-carrier open



With hook-on for ISFT250/400/630



With fuse monitor for ISFT250/400/630



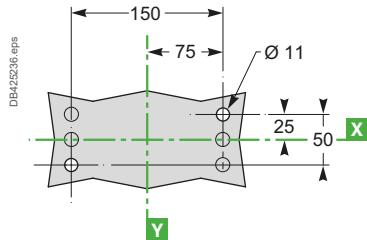
Type	L1	L2	P1	P2	P3	P4	P5	P6	P7
ISFT250	92	184	70	70	74	112	293	316	142
ISFT400	105	210	90	90	94	131	331	319	162
ISFT630	125	250	90	90	94	131	332	319	162

Fupact ISFT250 to 630

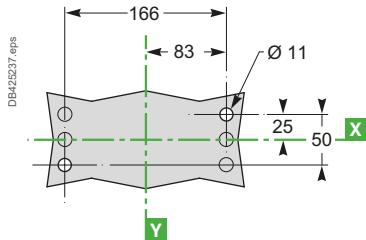
Mounting and front panel cut-outs

Mounting

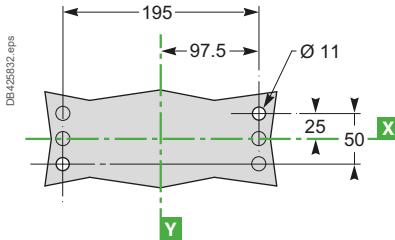
On a backplate for ISFT250



On a backplate for ISFT400

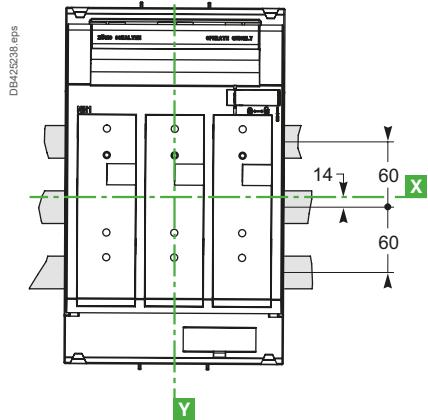


On a backplate for ISFT630

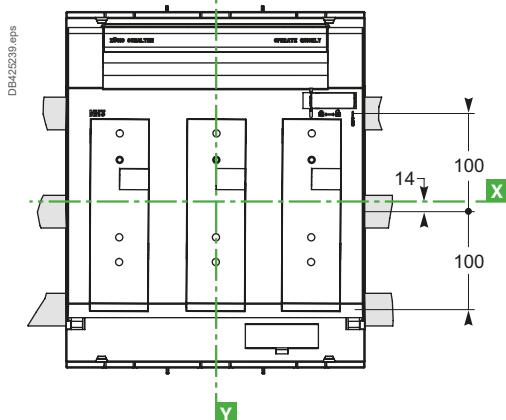


On busbars

With hook-on for ISFT250

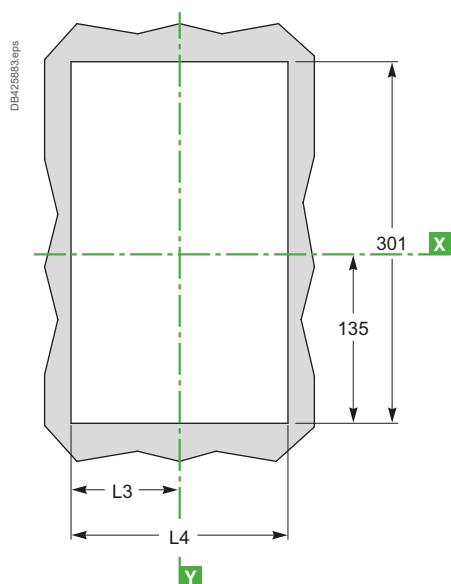
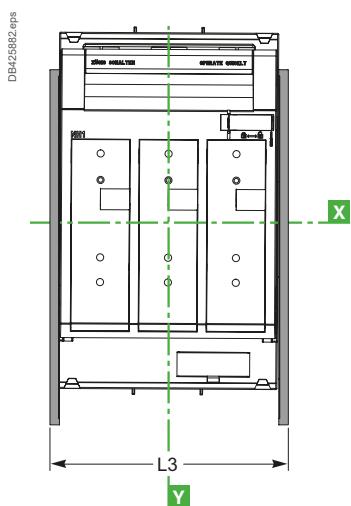
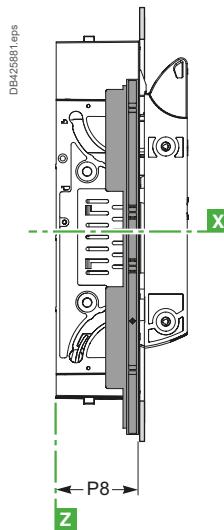


With hook-on for ISFT400/630



C

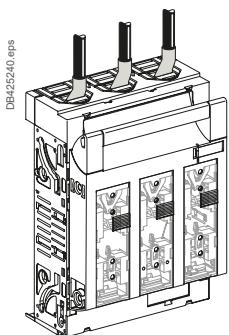
Front panel cut-outs



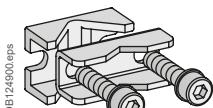
Type	L4	L5	P8
ISFT250	93	186	70
ISFT400	106	212	90
ISFT630	126	252	90

Fupact ISFT250 to 630

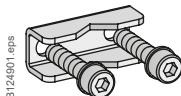
Connection and accessories



Terminal shields.



V-type connector.



Connector for flexible bars.

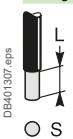


Lug for copper cables.

Front connection to standard M10 terminals

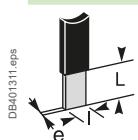
Fupact ISFT250 to 630 devices are equipped as standard with terminals comprising holes for M10 screws for the connection methods presented below.

V-type connector for bare Cu/Al cables



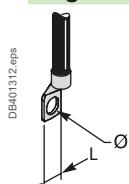
	ISFT250	ISFT400/630
L (mm)	20	25
S (mm ²)	6 to 150	6 to 240
Cu/Al		
Torque (Nm)	14	14

Connector for flexible bars



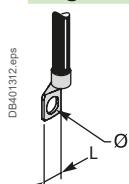
	ISFT250	ISFT400/630
L (mm)	20	30
I (mm ²)	16	21
e (mm)	15	15
Torque (Nm)	14	14

Lug for 100 to 185 mm² copper cables



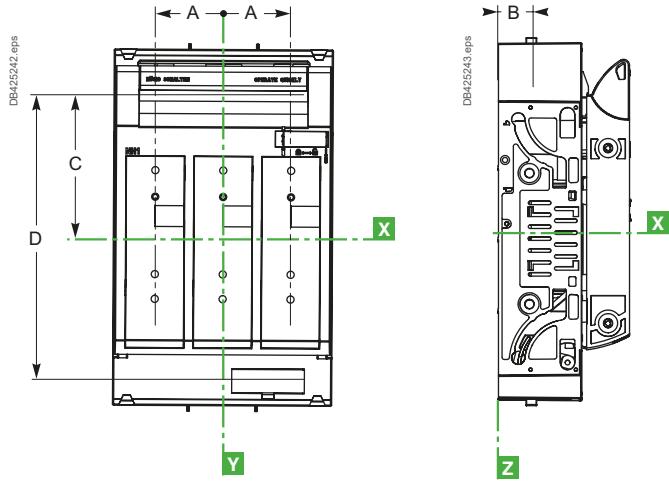
	ISFT250 to 630
L (mm)	≤ 16
Ø (mm)	10.2
Torque (Nm)	32

Lug for 240 to 300 mm² copper cables



	ISFT400/630
L (mm)	≤ 21
Ø (mm)	10.2
Torque (Nm)	32

Connections for mounting on a backplate

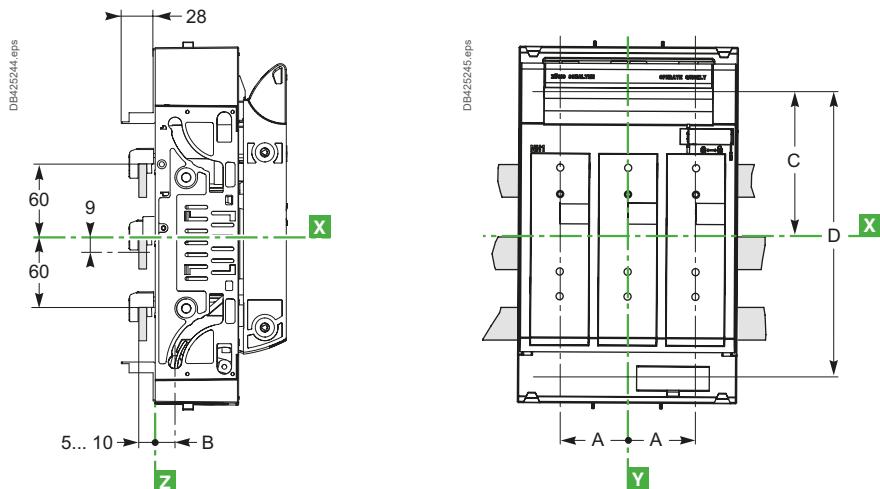


Type	A	B	C	D
ISFT250	57	33	93	186
ISFT400	65	36.5	104.5	209
ISFT630	80	36.5	104.5	209

C

Connections for mounting on 60 mm busbars

Hook-on connection for ISFT250/400



Fupact ISFL160 3 x 1P

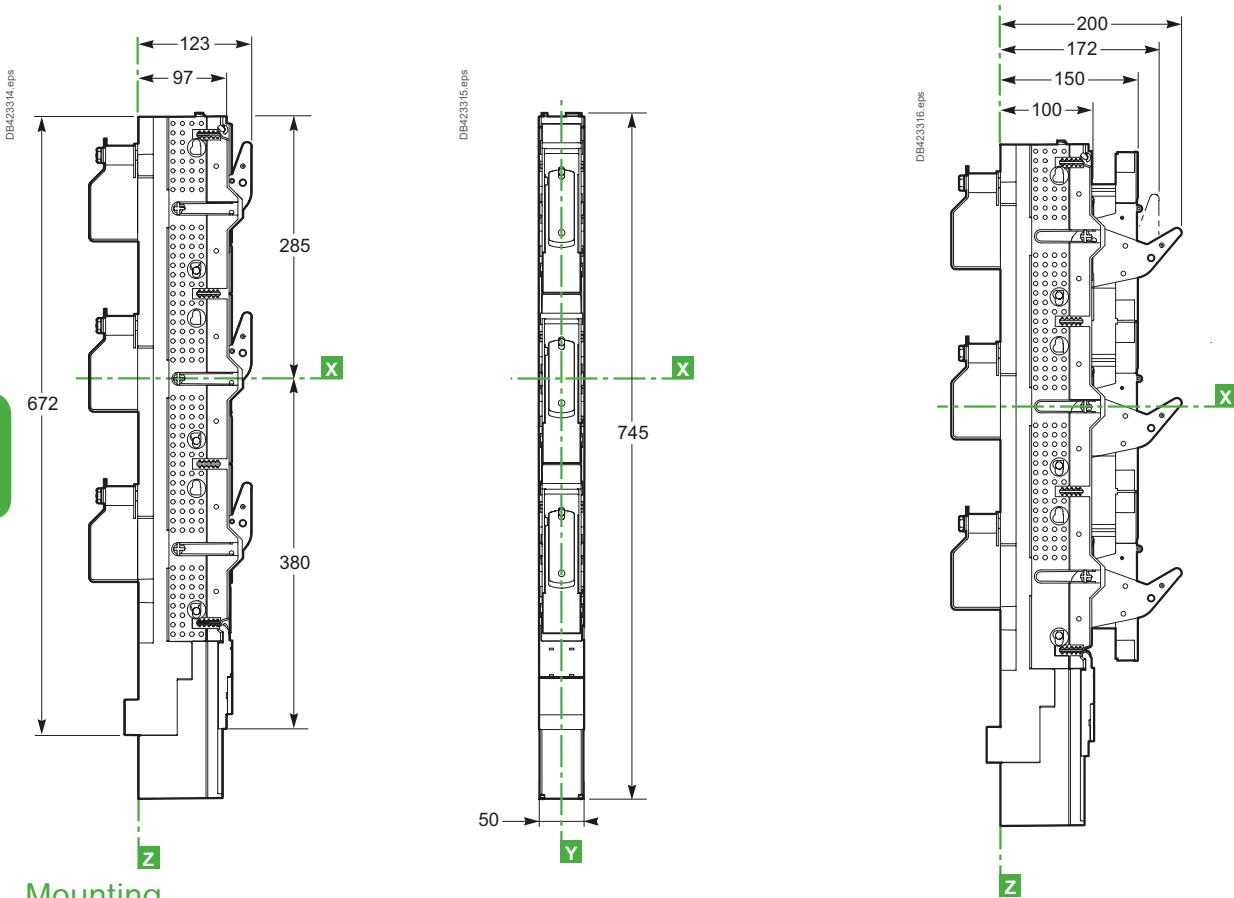
Dimensions and mounting

Dimensions

Fuse-carrier closed

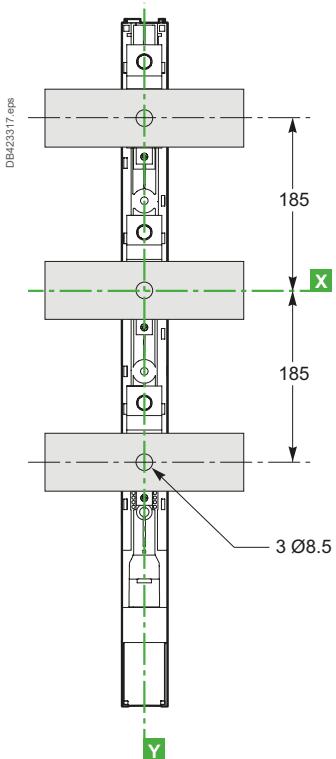
Front

Open and locked



Mounting

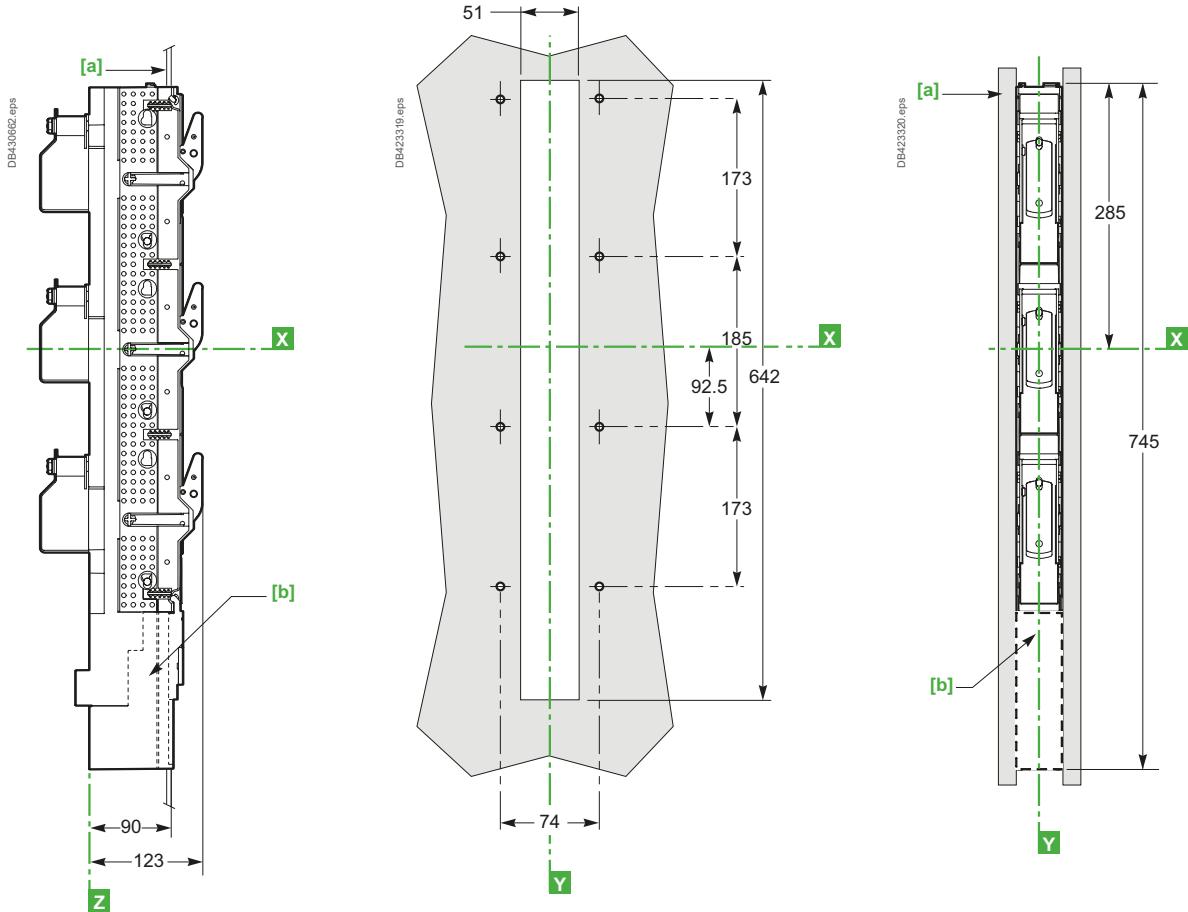
For 185 mm busbars



Fupact ISFL160 3 x 1P

Dimensions and mounting

For 1 device with side cover and/or 1 free slot



[a] Side cover for front panel cut-out.

[b] Terminal shields.

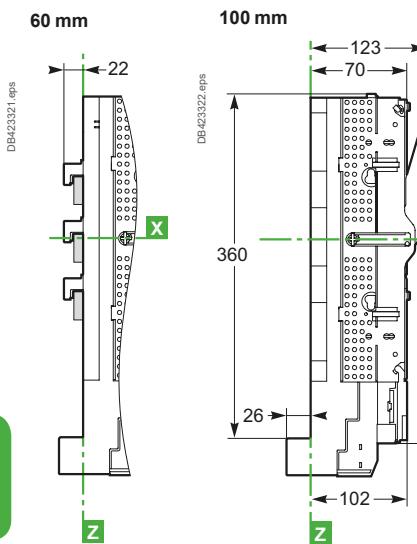
C

Fupact ISFL160 1 x 3P

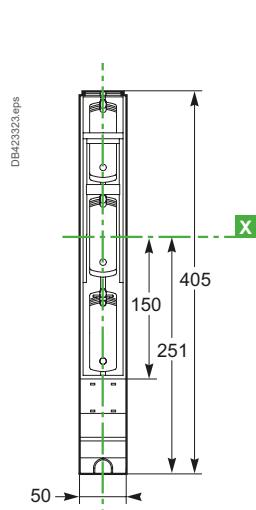
Dimensions and mounting

Dimensions

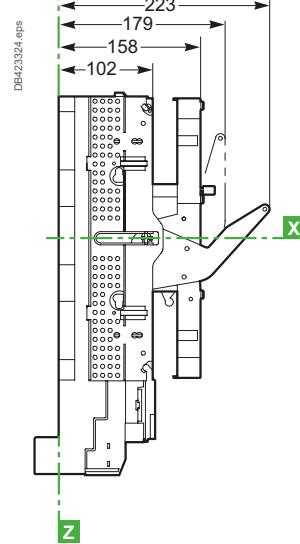
Fuse-carrier closed



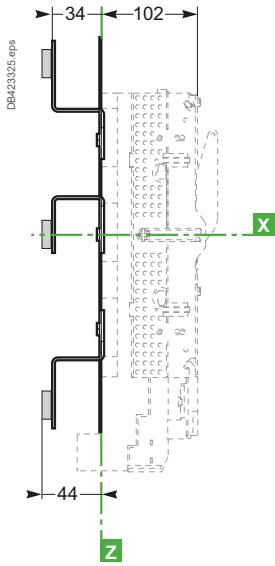
Front



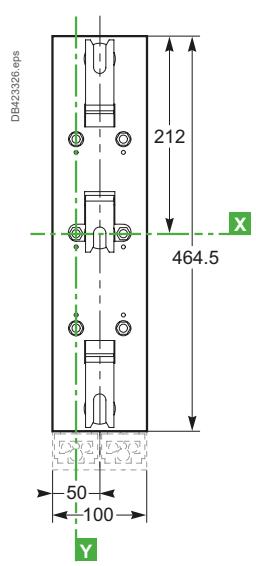
Open and locked



With 185 mm connection kit

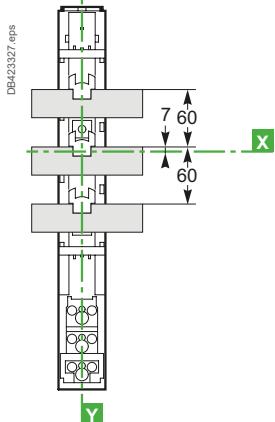


With 185 mm connection kit for 2 ISFL devices

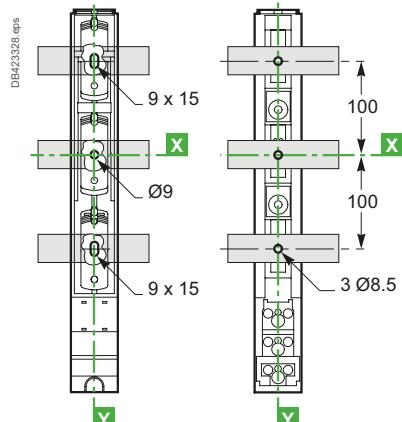


Mounting

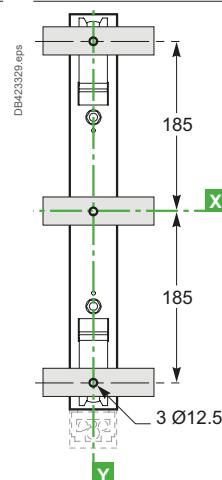
For 60 mm busbars



For 100 mm busbars



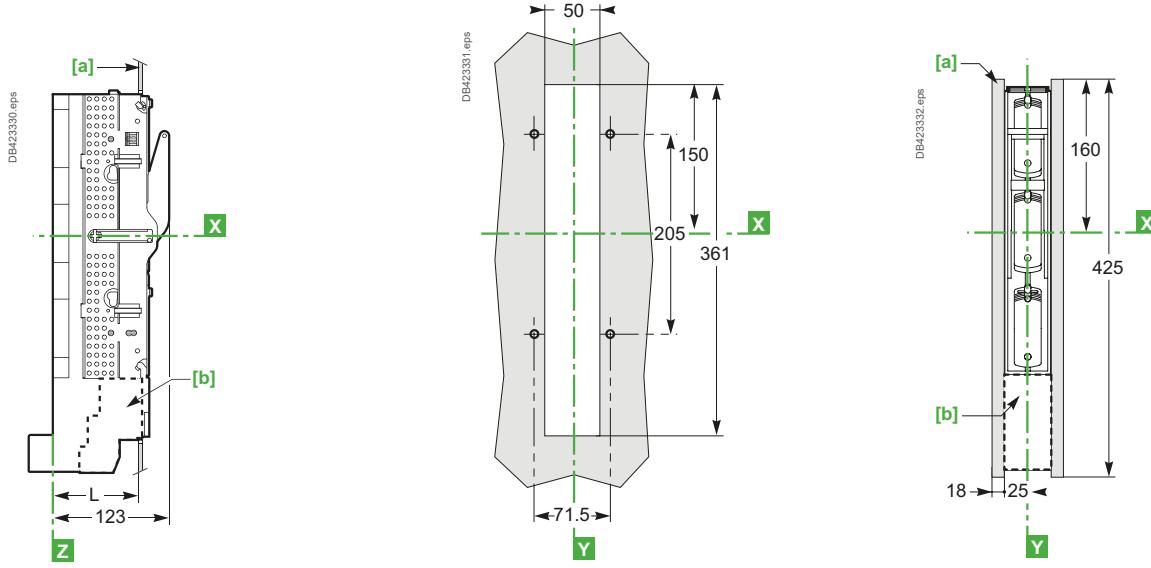
With connection kit for 185 mm busbars



Fupact ISFL160 1 x 3P

Dimensions and mounting

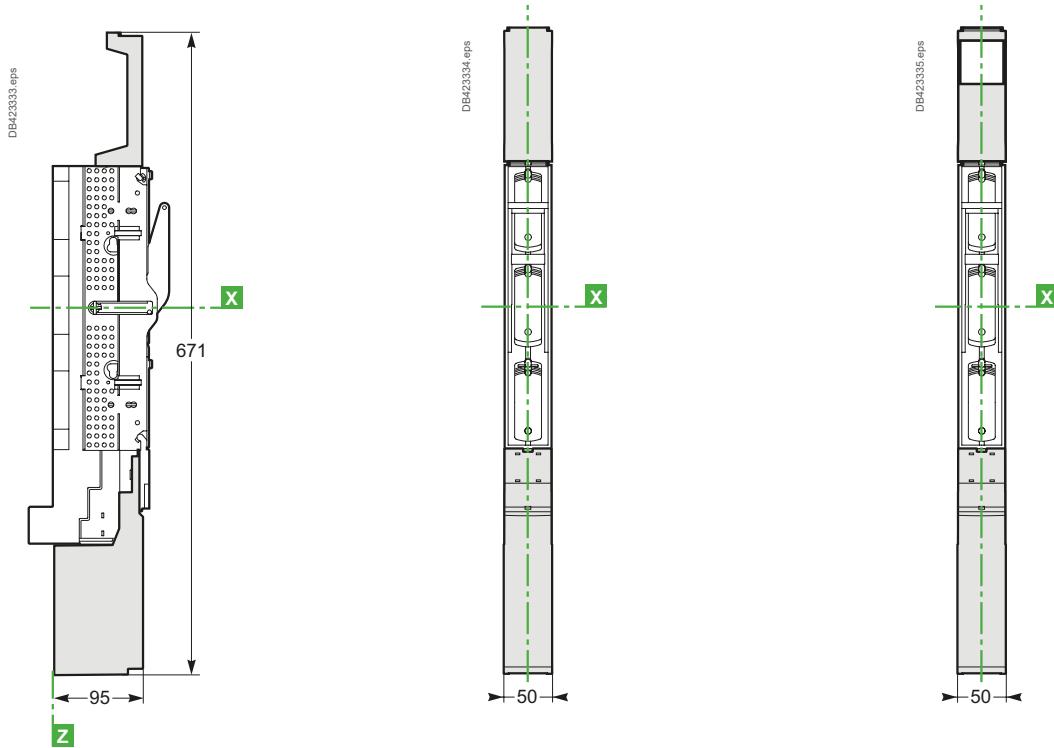
For 1 device with side cover and/or 1 free slot



[a] Side cover for front panel cut-out.
 [b] Terminal shields.

C

With length adapter

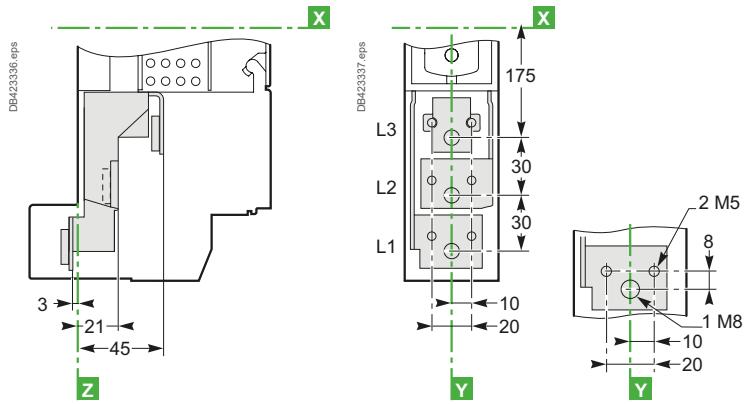


Fupact ISFL160 1 x 3P

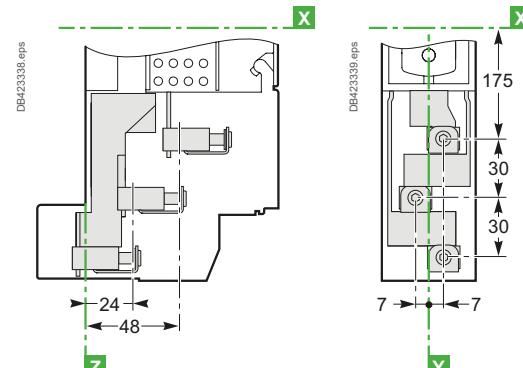
Connection and accessories

Connection

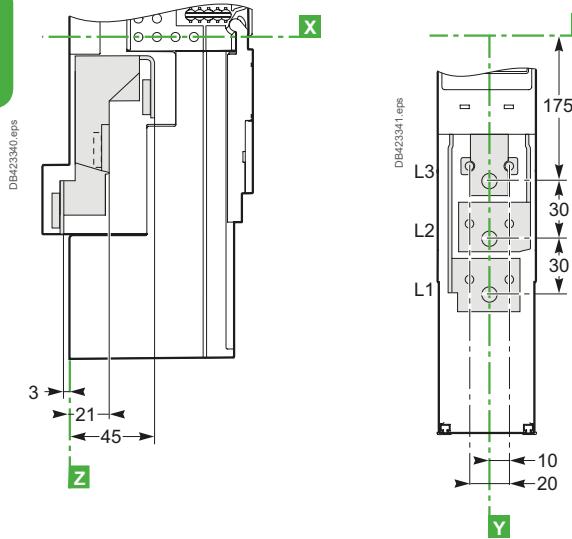
Connection via lugs/flexible bars



Connection via connectors

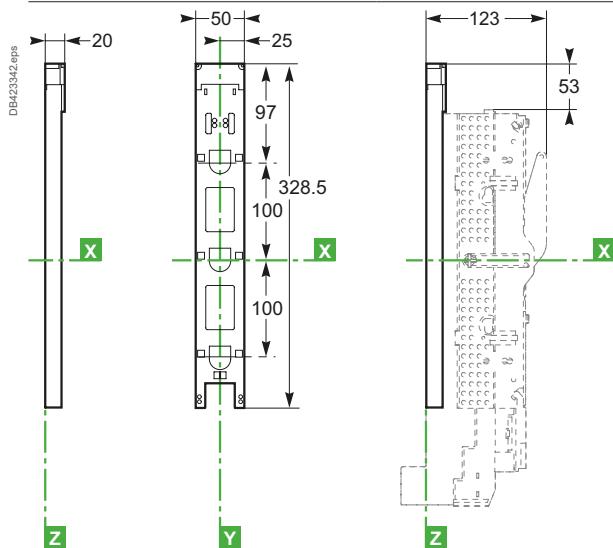


C



Current transformer

Direct connection to 100 mm busbars

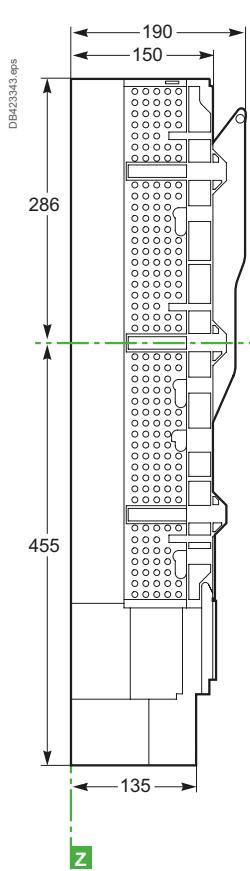


Fupact ISFL250 to 630 1 x 3P

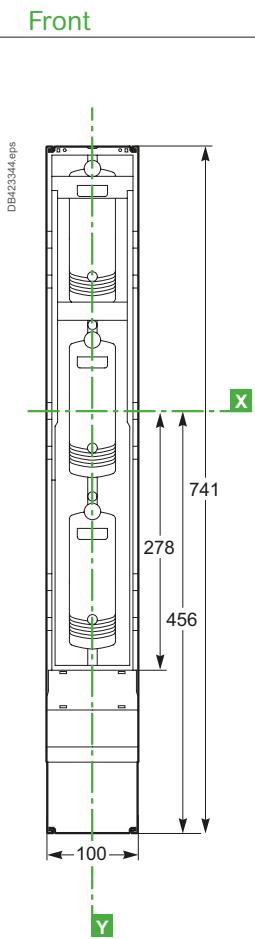
Dimensions and mounting

Dimensions

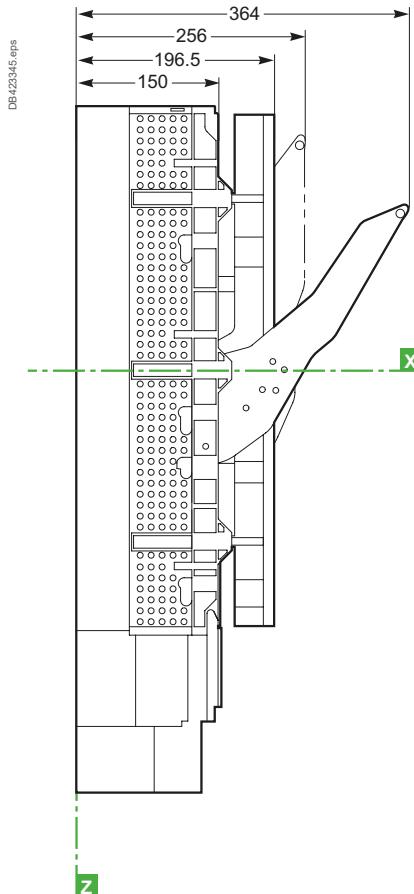
Fuse-carrier closed



Front



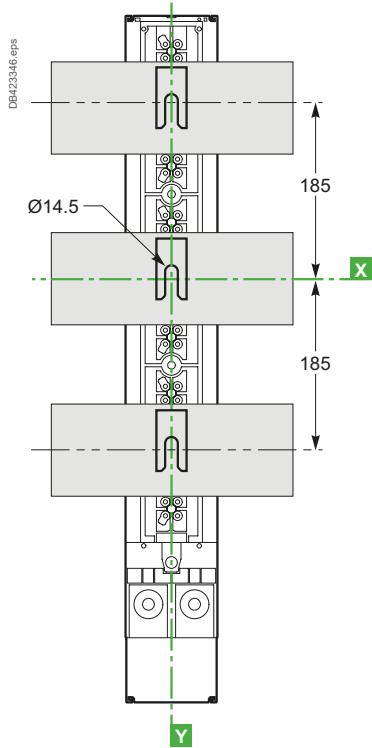
Open and locked



C

Mounting

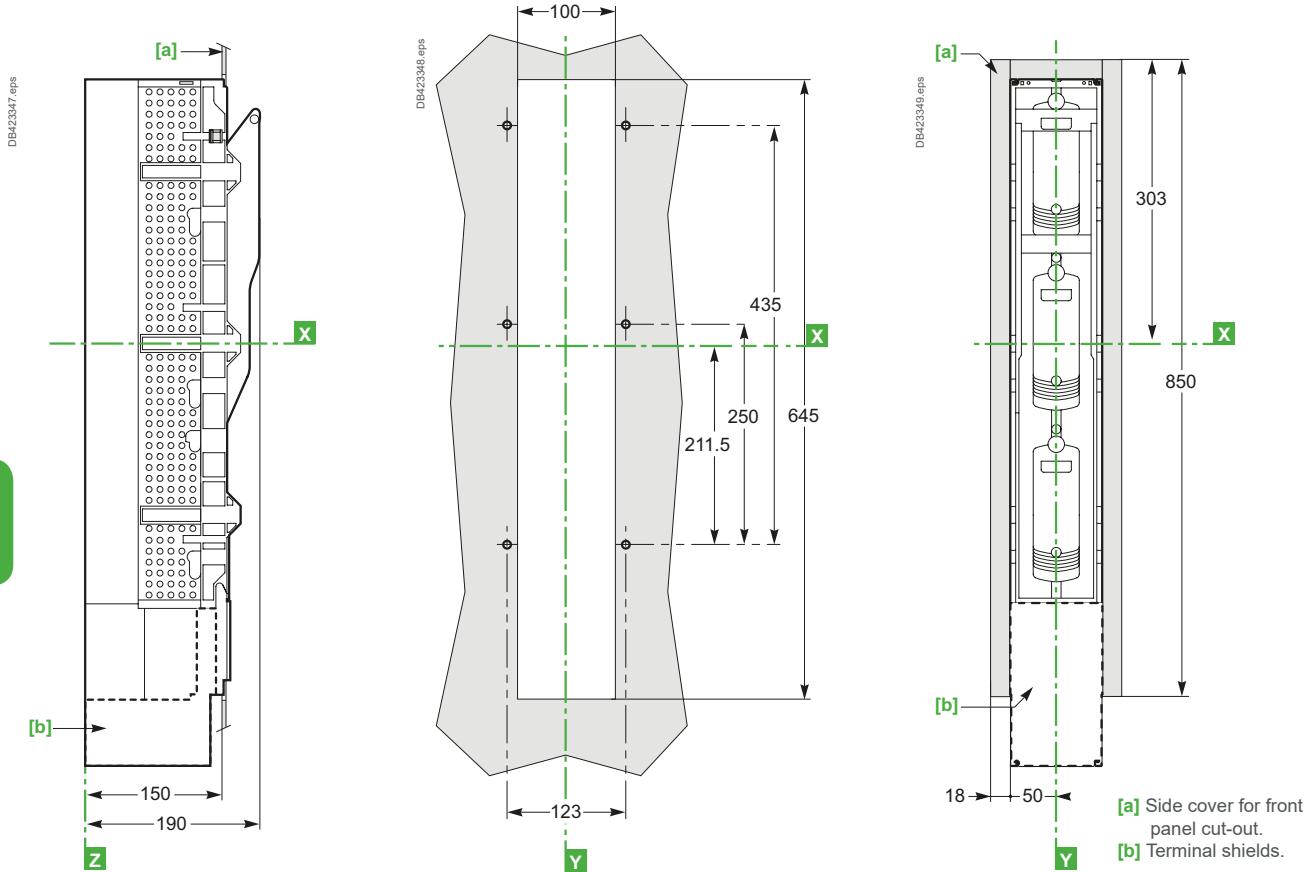
For 185 mm busbars



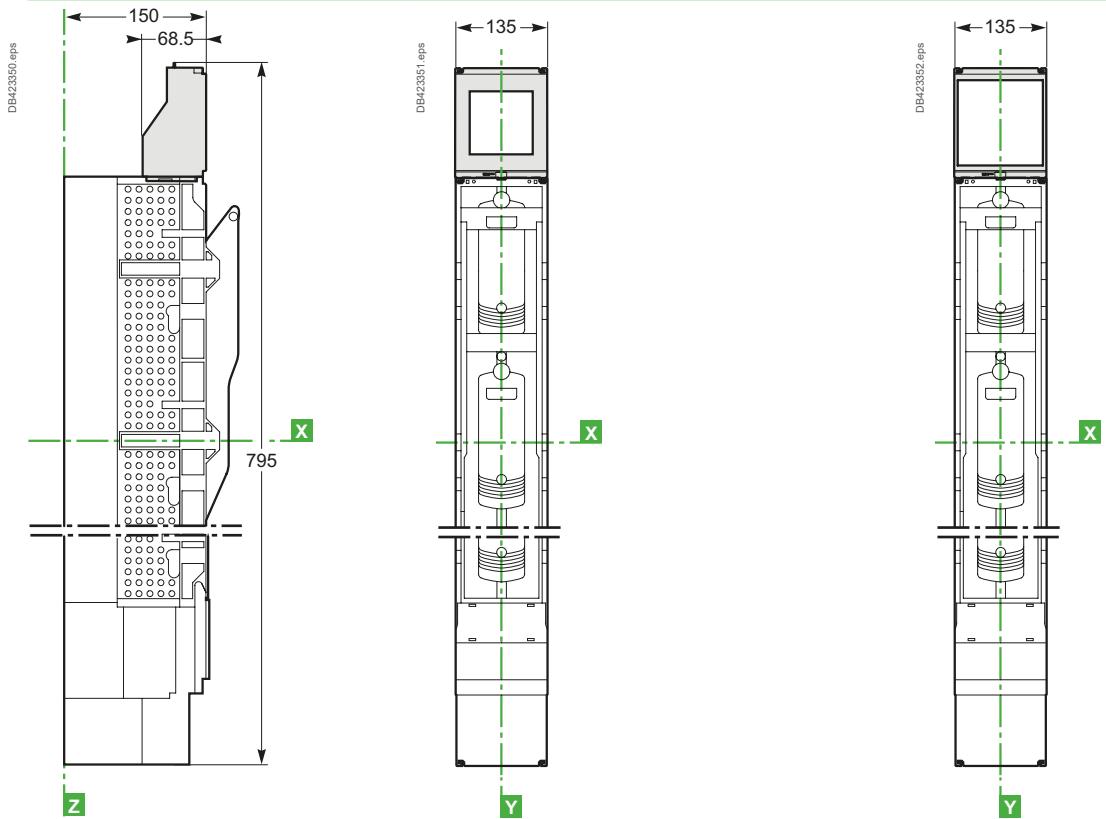
Fupact ISFL250 to 630

Dimensions and mounting

Device with side cover



With measurement device

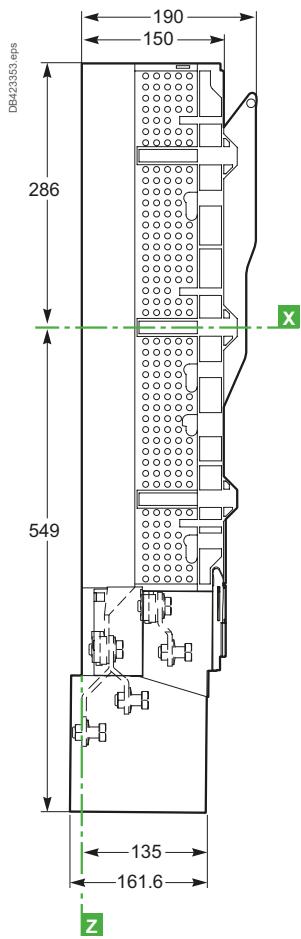


Fupact ISFL1250

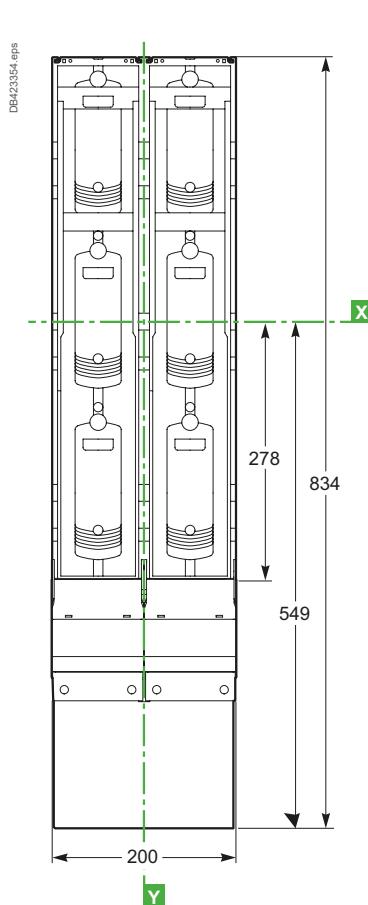
Dimensions and mounting

Dimensions

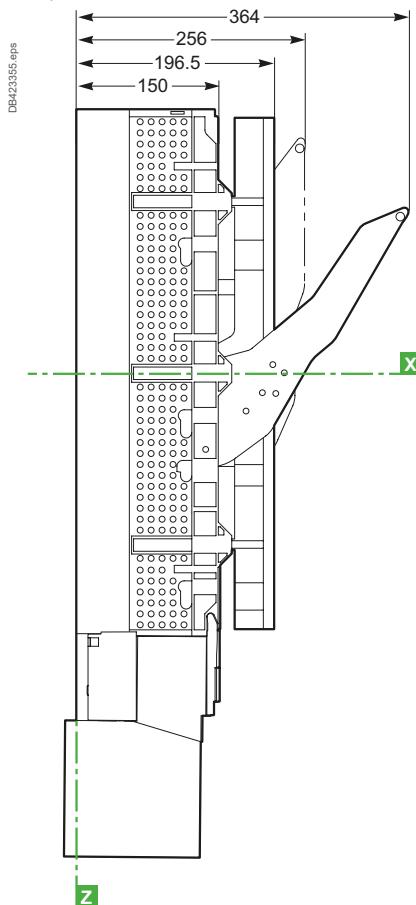
Fuse-carrier closed



Front



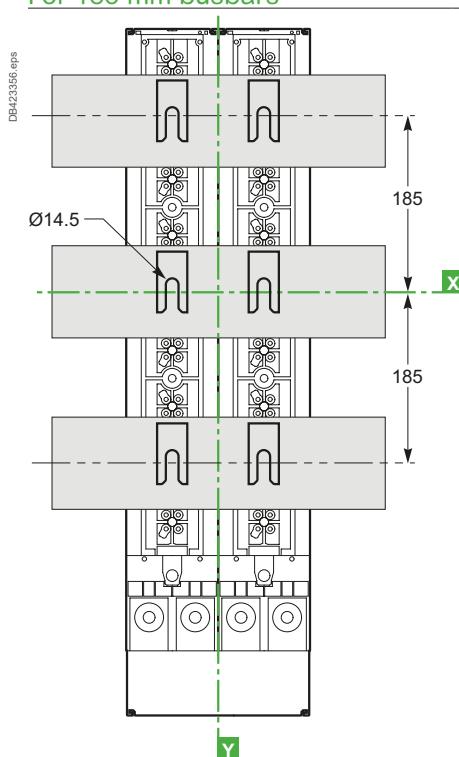
Open and locked



C

Mounting

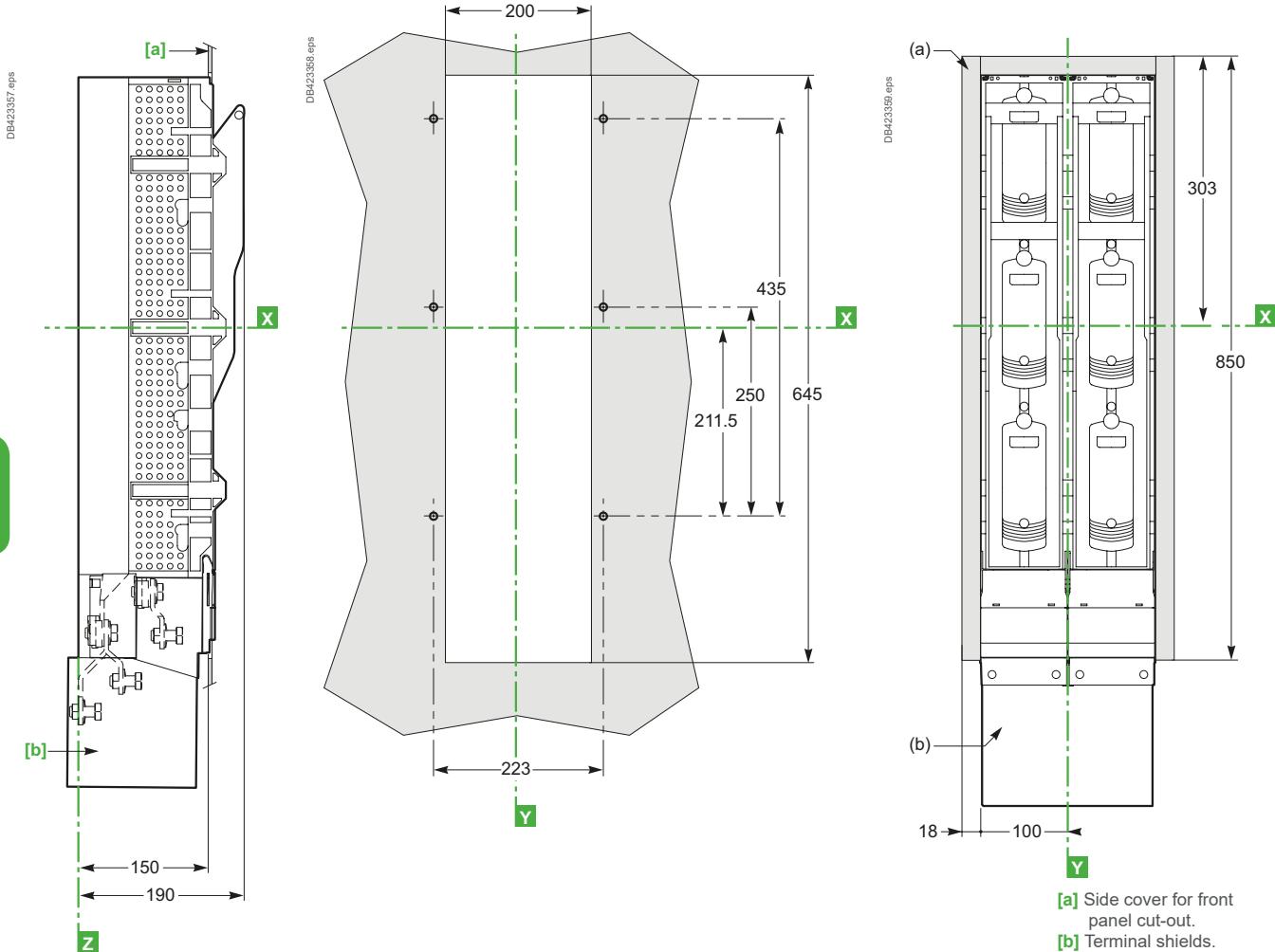
For 185 mm busbars



Fupact ISFL1250

Dimensions and mounting

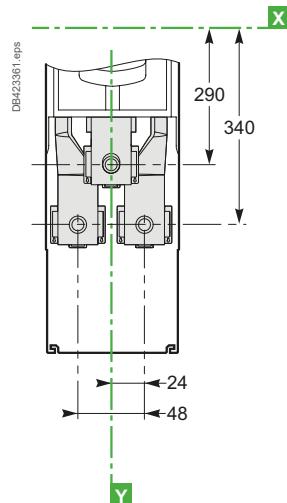
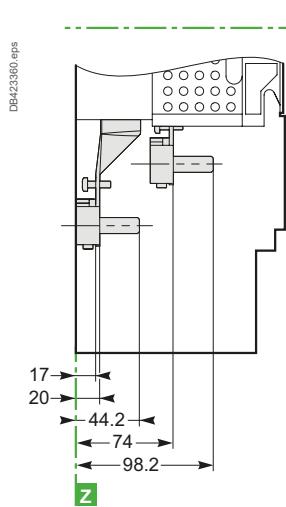
Device with side cover



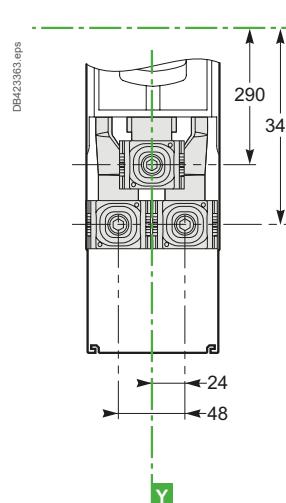
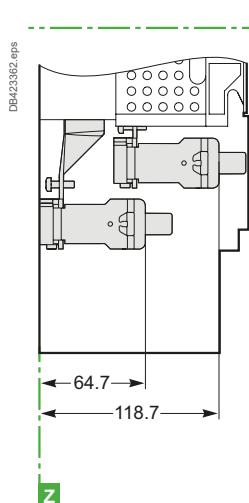
Dimensions and connection
Fupact ISFL1250
 Connection and accessories

Connection

Connection via lugs/flexible bars

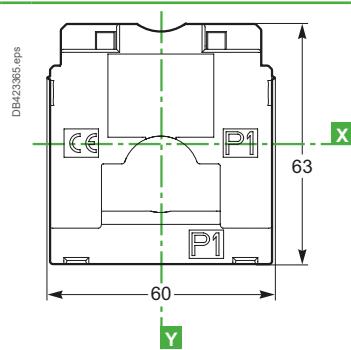
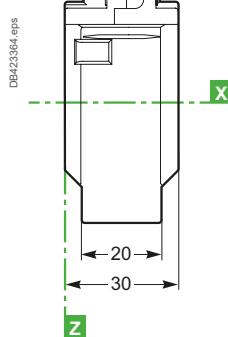


Connection via connectors



C

Current transformer

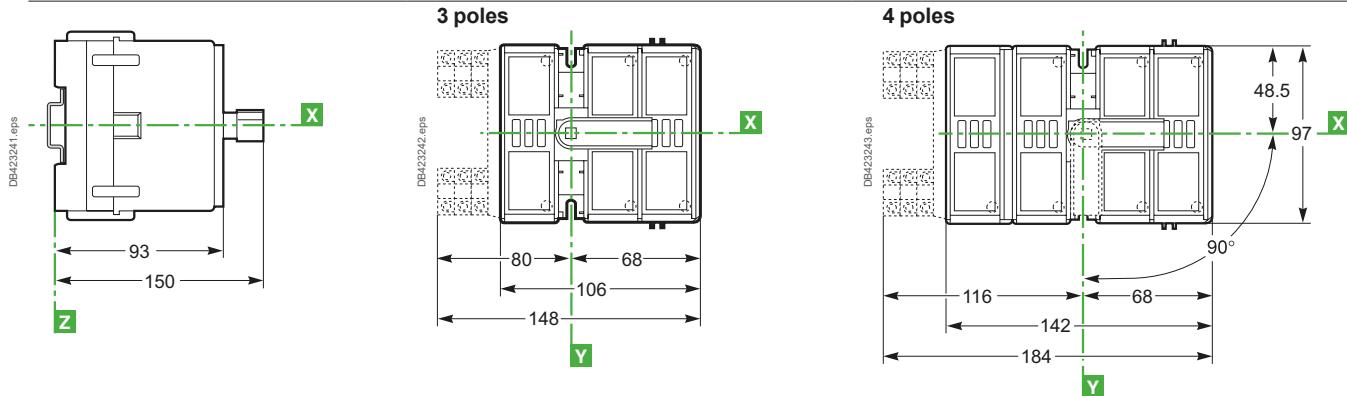


Fupact INF●32

Dimensions

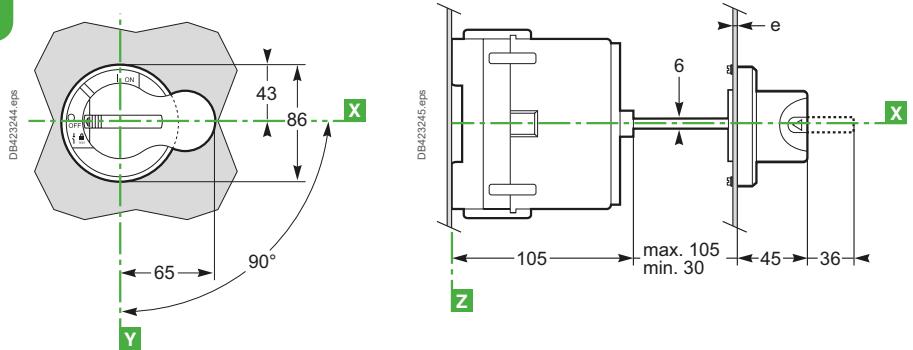
Dimensions

INFC32 and INFB32 with direct front handle

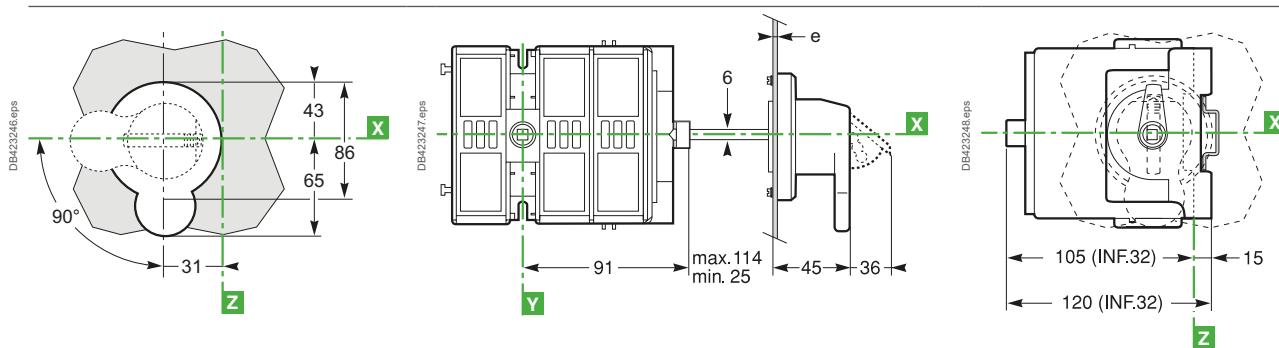


C

Extended front handle



Extended lateral handle

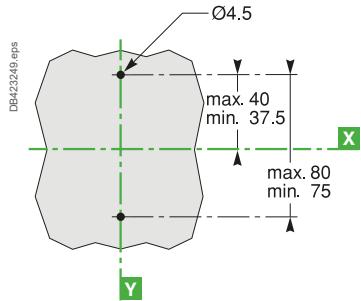


Fupact INF●32

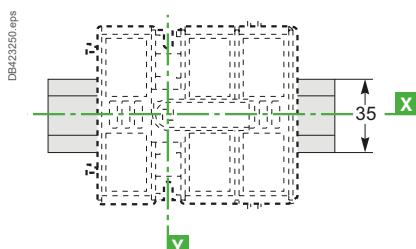
Mounting and front panel cut-outs

Mounting

On the backplate

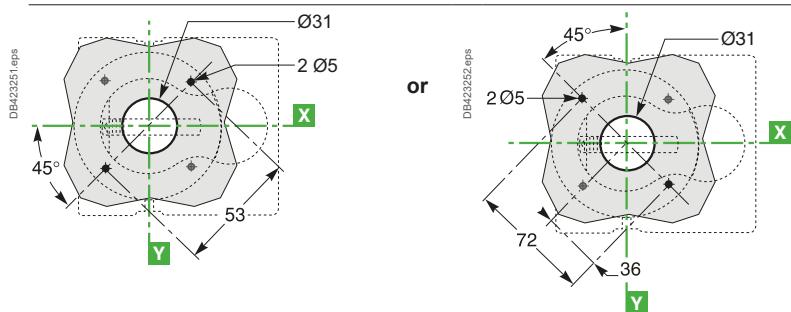


On DIN rail



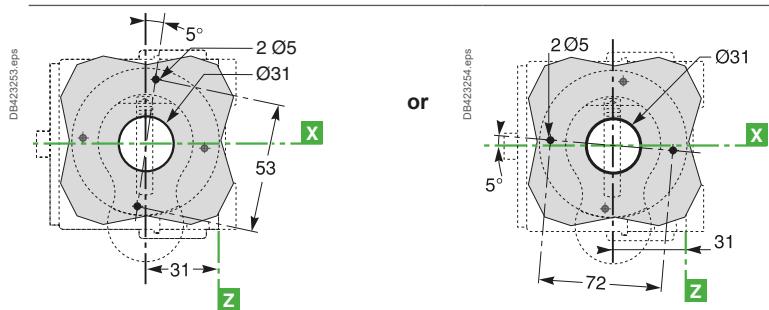
Front panel cut-outs

Extended front handle



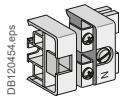
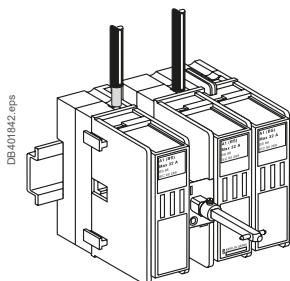
C

Extended lateral handle



Fupact INF●32

Connection and accessories



External neutral link.

Front connection of cables

Fupact INF●32 devices are equipped as standard with connectors for bare copper and aluminium cables.

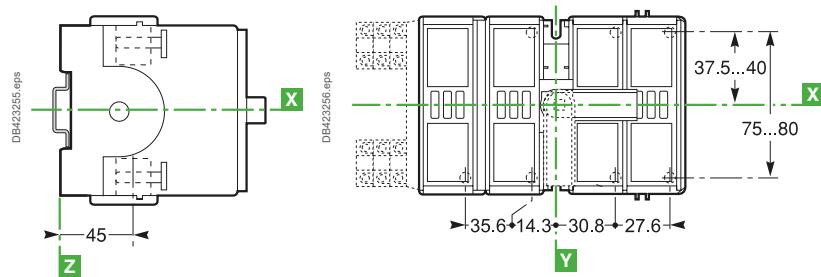
Neutral link: In the form of a terminal block to be secured directly to the DIN rail on the left-hand side of the Fupact.

Standard device

DB401702.eps	Fupact connectors	L (mm)	≤ 14
	S (mm ²)	0.5 to 10 rigid	
	Cu/Al	0.5 to 10 flexible [1]	
	Torque (Nm)	2	
O S	External neutral link	L (mm)	≤ 16
	S (mm ²)	2.5 to 35 rigid	
	Cu/Al	2.5 to 35 flexible [1]	
	Torque (Nm)	2	

[1] Connection of 0.5 to 4 mm² flexible cables requires crimped or auto-crimping ferrules.

Switch-disconnector fuse with front handle

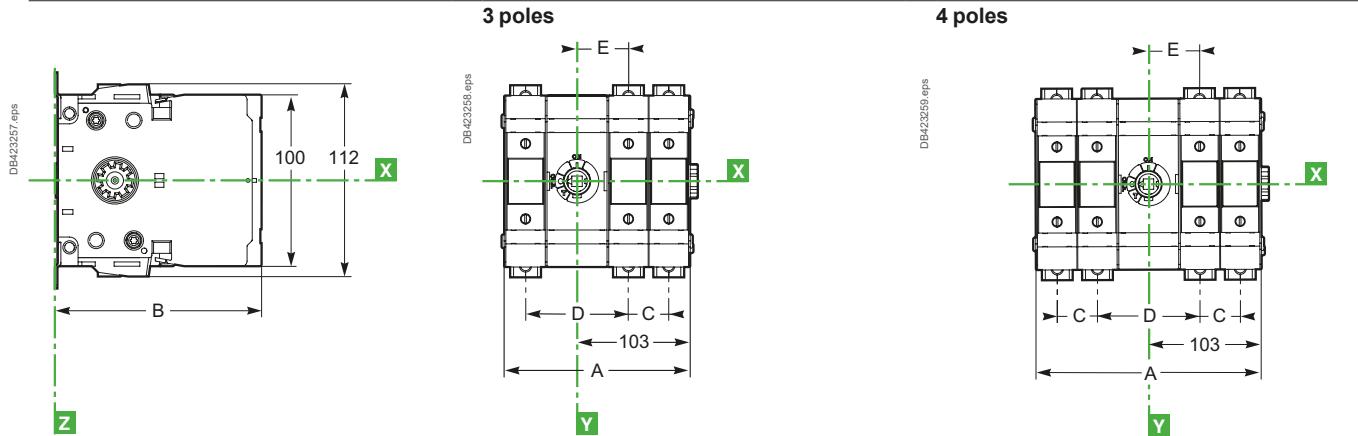


Fupact INF40 and INF●63

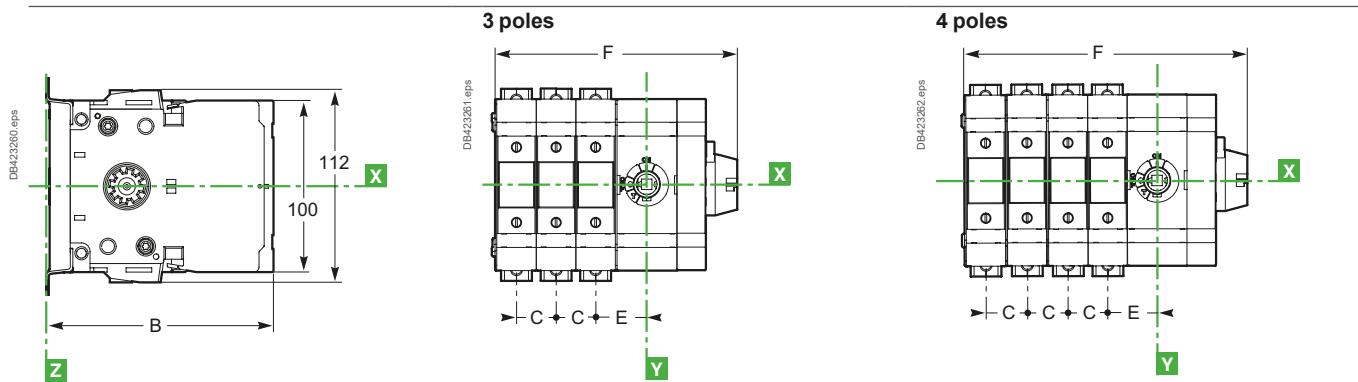
Dimensions

Dimensions

Front handle



Lateral handle



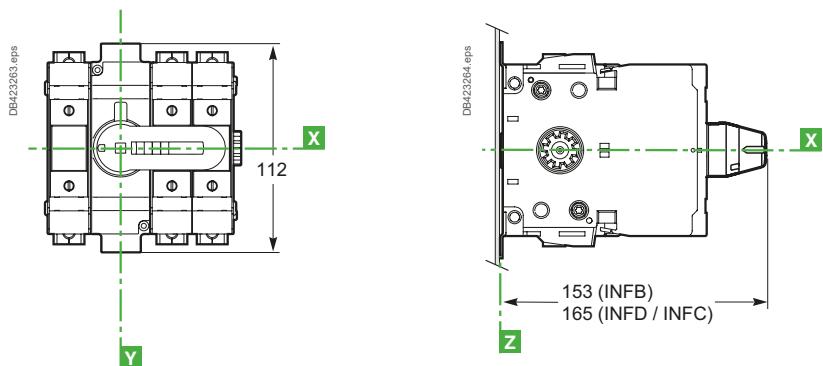
Type	A	B	C	D	E	F
INFB63 3P	114.5	108.5	23.5	60	30	146.5
INFC50 4P	138	108.5	23.5	60	30	170
INFC63 3P	148	130	35	71.5	36	181.5
4P	183	130	35	71.5	36	216.5
INF40 3P	114.5	120.5	23.5	60	30	146.5
INF63 4P	138	120.5	23.5	60	30	170

Fupact INF40 and INF●63

Dimensions

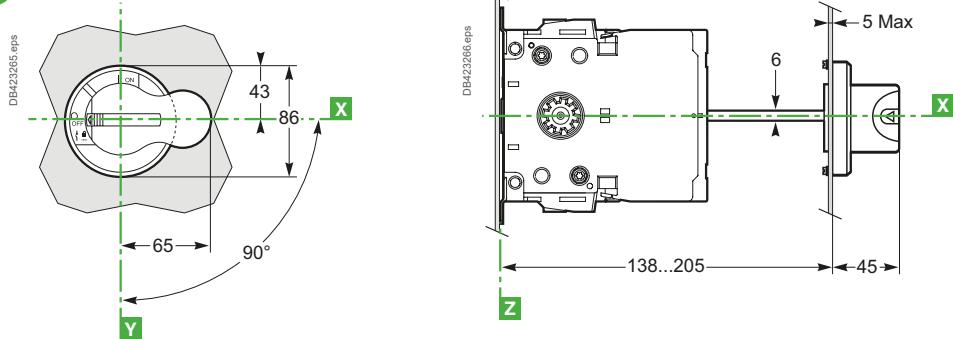
Dimensions

Direct front handle

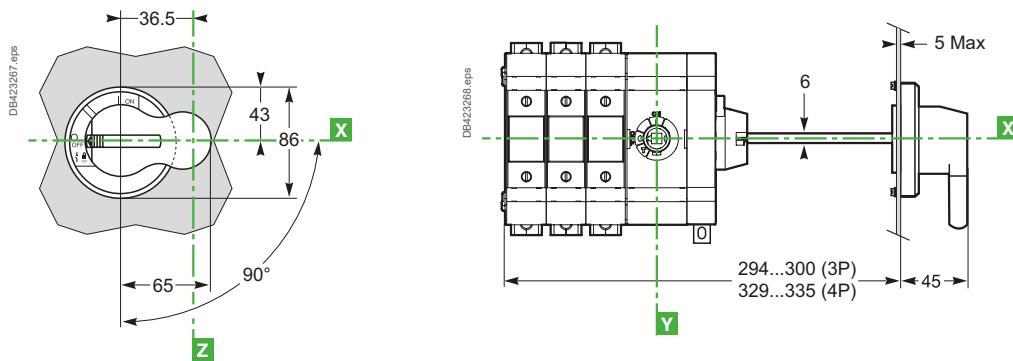


C

Extended front handle



Extended lateral handle

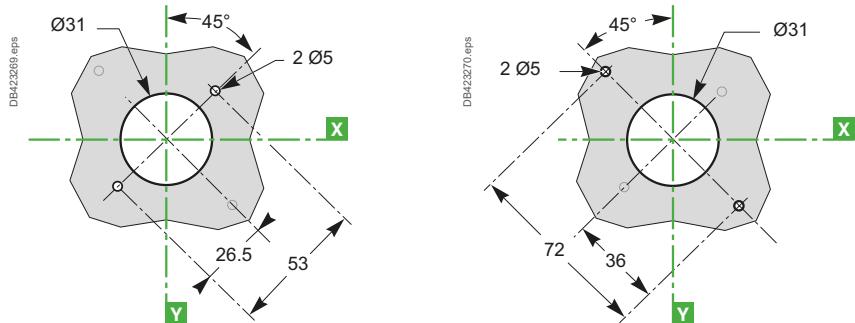


Fupact INF40 and INF●63

Mounting and front panel cut-outs

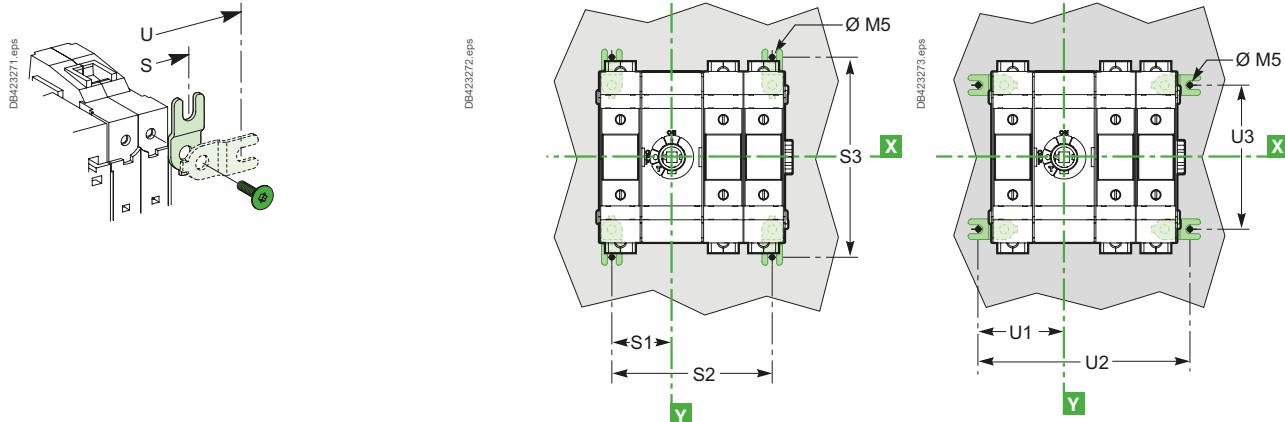
Front panel cut-outs

Extended front handle



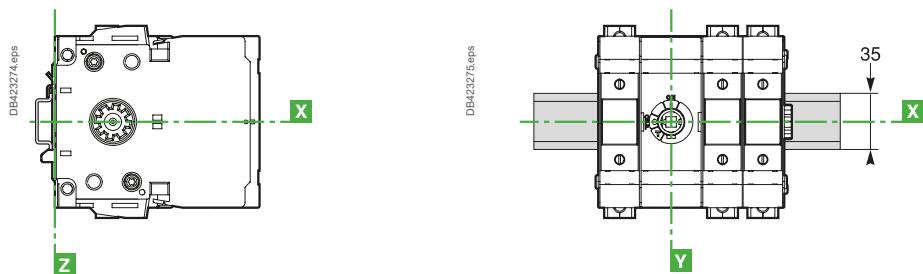
Mounting

On a backplate



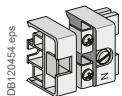
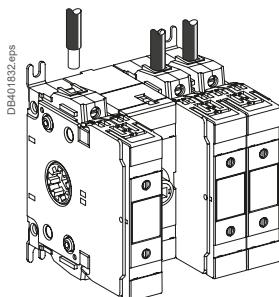
Type	S1	S2	S3	U1	U2	U3
INFB63 3 Poles	35	93.5	114	50	123.5	84
INFС50 4 Poles	58.5	117	114	50	147	84
INFД40 3 Poles	35	93.5	114	50	123.5	84
INFД63 4 Poles	58.5	117	114	50	147	84

On DIN rail



Fupact INF40 and INF●63

Connection and accessories



External neutral link.

Front connection of cables

Fupact INF40 and INF●63 devices are equipped as standard with connectors for bare copper and aluminium cables.

Neutral link: In the form of a terminal block to be secured directly to the DIN rail on the left-hand side of the Fupact.

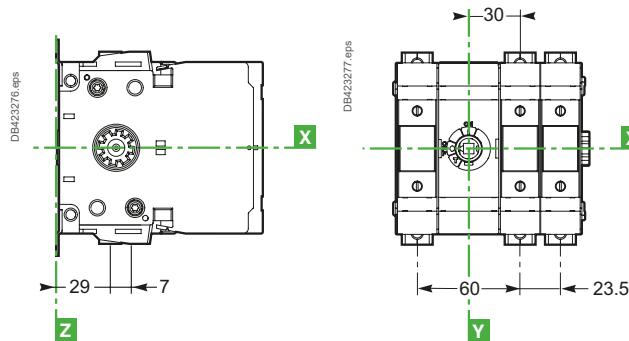
Standard device



Fupact connectors	L (mm)	≤ 12
S (mm^2)	2.5 to 25 rigid	
Cu/Al	2.5 to 25 flexible [1]	
Torque (Nm)	3 Nm (2.5 to 6 mm^2)	
	4 Nm (10 to 25 mm^2)	
External neutral link	L (mm)	≤ 18
S (mm^2)	2.5 to 35 rigid	
Cu/Al	2.5 to 35 flexible [1]	
Torque (Nm)	3.5	

[1] Connection of 2.5 to 4 mm^2 flexible cables requires crimped or auto-crimping ferrules.

Switch-disconnector fuse with front or lateral handle

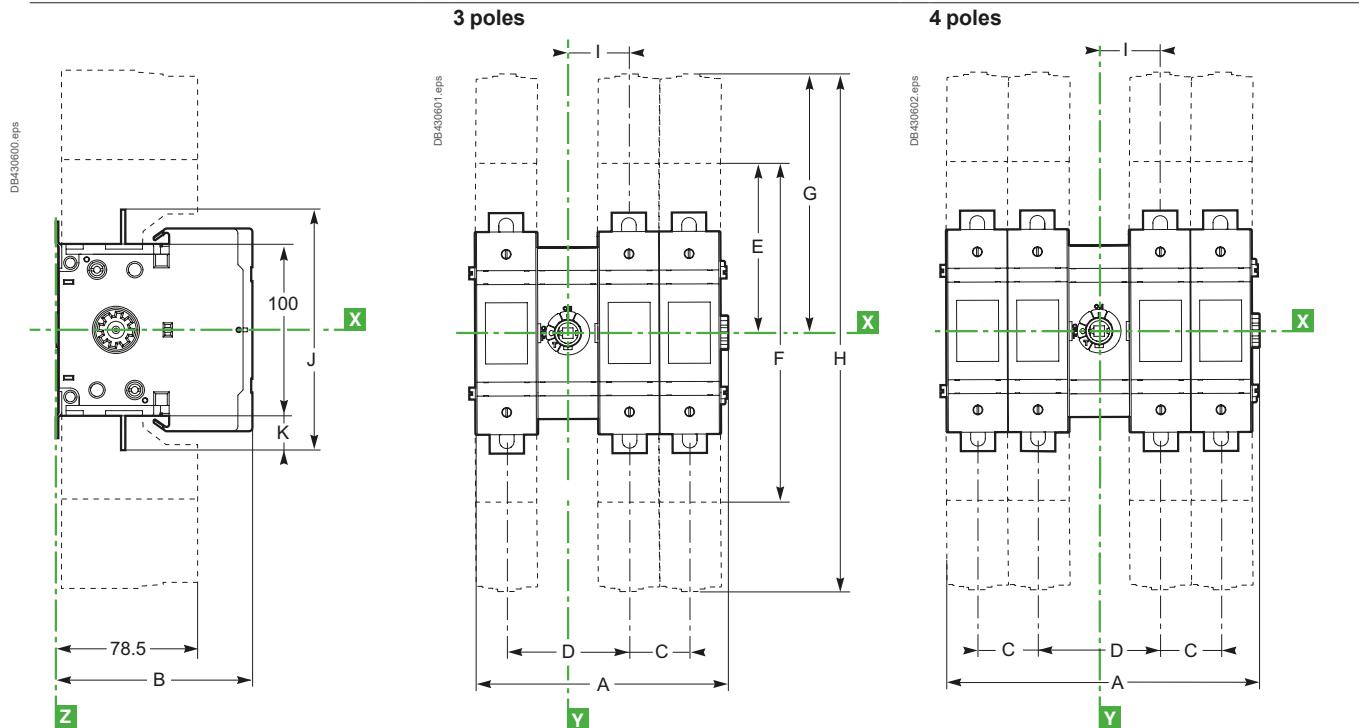


Fupact INFB100 to INF●160

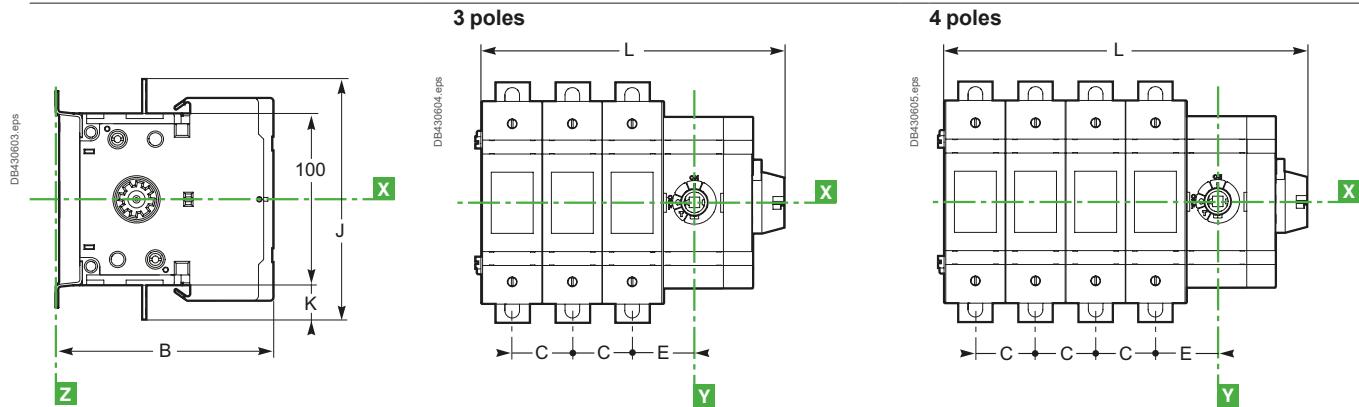
Dimensions

Dimensions

Front handle



Lateral handle



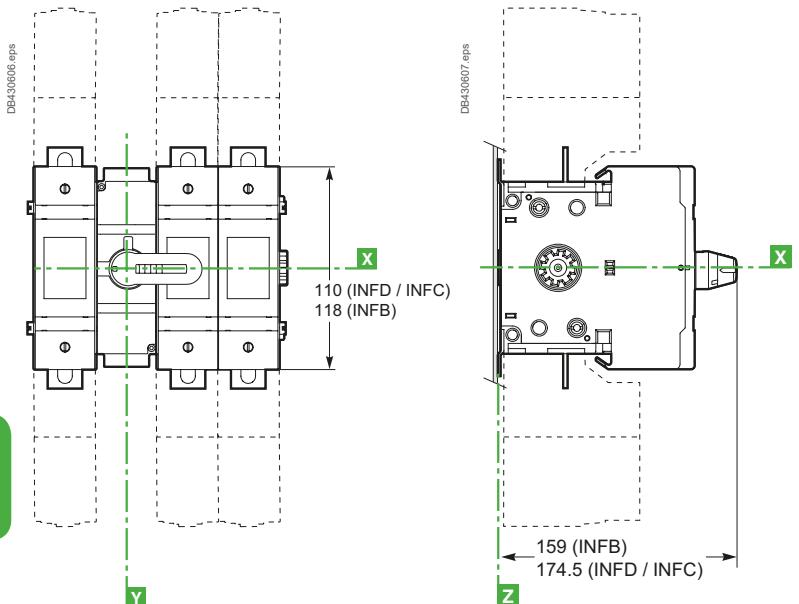
Type	A	B	C	D	E	F	G	H	I	J	K	L
INFB100 3 Poles	148	114.5	35	71.5	94	188	144	288	36	140	20	178
INFB160 4 Poles	183	114.5	35	71.5	94	188	144	288	36	140	20	213
INFC125 3 Poles	148	130	35	71.5	94	188	144	288	36	140	20	178
INFD160 4 Poles	183	130	35	71.5	94	188	144	288	36	140	20	213

Fupact INF \bullet 100 to INF \bullet 160

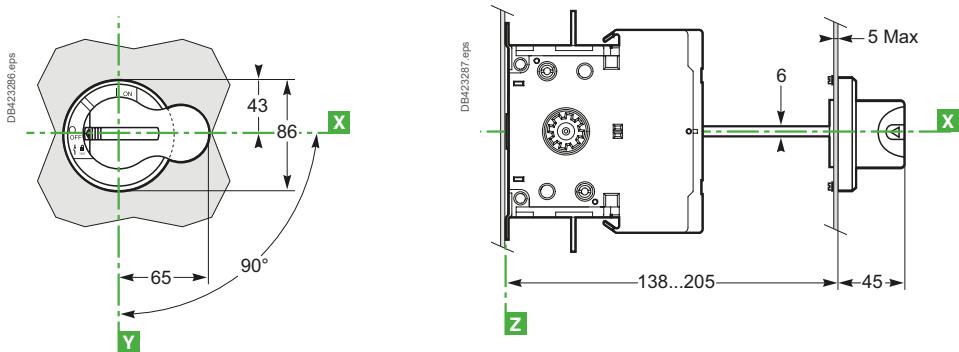
Dimensions

Dimensions

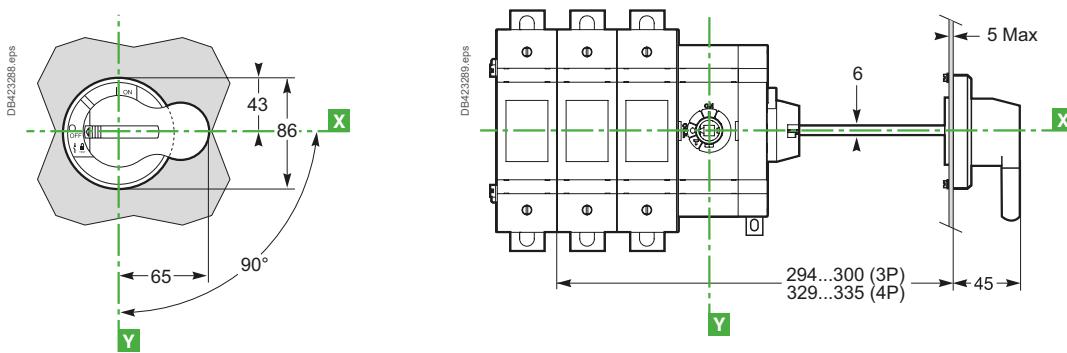
Direct front handle



Extended front handle



Extended lateral handle

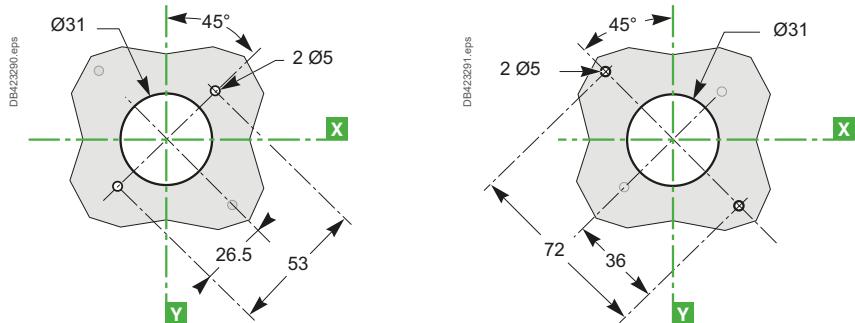


Fupact INFB100 to INF●160

Mounting and front panel cut-outs

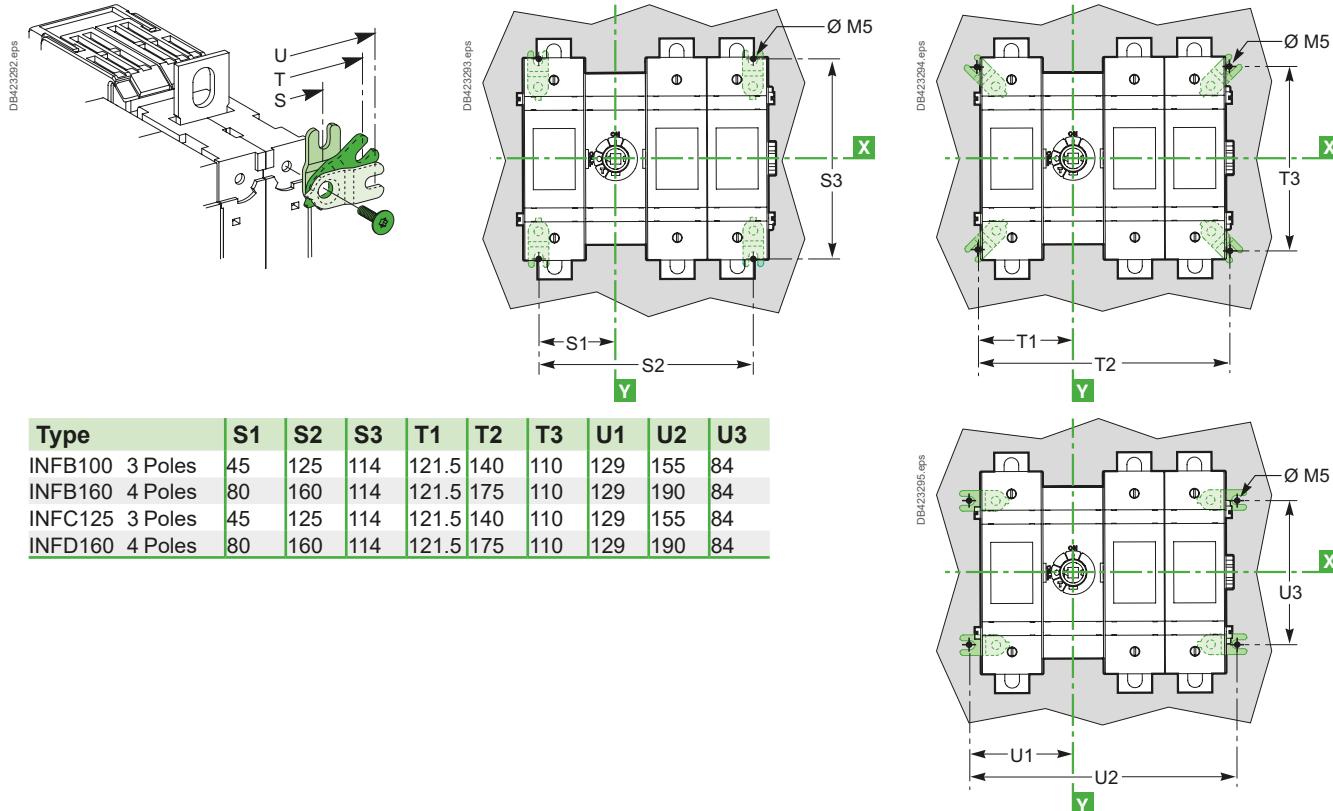
Front panel cut-outs

Extended front handle

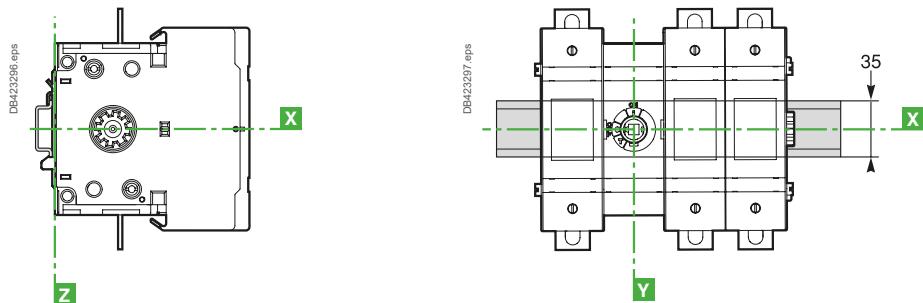


Mounting

On a backplate

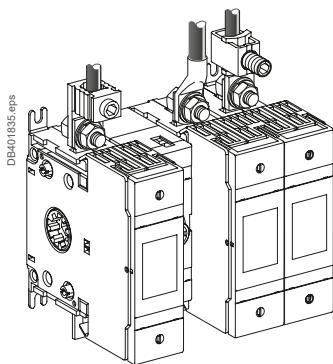


On DIN rail



Fupact INFB100 to INF●160

Connection and accessories

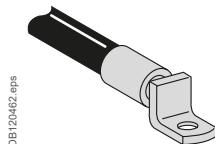


If $500 \text{ V} \leq U \leq 690 \text{ V}$, terminal shields are mandatory.

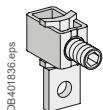
C



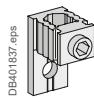
Lug for copper cable.



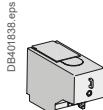
Lug for aluminium cable.



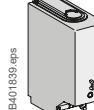
Cable connector
25 to 95 mm² Cu.



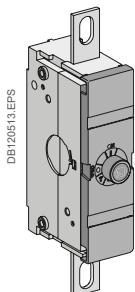
Cable connector
6 to 95 mm² Al.



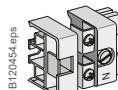
Short terminal shield.



Long terminal shield.



Removable neutral link.



External neutral link.

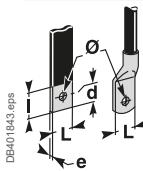
Front connection of bars or cables

Fupact INFB100 to INF●160 devices are equipped as standard with 20 mm wide terminals with holes for M8 screws, for direct connection of insulated bars and cables with crimped lugs.

Lugs

The small lugs for copper or aluminium cables may be used for cables with cross-sectional areas up to 185 mm². Crimping by hexagonal barrels or punching. Lugs are compatible with the terminal shields.

Standard device



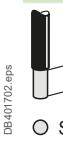
d (mm)	≤ 10
l (mm)	≤ 27
e (mm)	2...6.4
L (mm)	≤ 20
Ø (mm)	10
Torque (Nm)	15 to 22
Bars, lugs	

Front connection with accessories

Fupact INFB100 to INF●160 switch-disconnector fuses are equipped as standard with 20 mm wide terminals that can be fitted with connectors for bare copper or aluminium cables with cross-sectional areas from 25 to 120 mm².

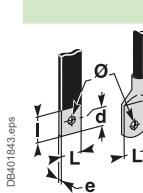
Removable neutral link: in the form of a terminal block to be secured directly to the DIN rail on the left-hand side of the Fupact.

Standard device



Fupact connectors LV480442	L (mm)	27
	S (mm ²) Cu/Al	25 to 95
	Torque (Nm)	20
Fupact connectors LV480443	L (mm)	27
	S (mm ²) Cu/Al	6 to 95
	Torque (Nm)	12 to 22
External neutral link	L (mm)	≤ 18
	S (mm ²)	2.5 to 35 rigid
		2.5 to 35 flexible
	Torque (Nm)	2

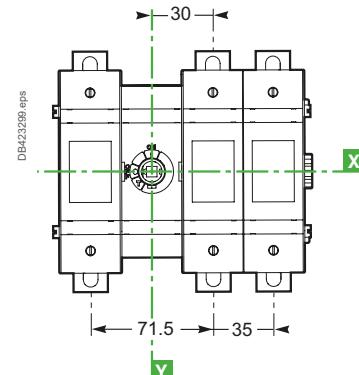
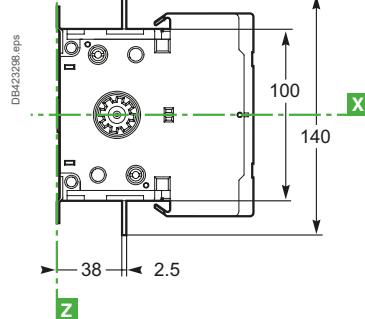
Removable neutral link



INF●100 INF●160

d (mm)	≤ 15
l (mm)	≤ 58
e (mm)	≤ 6
L (mm)	≤ 25
Ø (mm)	≥ 12
Torque (Nm)	30

Switch-disconnector fuse with front handle

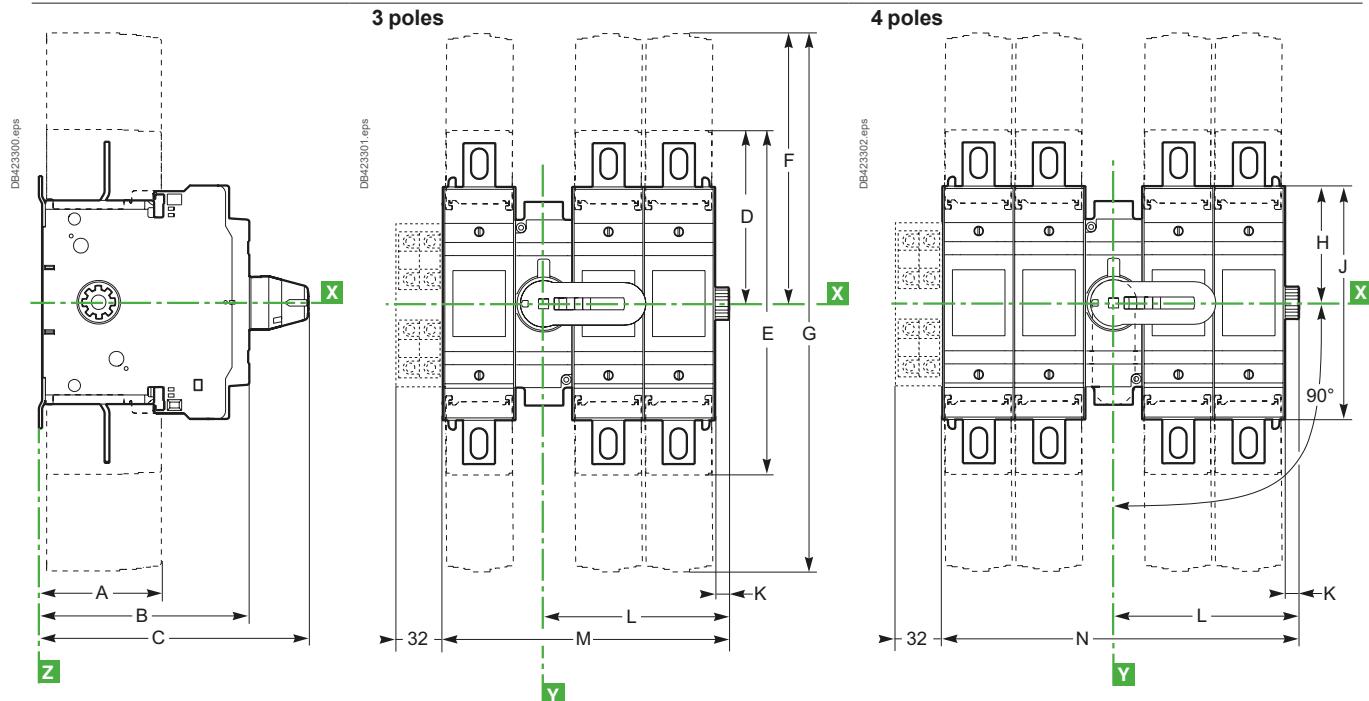


Fupact INF●200 to INF●800

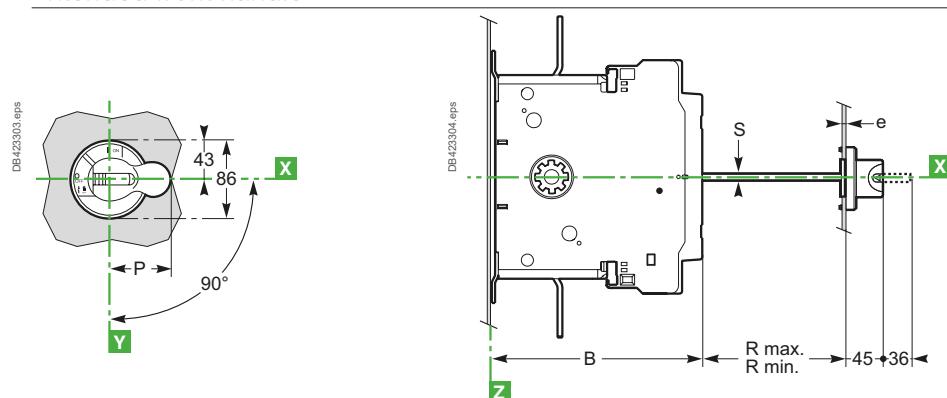
Dimensions

Dimensions

Direct front handle



Extended front handle

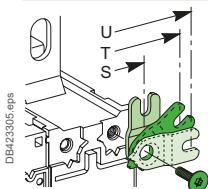


Type	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R min	R max	S
INFD200	78	149	191	103.5	207	167.5	335	72.5	145	6.8	111.5	175.5	219	65	40	105	6
INFB200	78	130	167	103.5	207	167.5	335	72.5	145	6.8	111.5	175.5	219	65	59	124	6
INFD250	78	154	191	103.5	207	173.5	347	74.5	149	6.8	131.5	206	260	65	35	100	6
INFB250	78	154	167	103.5	207	173.5	347	74.5	149	6.8	131.5	206	260	65	35	100	6
INFD400	84	193	236	125.8	251.6	209	401.8	83	166	6.8	161.5	254	318	95	37	132	12
INFB400	84	176	219	125.8	251.6	209	401.8	97	194	6.8	161.5	254	318	95	54	149	12
INF●630	98	233	276	165	330	240	480	115	230	7.8	218.5	341	429	145	23	146	12
INF●800	135	233	276	165	330	240	480	115	230	7.8	218.5	341	429	145	23	146	12

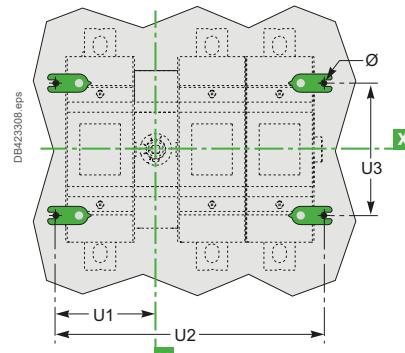
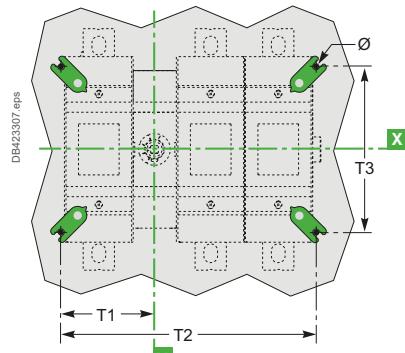
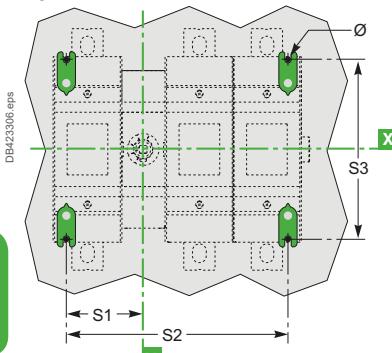
Fupact INF●200 to INF●800

Mounting and front panel cut-outs

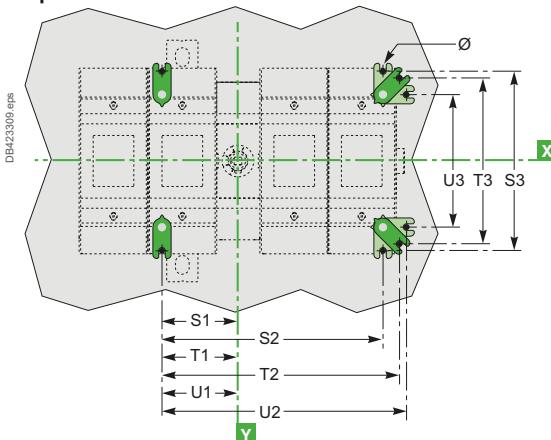
Mounting



3 poles

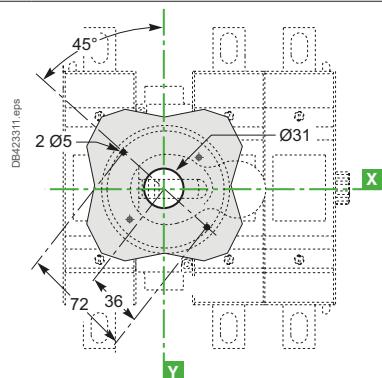
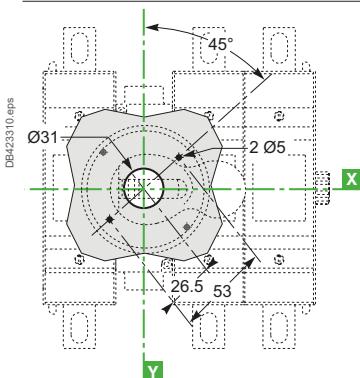


4 poles



Front panel cut-outs

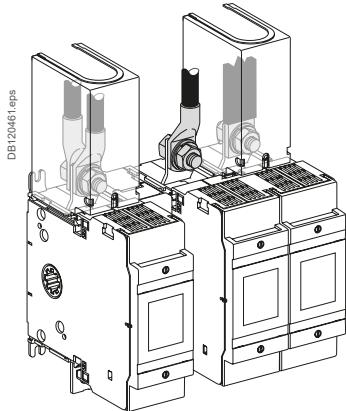
Extended front handle



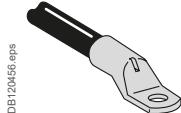
Type	S1	S2	S3	T1	T2	T3	U1	U2	U3	\emptyset	
INF●200	3P 4P	52 52	147.5 147.5	144 144	61.5 52	166.5 157	138.5 138.5	70 52	183.5 165.5	108 108	5.2 5.2
INF●250	3P 4P	67.5 67.5	178 178	144 144	71.5 67.5	197 187.5	138.5 138.5	80 67.5	214 196	108 108	5.2 5.2
INF●400	3P 4P	81.5 81.5	227 227	164 164	90.5 81.5	245 236	159 159	101 81.5	263 245	128 128	5.2 5.2
INF●630	3P	102.5	293	232	117.5	323	223.3	130.5	349	176	8.2
INF●800	4P	102.5	293	232	102.5	308	223.3	102.5	321	176	8.2

Fupact INF●200 to INF●800

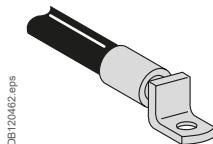
Connection and accessories



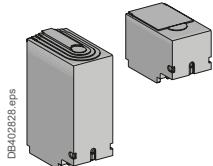
If $500 \text{ V} \leq U \leq 690 \text{ V}$, terminal shields are mandatory.



Lug for copper cable.



Lug for aluminium cable.



Terminal shields.

Front connection of bars or cables

Fupact INF●250 to INF●400 and INF●630 to INF●800 devices are equipped as standard with terminals with holes for screws, for direct connection of insulated bars and cables with crimped lugs.

Terminals

- 25 mm wide with M10 screws (INF●200 to INF●400)
- 40 mm wide with M12 screws (INF●630 to INF●800).

Lugs

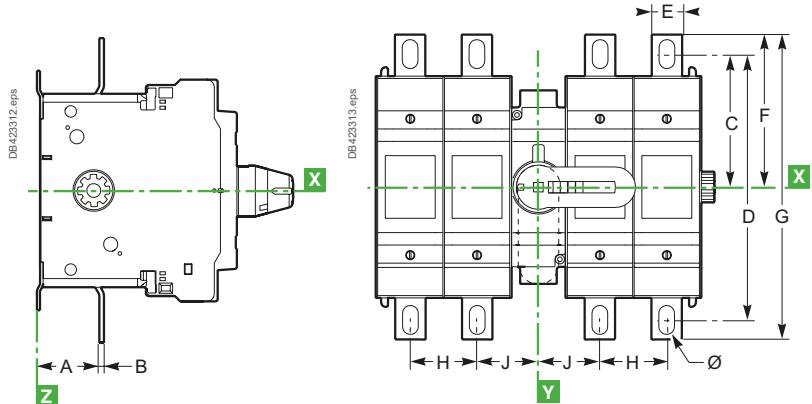
The lugs are different for copper and aluminium cables and are compatible with the terminal shields.

The small lugs for copper or aluminium cables may be used for cables with 240 or 300 mm² cross-sectional areas (INF●630 to INF●800).

Crimping by hexagonal barrels (Cu or Al lugs) or punching (Cu lugs).

Standard device	INF●200	INF●250 INF●400	INF●630 INF●800
d (mm)	≤ 15	≤ 15	≤ 20
I (mm)	≤ 58	≤ 58	≤ 58
e (mm)	≤ 6	≤ 6	$3 \leq e \leq 10$
L (mm)	≤ 25	≤ 25	≤ 40
\varnothing (mm)	≥ 12	≥ 12	≥ 14
Torque (Nm)	15 to 22	30 to 44	50 to 75

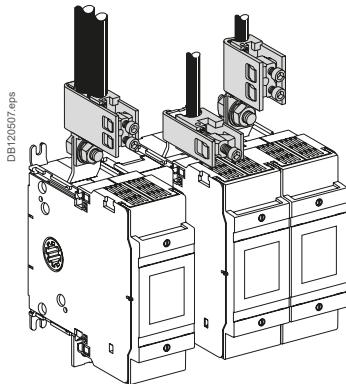
Switch-disconnector fuse with front handle



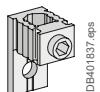
	A	B	C	D	E	F	G	H	J	\varnothing
INF●200	40.5	3	86.8	173.6	20	99.5	199	43.5	40	10.5
INF●250	40.5	3	83	166	25	96.5	193	54	45	10.5
INF●400	43.5	5	100	200	25	115	230	64	58.5	11.5
INF●630	48.4	6	130	260	39	153	306	88	77.5	13.5
INF●800	48.4	6	130	260	39	153	306	88	77.5	13.5

Fupact INF●200 to INF●800

Connection and accessories



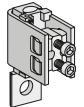
If $500 \text{ V} \leq U \leq 690 \text{ V}$,
terminal shields are mandatory.



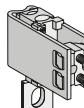
6 to 95 mm² bare cable connector, **LV480443**.



25 to 95 mm² bare cable connector, **LV480442**.



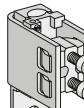
95 to 185 mm² bare cable connector, **49651**.



2 x (95 to 185 mm²) bare cable connector, **49652**.



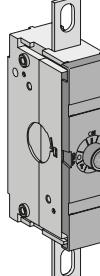
120 to 240 mm² bare cable connector, **49653**.



120 to 300 mm² bare cable connector, **49654**.



2 x (120 to 300 mm²) bare cable connector, **49655**.



Removable neutral link.

Front connection with accessories

Fupact INF●200 to INF●400 devices are equipped as standard with 25 mm wide terminals and Fupact INF●630 to INF●800 devices are equipped as standard with 40 mm wide terminals that can be fitted with connectors for bare copper or aluminium cables with cross-sectional areas from 70 to 300 mm².

Removable neutral link: In the form of a terminal block to be secured directly to the side of the device.

Standard device		INF●200 INF●250	INF●400	INF●630 INF●800
1-cable connector LV480442 Steel profile (only for INF●200)	L (mm) S (mm ²) Cu/Al	27 25 to 95 [1]	-	-
Torque (Nm) Cable	20	-	-	-
1-cable connector LV480443 Al profile (only for INF●200)	L (mm) S (mm ²) Cu/Al	27 6 to 95 [1]	-	-
Torque (Nm) Cable	20	-	-	-
1-cable connector 49651	L (mm) S (mm ²) Cu/Al	58 95 to 185 [1]	-	-
Torque (Nm) Cable Terminal	22 30 to 44	-	-	-
2-cable connector 49652	L (mm) S (mm ²) Cu/Al	70 2x(95 to 185) [1]	70 2x(95 to 185) [1]	-
Torque (Nm) Cable Terminal	22 30 to 44	-	-	-
1-cable connector 49653 (only for INF●400)	L (mm) S (mm ²) Cu/Al	- - 58	58 120 to 240	-
Torque (Nm) Cable Terminal	- - 30 to 44	35 50 to 75	-	-
1-cable connector 49654	L (mm) S (mm ²) Cu/Al	- - 58	58 120 to 300 [1]	-
Torque (Nm) Cable Terminal	- - 30 to 44	44 70	-	-
2-cable connector 49655	L (mm) S (mm ²) Cu/Al	- - -	- - 2x(120 to 300) [1]	-
Torque (Nm) Cable Terminal	- - -	- - 50 to 75	44	-

Removable neutral link	INF●200 INF●250	INF●400	INF●630 INF●800
d (mm)	≤ 15	≤ 15	≤ 20
l (mm)	≤ 58	≤ 58	≤ 58
e (mm)	≤ 6	≤ 6	$3 \leq e \leq 10$
L (mm)	≤ 25	≤ 25	≤ 40
\varnothing (mm)	≥ 12	≥ 12	≥ 12
Torque (Nm)	30	40	50

[1] Flexible or rigid cables.

Wiring diagrams

Fupact ISFT	D-2
Fupact ISFL	D-3
Fupact INF●32 to INF●800.....	D-4

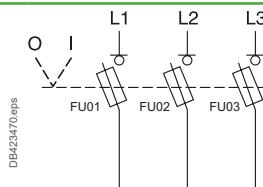
D

Other chapters

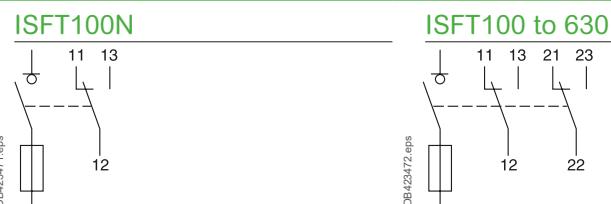
Presentation	2
Functions and characteristics	A-1
Installation recommendation	B-1
Dimensions and connection	C-1
Technical characteristics	E-1
Catalogue numbers	F-1

Fupact ISFT

Power



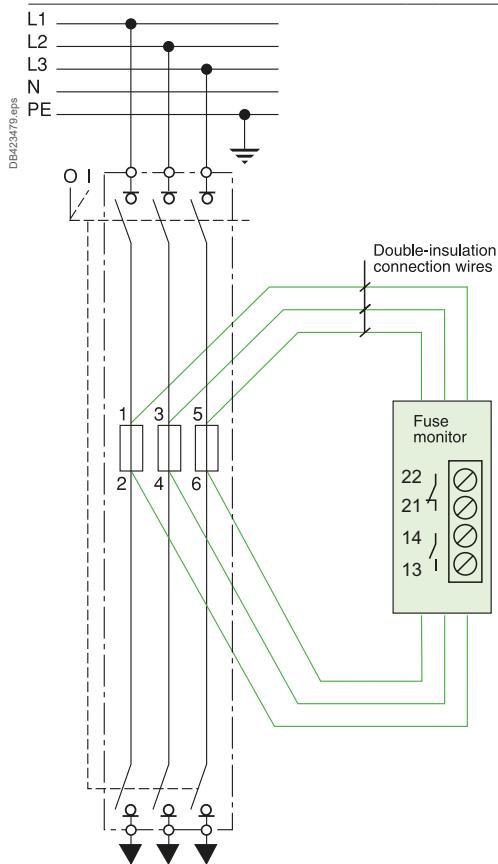
Auxiliary contacts



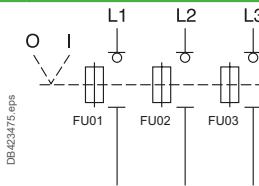
Blown fuse

D

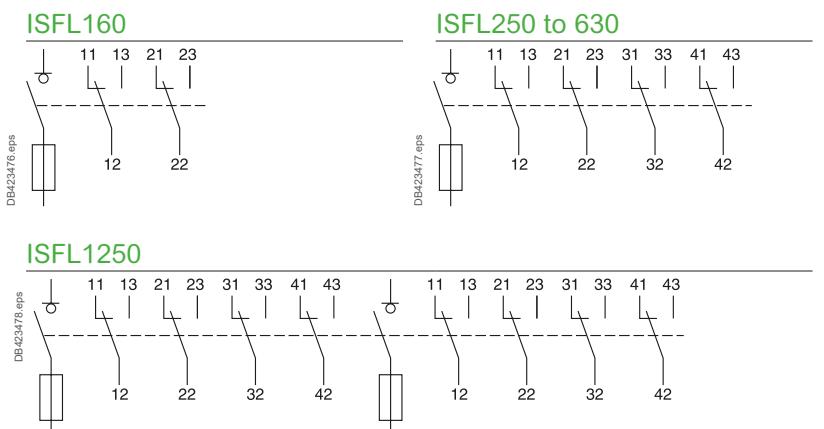
ISFT160 to 630 Electronic fuse Monitor



Power

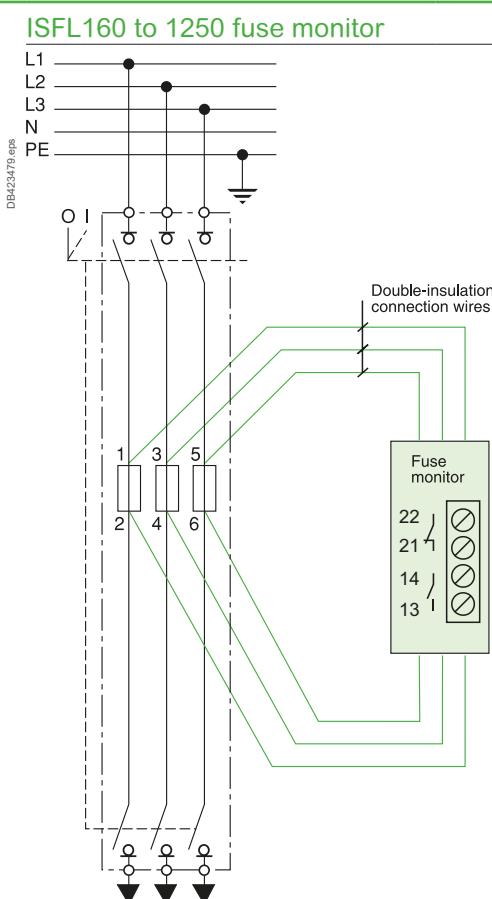


Auxiliary contacts



D

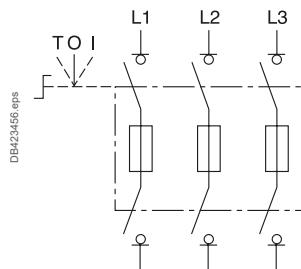
Blown fuse



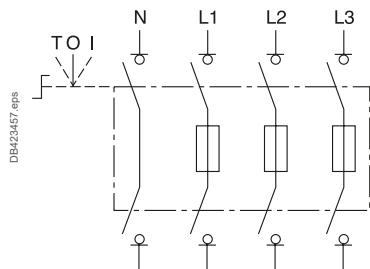
Fupact INF●32 to INF●800

Power

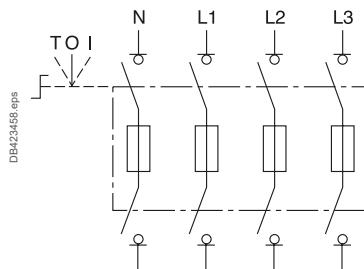
3 poles, 3 fuse-links



4 poles, 3 fuse-links

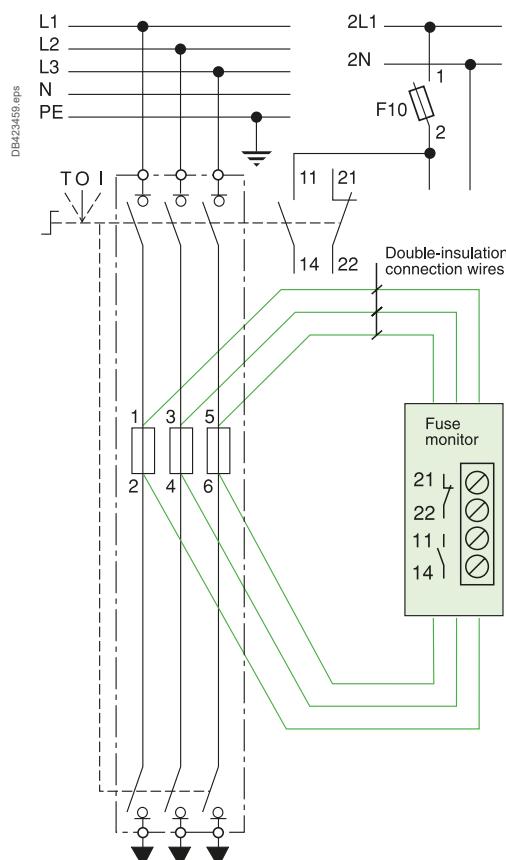


4 poles, 4 fuse-links



Fuse monitor

INF●32 to INF●800



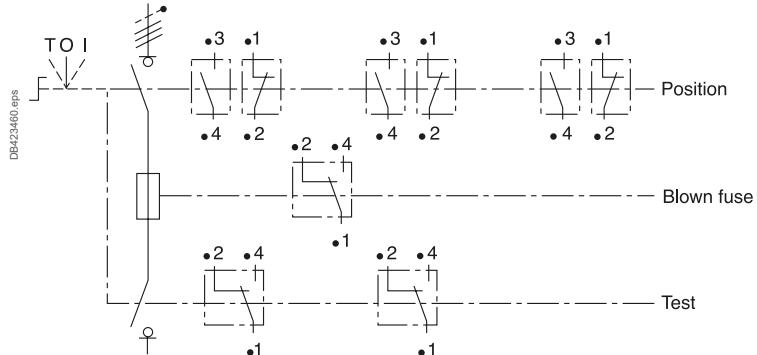
Note: for a switch-disconnector fuse supplied via the downstream terminals (reverse supply), reverse the connection of the fuse monitor. The double insulation connection wires of the fuse monitor must be connected on the side to which the incoming power is connected.

T : Test
I : On
O : Off.

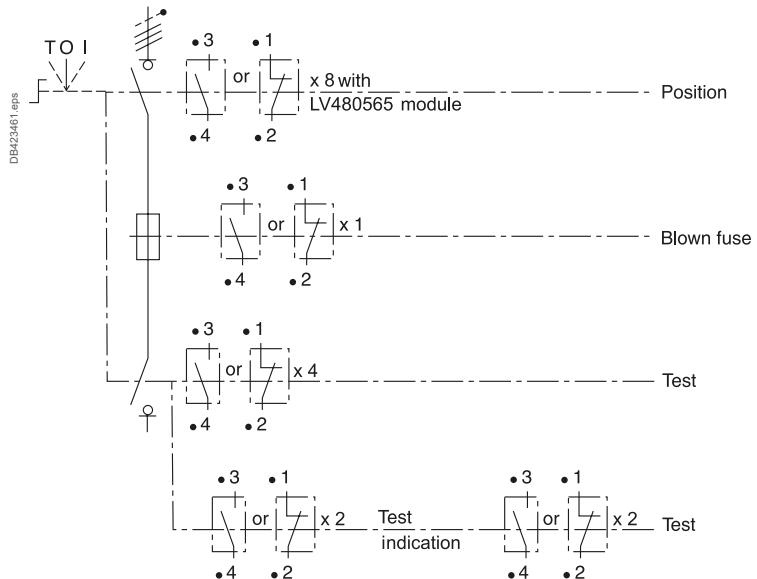
Fupact INF●32 to INF●800

Auxiliary contacts

INF●32



INFD40 to INF●160



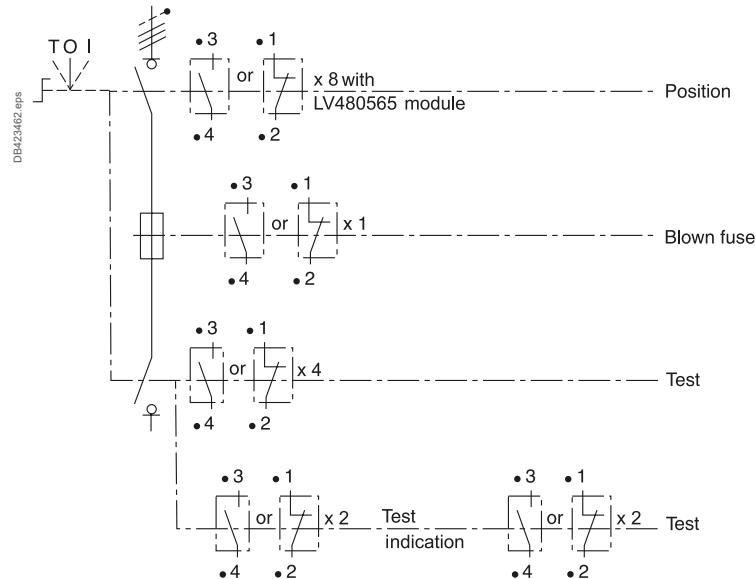
Note: for possible combinations, see pages A-81 to A-83 (chapter A).

D

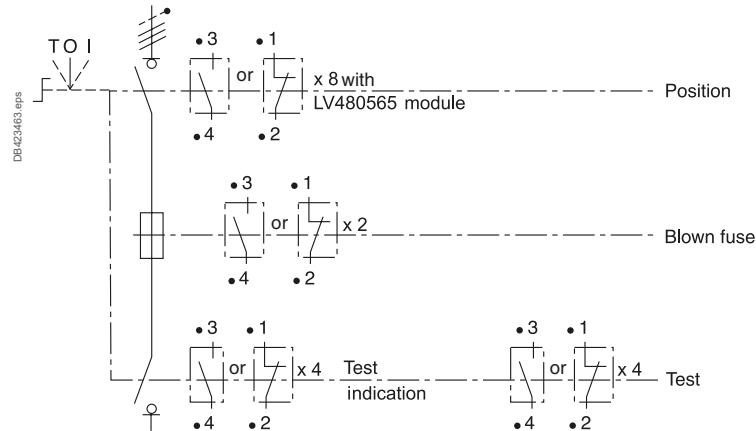
Fupact INF●32 to INF●800

Auxiliary contacts

INF●200 and INF●250



INF●400 to INF●800

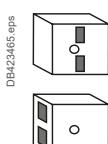
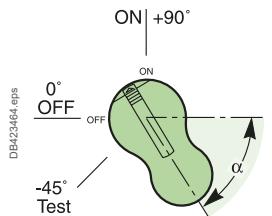


Note: for possible combinations, see pages A-81 to A-83 (chapter A).

Fupact INF●32 to INF●800

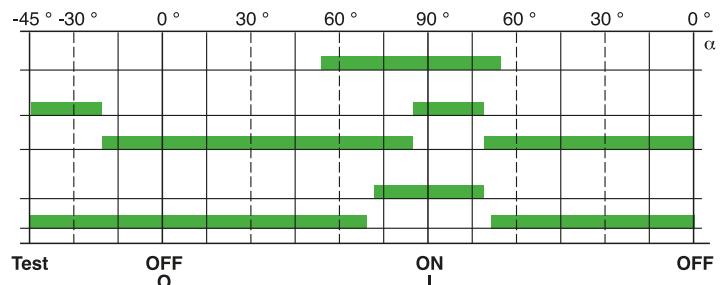
Auxiliary contact functions with front handle

INF●32

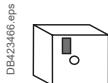


Main contacts

- 49605 Test NO
- 49605 Test NC
- 49609 Auxiliary contact NO
- 49610 Auxiliary contact NC

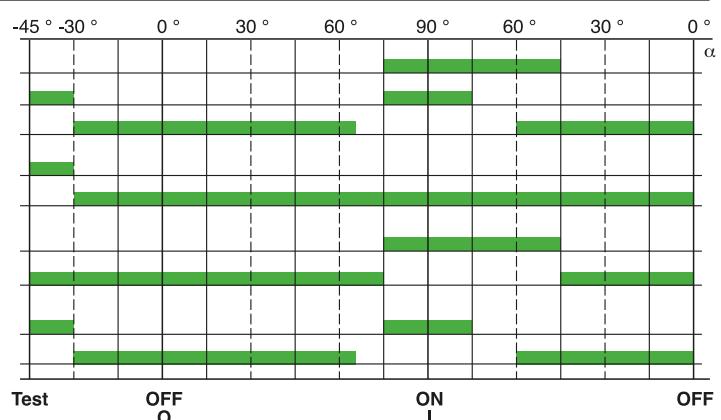


INF●40 to INF●250

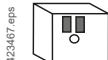


Main contacts

- 46609 Test NO
- 49610 Test NC
- or
- 46609 Test indication NO
- 49610 Test indication NC
- 46609 Auxiliary contact NO
- 49610 Auxiliary contact NC
- 46609 Test NO
- 49610 Test NC

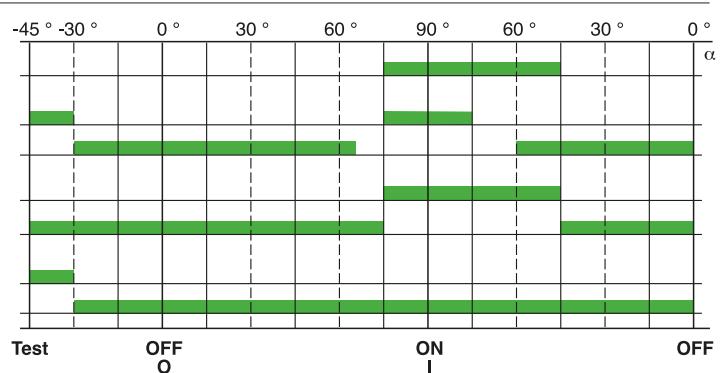


INF●400 to INF●800



Main contacts

- 46609 Test NO
- 49610 Test NC
- 46609 Auxiliary contact NO
- 49610 Auxiliary contact NC
- 46609 Test indication NO
- 49610 Test indication NC

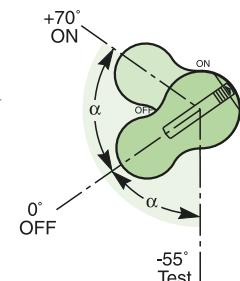


D

Fupact INF●32 to INF●160

Auxiliary contact functions with lateral handle

INF●32



DB423468.eps

DB423469.eps

Main contacts



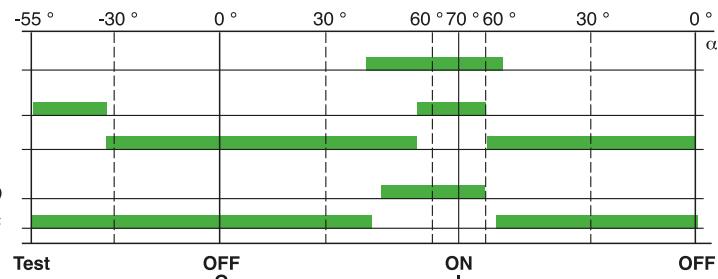
49605 Test NO

49605 Test NC



49609 Auxiliary contact NO

49610 Auxiliary contact NC



INFD40 to INF●160

DB423467.eps

Main contacts



46609 Test NO

49610 Test NC



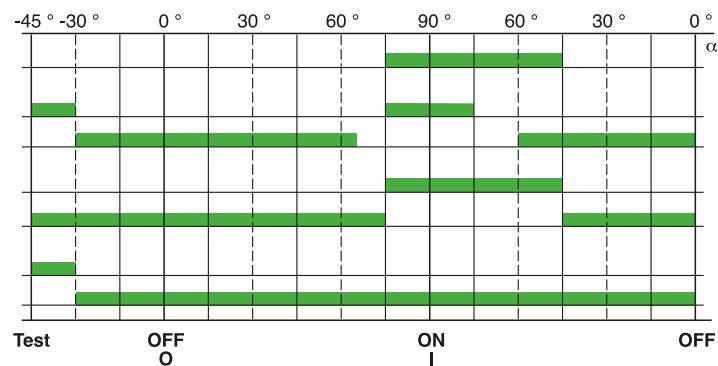
46609 Auxiliary contact NO

49610 Auxiliary contact NC



46609 Test indication NO

49610 Test indication NC



D

Technical characteristics

Functions and applications	E-2
Standards	
Fusegear	E-4
Fuse-links	E-6
Installation	E-9
Discrimination	E-13
Discrimination tables	
Upstream: Fupact (gG fuse-link)	
Downstream: Fupact (gG or aM fuse-link)	E-17
Upstream: Masterpact MTZ	
Downstream: Fupact (gG or aM fuse-link)	E-18
Upstream: Compact NS630b to 3200	
Downstream: Fupact (gG fuse-link)	E-19
Upstream: Compact NSX100 to 630	
Downstream: Fupact (gG fuse-link)	E-20
Upstream: Compact NSX100 to 630	
Downstream: Fupact (aM fuse-link)	E-21
Upstream: Fupact (gG fuse-link)	
Downstream: Compact NSX100 to 630	E-22
Protection of motor circuits with fuses: general	E-23
Protection of motor circuits with BS fuses.....	E-24
Protection of motor circuits with NFC fuses.....	E-25
Protection of motor circuits with DIN fuses	E-27
Type 2 coordination (IEC 60947-4-1) 380/415 V	E-29
Type 2 coordination (IEC 60947-4-1) 440 V	E-31
Type 2 coordination (IEC 60947-4-1) 500 V	E-33
Type 2 coordination (IEC 60947-4-1) 500 V	E-34
Type 2 coordination (IEC 60947-4-1) 525/550 V.....	E-35
Type 2 coordination (IEC 60947-4-1) 525/550 V.....	E-36
Type 2 coordination (IEC 60947-4-1) 660/690 V.....	E-37
Type 2 coordination (IEC 60947-4-1) 660/690 V.....	E-38

Other chapters

Presentation	2
Functions and characteristics	A-1
Installation recommendation	B-1
Dimensions and connection	C-1
Wiring diagrams.....	D-1
Catalogue numbers	F-1

E

Functions and applications

Fusegear:

- is a control device, generally manually operated
 - can make and break circuits on load
 - is suitable for isolation of circuits. This optional characteristic for switches is very important to ensure the safety of life and property on circuits downstream of fusegear in the open (OFF) position.
- A fuse-link is an element designed to protect against:
- overloads (except for aM type fuse-links)
 - short-circuits.
- The Fupact fusegear range is made up of self-protected devices.

Functions

Fusegear range

INF●: switch-disconnector fuses.

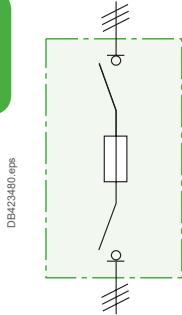
ISF●: fuse-switch disconnectors.

The Fupact fuse-combination unit includes:

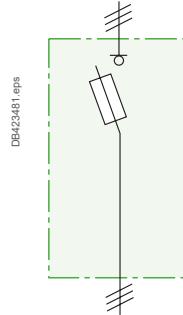
- a switch that is suitable for isolation, fulfilling the switch-disconnector function as defined by standard IEC 60947-1/3
- a fuse device for industrial fuse-links in compliance with standards:
 - IEC 60269-1 to 4
 - EN 60269-1 to 4
 - NF C63200, NF C63211
 - DIN 43620 / VDE 0636
 - BS 88.



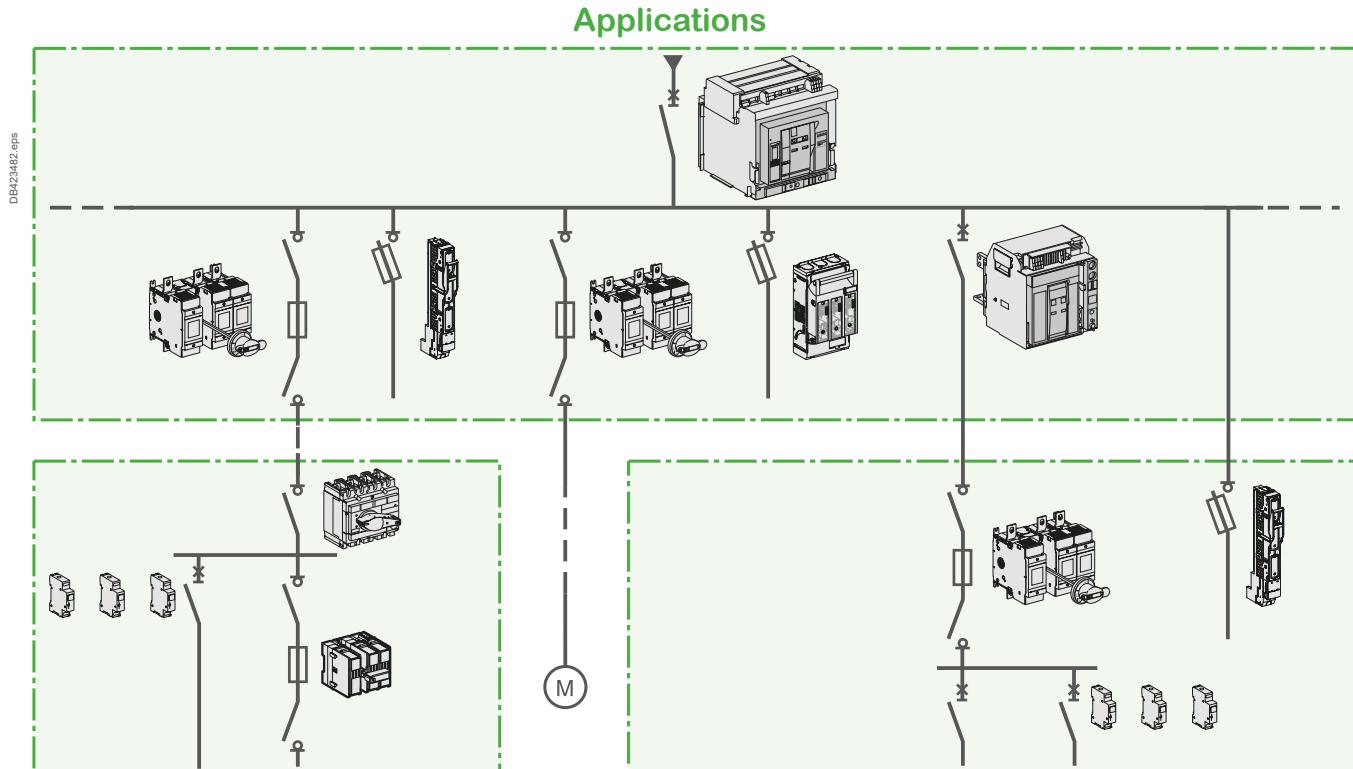
NFC, DIN and BS fuse-links.



INF● diagram.



ISF● diagram.



Simplified LV distribution system diagram.

Fupact devices are used for the applications presented below:

Incomer for sub-distribution switchboards and enclosures

Local protection and isolation functions.

The protection function is ensured by gG distribution fuse-links.

Isolation, a mandatory safety function, is ensured by the switch-disconnector.

Feeders between main and sub-distribution LV switchboards or between secondary and final switchboards

Line protection function.

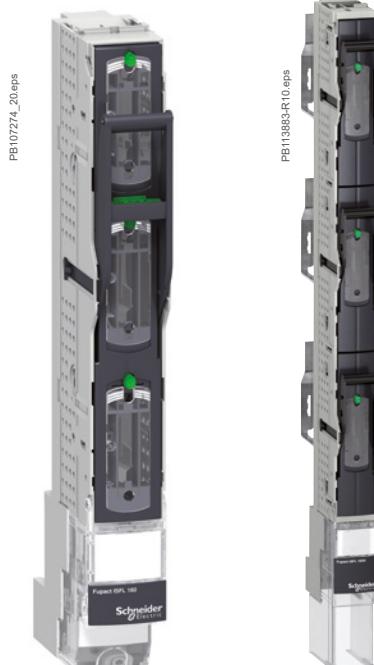
The protection function is ensured primarily by gG distribution fuse-links.

Motor feeders

Local protection and isolation functions for motor feeders.

The on-load breaking and isolation functions are mandatory.

The protection function is ensured by aM / gM or gG fuse-links.



ISFL160 - 3P



INFID160.



ISFT160.

Technical characteristics

Standards

Fusegear

www.schneider-electric.com



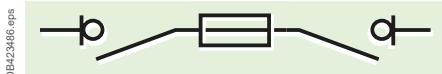
Switch.



Disconnector.



Switch-disconnector.



Switch-disconnector fuses.



Fuse-switch disconnector.

E

Standard IEC 60947-3

All requirements and test specifications are laid out in standard IEC 60947-1 (general stipulations) and in standard IEC 60947-3 (specific stipulations).

Definitions

- **A switch is a mechanical switching device:**
 - capable of making, carrying and breaking currents under normal circuit conditions including specific overload conditions
 - capable of carrying currents under abnormal circuit conditions such as short-circuits for a specified time
- **A disconnector is a mechanical switching device:**
 - capable of opening a circuit exclusively under no-load conditions (no load downstream)
 - which, in the open position, complies with the requirements specified for the isolating function
 - capable of carrying currents under normal circuit conditions and of carrying currents under abnormal conditions such as short-circuits for a specified time
- **A switch-disconnector is a switch which**
In the open position, satisfies the isolating requirements specified for a disconnector

■ Switch-disconnector fuses and fuse-switch disconnectors

A switch-disconnector in which one or more poles have a fuse in series in a combined unit (for fuse-switch disconnectors, the fuse-link forms the moving contact).

Standardised current values for fusegear

■ Conventional thermal current I_{th} (A)

This is the maximum current that a switch can carry continuously without excessive temperature rise. This value is provided with an operating temperature indicated by the manufacturer.

■ E.g. $I_{th} = 400$ A, $I_{th} = 25$ A at 40°C .

Generally speaking, $I_{th} = I_u$ (rated uninterrupted current). I_{th} is in fact the rating for the switch.

■ Rated operational current I_e (A)

This is the current for which the switch is generally used. It depends on the application (resistive or inductive current).

Utilisation categories

The standard IEC 60947-3 distinguishes between three types of utilisation category:

- AC21: resistive loads
- AC22: mixed (resistive and inductive) loads
- AC23: inductive loads.

A specific category is defined in the Appendix:

- AC3: direct switching of individual motors.

For DC loads, the respective categories are DC21, DC22, etc.

The designation (e.g. ACxy) of utilisation categories is completed by the suffix A or B according to whether the intended applications require frequent or infrequent operations:

- the letter "A" indicates frequent operations, from 2000 to 10,000 (mechanical and electrical), depending on the rating
- the letter "B" indicates infrequent operations, from 400 to 2000.

Utilisation categories		Characteristics	Applications
Frequent operation	Infrequent operation		
AC21A	AC21B	Switching of resistive loads including moderate overloads ($\cos \varphi = 0.95$)	Power distribution Final distribution (except motor feeders)
AC22A	AC22B	Switching of mixed resistive and inductive loads, including moderate overloads ($\cos \varphi = 0.65$)	Medium and high power industrial distribution with motor feeders
AC23A	AC23B	Switching of motor loads or other highly inductive loads ($\cos \varphi = 0.45$ for $I_e > 100$ A) ($\cos \varphi = 0.35$ for $I_e \leq 100$ A)	Motor feeders Occasional motor control [1]
AC3		Switching of motor loads or other highly inductive loads ($\cos \varphi = 0.45$ for $I_e > 100$ A) ($\cos \varphi = 0.35$ for $I_e \leq 100$ A)	Main, indirect control of an individual motor

[1] For this type of application, a contactor is used to control the motor.

Example:

A 125 A switch in the AC23 utilisation category must be capable of:

- making a 10 In current (1250 A) with a $\cos \varphi = 0.45$
- breaking a 8 In current (1000 A) with a $\cos \varphi = 0.45$.

Suitability for isolation

Standard IEC 60947-1 clearly defines the general rules governing suitability for isolation.

Standard IEC 60947-3 stipulates the requirements for the isolation function of switches.

These standards are based on:

- construction rules
- the required tests.

Construction rules

The construction rules stipulate, among other features:

- the isolation clearances and distances between open contacts ($> 1 \text{ mm/kV}$, see Table 13 in standard IEC 60947-1) or, if that is not the case, sampling tests (impulse withstand voltage) for verification of clearances
- the presence of a device indicating the true position of the contacts (the actuator if its position is indicative of that of all the contacts). When means are provided to lock the equipment in the open position, locking in that position shall only be possible when the main contacts are in the open position.

Additional requirements for equipment suitable for isolation

Three specific tests must be carried out:

■ impulse withstand voltage (Uimp) test

Test conditions are those defined in standard IEC 60947-1.

The impulse withstand voltage tests (impulse voltage $1.2/50 \mu\text{s}$) for value U_{imp} (variable depending on the place of installation) are representative of atmospheric and switching overvoltages. They are carried out by the manufacturer when the manufacturer indicates a U_{imp} value

Voltage applied between:	Impulse withstand voltage (kV) at 2000 meters	Impulse withstand voltage (kV) at sea level
Phases	8	9.8
Upstream / downstream	10	12.3 [1]
Phases / exposed conductive parts	8	9.8

[1] 14.7 kV if the device was previously declared class II.

■ measurement of leakage current with the contacts in the open position

The test voltage is equal to 1.1 times the rated operational voltage.

The value of leakage current must not exceed:

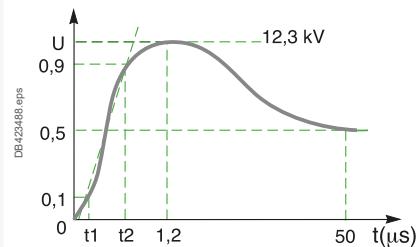
- 0.5 mA per pole for equipment in new condition
- 2 mA per pole for equipment having been subjected to tests related to:
 - general operating characteristics
 - operational performance capability (mechanical and electrical endurance)
 - making and breaking capacity.

■ mechanical test

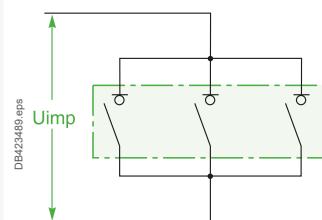
"Verification of the strength of actuator mechanism and position indicating device" or "welded contact test".

The contacts are maintained closed and the actuator is submitted to a force F equal to three times that required for normal operation (with a minimum of 150 N and a maximum of 400 N) for ten seconds.

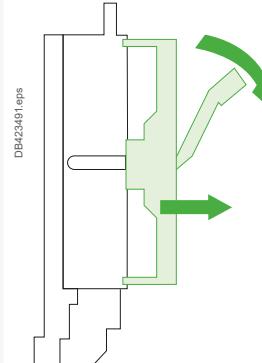
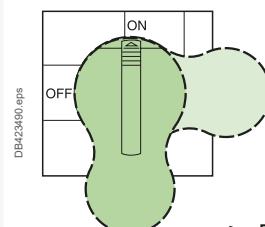
- during application of the force, it must not be possible to lock the actuator mechanism
- following the test and once the actuator has been released, the indication that the main contacts are in the open position must not be false.



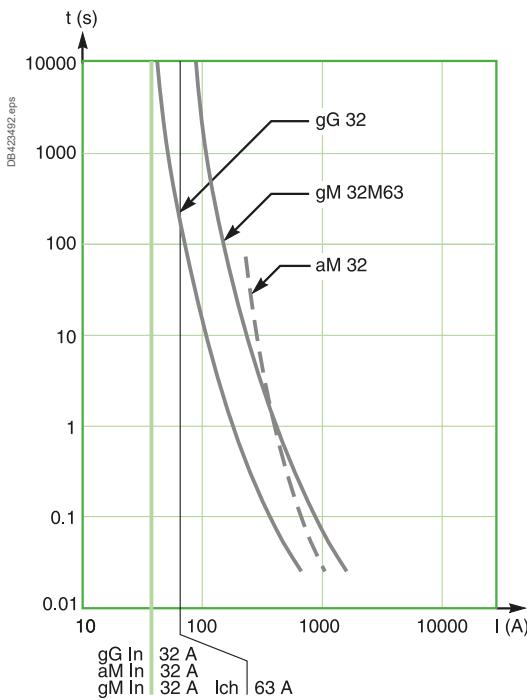
1.2-50 μs impulse voltage.



Impulse withstand voltage between switch input and output.



Strength testing of actuator mechanism.



The three curves represent the three types of 32 A fuse-links.

E

Standard IEC 60269

Standard IEC 60269 applies to low-voltage industrial fuses:

- with a breaking capacity greater than or equal to 6 kA
- intended for the protection of circuits with voltages up to 1000 V AC or 1500 V DC.

Definitions

■ Fuse-link ratings

□ a **gG fuse-link** is defined by its rated current I_{n} (e.g. fuse-link gG 63 A)

□ a **gM fuse-link** is characterised by two current values separated by an "M" (e.g. In M Ich)

- the first value I_{n} corresponds to the maximum continuous current
- the second value I_{ch} corresponds to the "G" characteristic of the fuse-link having the same time-current characteristic.

For example, a fuse-link rated 32M63 is intended to protect motors with a maximum continuous current less than 32 A and having the time-current characteristic of a 63 A "G" fuse-link.

Important: When comparing gM and gG fuse-links, the I_{ch} value of the gM fuse-link must be taken into account.

□ an **aM fuse-link** is defined by a fictive rated current I_{n} , i.e. it may be used to break currents only starting at four times I_{n} . Below this value, it must be protected against overloads. For example, a 32 A aM fuse-link must not be used for thermal protection below approximately 130 A.

■ Fuse-link codes

Standard IEC 60269 (section 5.7.1) defines a two-letter code to characterise industrial fuse-links.

First letter: type of fuse-link (breaking range)	Second letter: type of protection	Distribution	Motor
g = general use (full-range breaking capacity up to rated breaking capacity)	gG gM	■	■
a = back-up use (partial-range breaking capacity starting at 4 I_{n})	aM		■

■ Conventional non-fusing current I_{nf}

Value of current specified as that which the fuse-link is capable of carrying for a specified time (conventional time) without melting, expressed as a multiple of I_{n} (e.g. $I_{nf} = 1.25 I_{n}$).

■ Conventional fusing current I_f

Value of current specified as that which causes operation of the fuse-link within a specified time (conventional time), expressed as a multiple of I_{n} (e.g. $I_f = 1.6 I_{n}$).

■ Time-current characteristic

Curve giving the pre-arc time or operating time as a function of the prospective current under stated conditions of operation.

■ Gates

Standard IEC 60269 defines limiting values within which the characteristics must lie (see gate table on following page), notably for:

□ time-current characteristics

□ pre-arcing energies.

Characteristics $I = f(t)$

The manufacturer provides a curve for the pre-arching or total fusing time that is a function of the fault current, with a tolerance of $\pm 30\%$ (compared to 15 % for circuit breakers). This curve must respect the following standardised rules.

gG / gM fuse-links

■ Asymptotes

They are determined by the conventional non-fusing current and the conventional fusing current.

Conventional currents and times for "gG" and "gM" fuse-links

Rated current I_n for gG Characteristic current I_{ch} for gM (A)	Conventional time (h)	Conventional current (I_{nf})	Conventional current (I_f)
16 $\leq I_n \leq 63$	1	$1.25 I_n$	$1.6 I_n$
$63 < I_n \leq 160$	2		
$160 < I_n \leq 400$	3		
$400 < I_n$	4		

■ Gates

The time-current characteristics for the fuse-link must lie within the zone determined by the gates.

The table below indicates the gates for specified pre-arching times of gG and gM fuse-links.

I_n for gG I_{ch} for gM (A)	I_{min} (10 s) [1] (A)	I_{max} (5 s) [2] (A)	I_{min} (0.1 s) (A)	I_{max} (0.1 s) (A)
16	33	65	85	150
20	42	85	110	200
25	52	110	150	260
32	75	150	200	350
40	95	190	260	450
50	125	250	350	610
63	160	320	450	820
80	215	425	610	1100
100	290	580	820	1450
125	355	715	1100	1910
160	460	950	1450	2590
200	610	1250	1910	3420
250	750	1650	2590	4500
315	1050	2200	3420	6000
400	1420	2840	4500	8060
500	1780	3800	6000	10600
630	2200	5100	8060	14140
800	3060	7000	10600	19000
1000	4000	9500	14140	24000
1250	5000	13000	19000	35000

[1] I_{min} (10 s) is the minimum value of current for which the pre-arching time is not less than ten seconds.

[2] I_{max} (5 s) is the maximum value of current for which the operating time is not more than five seconds.

aM fuse-links

■ Asymptotes

aM fuse-links do not have an asymptote because they must not be used for protection purposes under $4 I_n$.

The table below indicates the gates for specified pre-arching times of aM fuse-links. The gates are expressed as a percentage of the "fictive" rated current I_n (called k_0)

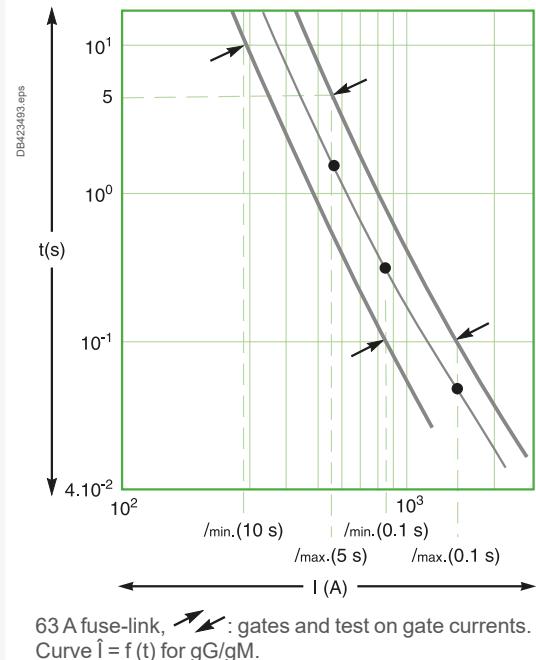
■ aM gates

t (s)	I_p/I_n	I_f/I_n
60	4	6.3
0.5	8	12
0.2	10	
0.1		19

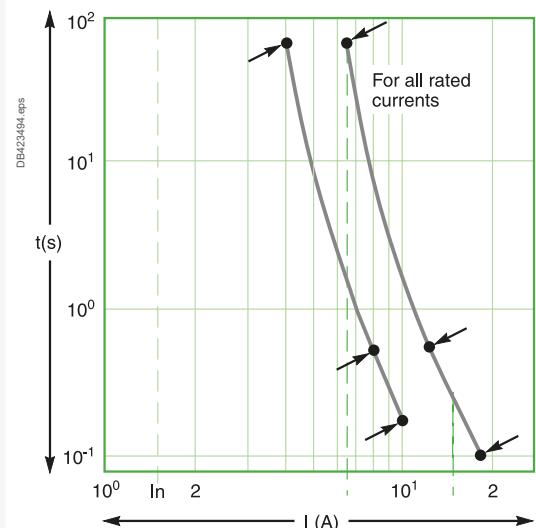
I_n : "fictive" rated current I_n (called k_0).

I_p : pre-arching threshold.

I_f : fusing threshold.



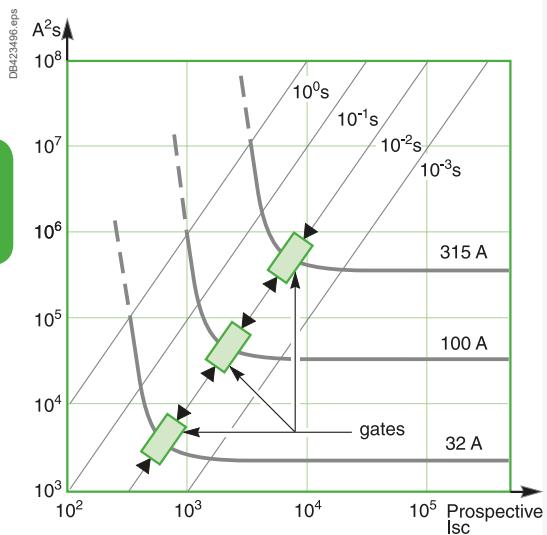
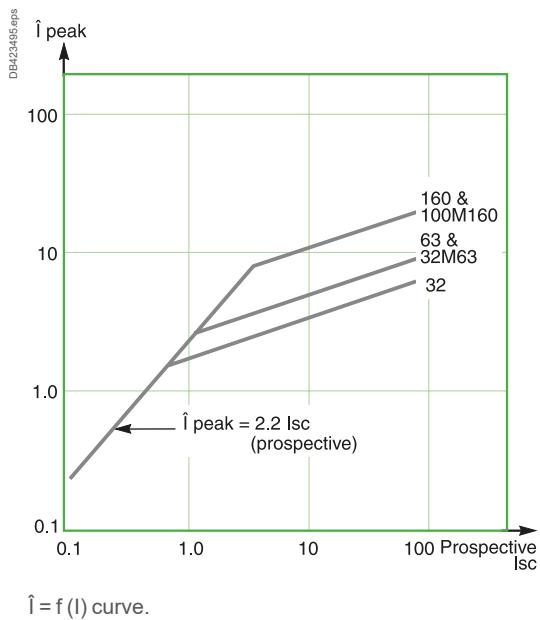
63 A fuse-link, : gates and test on gate currents.
Curve $f(t)$ for gG/gM.



: aM gates for an aM fuse-link.
Curve $f(t)$ for aM.

Standards

Fuse-links



Standard IEC 60364

The international installation standard IEC 60364 and the derived national standards stipulate the main rules to be observed to ensure the safety of installations.

Protection against overloads

Section 364-52 covers this type of protection.

Calculations

A wiring system rated I_z supplies a load or set of loads with a rated current I_b and is protected by a fuse with a rated current I_n . The I_z rating is determined as indicated below:

current I_b depends on the load, hence:

- fuse sizing where $I_n > I_b$
- fusing current $I_2 \leq 1.6 I_n$
- overload protection for the wiring system is ensured if $I_2 \leq 1.45 I_z$
- the wiring system must therefore be sized to $I_2 > 1.1 I_n$.

Determination of the rated current for a wiring system depends on the cross-sections in a given environment. Standard IEC 60364 precisely defines the environment.

For example, the "reference method" defines the method of installation, whether the cables are single or multicore, etc. Depending on the environment, correction factors are applied to determine the cross-section of the cable to be installed.

Calculation of the correction factors

Reference method

Type of conductor	Method of installation	Reference method
Multicore cables and conductors	■ in conduits, cable ducting, cable trunking, surface mounted or embedded	B
	■ in building voids, ceiling voids ■ in cable channels, mouldings, skirting trunking, architraves ■ surface mounted on walls or ceilings ■ on unperforated trays	C
Multicore cables	■ on ladders, brackets, perforated trays ■ surface mounted, spaced from wall ■ suspended cables	E
Single-core cables	■ on ladders, brackets, perforated trays ■ surface mounted, spaced from wall ■ suspended cables	F

Correction factors K1, K2, K3

The installation standards specify in the tables the values of the correction factors to be applied. The main effects of the environment are presented below:

- K1 varies from 0.7 to 1, depending on:
 - the reference method of installation
 - particular installation criteria (cables in ceiling voids, cable channels, in a conduit in a thermally insulated wall)
- K2 varies from 0.38 to 1, depending on:
 - primarily the number of multicore cables and conductors positioned side by side
 - the number of layers (one or more) [1]
 - the method of installation
- K3 varies from 0.115 to 1.29, depending on:
 - the ambient temperature
 - the type of cable insulation (EPR, PVC, XPLE, etc.).

[1] An additional factor < 1 must be applied in this case.

Example

A three-phase XPLE cable is run on a perforated tray, touching three other circuits, namely:

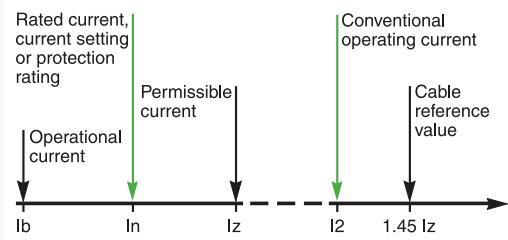
- a three-phase cable (circuit 1)
- three single-phase cables (circuit 2)
- six single-phase cables (circuit 3). This circuit is made up of two conductors per phase.

There are therefore five three-phase groups. The ambient temperature is 40° C.

The XPLE cable carries 23 amperes per phase.

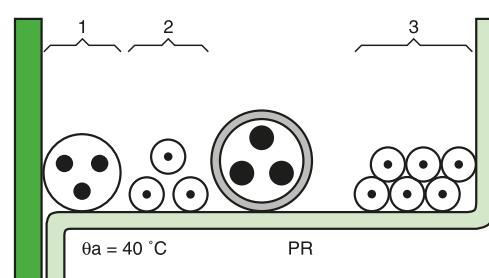
The reference method is indicated in the table above. The correction factors K1, K2 and K3 are indicated in the tables in the standard. For this example, the correction factors are K1 = 1, K2 = 0.75, K3 = 0.91.

The resulting K factor (equal to K1 x K2 x K3, i.e. 1 x 0.75 x 0.91), is therefore 0.68.



Wiring system protection fuse.

E



Technical characteristics

Standards

Installation

Depending on the cable size and the environment, the table below indicates the rating I_z and, in the next column (F), the rating of the corresponding protection fuse-link.

Permissible current (I_z) and the corresponding protection fuse-link (F)

Reference method	Insulation and number of loaded conductors																	
	B	PVC3		PVC2		PR3		PR2		PR2		PR2		PR2		PR2		
	C			PVC3		PVC2		PR3				PR2				PR2		
	E			PVC3		PVC2		PR3		PR2		PR2		PR2		PR2		
Copper, cross-sectional area (mm ²)	F			PVC3		PVC2		PR3		PR2		PR2		PR2		PR2		
		I_z	F	I_z	F	I_z	F											
	1.5	15.5	10	17.5	10	18.5	10	19.5	16	22	16	23	16	24	20	26	20	
	2.5	21	16	24	20	25	20	27	20	30	25	31	25	33	25	36	32	
	4	28	20	32	25	34	25	36	32	40	32	42	32	45	40	49	40	
	6	36	32	41	32	43	40	46	40	51	40	54	50	58	50	63	50	
	10	50	40	57	50	60	50	63	50	70	63	75	63	80	63	86	63	
	16	68	50	76	63	80	63	85	63	94	80	100	80	107	80	115	100	
	25	89	80	96	80	101	80	112	100	119	100	127	100	138	125	149	125	
	35	110	100	119	100	126	100	138	125	147	125	158	125	171	125	185	160	
	50	134	100	144	125	153	125	168	125	179	160	192	160	207	160	225	200	
	70	171	125	184	160	196	160	213	160	229	200	246	200	269	160	289	250	
	95	207	160	223	200	238	200	258	200	278	250	298	250	328	250	352	315	
	120	239	200	259	200	276	250	299	250	322	250	346	315	382	315	410	315	
	150			299	250	319	250	344	315	371	315	399	315	441	400	473	400	
	185			341	250	364	315	392	315	424	315	456	400	506	400	542	500	
	240			403	315	430	315	461	400	500	400	538	400	599	500	641	500	
	300				464	400	497	400	530	400	576	500	621	500	693	630	741	630
	400										656	500	754	630	825	630		840
	500										749	630	868	800	946	800		1083
	630										855	630	1005	800	1088	800		1254
Aluminium cross-sectional area (mm ²)	2.5	16.5	10	18.5	10	19.5	16	21	16	23	16	24	20	26	20	28	20	
	4	22	16	25	20	26	20	28	20	31	25	32	25	35	32	38	32	
	6	28	20	32	25	33	25	36	32	39	32	42	40	45	40	49	40	
	10	39	32	44	40	46	40	49	40	54	50	58	50	62	50	67	50	
	16	53	40	59	50	61	50	66	50	73	63	77	63	84	63	91	80	
	25	70	63	73	63	78	63	83	63	90	80	97	80	101	80	108	100	
	35	86	80	90	80	96	80	103	80	112	100	120	100	126	100	135	125	
	50	104	80	110	100	117	100	125	100	136	125	146	125	154	125	164	125	
	70	133	100	140	125	150	125	160	125	174	160	187	160	198	160	211	160	
	95	161	125	170	125	183	160	195	160	211	160	227	200	241	200	257	200	
	120	188	160	197	160	212	160	226	200	245	200	263	250	280	250	300	250	
	150			227	200	245	200	261	200	283	250	304	250	324	250	346	315	
	185			259	200	280	250	298	250	323	250	347	315	371	315	397	315	
	240			305	250	330	250	352	315	382	315	409	315	439	400	470	400	
	300			351	315	381	315	406	315	440	400	471	400	508	400	543	500	
	400									526	400	600	500	663	500		740	
	500									610	500	694	630	770	630		856	
	630									711	630	808	630	899	800		996	

Example 1:

- Three copper conductors in PVC insulation (PVC3) in embedded conduits are intended to carry a 58 A current (I_b). The method of installation corresponds to reference method B. The study of the environment shows that it is not necessary to apply correction factors. A direct reading in the table (B, PVC3) indicates:
 - fuse-link rating $I_n \geq I_b = 58 \text{ A} \rightarrow I_n = 80 \text{ A}$
 - cross-sectional area of the conductors = 25 mm².

Example 2:

- Consider the three-phase PR cable used in the example (page E-9). The method of installation corresponds to reference method E and the study of the environment shows that it is necessary to apply a correction factor of 0.68. A direct reading in the table (E, PR3) indicates:
 - the corrected I_z is $31 / 0.68 = 40.5 \rightarrow I_z = 42 \text{ A}$ and the corresponding cross sectional area of the conductors = 4 mm².

Protection of life and property

Standard IEC 60364-4x deals with the protection of life and property against indirect contacts. If a dangerous fault occurs ($> U_L$ maximum safety voltage), the duration of contact must be less than 0.4 seconds (for TN systems or for second fault on IT systems). The impedance of the downstream fault must be such that the fuse reacts within the time limit.

TN system

The table below indicates the length of wiring systems depending on the cross sectional areas and the fuse rating, with the following system characteristics:

- 230 V / 400 V distribution system
- maximum safety voltage $U_L = 50$ V
- copper conductors

$$\text{■ } m = \frac{S_{\text{Phase}}}{S_{PE}} = 1$$

Cable lengths

Rated copper conductor cross sectional areas (mm ²)	Rated currents of the disconnectors using gG fuse-links (A)																		
	16	20	25	32	40	50	63	90	100	125	160	200	250	315	400	500	630	800	
1.5	35	31	23	18	15	11	9	7	5.5	4	3								
2.5	59	51	39	30	25	19	15	12	9	7	5.5	4	3						
4	95	82	62	49	40	30	25	19	15	11	9	7	5	4	3				
6	142	123	94	73	60	45	37	29	22	17	13	10	8	6	4.5	3			
10	237	206	156	122	100	75	62	49	37	29	22	17	13	9.5	8	5.5	4		
16	379	329	250	195	160	120	99	78	59	46	36	27	21	15	12	9	6	5	
25	592	515	391	305	250	188	155	122	93	72	56	42	32	24	19	13	10	8	
35	830	720	547	428	350	263	217	171	130	101	78	59	46	34	27	19	13	11	
50	1185	1029	782	611	501	376	310	244	186	145	112	85	65	48	39	27	19	15	
70	1660	1440	1095	855	702	526	434	342	260	203	156	119	91	67	55	38	27	22	
95	2250	1955	1486	1191	953	714	590	464	354	245	212	161	124	62	74	52	37	20	
120	2845	2470	1877	1466	1203	902	745	586	447	348	268	204	156	116	94	65	29	37	
150				2127	1662	1364	1023	844	665	506	394	304	231	177	131	106	74	42	
185					1809	1484	1113	919	723	551	429	331	251	193	143	116	80	57	46
240						1805	1354	1117	880	870	521	402	306	235	174	140	98	70	56
300							1579	1303	1027	782	608	469	357	274	203	164	114	82	66
400																			

Correction factors for cable lengths

$m = \frac{S_{\text{Phase}}}{S_{PE}}$	1	2	3	4	
400 V systems [1]	copper cable	1	0.67	0.50	0.40
(phase-to-phase)	aluminium cable	0.62	0.41	0.31	0.25

[1] For 237 V phase-to-phase systems, apply the additional factor of 0.62.

For 237 V single-phase systems (237 V phase-to-neutral), do not apply the additional correction factor.

IT system

Additional correction factors

After applying the correction factors in the table above (where applicable) to the cable lengths, the correction factors specific to the IT system must be applied.

400 V systems [1]	IT with non-distributed neutral	0.86
(phase-to-phase)	IT with distributed neutral	0.60

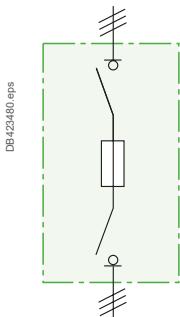
[1] For 237 V phase-to-phase systems, apply the additional factor of 0.62. For 237 V single-phase systems (237 V phase-to-neutral), use the 400 V table with the distributed-neutral correction factor.

TT system

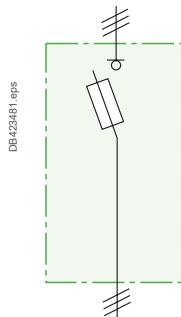
The protection of life and property is ensured by residual-current devices (RCD), which may be easily combined with circuit breakers.

Standards

Installation



INF● diagram.



ISF● diagram.

Isolation of an outgoing circuit

It is necessary to be able to de-energise an electrical installation in part or in whole for maintenance or servicing purposes, or to make modifications on the installation. Standard IEC 60364-5x deals with isolation and lock-out of outgoing circuits.

Fupact and the isolation function

Fupact is suitable for isolation with positive contact indication.

The Fupact handle cannot indicate the OFF position unless the main contacts are actually open.

The isolation function is consequently guaranteed by the manufacturer.

Isolation and installation rules

■ Lock-out of a circuit

The device disconnecting the circuit in question must be "suitable for isolation" and have a locking system to maintain the contacts in the OFF position.

■ Position of the isolating function in the installation

A disconnection device must be installed at the head of each circuit-distribution point to ensure optimum continuity of service (incomer in an enclosure or sub-distribution switchboard).

■ Implementation in the installation

A device "suitable for isolation" must:

- ensure breaking of all poles
- have a locking system to maintain the contacts in the OFF position
- meet overvoltage withstand conditions.



Safe replacement of fuse-links on a Fupact ISFL.

Fupact and the safety of maintenance operations

The Fupact front face offers IP20 protection.

Fupact uses replaceable fuse-links, so it is mandatory to ensure that replacement operations may be carried out without any risk.

Safety is ensured because:

- the fuse-contacts are totally protected during normal operation
- the fuse covers or fuse-carriers cannot be removed unless the handle is turned to the OFF position
- Fupact ensures double isolation, upstream and downstream of the fuse-link
- the innovative fuse-carrier system on the small ratings makes it possible to replace the fuse-links outside of the switchboard.

Discrimination

Principle

Schneider Electric offers a coordinated protection system

In an electrical installation, protection fuses are never used alone and must always be integrated in a system comprising circuit breakers.

Coordination is required between:

- upstream and downstream fuses
- upstream circuit breakers and downstream fuses
- upstream fuses and downstream circuit breakers.

Upstream fuse / Downstream fuse

Discrimination is ensured when

Total energy of downstream fuse (Etav) < Pre-arc energy of upstream fuse (Epam)

Note: If Etav is higher than 80 % of Epam, the upstream fuse may be derated.

■ Upstream gG fuse-link / downstream gG fuse-link

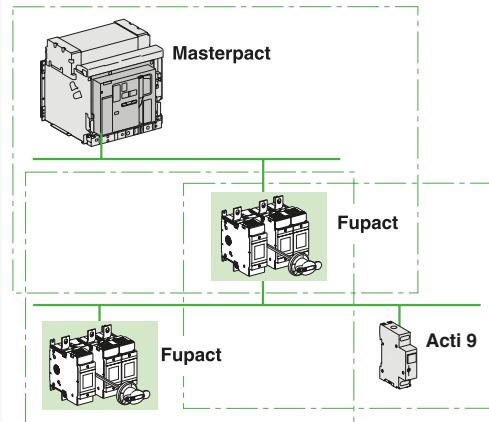
Standard IEC 60269-2-1 indicates limit values for pre-arc and total energies for operation of gG and gM fuse-links, where the operating current is approximately 30 In.

I²t limit and test currents for verification of discrimination

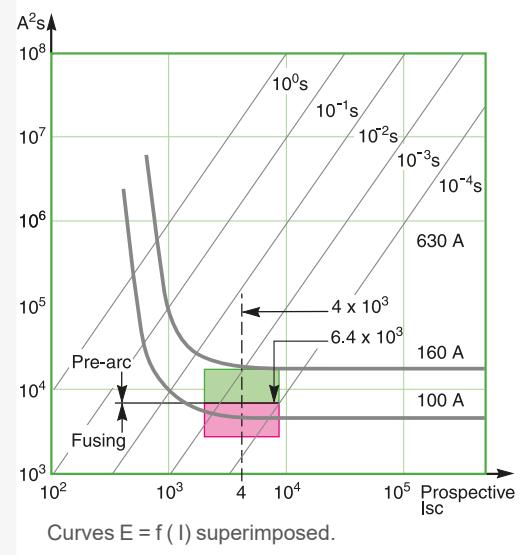
I _n (A)	Minimum values of pre-arcing I ² t		Maximum values of operating I ² t	
	Rms values of I ² t prospective (kA)	I ² t (A ² s)	Rms values of I ² t prospective(kA)	I ² t (A ² s)
16	0.27	291	0.55	1 210
20	0.40	640	0.79	2 500
25	0.55	1 210	1.00	4 000
32	0.79	2 500	1.20	5 750
40	1.00	4 000	1.50	9 000
50	1.20	5 750	1.85	13 700
63	1.50	9 000	2.30	21 200
80	1.85	13 700	3.00	36 000
100	2.30	21 200	4.00	64 000
125	3.00	36 000	5.10	104 000
160	4.00	64 000	6.80	185 000
200	5.10	104 000	8.70	302 000
250	6.80	185 000	11.80	557 000
315	8.70	302 000	15.00	900 000
400	11.80	557 000	20.00	1 600 000
500	15.00	900 000	26.00	2 700 000
630	20.00	1 600 000	37.00	5 470 000
800	26.00	2 700 000	50.00	10 000 000
1 000	37.00	5 470 000	66.00	17 400 000
1 250	50.00	10 000 000	90.00	33 100 000

■ Upstream gG fuse-link / downstream aM fuse-link

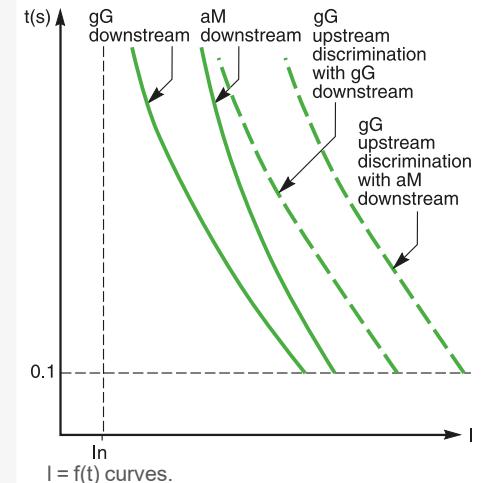
The $I = f(t)$ curve for an aM fuse-link is steeper. aM fuse-links are just as fast as gG fuse-links for short-circuit currents, but slower for low overloads. That is why the discrimination ratio between gG and aM fuse-links is approximately 2.5 to 4.



DB419126.eps



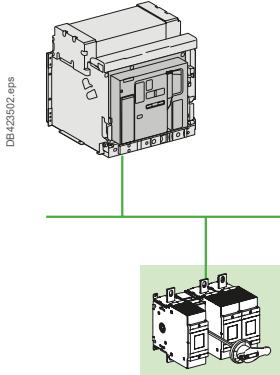
DB423500.eps



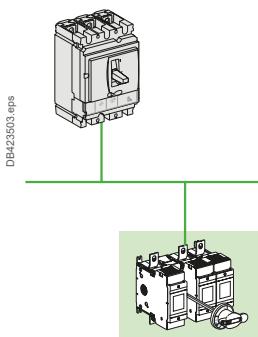
DB423501.eps

Technical characteristics

Discrimination



E



Upstream circuit breaker / Downstream fuse

Upstream circuit breaker with delayed ST (short time) protection function

This is the situation for a MLVS (main low-voltage switchboard) or sub-distribution switchboard protected by an incoming circuit breaker.

The upstream circuit breaker has an electrodynamic withstand capacity I_{cw} and ensures time discrimination.

Rule

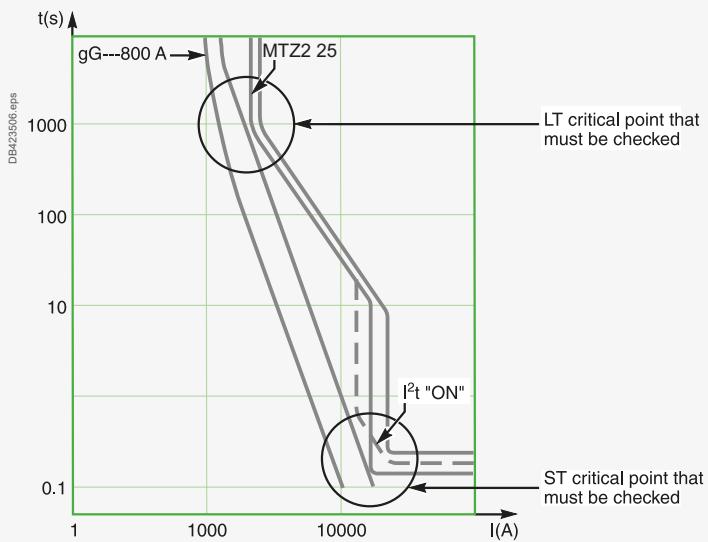
Examination of discrimination at the critical points on the LT (long time) and ST (short time) curves results in a discrimination table.

Analysis of the LT critical point indicates whether discrimination between the protection devices is possible or not.

Analysis of the ST (or I_{cw}) critical point indicates whether the discrimination limit is greater than or equal to the ST (or I_{cw}) value.

Note:

- the LT critical point is the most restrictive
- for circuit breakers with a I_{cw} value that is high and/or equal to I_{cu} , the ST critical point is almost never a problem, i.e. discrimination is total.

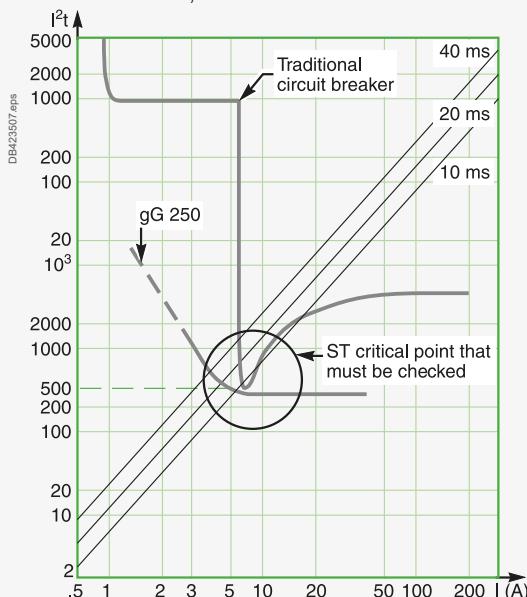


Time-current curves and critical points that must be checked.

Upstream circuit breaker with non-delayed ST (short time) protection and/or current-limiting function

To make sure the ST critical point is OK, it is necessary to compare:

- the energy curves of the protection devices
- the non-tripping curves of the upstream circuit breaker and the fusing curves of the downstream fuse, and to run tests for the critical values.



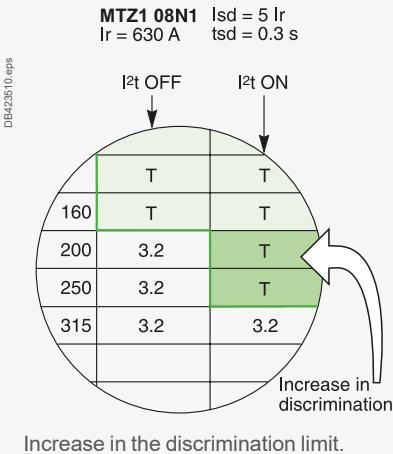
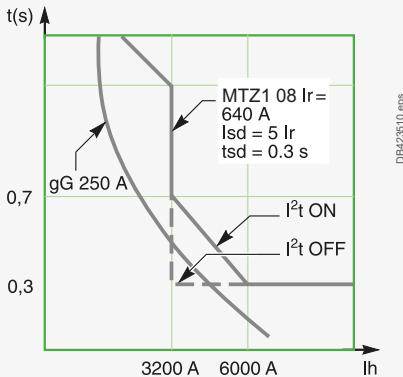
Energy curves and critical points that must be checked.

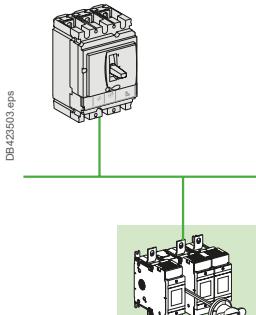
Discrimination

I²t ON setting

To significantly limit the stresses exerted on the installation (cables installed on trays, power supplied by an engine generator set, etc.), it may be necessary to set the ST protection function to a low value.

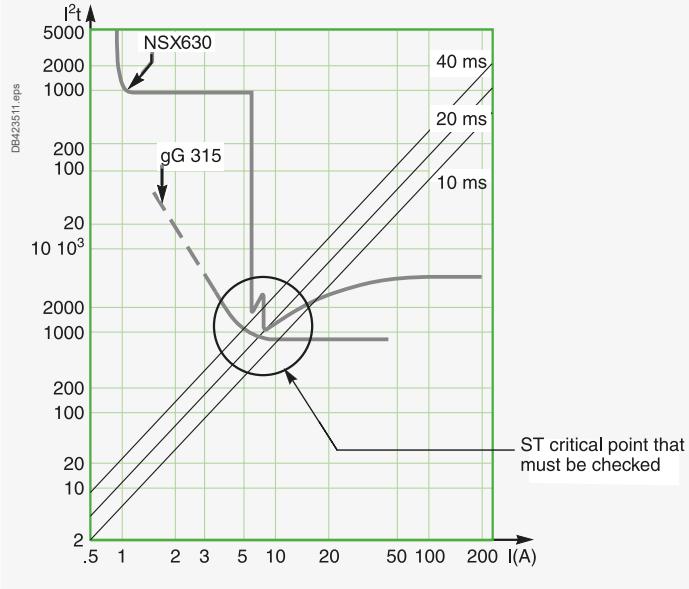
The I²t ON function, a constant-energy tripping curve, maintains the level of discrimination performance and facilitates total discrimination.





Compact NSX upstream of gG or aM fuse-links

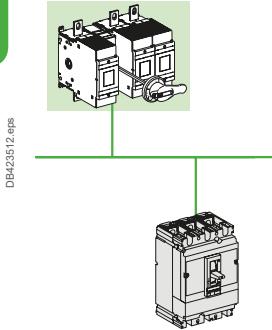
Compact NSX is a current-limiting circuit breaker. Even without an ST (short time) delay setting, discrimination at the ST critical point is significantly improved because Compact NSX has a mini-delay that considerably increases curve values at the ST critical point.



I^2t curve for Compact NSX and a fuse.

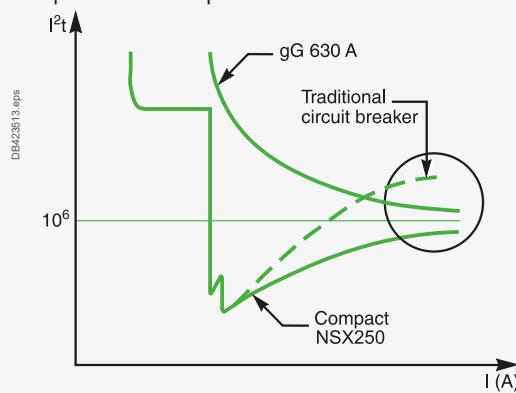
See pages E-23 to E-25 for the discrimination tables.

E



Compact NSX downstream of gG or aM fuse-links

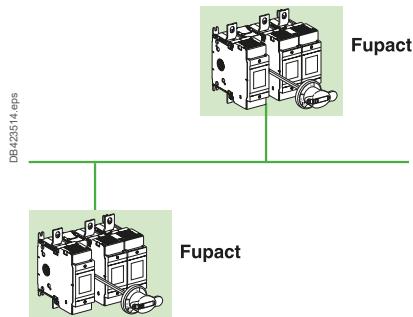
Compact NSX offers an extremely high level of current-limiting performance due to the piston-based reflex tripping system. Again, discrimination is significantly improved with an upstream fuse.



See page E-26 for the discrimination tables.

Discrimination tables

Upstream: Fupact (gG fuse-link)
 Downstream: Fupact (gG or aM fuse-link)



The tables below indicate the necessary ratings for the upstream and downstream fuse-links to achieve **total discrimination**. They take into account the standardised values stipulated in IEC 60269-1 and IEC 60269-2-1 for:

- the pre-arching energies of the upstream fuse-links
- the total fusing energies of the downstream fuse-links.

Upstream fuse-link gG (In) / gM (Ich)	Downstream fuse-link gG (In) / gM (Ich)	aM (In)
Rating (A)		
16	6	4
20	10	6
25	16	8
32	20	10
40	25	12
50	32	16
63	40	20
80	50	25
100	63	32
125	80	40
160	100	63
200	125	80
250	160	125
315	200	125
400	250	160
500	315	200
630	400	250
800	500	315
1000	630	400
1250	8000	500

Examples:

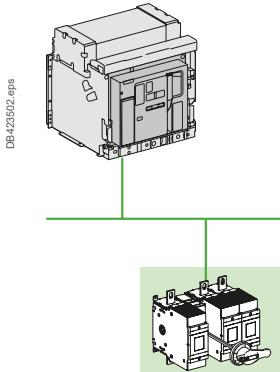
- an upstream 125 A gG fuse-link ensures total discrimination with an 80 A gG fuse-link and/or a 40 A aM fuse-link situated downstream
- an upstream 125 A gG fuse-link ensures total discrimination with a 63 A gG 63M80 fuse-link (with an 80 A characteristic) situated downstream.

Discrimination tables

Upstream: Masterpact MTZ

Downstream: Fupact (gG or aM fuse-link)

Ue ≤ 440 V AC



The Masterpact circuit breaker is equipped with a Micrologic 5.0 - 6.0 - 7.0 X control unit with the following settings:

- LT setting: $T_r = 24$ seconds
- ST setting: instantaneous OFF / $I_{sd} = 10I_r$ $T_{sd} = 0.4$ seconds.

Upstream		Masterpact MTZ Micrologic 5.0-6.0-7.0 X																					
		MTZ1 08	MTZ1 08	MTZ1 08	MTZ1 08	MTZ1 08	MTZ1 08	MTZ1 08	MTZ1 10	MTZ1 12	MTZ1 16	MTZ2 08	MTZ2 08	MTZ2 08	MTZ2 08	MTZ2 10	MTZ2 12	MTZ2 16	MTZ2 20	MTZ2 25	MTZ2 32	MTZ2 40	MTZ3 50
H1	H1	H1	H1	H1	H1	H1	H1	H1	H1	H1	H1	H1/H2											

Down-stream g/G/M Fuse-link	Rating (A)	400	400	400	630	800	800	800	800	1000	1200	1600	2000	2500	3200	4000	5000	6300
	Ir setting	160	200	240	315	400	480	630	800	1000	1200	1600	2000	2500	3200	4000	5000	6300
32	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
50	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
100		T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
125			T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
160				T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
200					T	T	T	T	T	T	T	T	T	T	T	T	T	T
250						T	T	T	T	T	T	T	T	T	T	T	T	T
315							T	T	T	T	T	T	T	T	T	T	T	T
355								T	T	T	T	T	T	T	T	T	T	T
400									T	T	T	T	T	T	T	T	T	T
500										T	T	T	T	T	T	T	T	T
630											T	T	T	T	T	T	T	T
800												T	T	T	T	T	T	T
1000													T	T	T	T	T	T
1250														T	T	T	T	T

Table key

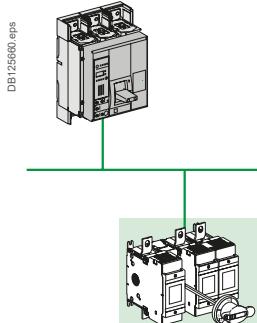
T	Total discrimination
16	Discrimination limit in kA
	No discrimination

Discrimination tables

Upstream: Compact NS630b to 3200

Downstream: Fupact (gG fuse-link)

$U_e \leq 440 \text{ V AC}$



The Compact NS630b to 3200 circuit breaker is equipped with a Micrologic 5.0-6.0-7.0 control unit with the following settings:

- LT setting: $T_r = 24 \text{ seconds}$
- ST setting: instantaneous OFF / $T_{sd} = 0.4 \text{ seconds}$.

Upstream: Compact NS L

Micrologic 5.0-6.0-7.0

	NS630b	NS800	NS1000						
--	--------	--------	--------	--------	--------	--------	--------	-------	--------

Downstream: Fupact gG fuse-link

Rating (A)	400	400	400	630	630	630	630	800	1000
Ir setting	160	200	240	315	400	500	630	800	1000
32	T	T	T	T	T	T	T	T	T
40	T	T	T	T	T	T	T	T	T
50	T	T	T	T	T	T	T	T	T
63	T	T	T	T	T	T	T	T	T
80	T	T	T	T	T	T	T	T	T
100		74	74	74	74	74	74	74	74
125			41	41	41	41	41	41	41
160				16	16	16	16	16	16
200					10	10	10	10	10
250						10	10	10	
315							10	10	
355							10	10	
400								10	
500									
630									
800									
1000									
1250									

Upstream: Compact NS N/H

Micrologic 5.0-6.0-7.0

NS630b	NS630b	NS630b	NS630b	NS630b	NS630b	NS800	NS1000	NS1250	NS1600	NS1600b	NS2000	NS2500	NS3200
--------	--------	--------	--------	--------	--------	-------	--------	--------	--------	---------	--------	--------	--------

Downstream: Fupact gG fuse-link

Rat. (A)	400	400	400	630	630	630	630	800	1000	1200	1600	1600	2000	2500	3200
Ir setting	160	200	240	315	400	500	630	800	1000	1200	1600	1600	2000	2500	3200
32	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
50	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
100		T	T	T	T	T	T	T	T	T	T	T	T	T	T
125			T	T	T	T	T	T	T	T	T	T	T	T	T
160				T	T	T	T	T	T	T	T	T	T	T	T
200					T	T	T	T	T	T	T	T	T	T	T
250						T	T	T	T	T	T	T	T	T	T
315							T	T	T	T	T	T	T	T	T
355								44	44	44	44	T	T	T	T
400									35	35	35	T	T	T	T
500										25	25	T	T	T	T
630											25	40	40	40	40
800												40	40	40	40
1000													40	40	40
1250														40	40

Table key

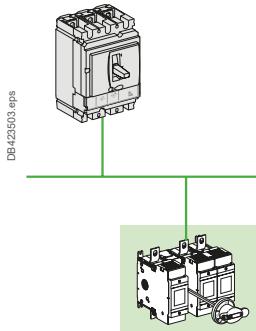
T	Total discrimination
41	Discrimination limit in kA
	No discrimination

Discrimination tables

Upstream: Compact NSX100 to 630

Downstream: Fupact (gG fuse-link)

Ue ≤ 440 V AC



The Compact NSX100 to 630 circuit breaker is equipped with a thermal-magnetic or electronic trip unit without a delayed short-time setting.

Note: the discrimination rules are the same for a Compact NSX with a delayed short-time setting.

Upstream: Compact NSX

TM-D

| NSX100B/F/N/H/S/L

| NSX160B/F/N/H/S/L

| NSX250B/F/N/H/S/L

Downstream: Fupact gG fuse-link

Rating (A)	16	25	32	40	50	63	80	100	80	100	125	160	160	200	250
Im (kA)	0.19	0.3	0.4	0.5	0.5	0.5	0.63	0.8	1	1	1	1	1	2	2.5
2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
16				T	T	T	T	T	T	T	T	T	T	T	T
20				T	T	T	T	T	T	T	T	T	T	T	T
25				T	T	T	T	T	T	T	T	T	T	T	T
32						T	T	T	T	T	T	T	T	T	T
35									T	T	T	T	T	T	T
40									T	T	T	T	T	T	T
50									T	T	T	T	T	T	T
63									T	T	T	T	T	T	T
80												T	T	T	T
100													T	T	T
125														T	T
160														T	T

Upstream: Compact NSX

Micrologic 2, 5, 6 lsd = 10 Ir

| NSX100B/F/N/H/S/L

| NSX160B/F/N/H/
S/L

| NSX250B/F/N/H/
S/L

| NSX400F/N/H/S/L

| NSX630F/N/H/S/L

Downstream: Fupact gG fuse-link

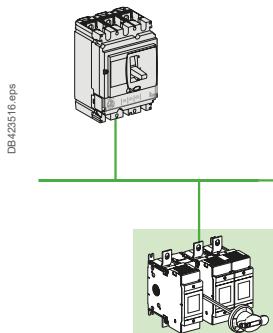
Rating (A)	40	25	40	40	63	80	100	100	125	160	160	200	250	250	400	400	400	400	500	630
Ir Setting	18		0.25	0.4	0.4	0.63	0.8	1	1	1.25	1.6	1.6	2	2.5	2.5	3.2	4	4	5	6.3
Im (kA)										T	T	T	T	T	T	T	T	T	T	
2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
16				T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
20					T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
25					T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
32						T	T	T	T	T	T	T	T	T	T	T	T	T	T	
35						T	T	T	T	T	T	T	T	T	T	T	T	T	T	
40						T	T	T	T	T	T	T	T	T	T	T	T	T	T	
50								T	T	T	T	T	T	T	T	T	T	T	T	
63									T	T	T	T	T	T	T	T	T	T	T	
80										T	T	T	T	T	T	T	T	T	T	
100											T	T	T	T	T	T	T	T	T	
125												T	T	T	T	T	T	T	T	
160													T	T	T	T	T	T	T	
200														T	T	T	T	T	T	
250															T	T	T	T	T	

Discrimination tables

Upstream: Compact NSX100 to 630

Downstream: Fupact (aM fuse-link)

$U_e \leq 440$ V AC



The Compact NSX100 to 630 circuit breaker is equipped with a thermal-magnetic or electronic trip unit without a delayed short-time setting.

Note: the discrimination rules are the same for a Compact NSX with a delayed short-time setting.

Upstream: Compact NSX

TM-D

| NSX100B/F/N/H/S/L

| NSX160B/F/N/H/S/L

| NSX250B/F/N/H/S/L

Downstream: Fupact aM fuse-link

Rating (A)	16	25	32	40	50	63	80	100	80	100	125	160	160	200	250
Im (kA)	0.19	0.3	0.4	0.5	0.5	0.5	0.63	0.8	1	1	1	1	1	2	2.5
2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
10				T	T	T	T	T	T	T	T	T	T	T	T
16				T	T	T	T	T	T	T	T	T	T	T	T
20					T	T	T	T	T	T	T	T	T	T	T
32						T	T	T	T	T	T	T	T	T	T
35							T	T	T	T	T	T	T	T	T
40								T	T	T	T	T	T	T	T
50									T	T	T	T	T	T	T
63										T	T	T	T	T	T

Upstream: Compact NSX

Micrologic 2.0/5.0/6.0 lsd: 10 Ir

| NSX100B/F/N/H/S/L

| NSX160B/F/N/H/S/L

| NSX250B/F/N/H/S/L

Downstream: Fupact aM fuse-link

Rating (A)	40	18	25	40	100	40	63	80	100	160	63	80	100	125	160	250
Im (kA)			0.25	0.4	0.4	0.63	0.8	1	0.63	0.8	1	1.25	1.6	1	1.25	1.6
2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
10			T	T	T	T	T	T	T	T	T	T	T	T	T	T
16				T	T	T	T	T	T	T	T	T	T	T	T	T
20					T	T	T	T	T	T	T	T	T	T	T	T
32						T	T	T	T	T	T	T	T	T	T	T
35							T	T	T	T	T	T	T	T	T	T
40								T	T	T	T	T	T	T	T	T
50									T	T	T	T	T	T	T	T
63										T	T	T	T	T	T	T

Upstream: Compact NSX

Micrologic 2.0/5.0/6.0 lsd: 10 Ir

| NSX400F/N/H/S/L

| NSX630F/N/H/S/L

Downstream: Fupact aM fuse-link

Rating (A)	400	160	200	250	320	400	630	250	320	400	500	630
Im (kA)	1.6	2	2.5	3.2	4	2.5	2.5	3.2	4	5	6.3	
2	T	T	T	T	T	T	T	T	T	T	T	T
4	T	T	T	T	T	T	T	T	T	T	T	T
6	T	T	T	T	T	T	T	T	T	T	T	T
10	T	T	T	T	T	T	T	T	T	T	T	T
16	T	T	T	T	T	T	T	T	T	T	T	T
20	T	T	T	T	T	T	T	T	T	T	T	T
32	T	T	T	T	T	T	T	T	T	T	T	T
35	T	T	T	T	T	T	T	T	T	T	T	T
40	T	T	T	T	T	T	T	T	T	T	T	T
50		T	T	T	T	T	T	T	T	T	T	T
63			T	T	T	T	T	T	T	T	T	T
80				T	T	T	T	T	T	T	T	T
100					T				T	T	T	T

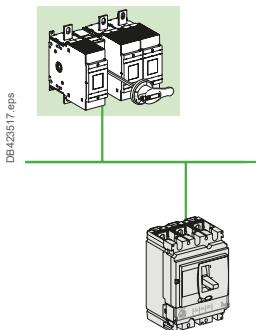
E

Discrimination tables

Upstream: Fupact (gG fuse-link)

Downstream: Compact NSX100 to 630

Ue ≤ 440 V AC



The Compact NSX100 to 630 circuit breaker is equipped with a thermal-magnetic or electronic trip unit without a delayed short-time setting.

Upstream: Fupact gG fuse-link

Downstream	Rating (A)	160	200	250	315	355	400	450	500	560	630	670	710	750	800	1000	1250
NSX100 TM-D	16	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	25	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	32	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	40	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	50	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	63	2.5	4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	80		4	7	15	T	T	T	T	T	T	T	T	T	T	T	T
	100			7	15	T	T	T	T	T	T	T	T	T	T	T	T
	≤ 63			7	15	T	T	T	T	T	T	T	T	T	T	T	T
NSX160 TM-D	80		7	15	T	T	T	T	T	T	T	T	T	T	T	T	T
	100				T	T	T	T	T	T	T	T	T	T	T	T	T
	125				T	T	T	T	T	T	T	T	T	T	T	T	T
	160				T	T	T	T	T	T	T	T	T	T	T	T	T
NSX250 TM-D	≤ 100				T	T	T	T	T	T	T	T	T	T	T	T	T
	125				T	T	T	T	T	T	T	T	T	T	T	T	T
	160				T	T	T	T	T	T	T	T	T	T	T	T	T
	200				T	T	T	T	T	T	T	T	T	T	T	T	T
NSX100 Micrologic 2.0/5.0/6.0	250				T	T	T	T	T	T	T	T	T	T	T	T	T
	40		4	10	T	T	T	T	T	T	T	T	T	T	T	T	T
	100		4	10	T	T	T	T	T	T	T	T	T	T	T	T	T
	NSX160 Micrologic 2.0/5.0/6.0				7	8	T	T	T	T	T	T	T	T	T	T	T
NSX250 Micrologic 2.0/5.0/6.0	40				7	8	T	T	T	T	T	T	T	T	T	T	T
	100				7	8	T	T	T	T	T	T	T	T	T	T	T
	160				7	8	T	T	T	T	T	T	T	T	T	T	T
	200						10	T	T	T	T	T	T	T	T	T	T
NSX400 Micrologic 2.0/5.0/6.0	100						10	T	T	T	T	T	T	T	T	T	T
	160						10	T	T	T	T	T	T	T	T	T	T
	250							T	T	T	T	T	T	T	T	T	T
	320								6	7	9	10	T	T	T	T	T
NSX630 Micrologic 2.0/5.0/6.0	400								6	7	9	10	T	T	T	T	T
	400												12	15	30	T	T
	630												12	15	30	T	T

Table key

T	Total discrimination
16	Discrimination limit in kA
	No discrimination

Protection of motor circuits with fuses: general

Example:

An INF•160 can receive BS fuse-links in sizes A2, A3 or A4, which correspond to the following ratings:

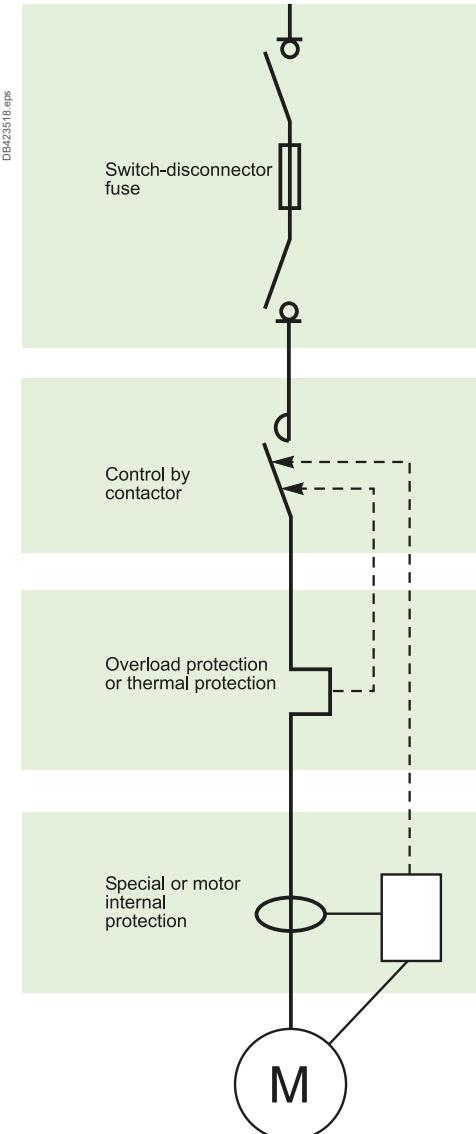
- A2 size:
 - 2 to 32 A for gG fuse-links
 - 32M35 to 32M63 for gM fuse-links
- A3 size:
 - 35 to 63 A for gG fuse-links
 - 63M80 to 63M100 for gM fuse-links
- A4 size:
 - 80 to 100 A for gG fuse-links
 - 100M125 to 100M200 for gM fuse-links.

The tables on [pages E-24 to E-33](#) directly indicate the correct selection of fuse-links and Fupact switches depending on the distribution circuit rating and the motor rating (for direct-on-line starting).

Fuse size table

The table below indicates the minimum and maximum fuse sizes depending on the rating of the switch and the applicable reference standard.

	BS min.	BS max.	DIN min.	DIN max.	NFC min.	NFC max.
INF•32	A1	A2			10 x 38	14 x 51
INFD40			000	000		
INFC50					14 x 51	14 x 51
INF•63	A2	A3	000	000	22 x 58	22 x 58
INF•100	A2	A4				
INFC125					22 x 58	22 x 58
INF•160	A2	A4	000	00		
INF•200	B1	B2	0	0		
INF•250	B1	B3	0	1		
INF•400	B1	B4	0	2		
INF•630	C1	C3	3	3		
INF•800	C1	C3	3	3		
ISFT100N			000	000		
ISFT100			000	000		
ISF•160			000	00		
ISF•250			1	1		
ISF•400			2	2		
ISF•630			3	3		



Protection of motor feeders

A motor feeder is generally made up of:

- a control contactor
- a thermal relay for overcurrent protection
- a short-circuit protection device
- a disconnection device capable of interrupting load currents.

Fupact switch-disconnector fuses are ideally suited to perform the last two functions in the list. What is more, Fupact devices are totally compatible with the IEC 60204 machine directive.

Additional specific protection:

- fault limiting protection (while the motor is running)
- fault prevention (monitoring of motor insulation with motor off).

Fupact characteristics

The local emergency-off switch must have the AC23 characteristic for the rated motor current.

Motor starting characteristics are the following:

- peak current: 8 to 10 In
- duration of peak current: 20 to 30 ms
- starting current Id: 4 to 8 In
- starting time td: 2 to 4 seconds.

Short-circuit protection of motors is ensured by aM or gM ^[1] fuse-links that are sized to take into account the above characteristics.

Fupact offers a wide range of fuse utilisations, whatever the applicable reference standard.

[1] A gM fuse-link is in fact simply a derated gG fuse-link.

Coordination of devices on the motor feeder

- Thermal protection of:

- motor
- conductors
- switch
- fuse

is ensured by the thermal relay on the contactor.

- Overload (or short-circuit) protection of:
- motor
- conductors
- switch
- thermal relay

is ensured by the fuse.

To ensure a high level of operational quality, it is important to ensure **coordination of the devices** on the motor feeder in compliance with standard IEC 60947-4.

The equipment manufacturers provide type-1 and type-2 coordination tables between fuse-links, contactors and thermal relays.

Note: Proposed fuses are based on 4 poles 50 Hz induction motors direct on line start $Id/In \leq 7$ for 10 sec.
The choice of fuses and overload relay shall be checked according to the actual motor's characteristic.

Protection of motor circuits with BS fuses

Selection tables for Fupact devices and associated BS fuse-links

Example:

A 37 kW motor supplied at 415 V is protected by 160 A gM fuse-links.

This type of fuse-link may be mounted on a Fupact INFB100 or higher.

See the grey section in the table opposite.

230/240 V					415V				
P(kW)	(HP)	In (A)	Fupact	gG/gM	P(kW)	(HP)	In (A)	Fupact	gG/gM
0.37	0.5	1.9	INFB32	gG 6	0.37	0.5	1.1	INFB32	gG 4
1	0.7	2.7	INFB32	gG 10	1	0.7	1.5	INFB32	gG 6
0.8	1	3.6	INFB32	gG 16	0.8	1	2	INFB32	gG 10
1.1	1.5	4.5	INFB32	gG 16	1.1	1.5	2.5	INFB32	gG 10
1.5	2	6.3	INFB32	gG 20	1.5	2	3.5	INFB32	gG 16
2.2	2.9	9	INFB32	20M25	2.2	2.9	5	INFB32	gG 16
3	4	11.7	INFB32	20M32	3	4	6.5	INFB32	gG 20
4	5.3	15.2	INFB32	32M40	4	5.3	8.4	INFB32	20M25
5.5	7.3	19.8	INFB32	32M50	5.5	7.3	11	INFB32	20M32
7.5	10	26	INFB32	32M50	7.5	10	14.4	INFB32	32M40
10	13	34	INFB32	63M80	10	13.3	19.1	INFB32	32M50
11	15	38	INFB63	63M80	11	15	21	INFB32	32M50
15	20	51	INFB63	63M100	15	20	28	INFB32	32M63
18.5	25	63	INFB100	100M160	18.5	25	35	INFB63	63M80
22	29	74	INFB100	100M160	22	29	41	INFB63	63M80
30	40	99	INFB200	gG 200	30	40	55	INFB63	63M100
37	49	125	INFB200	200M250	37	49	69	INFB100	100M160
45	60	144	INFB200	200M250	45	60	80	INFB100	100M160
55	73	177	INFB250	315M400	55	73	98	INFB200	gG 200
75	100	245	INFB250	315M400	75	100	136	INFB200	200M250
90	120	296	INFB400	400M450	90	120	164	INFB200	200M315
110	147	354	INFB630	gG 630	110	147	196	INFB250	315M400
132	176	408	INFB800	gG 800	132	176	226	INFB250	315M400
150	200	484	INFB800	gG 800	150	200	268	INFB400	400M500
160	213	496	INFB800	gG 800	160	213	275	INFB400	400M500
					200	267	358	INFB630	gG 630
					240	320	428	INFB800	gG 800
					280	373	488	INFB800	gG 800

Protection of motor circuits with NFC fuses

Selection tables for Fupact devices and associated NFC fuse-links

Example:

A 30 kW motor supplied at 690 V is protected by:

- 80 A gG fuse-links
- 32 A aM fuse-links.

Both types of fuse-links may be mounted on a Fupact INF63^[1] or higher.

See the grey section in the table on following page.

[1] Fupact is designed to allow overrated protection.

230/240 V

P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1.9	INF63	6	INF63	2
0.55	0.73	2.7	INF63	10	INF63	4
0.75	1	3.6	INF63	16	INF63	4
1.1	1.5	4.5	INF63	16	INF63	6
1.5	2	6.3	INF63	20	INF63	8
2.2	2.9	9	INF63	25	INF63	10
3	4	11.7	INF63	32	INF63	12
4	5.3	15.2	INF63	40	INF63	16
5.5	7.3	19.8	INF63	50	INF63	20
7.5	10	26	INF63	50	INF63	32
10	13	34	INF63	80	INF63	40
11	15	38	INF63	80	INF63	40
15	20	51	INF63	100	INF63	63
18.5	25	63	-	160	INF125	80
22	29	74	-	160	INF125	80
30	40	99	-	200	INF125	100
37	49	125	-	250	INF125	125

380/400V

P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1.1	INF63	4	INF63	2
0.55	0.73	1.6	INF63	6	INF63	2
0.75	1	2.2	INF63	10	INF63	4
1.1	1.5	2.7	INF63	10	INF63	4
1.5	2	3.8	INF63	16	INF63	4
2.2	2.9	5.5	INF63	16	INF63	6
3	4	7.1	INF63	20	INF63	8
4	5.3	9.2	INF63	25	INF63	10
5.5	7.3	12	INF63	32	INF63	12
7.5	10	16	INF63	40	INF63	16
10	13	21	INF63	50	INF63	25
11	15	23	INF63	50	INF63	25
15	20	31	INF63	80	INF63	32
18.5	25	38	INF63	80	INF50	40
22	29	45	INF63	100	INF50	50
30	40	60	INF63	125	INF63	63
37	49	75	-	160	INF125	80
45	60	87	-	200	INF125	100
55	73	107	-	200	INF125	125

415 V

P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1.1	INF63	4	INF63	2
0.55	0.73	1.5	INF63	6	INF63	2
0.75	1	2	INF63	6	INF63	2
1.1	1.5	2.5	INF63	10	INF63	4
1.5	2	3.5	INF63	16	INF63	4
2.2	2.9	5	INF63	16	INF63	6
3	4	6.5	INF63	20	INF63	8
4	5.3	8.4	INF63	25	INF63	10
5.5	7.3	11	INF63	32	INF63	12
7.5	10	14	INF63	40	INF63	16
10	13	19	INF63	50	INF63	25
11	15	21	INF63	50	INF63	25
15	20	28	INF63	63	INF63	32
18.5	25	35	INF63	80	INF50	40
22	29	41	INF63	80	INF50	50
30	40	55	INF63	100	INF63	63
37	49	69	-	160	INF125	80
45	60	80	-	160	INF125	80
55	73	98	-	200	INF125	100

440 V

P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1	INF63	4	INF63	2
0.55	0.73	1.4	INF63	6	INF63	2
0.75	1	1.9	INF63	6	INF63	2
1.1	1.5	2.4	INF63	10	INF63	4
1.5	2	3.3	INF63	10	INF63	4
2.2	2.9	4.7	INF63	16	INF63	6
3	4	6.1	INF63	16	INF63	6
4	5.3	7.9	INF63	20	INF63	8
5.5	7.3	10.4	INF63	25	INF63	10
7.5	10	14	INF63	40	INF63	16
10	13	18	INF50	50	INF63	20
11	15	20	INF50	50	INF63	20
15	20	26	INF63	63	INF63	32
18.5	25	33	INF63	80	INF50	40
22	29	39	INF63	80	INF50	40
30	40	52	INF63	100	INF50	50
37	49	65	-	160	INF125	80
45	60	75	-	160	INF125	80
55	73	92	-	200	INF125	100

E

Protection of motor circuits with NFC fuses

500 V							525/550 V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM	P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	0.9	INF32	4	INF32	2	0.37	0.49	0.8	INF63	4	INF32	2
0.55	0.73	1.2	INF32	4	INF32	2	0.55	0.73	1.1	INF63	4	INF32	2
0.75	1	1.5	INF32	6	INF32	2	0.75	1	1.4	INF63	6	INF32	2
1.1	1.5	2.2	INF32	6	INF32	2	1.1	1.5	2.1	INF63	6	INF32	2
1.5	2	2.9	INF32	10	INF32	4	1.5	2.0	2.8	INF63	10	INF32	4
2.2	2.9	3.9	INF32	10	INF32	4	2.2	2.9	3.7	INF63	10	INF32	4
3	4	5.2	INF32	16	INF32	6	3	4	4.9	INF63	16	INF32	6
4	5.3	6.8	INF32	20	INF32	8	4	5.3	6.5	INF63	20	INF32	8
5.5	7.3	9.2	INF32	25	INF32	10	5.5	7.3	8.7	INF63	25	INF32	10
7.5	10	12	INF32	32	INF32	12	7.5	10	12	INF63	32	INF32	12
10	13	16	INF32	32	INF32	16	10	13	15	INF63	32	INF32	16
11	15	18	INF32	40	INF32	20	11	15	17	INF63	40	INF32	20
15	20	23	INF63	50	INF32	25	15	20	22	INF63	50	INF32	25
18.5	25	28	INF63	63	INF50	32	18.5	25	27	INF63	63	INF63	32
22	29	33	INF63	80	INF50	40	22	29	31	INF63	80	INF63	40
30	40	45	INF63	100	INF63	50	30	40	43	-	100	INF63	50
37	49	53	INF63	100	INF63	63	37	49	50	-	100	INF63	63
45	60	64	-	160	INF125	80	45	60	61	-	125	INF63	63
55	73	78	-	160	INF125	80	55	73	74	-	160	INF125	80

660/690V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	0.7	INF63	2	INF32	2
0.55	0.73	0.9	INF63	4	INF32	2
0.75	1	1.1	INF63	4	INF32	2
1.1	1.5	1.6	INF63	6	INF32	2
1.5	2	2.2	INF63	6	INF32	4
2.2	2.9	2.8	INF63	10	INF32	4
3	4	3.8	INF63	10	INF32	6
4	5.3	4.9	INF63	16	INF32	6
5.5	7.3	6.7	INF63	20	INF32	8
7.5	10	9	INF63	25	INF32	10
10	13	12	INF63	32	INF32	12
11	15	13	INF63	32	INF32	16
15	20	17	INF63	40	INF32	20
18.5	25	22	INF63	50	INF32	25
22	29	24	INF63	50	INF63	25
30	40	32	INF63	80	INF63	32
37	49	39	INF63	80	INF63	40
45	60	47	-	100	INF63	50
55	73	57	-	125	INF63	63
75	100	77	-	160	INF125	80

Protection of motor circuits with DIN fuses

Selection tables for Fupact devices and associated DIN fuse-links

Example:

A 75 kW motor supplied at 500 V is protected by:

- 200 A gG fuse-links
- 125 A aM fuse-links.

Both types of fuse-links may be mounted on a Fupact INFID200 or higher.

See the grey section in the table below.

230/240 V							380/400V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM	P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1.9	INFID40	6	INFID40	2	0.37	0.49	1.1	INFID40	4	INFID40	2
0.55	0.73	2.7	INFID40	10	INFID40	4	0.55	0.73	1.6	INFID40	6	INFID40	2
0.75	1	3.6	INFID40	16	INFID40	4	0.75	1	2.2	INFID40	10	INFID40	4
1.1	1.5	4.5	INFID40	16	INFID40	6	1.1	1.5	2.7	INFID40	10	INFID40	4
1.5	2	6.3	INFID40	20	INFID40	8	1.5	2	3.8	INFID40	16	INFID40	4
2.2	2.9	9.0	INFID40	25	INFID40	10	2.2	2.9	5.5	INFID40	16	INFID40	6
3	4	11.7	INFID40	32	INFID40	12	3	4	7.1	INFID40	20	INFID40	8
4	5.3	15.2	INFID40	40	INFID40	16	4	5.3	9.2	INFID40	25	INFID40	10
5.5	7.3	19.8	INFID40	50	INFID40	20	5.5	7.3	12	INFID40	32	INFID40	12
7.5	10	26	INFID40	50	INFID40	32	7.5	10	16	INFID40	40	INFID40	16
10	13	34	INFID40	80	INFID40	40	10	13	21	INFID40	50	INFID40	25
11	15	38	INFID40	80	INFID40	40	11	15	23	INFID40	50	INFID40	25
15	20	51	INFID63	100	INFID63	63	15	20	31	INFID40	80	INFID40	32
18.5	25	63	INFID160	160	INFID160	80	18.5	25	38	INFID40	80	INFID40	40
22	29	74	INFID160	160	INFID160	80	22	29	45	INFID63	100	INFID63	50
30	40	99	INFID200	200	INFID160	100	30	40	60	INFID63	125	INFID63	63
37	49	125	INFID200	250	INFID160	125	37	49	75	INFID160	160	INFID160	80
45	60	144	INFID200	250	INFID160	160	45	60	87	INFID200	200	INFID160	100
55	73	177	INFID250	355	INFID200	200	55	73	107	INFID200	200	INFID160	125
75	100	245	INFID400	400	INFID400	250	75	100	149	INFID200	250	INFID160	160
90	120	296	INFID400	450	INFID400	315	90	120	179	INFID250	355	INFID200	200
110	147	354	INFID630	630	INFID400	355	110	147	214	INFID400	400	INFID250	250
132	176	408	INFID630	800	INFID630	450	132	176	247	INFID400	450	INFID250	250
150	200	484	INFID630	800	INFID630	500	150	200	293	INFID400	500	INFID400	315
160	213	496	INFID630	800	INFID630	500	160	213	300	INFID630	630	INFID400	315
200	267	646	-	-	INFID800	800	200	267	391	INFID630	800	INFID400	400
240	320	467	-	-	INFID630	800	240	320	467	-	-	INFID630	500
280	373	533	-	-	-	-	280	373	533	-	-	INFID630	630
300	400	573	-	-	-	-	300	400	573	-	-	INFID630	630
320	427	588	-	-	-	-	320	427	588	-	-	INFID630	630

415 V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1.1	INFID40	4	INFID40	2
0.55	0.73	1.5	INFID40	6	INFID40	2
0.75	1	2	INFID40	10	INFID40	2
1.1	1.5	2.5	INFID40	10	INFID40	4
1.5	2	3.5	INFID40	16	INFID40	4
2.2	2.9	5	INFID40	16	INFID40	6
3	4	6.5	INFID40	20	INFID40	8
4	5.3	8.4	INFID40	25	INFID40	10
5.5	7.3	11	INFID40	32	INFID40	12
7.5	10	14	INFID40	40	INFID40	16
10	13	19	INFID40	50	INFID40	25
11	15	21	INFID40	50	INFID40	25
15	20	28	INFID40	63	INFID40	32
18.5	25	35	INFID40	80	INFID40	40
22	29	41	INFID63	80	INFID63	50
30	40	55	INFID63	100	INFID63	63
37	49	69	INFID160	160	INFID160	80
45	60	80	INFID160	160	INFID160	80
55	73	98	INFID200	200	INFID160	100
75	100	136	INFID200	250	INFID160	160
90	120	164	INFID250	315	INFID200	200
110	147	196	INFID250	355	INFID200	200
132	176	226	INFID400	400	INFID250	250
150	200	268	INFID400	450	INFID400	315
160	213	275	INFID400	500	INFID400	315
200	267	358	INFID630	630	INFID400	400
240	320	428	INFID630	800	INFID630	450
280	373	488	INFID630	800	INFID630	500
300	400	525	-	-	INFID630	630
320	427	538	-	-	INFID630	630
355	473	605	-	-	INFID630	630
375	500	610	-	-	INFID630	630

440 V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	1	INFID40	4	INFID40	2
0.55	0.73	1.4	INFID40	6	INFID40	2
0.75	1	1.9	INFID40	6	INFID40	2
1.1	1.5	2.4	INFID40	10	INFID40	4
1.5	2	3.3	INFID40	10	INFID40	4
2.2	2.9	4.7	INFID40	16	INFID40	6
3	4	6.1	INFID40	16	INFID40	6
4	5.3	7.9	INFID40	20	INFID40	8
5.5	7.3	10.4	INFID40	25	INFID40	10
7.5	10	14	INFID40	40	INFID40	16
10	13	18	INFID40	50	INFID40	20
11	15	20	INFID40	50	INFID40	20
15	20	26	INFID40	63	INFID40	32
18.5	25	33	INFID40	80	INFID40	40
22	29	39	INFID40	80	INFID40	40
30	40	52	INFID63	100	INFID63	50
37	49	65	INFID160	160	INFID160	80
45	60	75	INFID160	160	INFID160	80
55	73	92	INFID160	200	INFID160	100
75	100	128	INFID200	250	INFID160	125
90	120	155	INFID250	315	INFID160	160
110	147	185	INFID250	355	INFID200	200
132	176	213	INFID400	400	INFID250	250
150	200	253	INFID400	450	INFID400	250
160	213	259	INFID400	500	INFID400	315
200	267	338	INFID630	630	INFID400	355
240	320	404	INFID630	800	INFID630	400
280	373	460	INFID630	800	INFID630	450
300	400	495	INFID630	800	INFID630	500
320	427	507	-	-	INFID630	500
355	473	560	-	-	INFID630	630
375	500	575	-	-	INFID630	630
400	533	611	-	-	INFID630	630
450	600	630	-	-	INFID630	630

500 V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	0.9	INFID40	4	INFID40	2
0.55	0.73	1.2	INFID40	4	INFID40	2
0.75	1	1.5	INFID40	6	INFID40	2
1.1	1.5	2.2	INFID40	6	INFID40	2
1.5	2	2.9	INFID40	10	INFID40	4
2.2	2.9	3.9	INFID40	10	INFID40	4
3	4	5.2	INFID40	16	INFID40	6
4	5.3	6.8	INFID40	20	INFID40	8
5.5	7.3	9.2	INFID40	25	INFID40	10
7.5	10	12	INFID40	32	INFID40	12
10	13	16	INFID40	32	INFID40	16
11	15	18	INFID40	40	INFID40	20
15	20	23	INFID40	50	INFID40	25
18.5	25	28	INFID40	63	INFID40	32
22	29	33	INFID40	80	INFID40	40
30	40	45	INFID63	100	INFID63	50
37	49	53	INFID63	100	INFID160	63
45	60	64	INFID160	160	INFID160	80
55	73	78	INFID160	160	INFID160	80
75	100	106	INFID200	200	INFID160	125
90	120	130	INFID200	250	INFID160	160
110	147	155	INFID250	315	INFID200	160
132	176	187	INFID250	355	INFID250	200
150	200	211	INFID400	400	INFID400	250
160	213	225	INFID400	400	INFID400	250
200	267	280	INFID400	450	INFID400	315</

Protection of motor circuits with DIN fuses

525/550 V							660/690V						
P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM	P(kW)	(HP)	In (A)	Fupact	gG	Fupact	aM
0.37	0.49	0.8	INF40	4	INF40	2	0.37	0.49	0.7	INF40	2	INF40	2
0.55	0.73	1.1	INF40	4	INF40	2	0.55	0.73	0.9	INF40	4	INF40	2
0.75	1	1.4	INF40	6	INF40	2	0.75	1	1.1	INF40	4	INF40	2
1.1	1.5	2.1	INF40	6	INF40	2	1.1	1.5	1.6	INF40	6	INF40	2
1.5	2	2.8	INF40	10	INF40	4	1.5	2	2.2	INF40	6	INF40	4
2.2	2.9	3.7	INF40	10	INF40	4	2.2	2.9	2.8	INF40	10	INF40	4
3	4	4.9	INF40	16	INF40	6	3	4	3.8	INF40	10	INF40	6
4	5.3	6.5	INF40	20	INF40	8	4	5.3	4.9	INF40	16	INF40	6
5.5	7.3	8.7	INF40	25	INF40	10	5.5	7.3	6.7	INF40	20	INF40	8
7.5	10	12	INF40	32	INF40	12	7.5	10	9	INF40	25	INF40	10
10	13	15	INF40	32	INF40	16	10	13	12	INF40	32	INF40	12
11	15	17	INF40	40	INF40	20	11	15	13	INF40	32	INF40	16
15	20	22	INF40	50	INF40	25	15	20	17	INF40	40	INF40	20
18.5	25	27	INF40	63	INF40	32	18.5	25	22	INF40	50	INF40	25
22	29	31	INF63	80	INF40	40	22	29	24	INF40	50	INF40	25
30	40	43	INF160	100	INF63	50	30	40	32	INF63	80	INF40	32
37	49	50	INF160	100	INF63	63	37	49	39	INF63	80	INF63	40
45	60	61	INF160	125	INF63	63	45	60	47	INF160	100	INF63	50
55	73	74	INF200	160	INF160	80	55	73	57	INF160	125	INF63	63
75	100	101	INF250	200	INF160	100	75	100	77	INF200	160	INF160	80
90	120	123	INF400	250	INF160	125	90	120	93	INF250	200	INF160	100
110	147	147	INF400	250	INF250	160	110	147	113	INF250	250	INF160	125
132	176	178	INF630	355	INF250	200	132	176	134	INF250	250	INF250	160
150	200	200	INF630	400	INF250	200	150	200	152	INF400	315	INF250	160
160	213	214	INF630	400	INF250	250	160	213	162	INF400	315	INF250	160
200	267	266	INF630	450	INF400	315	200	267	203	INF630	400	INF250	200
240	320	321	-	-	INF400	355	240	320	244	INF630	450	INF250	250
280	373	366	-	-	INF400	400	280	373	284	INF630	500	INF400	315
300	400	394	-	-	INF400	400	300	400	305	INF630	500	INF400	315
320	427	413	-	-	INF630	450	320	427	325	-	-	INF630	355
355	473	464	-	-	INF630	500	355	473	354	-	-	INF630	355
375	500	490	-	-	INF630	500	375	500	374	-	-	INF630	400
							400	533	400	-	-	INF630	400
							450	600	455	-	-	INF630	450

Type 2 coordination (IEC 60947-4-1) 380/415 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 380/415 V - "Iq" 100 kA

Starting

Class 10 A/10

Motors P (kW)	I (A) 380 V	I (A) 415 V	Ie Max (A)	Switch-fuse [1] Type	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2] Type	Thermal relays Type	Irth (A)
0.37	1.2	1.1	1.6	INFC32 or INF40	4	2	LC1-D09	LRD 06	1/1.6
0.55	1.6	1.5	1.6	INFC32 or INF40	6	2	LC1-D09	LRD 06	1/1.6
0.75	2	1.8	2.5	INFC32 or INF40	10	4	LC1-D09	LRD 07	1.6/2.5
1.1	2.8	2.6	2.5	INFC32 or INF40	10	4	LC1-D09	LRD 07	1.6/2.5
1.5	3.7	3.4	4	INFC32 or INF40	16	4	LC1-D09	LRD 08	2.5/4
2.2	5.3	4.8	6	INFC32 or INF40	16	6	LC1-D09	LRD 10	4/6
3	7	6.5	8	INFC32 or INF40	20	8	LC1-D09	LRD 12	5.5/8
4	9	8.2	10	INFC32 or INF40	25	10	LC1-D12	LRD 14	7/10
5.5	12	11	12	INFC32 or INF40	32	12	LC1-D12	LRD 16	9/13
7.5	16	14	16	INFC32 or INF40	40	16	LC1-D18	LRD 21	12/18
10	21	19	24	INFC32 or INF40	50	25	LC1-D25	LRD 22	16/24
11	23	21	24	INFC32 or INF40	50	25	LC1-D25	LRD 22	16/24
15	30	28	32	INFC32 or INF40	-	32	LC1-D32	LRD 32	23/32
				INFC63 or INF40	63	-			
18.5	37	34	40	INFC50 or INF40	-	40	LC1-D40A	LRD 340	30/40
				INFC63 or INF40	80	-			
22	43	40	50	INFC50 or INF63	-	50	LC1-D50A	LRD 350	37/50
				INFC63 or INF63	100	-			
30	59	55	63	INFC63 or INF63	125	63	LC1-D65A	LRD 365	48/65
37	72	66	80	INFC125 or INF160	160	80	LC1-D80	LRD 3363	63/80
45	85	80	100	INFC125 or INF160	-	100	LC1-D115	LR9-D53 67	60/100
				INF200	200	-			
55	105	100	115	INFC125 or INF160	-	125	LC1-D115	LR9-D53 69	90/150
				INF200	200	-			
75	140	135	150	INF200	-	160	LC1-D150	LR9-D53 69	90/150
				INF200	250	-			
90	170	160	185	INF200	-	200	LC1-F265	LR9-F53 71	132/220
				INF250	355	-			
110	210	200	220	INF250	-	250	LC1-F330	LR9-F53 71	132/220
				INF400	400	-			
132	250	230	250	INF250	-	250	LC1-F330	LR9-F73 75	200/330
				INF400	450	-			
160	300	270	265	INF400	-	315	LC1-F400	LR9-F73 75	200/330
				INF630	630	-			
200	380	361	400	INF400	-	400	LC1-F500	LR9-F73 79	300/500
				INF630	800	-			
250	460	430	500	INF630	800	500	LC1-F500	LR9-F73 79	300/500
280	520	475	630	INF630	800	630	LC1-F630	LR9-F73 81	380/630
300	565	500	630	INF630	-	630	LC1-F630	LR9-F73 81	380/630
335	610	560	630	INF630	-	630	LC1-F630	LR9-F73 81	380/630
355	630	590	630	INF630	-	800	LC1-F630	LR9-F73 81	380/630

[1] INFC for NFC cylindrical ferrule / INF40 for NH DIN type fuse-link.

[2] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

E

Type 2 coordination (IEC 60947-4-1) 380/415 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 380/415 V - "Iq" 100 kA

Starting

Adjustable class 10 A to 30 A [4]

Motors P (kW)	I (A) 380 V	I (A) 415 V	Ie Max (A)	Switch-fuse [1] Type	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2] Type	Thermal relays Type	I _{th} (A)
0.37	1.2	1.1	2	INFC32 or INFID40	4	2	LC1-D09	LTM R08	0.4/8 [3]
0.55	1.6	1.5	2	INFC32 or INFID40	6	2	LC1-D09	LTM R08	0.4/8 [3]
0.75	2	1.8	4	INFC32 or INFID40	10	4	LC1-D09	LTM R08	0.4/8 [3]
1.1	2.8	2.6	4	INFC32 or INFID40	10	4	LC1-D09	LTM R08	0.4/8 [3]
1.5	3.7	3.4	4	INFC32 or INFID40	16	4	LC1-D09	LTM R08	0.4/8 [3]
2.2	5.3	4.8	6	INFC32 or INFID40	16	6	LC1-D09	LTM R08	0.4/8 [3]
3	7	6.5	8	INFC32 or INFID40	20	8	LC1-D09	LTM R08	0.4/8 [3]
4	9	8.2	10	INFC32 or INFID40	25	10	LC1-D12	LTM R27	1.35/27 [3]
5.5	12	11	12	INFC32 or INFID40	32	12	LC1-D18	LTM R27	1.35/27 [3]
7.5	16	14	16	INFC32 or INFID40	40	16	LC1-D25	LTM R27	1.35/27 [3]
10	21	19	25	INFC32 or INFID40	50	25	LC1-D32	LTM R27	1.35/27 [3]
11	23	21	25	INFC32 or INFID40	50	25	LC1-D32	LTM R27	1.35/27 [3]
15	30	28	32	INFC32 or INFID40	-	32	LC1-D40A	LTM R100	5/100 [3]
				INFC63 or INFID40	80	-			
18.5	37	34	40	INFC50 or INFID40	-	40	LC1-D40A	LTM R100	5/100 [3]
				INFC63 or INFID40	80	-			
22	43	40	50	INFC50 or INFID63	-	50	LC1-D50A	LTM R100	5/100 [3]
				INFC63 or INFID63	100	-			
30	59	55	63	INFC63 or INFID63	125	63	LC1-D65A	LTM R100	5/100 [3]
37	72	66	80	INFC125 or INFID160	160	80	LC1-D80	LTM R100	5/100 [3]
45	85	80	80	INFC125 or INFID160	-	100	LC1-D115	LTM R100	5/100 [3]
				INFID200	200	-			
55	105	100	115	INFC125 or INFID160	-	125	LC1-D115	LTM R08	On CT
				INFID200	200	-			
75	140	135	150	INFID160	-	160	LC1-D150	LTM R08	On CT
				INFID200	250	-			
90	170	160	185	INFID200	-	200	LC1-D265	LTM R08	On CT
				INFID250	355	-			
110	210	200	225	INFID250	-	250	LC1-F330	LTM R08	On CT
				INFID400	400	-			
132	250	230	250	INFID250	-	250	LC1-F330	LTM R08	On CT
				INFID400	450	-			
160	300	270	315	INFID400	-	315	LC1-F400	LTM R08	On CT
				INFID630	630	-			
200	380	361	400	INFID400	-	400	LC1-F500	LTM R08	On CT
				INFID630	800	-			
250	460	430	500	INFID630	800	500	LC1-F500	LTM R08	On CT
280	520	475	630	INFID630	800	630	LC1-F630	LTM R08	On CT
300	565	500	630	INFID630	-	630	LC1-F630	LTM R08	On CT
335	610	560	630	INFID630	-	630	LC1-F630	LTM R08	On CT
355	630	590	630	INFID630	-	800	LC1-F630	LTM R08	On CT

(1) INFC for NFC cylindric ferrule / INFID for NH DIN type fuse-link.

(2) Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

(3) Currents transformers built-in electronic relays.

(4) For use with overload relay setted in class 20 and 30, apply respectively a derating of 20 % and 37 %.

Type 2 coordination (IEC 60947-4-1) 440 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 440 V [3] - "Id" 100 kA

Starting

Class 10 A/10

Motors P (kW)	I (A) 440 V	Ie Max (A)	Switch-fuse [1] Type	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2] Type	Thermal relays Type	Irth (A)
0.37	1	1.6	INFC32 or INF40	4	2	LC1-D09	LRD 06	1/1.6
0.55	1.4	1.6	INFC32 or INF40	6	2	LC1-D09	LRD 06	1/1.6
0.75	1.9	2.5	INFC32 or INF40	6	2	LC1-D09	LRD 07	1.6/2.5
1.1	2.4	2.5	INFC32 or INF40	10	4	LC1-D09	LRD 07	1.6/2.5
1.5	3.3	4	INFC32 or INF40	10	4	LC1-D09	LRD 08	2.5/4
2.2	4.7	6	INFC32 or INF40	16	6	LC1-D09	LRD 10	4/6
3	6.1	6	INFC32 or INF40	16	6	LC1-D09	LRD 10	4/6
4	7.9	8	INFC32 or INF40	20	8	LC1-D09	LRD 12	5.5/8
5.5	10.4	10	INFC32 or INF40	25	10	LC1-D12	LRD 16	9/13
7.5	14	16	INFC32 or INF40	40	16	LC1-D18	LRD 21	12/18
11	20	20	INFC32 or INF40	-	20	LC1-D25	LRD 22	16/24
			INFC50 or INF40	50	-			
15	26	32	INFC32 or INF40	-	32	LC1-D32	LRD 32	23/32
			INFC63 or INF40	63	-			
18.5	33	40	INFC50 or INF40	-	40	LC1-D40A	LRD 340	30/40
			INFC63 or INF40	80	-			
22	39	50	INFC50 or INF63	-	50	LC1-D50A	LRD 340	30/40
			INFC63 or INF63	100	-			
30	52	63	INFC50 or INF63	-	63	LC1-D65A	LRD 365	48/65
			INFC63 or INF63	125	-			
37	65	65	INFC125 or INF160	-	80	LC1-D80	LRD 3359	48/65
			INF160	160	-			
45	75	80	INFC125 or INF160	-	80	LC1-D80	LRD 3363	63/80
			INF160	160	-			
55	92	100	INFC125 or INF160	-	100	LC1-D115	LR9-D53 67	60/100
			INF160	200	-			
75	128	125	INF160	-	125	LC1-D150	LR9-D53 69	90/150
			INF200	250	-			
90	155	150	INF160	-	160	LC1-D185	LR9-D53 69	90/150
			INF250	315	-			
110	185	200	INF200	-	200	LC1-F265	LR9-F53 71	132/220
			INF250	355	-			
132	213	220	INF250	-	250	LC1-F265	LR9-F53 71	132/220
			INF400	400	-			
160	259	315	INF400	500	315	LC1-F330	LR9-F73 75	200/330
200	338	330	INF400	-	355	LC1-F400	LR9-F73 75	200/330
			INF630	630	-			
250	423	400	INF630	800	400	LC1-F500	LR9-F73 79	300/500
280	460	450	INF630	800	450	LC1-F500	LR9-F73 79	300/500
300	495	500	INF630	800	500	LC1-F500	LR9-F73 79	300/500
355	560	630	INF630	-	630	LC1-F630	LR9-F73 81	380/630
375	575	630	INF630	-	630	LC1-F630	LR9-F73 81	380/630
400	611	630	INF630	-	800	LC1-F630	LR9-F73 81	380/630

[1] INFC for NFC cylindric ferrule / INF40 for NH DIN type fuse-link.

[2] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

[3] Valid for 480 V NEMA network.

E

Type 2 coordination (IEC 60947-4-1) 440 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 440 V [5] - "Iq" 100 kA

Starting

Adjustable class 10 A to 30 [4]

Motors P (kW)	I (A) 440 V	Ie Max (A)	Switch-fuse [1] Type	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2] Type	Thermal relays Type	Irth (A)
0.37	1	2	INFC32 or INFID40	4	2	LC1-D09	LTM R08	0.4/8 [3]
0.55	1.4	2	INFC32 or INFID40	6	2	LC1-D09	LTM R08	0.4/8 [3]
0.75	1.8	2	INFC32 or INFID40	6	2	LC1-D09	LTM R08	0.4/8 [3]
1.1	2.4	4	INFC32 or INFID40	10	4	LC1-D09	LTM R08	0.4/8 [3]
1.5	3.3	4	INFC32 or INFID40	10	4	LC1-D09	LTM R08	0.4/8 [3]
2.2	4.7	6	INFC32 or INFID40	16	6	LC1-D09	LTM R08	0.4/8 [3]
3	6.1	6	INFC32 or INFID40	16	6	LC1-D09	LTM R08	0.4/8 [3]
4	7.9	8	INFC32 or INFID40	20	8	LC1-D09	LTM R08	0.4/8 [3]
5.5	10.4	10	INFC32 or INFID40	25	10	LC1-D12	LTM R27	1.35/27 [3]
7.5	14	16	INFC32 or INFID40	40	16	LC1-D18	LTM R27	1.35/27 [3]
11	20	20	INFC32 or INFID40	-	20	LC1-D25	LTM R27	1.35/27 [3]
			INFC50 or INFID40	50	-			
15	26	27	INFC32 or INFID40	-	32	LC1-D32	LTM R27	1.35/27 [3]
			INFC63 or INFID40	63	-			
18.5	33	40	INFC50 or INFID40	-	40	LC1-D40A	LTM R100	5/100 [3]
			INFC63 or INFID40	80	-			
22	39	50	INFC50 or INFID63	-	50	LC1-D50A	LTM R100	5/100 [3]
			INFC63 or INFID63	100	-			
30	52	63	INFC50 or INFID63	-	63	LC1-D63A	LTM R100	5/100 [3]
			INFC63 or INFID63	125	-			
37	65	80	INFC125 or INFID160	-	80	LC1-D80	LTM R100	5/100 [3]
			INFID160	160	-			
45	75	80	INFC125 or INFID160	-	80	LC1-D80	LTM R100	5/100 [3]
			INFID160	160	-			
55	92	100	INFC125 or INFID160	-	100	LC1-D115	LTM R100	5/100 [3]
			INFID160	200	-			
75	128	125	INFID160	-	125	LC1-D150	LTM R08	On CT
			INFID200	250	-			
90	155	160	INFID160	-	160	LC1-F185	LTM R08	On CT
			INFID250	315	-			
110	185	200	INFID200	-	200	LC1-F265	LTM R08	On CT
			INFID250	355	-			
132	213	250	INFID250	-	250	LC1-F265	LTM R08	On CT
			INFID400	400	-			
160	259	315	INFID400	500	315	LC1-F330	LTM R08	On CT
200	338	355	INFID400	-	355	LC1-F400	LTM R08	On CT
			INFID630	630	-			
250	423	400	INFID630	800	400	LC1-F500	LTM R08	On CT
280	460	450	INFID630	800	450	LC1-F500	LTM R08	On CT
300	495	500	INFID630	800	500	LC1-F500	LTM R08	On CT
355	560	630	INFID630	-	630	LC1-F630	LTM R08	On CT
375	575	630	INFID630	-	630	LC1-F630	LTM R08	On CT
400	611	630	INFID630	-	800	LC1-F630	LTM R08	On CT

[1] INFC for NFC cylindric ferrule / INFID for NH DIN type fuse-link.

[2] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

[3] Currents transformers built-in electronic relays.

[4] For use with overload relay setted in class 20 and 30, apply respectively a derating of 20 % and 37 %.

[5] Valid for 480 V NEMA network.

Type 2 coordination (IEC 60947-4-1) 500 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 500 V - "Iq" 100 kA

Starting

Class 10 A/10

Motors P (kW)	I (A) 500 V	Ie Max (A)	Switch-fuse [1]	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2]	Thermal relays Type	Irh (A)
0.37	0.8	1	INFC32 or INFID40	4	2	LC1-D09	LRD 05	0.63/1
0.55	1.2	1.6	INFC32 or INFID40	4	2	LC1-D09	LRD 06	1/1.6
0.75	1.5	1.6	INFC32 or INFID40	6	2	LC1-D09	LRD 06	1/1.6
1.1	2	2	INFC32 or INFID40	6	2	LC1-D09	LRD 07	1.6/2.5
1.5	2.8	4	INFC32 or INFID40	10	4	LC1-D09	LRD 08	2.5/4
2.2	3.8	4	INFC32 or INFID40	10	4	LC1-D09	LRD 08	2.5/4
3	5	6	INFC32 or INFID40	16	6	LC1-D09	LRD 10	4/6
4	6.5	8	INFC32 or INFID40	20	8	LC1-D09	LRD 12	5.5/8
5.5	9	10	INFC32 or INFID40	25	10	LC1-D12	LRD 16	9/13
7.5	12	12	INFC32 or INFID40	32	12	LC1-D18	LRD 16	9/13
10	15	16	INFC32 or INFID40	32	16	LC1-D25	LRD 21	12/18
11	18.4	20	INFC32 or INFID40	40	20	LC1-D25	LRD 22	16/24
15	23	24	INFC32 or INFID40	-	25	LC1-D32	LRD 22	16/24
			INFC63 or INFID40	50	-			
18.5	28.5	32	INFC50 or INFID40	-	32	LC1-D32	LRD 32	23/32
			INFC63 or INFID40	63	-			
22	33	40	INFC50 or INFID40	-	40	LC1-D40A	LRD 340	30/40
			INFC63 or INFID40	80	-			
30	45	50	INFC63 or INFID63	100	50	LC1-D50A	LRD 350	37/50
37	55	63	INFC63 or INFID63	100	63	LC1-D65A	LRD 365	48/65
45	65	70	INFC125 or INFID160	-	80	LC1-D80	LRD 3361	55/70
			INFID160	160	-			
55	75	80	INFC125 or INFID160	-	80	LC1-D115	LRD 3363	63/80
			INFID160	160	-			
75	105	115	INFID160	-	125	LC1-D115	LR9-D53 69	90/150
			INFID200	200	-			
90	130	150	INFID160	-	160	LC1-D150	LR9-D53 69	90/150
			INFID200	250	-			
110	156	160	INFID200	-	160	LC1-F185	LR9-F53 71	132/220
			INFID250	315	-			
132	187	200	INFID250	355	200	LC1-F265	LR9-F53 71	132/220
160	230	250	INFID400	400	250	LC1-F265	LR9-F73 75	200/330
200	280	315	INFID400	450	315	LC1-F400	LR9-F73 75	200/330
240	338	355	INFID630	630	355	LC1-F400	LR9-F73 79	300/500
280	386	400	INFID630	800	400	LC1-F500	LR9-F73 79	300/500
300	415	450	INFID630	800	450	LC1-F500	LR9-F73 79	300/500
320	425	450	INFID630	800	450	LC1-F500	LR9-F73 79	300/500
355	478	500	INFID630	800	500	LC1-F500	LR9-F73 79	300/500
375	482	500	INFID630	-	500	LC1-F630	LR9-F73 81	380/630
400	534	500	INFID630	-	630	LC1-F630	LR9-F73 81	380/630
450	630	630	INFID630	-	630	LC1-F630	LR9-F73 81	380/630

[1] INFC for NFC cylindric ferrule / INFID for NH DIN type fuse-link.

[2] Reversers: replace LC1 with LC2 ; start-delta starter: replace LC1 with LC3.

Note: Proposed fuses are based on 4 poles 50 Hz induction motors direct on line start $Id/In \leq 7$ for 10 sec.
The choice of fuses and overload relay shall be checked according to the actual motor's characteristic.

E

Type 2 coordination (IEC 60947-4-1) 500 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 500 V - "Iq" 100 kA

Starting

Adjustable class 10 A to 30 [4]

Motors P (kW)	I (A) 500 V	Ie Max (A)	Switch-fuse [1]	Fuse-link type gG rating (A)	aM rating (A)	Contactors [2]	Thermal relays
			Type	Type	Type	Type	Type
0.37	0.8	1	INF32 or INF40	4	2	LC1-D09	LTM R08
0.55	1.2	1.6	INF32 or INF40	4	2	LC1-D09	LTM R08
0.75	1.5	1.6	INF32 or INF40	6	2	LC1-D09	LTM R08
1.1	2	2	INF32 or INF40	6	2	LC1-D09	LTM R08
1.5	2.8	4	INF32 or INF40	10	4	LC1-D09	LTM R08
2.2	3.8	4	INF32 or INF40	10	4	LC1-D09	LTM R08
3	5	6	INF32 or INF40	16	6	LC1-D09	LTM R08
4	6.5	8	INF32 or INF40	20	8	LC1-D09	LTM R08
5.5	9	10	INF32 or INF40	25	10	LC1-D25	LTM R27
7.5	12	12	INF32 or INF40	32	12	LC1-D25	LTM R27
10	15	16	INF32 or INF40	32	16	LC1-D25	LTM R27
11	18.4	20	INF32 or INF40	40	20	LC1-D25	LTM R27
15	23	24	INF32 or INF40	-	25	LC1-D32	LTM R27
			INF63 or INF40	50	-		
18.5	28.5	32	INF50 or INF40	-	32	LC1-D32	LTM R100
			INF63 or INF40	63	-		
22	33	40	INF50 or INF40	-	40	LC1-D40A	LTM R100
			INF63 or INF40	80	-		
30	45	50	INF63 or INF63	100	50	LC1-D50A	LTM R100
37	55	63	INF63 or INF63	100	63	LC1-D65A	LTM R100
45	65	70	INF125 or INF160	-	80	LC1-D80	LTM R100
			INF160	160	-		
55	75	80	INF125 or INF160	-	80	LC1-D115	LTM R100
			INF160	160	-		
75	105	115	INF160	-	125	LC1-D115	LTM R08
			INF200	200	-		On CT
90	130	150	INF160	-	160	LC1-D150	LTM R08
			INF200	250	-		On CT
110	156	160	INF200	-	160	LC1-F185	LTM R08
			INF250	315	-		On CT
132	187	200	INF250	355	200	LC1-F265	LTM R08
160	230	250	INF400	400	250	LC1-F265	LTM R08
200	280	315	INF400	450	315	LC1-F400	LTM R08
240	338	355	INF630	630	355	LC1-F400	LTM R08
280	386	400	INF630	800	400	LC1-F500	LTM R08
300	415	450	INF630	800	450	LC1-F500	LTM R08
320	425	450	INF630	800	450	LC1-F500	LTM R08
355	478	500	INF630	800	500	LC1-F500	LTM R08
375	482	500	INF630	-	500	LC1-F630	LTM R08
400	534	500	INF630	-	630	LC1-F630	LTM R08
450	630	630	INF630	-	630	LC1-F630	LTM R08

[1] INF for NFC cylindric ferrule / INF40 for NH DIN type fuse-link.

[2] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

[3] Currents transformers built-in electronic relays.

[4] For use with overload relay setted in class 20 and 30, apply respectively a derating of 20 % and 37 %.

Type 2 coordination (IEC 60947-4-1) 525/550 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 525/550 V - "Iq" 80/100 kA [1]

Starting

Class 10 A/10

Motors P (kW)				Switch-fuse [2] Type	Fuse-link type		Contactors [3] Type	Thermal relays	
	I (A) 525 V	I (A) 550 V	Ie Max (A)		gG rating (A)	aM rating (A)		Type	Irth (A)
0.37	0.8	0.8	1	INF32 or INF40 INF63 or INF40	- 4	2 -	LC1-D09	LRD 05	0.63/1
0.55	1.2	1.1	1.6	INF32 or INF40 INF63 or INF40	- 4	2 -	LC1-D09	LRD 06	1/1.6
0.75	1.5	1.4	1.6	INF32 or INF40 INF63 or INF40	- 6	2 -	LC1-D09	LRD 06	1/1.6
1.1	2	2.1	2.5	INF32 or INF40 INF63 or INF40	- 6	2 -	LC1-D09	LRD 07	1.6/2.5
1.5	2.8	2.8	4	INF32 or INF40 INF63 or INF40	- 10	4 -	LC1-D09	LRD 08	2.5/4
2.2	3.8	3.7	4	INF32 or INF40 INF63 or INF40	- 10	4 -	LC1-D09	LRD 08	2.5/4
3	5	4.9	6	INF32 or INF40 INF63 or INF40	- 16	6 -	LC1-D09	LRD 10	4/6
4	6.5	6.5	8	INF32 or INF40 INF63 or INF40	- 20	8 -	LC1-D09	LRD 12	5.5/8
5.5	9	8.7	10	INF32 or INF40 INF63 or INF40	- 25	10 -	LC1-D25	LRD 16	9/13
7.5	12	11.8	12	INF32 or INF40 INF63 or INF40	- 32	12 -	LC1-D25	LRD 16	9/13
10	15	15.2	16	INF32 or INF40 INF63 or INF40	- 32	16 -	LC1-D25	LRD 21	12/18
11	18.4	16.7	24	INF32 or INF40 INF63 or INF40	- 40	20 -	LC1-D25	LRD 22	16/24
15	23	21.9	24	INF32 or INF40 INF63 or INF40	- 50	25 -	LC1-D32	LRD 22	16/24
18.5	28.5	26.6	32	INF63 or INF40	63	32	LC1-D32	LRD 32	23/32
22	33	31	40	INF63 or INF40 INF63 or INF63	- 80	40 -	LC1-D40A	LRD 340	30/40
30	45	43	50	INF63 or INF63 INF60	- 100	50 -	LC1-D50A	LRD 350	37/50
37	55	50	63	INF63 or INF63 INF60	- 100	63 -	LC1-D65A	LRD 365	48/65
45	65	61	70	INF63 or INF63 INF60	- 125	63 -	LC1-D80	LRD 3361	55/70
55	75	74	80	INF63 or INF60 INF200	- 160	80 -	LC1-D115	LRD 3363	63/80
75	105	101	115	INF60 INF250	- 200	100 -	LC1-D115	LR9-D53 69	90/150
90	130	123	125	INF60 INF400	- 250	125 -	LC1-D150	LR9-D53 69	90/150
110	156	147	160	INF250 INF400	- 250	160 -	LC1-F185	LR9-F53 71	132/220
132	187	178	200	INF250 INF630	- 355	200 -	LC1-F265	LR9-F53 71	132/220
160	214	204	250	INF250 INF630	- 400	250 -	LC1-F265	LR9-F73 75	200/330
200	266	254	315	INF600 INF630	- 450	315 -	LC1-F400	LR9-F73 75	200/330
240	321	307	355	INF600	-	355	LC1-F400	LR9-F73 79	300/500
280	366	350	400	INF600	-	400	LC1-F500	LR9-F73 79	300/500
300	394	376	400	INF600	-	400	LC1-F500	LR9-F73 79	300/500
320	413	394	450	INF630	-	450	LC1-F500	LR9-F73 79	300/500
355	464	443	500	INF630	-	500	LC1-F500	LR9-F73 79	300/500
375	490	467	500	INF630	-	500	LC1-F630	LR9-F73 81	380/630

[1] Coordination chart built with 690 V fuse-links (80 kA for NFC fuse-links, 100 kA for DIN fuse-link).

[2] INF6 for NFC cylindric ferrule / INF6 for NH DIN type fuse-link.

[3] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

E

Type 2 coordination (IEC 60947-4-1) 525/550 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 525/550 V - "Iq" 80/100 kA [1]

Starting

Adjustable class 10 A to 30 [4]

Motors P (kW)	Switch-fuse [2] Type			Fuse-link type gG rating (A)	aM rating (A)	Contactors [3] Type	Thermal relays Type	
	I (A) 525 V	I (A) 550 V	Ie Max (A)				Irth (A)	
0.37	0.8	0.8	2	INF32 or INF40	-	2	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	4	-		
0.55	1.2	1.1	2	INF32 or INF40	-	2	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	4	-		
0.75	1.5	1.4	2	INF32 or INF40	-	2	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	6	-		
1.1	2	2.1	2	INF32 or INF40	-	2	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	6	-		
1.5	2.8	2.8	4	INF32 or INF40	-	4	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	10	-		
2.2	3.8	3.7	4	INF32 or INF40	-	4	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	10	-		
3	5	4.9	6	INF32 or INF40	-	6	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	16	-		
4	6.5	6.5	8	INF32 or INF40	-	8	LC1-D09	LTM R08 0.4/8 [5]
				INF63 or INF40	20	-		
5.5	9	8.7	10	INF32 or INF40	-	10	LC1-D25	LTM R27 1.35/27 [5]
				INF63 or INF40	25	-		
7.5	12	11.8	12	INF32 or INF40	-	12	LC1-D25	LTM R27 1.35/27 [5]
				INF63 or INF40	32	-		
10	15	15.2	16	INF32 or INF40	-	16	LC1-D25	LTM R27 1.35/27 [5]
				INF63 or INF40	32	-		
11	18.4	16.7	20	INF32 or INF40	-	20	LC1-D25	LTM R27 1.35/27 [5]
				INF63 or INF40	40	-		
15	23	21.9	25	INF32 or INF40	-	25	LC1-D32	LTM R27 1.35/27 [5]
				INF63 or INF40	50	-		
18.5	28.5	26.6	32	INF63 or INF40	63	32	LC1-D32	LTM R100 5/100 [5]
22	33	31	40	INF63 or INF40	-	40	LC1-D40A	LTM R100 5/100 [5]
				INF63 or INF63	80	-		
30	45	43	50	INF63 or INF63	-	50	LC1-D50A	LTM R100 5/100 [5]
				INF160	100	-		
37	55	50	63	INF63 or INF63	-	63	LC1-D65A	LTM R100 5/100 [5]
				INF160	100	-		
45	65	61	63	INF63 or INF63	-	63	LC1-D80	LTM R100 5/100 [5]
				INF160	125	-		
55	75	74	80	INF63 or INF160	-	80	LC1-D115	LTM R100 5/100 [5]
				INF200	160	-		
75	105	101	100	INF160	-	100	LC1-D115	LTM R08 On CT
				INF250	200	-		
90	130	123	125	INF160	-	125	LC1-D150	LTM R08 On CT
				INF400	250	-		
110	156	147	160	INF250	-	160	LC1-F185	LTM R08 On CT
				INF400	250	-		
132	187	178	200	INF250	-	200	LC1-F265	LTM R08 On CT
				INF630	355	-		
160	214	204	250	INF250	-	250	LC1-F265	LTM R08 On CT
				INF630	400	-		
200	266	254	315	INF400	-	315	LC1-F400	LTM R08 On CT
				INF630	450	-		
240	321	307	355	INF400	-	355	LC1-F400	LTM R08 On CT
280	366	350	400	INF400	-	400	LC1-F500	LTM R08 On CT
300	394	376	400	INF400	-	400	LC1-F500	LTM R08 On CT
320	413	394	450	INF630	-	450	LC1-F500	LTM R08 On CT
355	464	443	500	INF630	-	500	LC1-F500	LTM R08 On CT
375	490	467	500	INF630	-	500	LC1-F630	LTM R08 On CT

[1] Coordination chart built with 690 V fuse-links (80 kA for NFC fuse-links, 100 kA for DIN fuse-link).

[2] INF for NFC cylindric ferrule / INF40 for NH DIN type fuse-link.

[3] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

[4] For use with overload relay setted in class 20 and 30, apply respectively a derating of 20 % and 37 %.

[5] Currents transformers built-in electronic relays.

Type 2 coordination (IEC 60947-4-1) 660/690 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 660/690 V - "Iq" 80/100 kA [1]

Starting

Class 10 A/10

Motors P (kW)	I (A) 690 V	Ie Max (A)	Switch-fuse ⁽²⁾ Type	Fuse-link type		Contactors ⁽³⁾ Type	Thermal relays Type	Irh (A)
				gG rating (A)	aM rating (A)			
0.75	1.1	1.6	INFC32 or INFID40 INFC63 or INFID40	- 4	2 -	LC1-D09	LRD 06	1/1.6
1	1.6	1.6	INFC32 or INFID40 INFC63 or INFID40	- 6	2 -	LC1-D09	LRD 06	1/1.6
1.5	2.2	2.5	INFC32 or INFID40 INFC63 or INFID40	- 6	4 -	LC1-D09	LRD 07	1.6/2.5
2.2	2.8	4	INFC32 or INFID40 INFC63 or INFID40	- 10	4 -	LC1-D09	LRD 08	2.5/4
3	3.8	4	INFC32 or INFID40 INFC63 or INFID40	- 10	6 -	LC1-D09	LRD 08	2.5/4
4	4.9	6	INFC32 or INFID40 INFC63 or INFID40	- 16	6 -	LC1-D09	LRD 10	4/6
5.5	6.7	8	INFC32 or INFID40 INFC63 or INFID40	- 20	8 -	LC1-D09	LRD 12	5.5/8
7.5	8.9	10	INFC32 or INFID40 INFC63 or INFID40	- 25	10 -	LC1-D25	LRD 16	9/13
11	12.8	13	INFC32 or INFID40 INFC63 or INFID40	- 32	16 -	LC1-D25	LRD 16	9/13
15	17	20	INFC32 or INFID40 INFC63 or INFID40	- 40	20 -	LC1-D25	LRD 22	16/24
18.5	22	24	INFC32 or INFID40 INFC63 or INFID40	- 50	25 -	LC1-D32	LRD 22	16/24
22	24	32	INFC32 or INFID40 INFC63 or INFID40	- 50	25 -	LC1-D40A	LRD 332	23/32
30	32	32	INFC63 or INFID40 INFC63 or INFID63	- 80	32 -	LC1-D40A	LRD 340	30/40
37	39	40	INFC63 or INFID63	80	40	LC1-D65A	LRD 365	37/50
45	47	50	INFC63 or INFID63 INFID160	- 100	50 -	LC1-D80	LRD 3357	37/50
55	57	63	INFC63 or INFID63 INFID160	- 125	63 -	LC1-D115	LRD 3359	48/65
75	77	80	INFC125 or INFID160 INFID200	- 160	80 -	LC1-D115	LRD 3363	63/80
90	93	100	INFID160 INFID250	- 200	100 -	LC1-D150	LR9-D53 69	90/150
110	113	125	INFID160 INFID250	- 250	125 -	LC1-F185	LR9-D53 69	90/150
132	134	160	INFID250	250	160	LC1-F265	LR9-F53 71	132/220
160	162	160	INFID250 INFID400	- 315	160 -	LC1-F265	LR9-F53 71	132/220
200	203	200	INFID250 INFID630	- 400	200 -	LC1-F400	LR9-F73 75	200/330
220	223	250	INFID250 INFID630	- 450	250 -	LC1-F400	LR9-F73 75	200/330
250	253	315	INFID400 INFID630	- 500	315 -	LC1-F400	LR9-F73 75	200/330
315	320	355	INFID630	-	355	LC1-F500	LR9-F73 79	300/500
355	354	400	INFID630	-	400	LC1-F630	LR9-F73 79	300/500
400	400	450	INFID630	-	450	LC1-F630	LR9-F73 79	300/500
450	455	500	INFID630	-	500	LC1-F630	LR9-F73 79	300/500

[1] Coordination chart built with 690 V fuse-links (80 kA for NFC fuse-links, 100 kA for DIN fuse-link).

[2] INFC for NFC cylindric ferrule / INFID for NH DIN type fuse-link.

[3] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

E

Type 2 coordination (IEC 60947-4-1) 660/690 V

Schneider Electric switch-disconnector fuses and contactors

Performance: Ue = 660/690 V - "Iq" 80/100 kA [1]

Starting

Adjustable class 10 A to 30 [4]

Motors P (kW)	I (A) 690 V	Ie Max (A)	Switch-fuse [2] Type	Switch-fuse type gG rating (A)	aM rating (A)	Contactors [3] Type	Thermal relays Type	Irth (A)
0.75	1.1	2	INF32 or INF40 INF63 or INF40	- 4	2 -	LC1-D09	LTM R08	0.4/8 [5]
1	1.6	2	INF32 or INF40 INF63 or INF40	- 6	2 -	LC1-D09	LTM R08	0.4/8 [5]
1.5	2.2	4	INF32 or INF40 INF63 or INF40	- 6	4 -	LC1-D09	LTM R08	0.4/8 [5]
2.2	2.8	4	INF32 or INF40 INF63 or INF40	- 10	4 -	LC1-D09	LTM R08	0.4/8 [5]
3	3.8	6	INF32 or INF40 INF63 or INF40	- 10	6 -	LC1-D09	LTM R08	0.4/8 [5]
4	4.9	6	INF32 or INF40 INF63 or INF40	- 16	6 -	LC1-D09	LTM R08	0.4/8 [5]
5.5	6.7	8	INF32 or INF40 INF63 or INF40	- 20	8 -	LC1-D09	LTM R08	0.4/8 [5]
7.5	8.9	10	INF32 or INF40 INF63 or INF40	- 25	10 -	LC1-D25	LTM R27	1.35/27 [5]
11	12.8	16	INF32 or INF40 INF63 or INF40	- 32	16 -	LC1-D25	LTM R27	1.35/27 [5]
15	17	20	INF32 or INF40 INF63 or INF40	- 40	20 -	LC1-D25	LTM R27	1.35/27 [5]
18.5	22	25	INF32 or INF40 INF63 or INF40	- 50	25 -	LC1-D32	LTM R27	1.35/27 [5]
22	24	25	INF32 or INF40 INF63 or INF40	- 50	25 -	LC1-D40A	LTM R27	1.35/27 [5]
30	32	32	INF63 or INF40 INF63 or INF63	- 80	32 -	LC1-D40A	LTM R100	5/100 [5]
37	39	40	INF63 or INF63	80	40	LC1-D65A	LTM R100	5/100 [5]
45	47	50	INF63 or INF63 INF160	- 100	50 -	LC1-D80	LTM R100	5/100 [5]
55	57	63	INF63 or INF63 INF160	- 125	63 -	LC1-D115	LTM R100	5/100 [5]
75	77	80	INF125 or INF160 INF200	- 160	80 -	LC1-D115	LTM R100	5/100 [5]
90	93	100	INF160 INF250	- 200	100 -	LC1-D150	LTM R100	5/100 [5]
110	113	125	INF160 INF250	- 250	125 -	LC1-F185	LTM R08	On CT
132	134	160	INF200 INF250	- 250	160 -	LC1-F265	LTM R08	On CT
160	162	160	INF200 INF400	- 315	160 -	LC1-F265	LTM R08	On CT
200	203	200	INF200 INF630	- 400	200 -	LC1-F400	LTM R08	On CT
220	223	250	INF250 INF630	- 450	250 -	LC1-F400	LTM R08	On CT
250	253	315	INF400 INF630	- 500	315 -	LC1-F400	LTM R08	On CT
315	320	355	INF400	-	355	LC1-F500	LTM R08	On CT
355	354	400	INF400	-	400	LC1-F630	LTM R08	On CT
400	400	450	INF630	-	450	LC1-F630	LTM R08	On CT
450	455	500	INF630	-	500	LC1-F630	LTM R08	On CT

[1] Coordination chart built with 690 V fuse-links (80 kA for NFC fuse-links, 100 kA for DIN fuse-link).

[2] INF for NFC cylindric ferrule / INFID for NH DIN type fuse-link.

[3] Reversers: replace LC1 with LC2; star-delta starter: replace LC1 with LC3.

[4] For use with overload relay setted in class 20 and 30, apply respectively a derating of 20 % and 37 %.

[5] Currents transformers built-in electronic relays.

Catalogue numbers

ISFT100N

Devices and accessories F-2

ISFT100

Devices and accessories F-3

ISFT160

Devices and accessories F-4

ISFT250 to ISFT630

Devices and accessories F-5

ISFL160

Devices and accessories F-6

ISFL250 to ISFL1250

Devices and accessories F-8

INF•32

Devices F-10

Accessories F-11

INFD40 and INFD63

Devices F-12

Accessories F-13

INFB100 to INFB160

Devices and accessories F-14

INF•200 to INF•800

Devices and accessories F-16

Fupact protection components

Cartridge fuses type aM F-18

Cartridge fuses type gG F-19

F

Other chapters

Presentation 2

Functions and characteristics A-1

Installation recommendation B-1

Dimensions and connection C-1

Wiring diagrams D-1

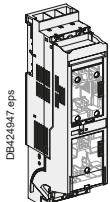
Technical characteristics E-1

ISFT100N

Devices and accessories

ISFT100N 3P fixed front-connected

Basic device for mounting on a backplate

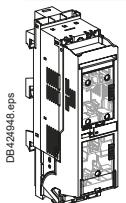
Connection via 2.5 to 50 mm² cable connectors**LV480750**

Basic device for mounting on busbars

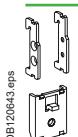
Hook-on connection to 60 mm busbars

Upstream distribution

Downstream distribution

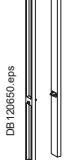
LV480751**LV480752****Accessories**

DIN rail fixing kit

LV480753

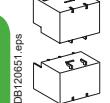
Support profile laterally attachable

Set of 2

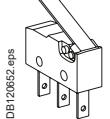
LV480754

Terminal shield

Set of 2

LV480756**Electrical auxiliaries**

Auxiliary changeover contact NO + NC

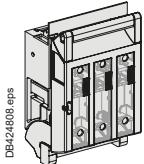
LV480755

ISFT100 3P fixed front-connected

Basic device for mounting on a backplate

Connection via 1.5 to 50 mm² cable connectors

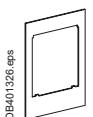
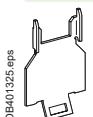
LV480800

**Accessories**

Mounting accessories

Accessory for mounting on a DIN rail

49877



Escutcheon (not compatible with feeding busbars)

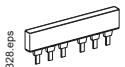
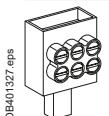
For 1 device
For 2 devices49878
49879

Connection accessories

Distribution connector 3 x 16 mm²

Set of 3

49860



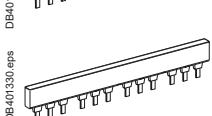
Feeding busbar to supply 2 devices

49861



Feeding busbar to supply 3 devices

49862



Feeding busbar to supply 4 devices

49863

Incoming connector (25 to 95 mm²) for feeding busbars

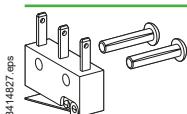
Set of 3

49865

Electrical auxiliaries

Auxiliary changeover contact NO + NC

49885



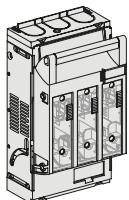
F

ISFT160

Devices and accessories

ISFT160 3P fixed front-connected

Basic device for mounting on a backplate



M8 terminals
2,5 to 95 mm² cable connectors (box clamp)

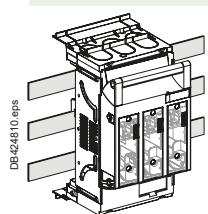
LV480801

LV480802

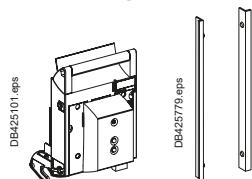
Basic device for mounting on busbars with turnable hooks

ISFT160

LV480803

**Accessories**

Mounting accessories

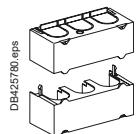


Handle with electronic fuse monitor

LV480810

Support profile laterally attachable

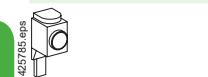
LV480817



Terminal shields

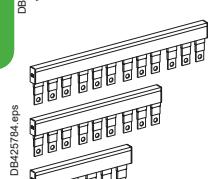
LV480819

Connection accessories



Incoming connector

LV480818



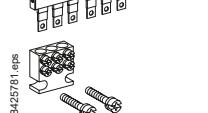
Feeding busbars

for 2 devices
for 3 devices
for 4 devices

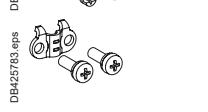
LV480811

LV480812

LV480813

Distribution connector 3 x 16 mm² for 1,5 to 50 mm² cable connectors

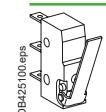
LV480814

Pressure plate for multiple-use terminal from 6 to 50mm²

LV480815

Pressure plate with contact prism for multiple-use terminal with Cu/Alu conductors from 6 to 70 mm²

LV480816

Electrical auxiliaries

Auxiliary changeover contact NO+NC

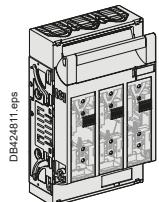
LV480755

ISFT250 to ISFT630

Devices and accessories

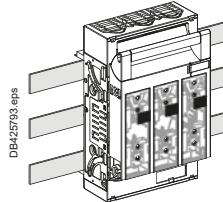
ISFT250 to ISFT630 3P fixed front-connected

Basic device for mounting on a backplate



ISFT250	LV480804
ISFT400	LV480806
ISFT630	LV480808

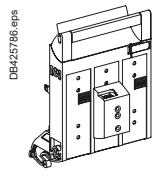
Basic device for mounting on busbars with turnable hooks



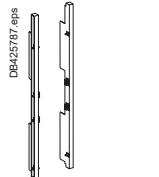
ISFT250	LV480805
ISFT400	LV480807

Accessories

Mounting accessories

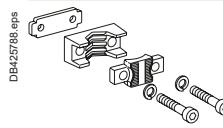


Handle with electronic fuse monitor	ISFT250	LV480821
	ISFT400	LV480825
	ISFT630	LV480828

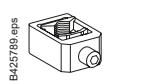


Support profile laterally attachable	LV480832
--------------------------------------	----------

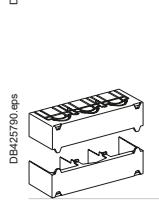
Connection accessories



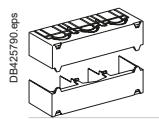
Pressure plate with contact prism for multiple-use terminal with Cu/Al conductors	from 70 to 150 mm ²	ISFT250	LV480822
	from 120 to 240 mm ²	ISFT400	LV480826
	from 150 to 300 mm ²	ISFT630	LV480829



ISFT250 box clamp from 35 to 150 mm ² 35...150 mm ² re/rm 50 to 150 mm ² se/sm	LV480823
---	----------

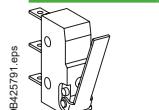


ISFT400 and ISFT 630 box clamp 95...300 mm ² re/rm 120 to 300 mm ² se/sm	LV480830
--	----------



Terminal shields	ISFT250	LV480824
	ISFT400	LV480827
	ISFT630	LV480831

Electrical auxiliaries



Auxiliary changeover contact NO + NC	LV480833
--------------------------------------	----------

ISFL160

Devices and accessories

ISFL160 1-pole switchable fixed front-connected

Basic device for mounting on busbars

Direct connection to 185mm busbars (M12)

LV480900**ISFL160 3-pole switchable fixed front-connected**

Basic device for mounting on busbars

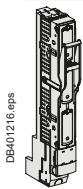
Direct hook-on connection to 60 mm busbars

Screws M8

LV480850Terminals 95 mm²**LV480851**

Direct connection to 100 mm busbars

Screws M8

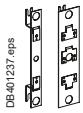
LV480852Terminals 95 mm²**LV480853**

Conversion kit for connection to busbars (for ISFL160 direct connection)

Direct connection to 185 mm busbars

LV480854

Direct connection to 185 mm busbars for 2 ISFL160 devices

LV480855**Accessories**Sideframe door cut out - 850 mm
Sidewise angle bracket for side frame (x4)**LV480868****LV480869**Length adaptor
Empty plastic box (46 x 46 mm)**LV480870****LV480878**

Bank panel cover

LV480871

Contact hooks for ISFL 1-pole switchable

Set of 3

LV480905Lugs for 95 mm² copper cables

Set of 3

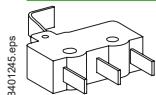
28951Connectors for Cu/Al bare cables 1.5 x 95 mm²
for flexible bars 12 x 6 mm

Set of 3

LV480861

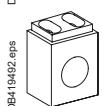
Set of 3

LV480862

Electrical auxiliaries

Auxiliary changeover contact NO + NC

LV480873

1 current transformer
for ISFL 1-pole switchable

150/5 A class 1 5 VA

Set of 1

LV480904

Single block with 3 current
transformer for ISFL 3-pole switchable

150/5 A class 1 1.5 VA

Set of 1

LV480881

150/1 A class 1 2.5 VA

Set of 1

LV480882

Single block with current
transformer for ISFL 3-pole switchable

150/5 A class 1 1.5 VA

Set of 1

LV480883

150/1 A class 1 2.5 VA

Set of 1

LV480884

Fuse monitor for ISFL 3-pole switchable

LV480877

F

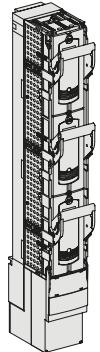
ISFL250 to ISFL1250

Devices and accessories

ISFL250 to ISFL630 1-pole switchable

Basic device for mounting on busbars

Direct connection to 185 mm busbars (screw M12)



ISFL250

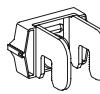
LV480901

ISFL400

LV480902

ISFL630

LV480903



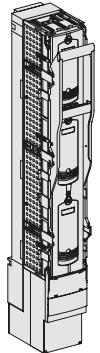
Hooks for mounting without drilling

LV480859

ISFL250 to ISFL630 3-pole switchable

Basic device for mounting on busbars

Direct connection to 185 mm busbars



ISFL250

LV480856

ISFL400

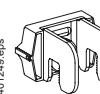
LV480857

ISFL630

LV480858

ISFL1250

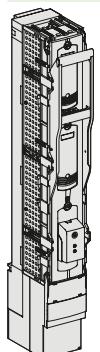
LV480875



Hooks for mounting without drilling

LV480859

With fuse monitor



Fuse monitor (direct connection to 185 mm busbars)

ISFL250

LV480863

ISFL400

LV480864

ISFL630

LV480865

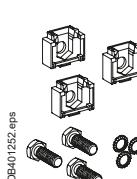
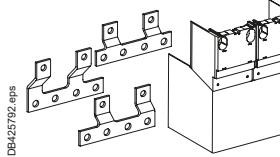
ISFL1250

LV480876

ISFL250 to ISFL1250

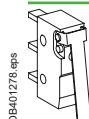
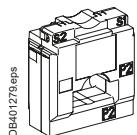
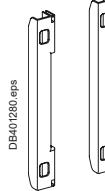
Devices and accessories

Accessories

	DB401239.eps		DB401238.eps	Sideframe door cut out - 850 mm Sidewise angle bracket for side frame	Set of 4	LV480868 LV480869	
	DB401251.eps			Empty plastic box (72 x 72 mm) Empty plastic box (96 x 96 mm)		LV480879 [1] LV480880 [1]	
	DB401250.eps			Blank panel cover		LV480872	
Connection (accessories for standard M12 terminals)							
	DB401277.eps		Db105281.eps	Connectors	For Cu/Al bare cable 1 x 35 to 300 mm ² For Cu/Al bare cable 2 x 50 to 185 mm ² For Cu/Al cable 4 x 240 mm ²	Set of 3 Set of 3 Set of 3	LV480867 [1] 49895 [1] LV480890 [2]
	DB401268.eps			Screws with plastic support	Set of 3	LV480866 [1]	
	DB401252.eps			Coupling kit ISFL250-630		LV480891 [1]	

F

Electrical auxiliaries

	DB401278.eps	Auxiliary changeover contact NO + NC		LV480874	
	DB401279.eps	Current transformer	150/5 class 1 250/5 class 1 400/5 class 1 600/5 class 1	Set of 1 Set of 1 Set of 1 Set of 1	LV480885 LV480886 LV480887 LV480888
	DB401280.eps	Click-lock cable transformers		Set of 1	LV480889

[1] Except for ISFL1250.

[2] Only for ISFL1250.

Catalogue numbers

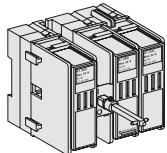
INF●32

Devices

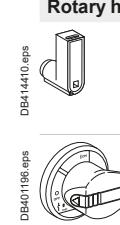
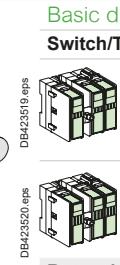
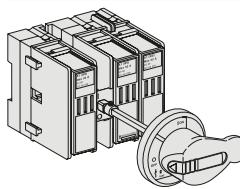
www.schneider-electric.com

INF●32 fixed, front-connected

Basic device supplied with 150 mm operating shaft (without handle)



Front control



Basic device for front control

Switch/Type of fuse

- INFC32 / NFC (10 x 38), 32 A
- INFC32 / NFC (14 x 51), 32 A
- INF32 / BS (A1), 32 A
- INF32 / BS (A2), 32 A

3P/3F

LV480650

4P/3F

LV480651

4P/4F

LV480652

4P/3F

LV480657

4P/4F

LV480658

4P/4F

LV480680

4P/4F

LV480681

4P/4F

LV480682

4P/4F

LV480683

Rotary handle for basic front-control device

Direct rotary handle

49613



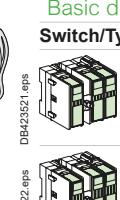
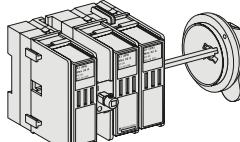
Black extended rotary handle

Red/yellow extended rotary handle

49619

49616

Lateral control



Basic device for lateral control

Switch/Type of fuse

- INFC32 / NFC (10 x 38), 32 A
- INFC32 / NFC (14 x 51), 32 A
- INF32 / BS (A1), 32 A
- INF32 / BS (A2), 32 A

3P/3F

LV480653

4P/3F

LV480654

4P/4F

LV480655

4P/3F

LV480659

4P/3F

LV480660

4P/4F

LV480661

Rotary handle for basic lateral-control device

Direct rotary handle

49614



Black extended rotary handle

Red/yellow extended rotary handle

49619

49616

Accessories

Shaft

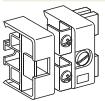
430 mm shaft (6 x 6)

49626



Accessories

Connection

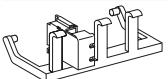
 DB401199.eps	External neutral link	35 mm ²	LV480450
		16 mm ²	LV480451

Electrical auxiliaries

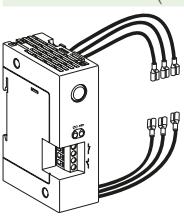
Auxiliary contacts

 DB401320.eps	For mounting between poles	1 NO + NC contact (changeover)	49605
	For mounting on left-hand side	Contact support required	49608
		1 NO contact	49609
		1 NC contact	49610

Blown fuse indicator (only for NFC type fuse-links)

 DB401321.eps	3P (supplied with 1 NO contact + 1 NC contact)	49630	
	4P (supplied with 1 NO contact + 1 NC contact)	49631	

Fuse monitor (for NFC, DIN and BS fuses)

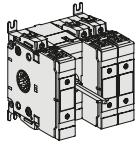
 DB119735.eps	100 to 260 V AC 50/60 Hz	LV480560	
	380 to 690 V AC 50/60 Hz	LV480561	

Catalogue numbers INFD40 and INF●63 Devices

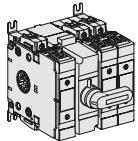
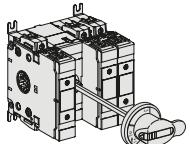
www.schneider-electric.com

INFD40 and INF●63 fixed, front-connected

Basic device supplied with 161 mm operating shaft (without handle)



Front control



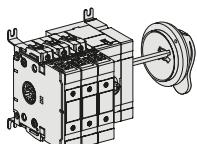
Basic device for front control

Switch/Type of fuse	3P/3F	4P/3F	4P/4F
INF63 / NFC (14 x 51), 50 A	LV480402	LV480403	LV480404
INF63 / NFC (22 x 58), 63 A	LV480410	LV480411	LV480412
INFD40 DIN (000), 40 A	LV480400	LV480401	
INF63 / DIN (000), 63 A	LV480405	LV480406	LV480407
INF63 / BS (A2/A3), 63 A	LV480408	LV480409	

Rotary handle for basic front-control device

Black rotary handle	LV480530
Red/yellow rotary handle	LV480531
Black extended rotary handle	49619
Red/yellow extended rotary handle	49616

Lateral control



Basic device for lateral control

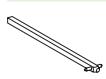
Switch/Type of fuse	3P/3F	4P/3F	4P/4F
INF63 / NFC (14 x 51), 50 A	LV480424	LV480425	LV480426
INF63 / NFC (22 x 58), 63 A	LV480431	LV480432	LV480433
INFD40 DIN (000), 40 A	LV480423		
INFD63 / DIN (000), 63 A	LV480427	LV480428	LV480429
INF63 / BS (A2/A3), 63 A	LV480430		

Rotary handle for basic lateral-control device

Black extended rotary handle	49619
Red/yellow extended rotary handle	49616

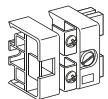
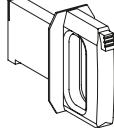
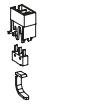
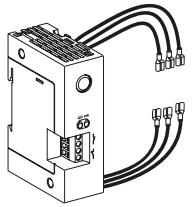
Accessories

Shaft



430 mm shaft (6 x 6) 49626

Accessories

Connection			
 DB401199.eps	External neutral link	35 mm ² 16 mm ²	LV480450 LV480451
Mounting accessories			
 DB401524.eps	Din rail mounting kit		LV480455
 DB425107.eps	Fuse replacement handle		LV480575
Electrical auxiliaries			
Auxiliary contacts			
 DBA01200.eps	1 NO contact 1 NC contact		49609 49610
 DB401201.eps	Module auxiliary contacts		LV480565
Blown fuse indicator (only for NFC type fuse-links 14 x 51)			
	3P (supplied with 1 NO contact + 1 NC contact) 4P (supplied with 1 NO contact + 1 NC contact)		LV480446 LV480447
Blown fuse indicator (only for NFC type fuse-links 22 x 58)			
 DB401215.eps	3P (supplied with 1 NO contact + 1 NC contact) 4P (supplied with 1 NO contact + 1 NC contact)		LV480448 LV480449
Fuse monitor (for NFC, DIN and BS fuses)			
 DB119735.eps	100 to 260 V AC 50/60 Hz 380 to 690 V AC 50/60 Hz		LV480560 LV480561

F

Catalogue numbers

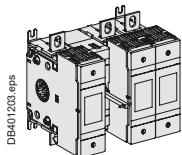
INFB100 to INF●160

Devices and accessories

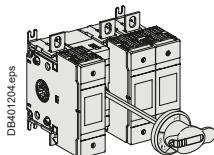
www.schneider-electric.com

INFB100 to INF●160 fixed, front-connected

Basic device supplied with 161 mm operating shaft (without handle)

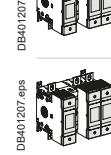


Front control

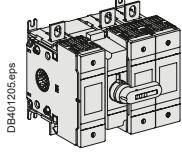


Basic device for front control

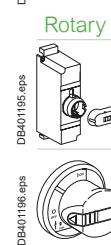
Switch/Type of fuse	3P/3F INFC125 / NFC (22 x 58)	4P/3F LV480413	4P/4F LV480414	LV480415
---------------------	-------------------------------------	-------------------	-------------------	----------



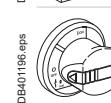
INFD160 / DIN (000/00)	LV480416	LV480417	LV480418	
---------------------------	----------	----------	----------	--



INFB100 / BS (A2/A3/A4) INFB160 / BS (A2/A3/A4)	LV480419	LV480420		
	LV480421	LV480422		

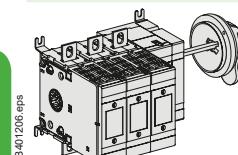


Black rotary handle Red/yellow rotary handle	LV480530	LV480531		
---	----------	----------	--	--



Black extended rotary handle Red/yellow extended rotary handle	49619	49616		
---	-------	-------	--	--

Lateral control



Basic device for lateral control

Switch/Type of fuse	3P/3F INFC125 / NFC (22 x 58)	4P/3F LV480434	4P/4F LV480435	LV480436
---------------------	-------------------------------------	-------------------	-------------------	----------



INFD160 / DIN (000/00)	LV480437	LV480438	LV480439	
---------------------------	----------	----------	----------	--



INFB160 / BS (A2/A3/A4)	LV480440	LV480441		
----------------------------	----------	----------	--	--



Black extended rotary handle Red/yellow extended rotary handle	49619	49616		
---	-------	-------	--	--

Accessories

Shaft



430 mm shaft (6 x 6)	49626			
----------------------	-------	--	--	--

Accessories

Connection

DB401199.eps	External neutral link	35 mm ² 16 mm ²	LV480450 LV480451
DB119730.eps	Removable neutral link	100 to 250 A (Ith 250 A)	LV480562
DB401208.eps	Crimp lugs for copper cables	For 120 mm ² cables For 150 mm ² cables For 185 mm ² cables	Set of 3 Set of 4 Set of 3 Set of 4 Set of 3 Set of 4
DB401209.eps	Crimp lugs for aluminium cables	For 150 mm ² cables For 185 mm ² cables	Set of 3 Set of 4 Set of 3 Set of 4 Set of 3 Set of 4
DB401211.eps	Cable connectors	25 to 95 mm ² Al/Cu (steel connector) 6 to 95 mm ² Al/Cu (Al connector)	(1 part) (1 part)
DB401212.eps	Short terminal shield for bars or cables with lugs Long terminal shield for bars or cables with lugs		LV480444 LV480445

Mounting accessories

DB401524.eps	Din rail mounting kit	LV480455
DB425107.eps	Fuse replacement handle	LV480575

Electrical auxiliaries

Auxiliary contacts

DB401200.eps	1 NO contact 1 NC contact	49609 49610
DB119733.eps	Module auxiliary contacts	LV480565

Blown fuse indicator (only for NFC type fuse-links)

DB401215.eps	3P (supplied with 1 NO contact + 1 NC contact) 4P (supplied with 1 NO contact + 1 NC contact)	LV480448 LV480449
--------------	--	----------------------

Fuse monitor (for NFC, DIN and BS fuses)

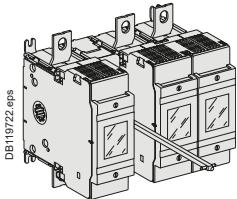
DB404301.eps	100 to 260 V AC 50/60 Hz 380 to 690 V AC 50/60 Hz	LV480560 LV480561
--------------	--	----------------------

F

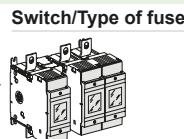
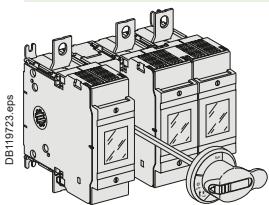
Catalogue numbers INF●200 to INF●800 Devices and accessories

www.schneider-electric.com

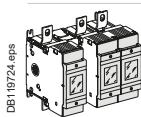
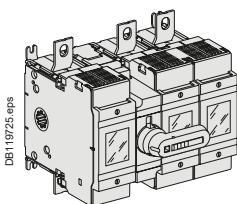
INF●200 to INF●800 fixed, front-connected Basic device supplied with 210 mm operating shaft (without handle)



Front control

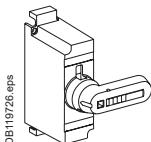


Switch/Type of fuse	3P/3F	4P/3F	4P/4F
INF●D200 / DIN (0)	LV480500	LV480501	LV480502
INF●D250 / DIN (0/1)	LV480503	LV480504	LV480505
INF●D400 / DIN (0/1/2)	LV480506	LV480507	LV480508
INF●D630 / DIN (3)	LV480509	LV480510	LV480511
INF●D800 / DIN (3)	LV480512	LV480513	LV480514



INF●B200 / BS (B1/B2/B3)	LV480515	LV480516
INF●B250 / BS (B1/B2/B3)	LV480517	LV480518
INF●B400 / BS (B1/B2/B3/B4)	LV480519	LV480520
INF●B630 / BS (C1/C2/C3)	LV480521	LV480522
INF●B800 / BS (C1/C2/C3)	LV480523	LV480524

Direct front-control rotary handle



For INF●B200

Black rotary handle	LV480530
Red/yellow rotary handle	LV480531

For INF●D200 and INF●250

Black rotary handle	LV480532
Red/yellow rotary handle	LV480533

For INF●D400

Black rotary handle	LV480534
Red/yellow rotary handle	LV480535

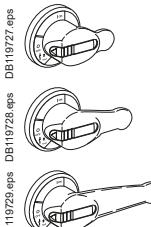
For INF●B400

Black rotary handle	LV480536
Red/yellow rotary handle	LV480537

For INF●630/800

Black rotary handle	LV480538
Red/yellow rotary handle	LV480539

Extended front-control rotary handle



For INF●200/250

Black rotary handle	49619
Red/yellow rotary handle	49616

For INF●400

Black rotary handle	LV480540
Red/yellow rotary handle	LV480541

For INF●630/800

Black rotary handle	49620
Red/yellow rotary handle	49617

Accessories

Shaft, locking



430 mm shaft (6 x 6) for INF●200/250	49626
465 mm shaft (12 x 12) for INF●400 to 800	49627
Handle locking accessory for Ronis EL11AP keylock (not supplied) for INF●400 to 800	49053

Catalogue numbers
INF●200 to INF●800
Devices and accessories

Accessories

Connection			
DB40198.eps	External neutral link	35 mm ² 16 mm ²	LV480450 LV480451
DB19730.eps	Removable neutral link	100 to 250 A (Ith 250 A) 400 A (Ith 400 A) 630 to 800 A (Ith 800 A)	LV480562 LV480563 LV480564
DB401208.eps	Crimp lugs for copper cables	For 240 mm ² cable For 300 mm ² cable	Set of 3 Set of 4 Set of 3 Set of 4 Set of 3 Set of 4 Set of 3 Set of 4
DB401209.eps	Crimp lugs for aluminium cables	For 240 mm ² cable For 300 mm ² cable	LV432500 LV432501 LV432502 LV432503 LV432504 LV432505 LV432506 LV432507
DB401923.eps	Cable connectors	25 to 95 mm ² Al/Cu (steel connector) 6 to 95 mm ² Al/Cu (Al connector) 95 to 185 mm ² Al/Cu 2 x (95 to 185 mm ²) Al/Cu 120 to 240 mm ² Al/Cu 120 to 300 mm ² Al/Cu 2 x (120 to 300 mm ²) Al/Cu	(1 part) (1 part) (1 part) (1 part) (1 part) (1 part) (1 part)
DB19731.eps	Terminal shields for crimp lugs and bars	Short for 200 A Long for 200 A Short for 250 A Long for 250 A Short for 400 A Long for 400 A Short for 630 and 800 A Long for 630 and 800 A	LV480550 LV480551 LV480552 LV480553 LV480554 LV480555 LV480556 LV480557
Mounting accessories			
DB425107.eps	Fuse replacement handle		LV480575
Electrical auxiliaries			
Auxiliary contacts			
DB401200.eps	1 NO contact 1 NC contact	(1 part) (1 part)	49609 49610
DB19733.eps	Module for auxiliary contacts (8 max.)		LV480565
Blown fuse indicator (only for DIN type fuse-links)			
DB19734.eps	3P (supplied with 3 NO and 3 NC contacts) 4P (supplied with 4 NO and 4 NC contacts)		LV480558 LV480559
Fuse monitor (for DIN and BS fuses)			
DB19735.eps	100 to 260 V AC 50/60 Hz 380 to 690 V AC 50/60 Hz		LV480560 LV480561

F

Fupact protection components

Cartridge fuses type aM

For protection of equipment with current peaks



DF2 CA●●●



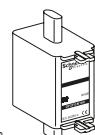
DF2 EA●●●



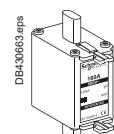
DF2 FA●●

Fuse type	Maximum rated voltage	Rating	Set of	Fuses without striker		Maximum rated voltage	Rating	Set of	Fuses with striker	
				Unit reference	Weight				Unit reference	Weight
Cylindrical 10 x 38	V ~ 500	20	10	DF2 CA20	0.010	-	20	-	-	-
	~ 400	25	10	DF2 CA25	0.010	-	25	-	-	-
		32	10	DF2 CA32	0.010	-	32	-	-	-
Cylindrical 14 x 51	~ 690	20	10	DF2 EA20	0.020	~ 500	20	10	DF3 EA20	0.020
		25	10	DF2 EA25	0.020		25	10	DF3 EA25	0.020
	~ 500	32	10	DF2 EA32	0.020		32	10	DF3 EA32	0.020
		40	10	DF2 EA40	0.020		40	10	DF3 EA40	0.020
		50	10	DF2 EA50	0.020		50	10	DF3 EA50	0.020
Cylindrical 22 x 58	~ 690	20	10	DF2 FA20	0.045	~ 690	20	10	DF3 FA20	0.045
		25	10	DF2 FA25	0.045		25	10	DF3 FA25	0.045
		32	10	DF2 FA32	0.045		32	10	DF3 FA32	0.045
		40	10	DF2 FA40	0.045		40	10	DF3 FA40	0.045
		50	10	DF2 FA50	0.045		50	10	DF3 FA50	0.045
		63	10	DF2 FA63	0.045	~ 500	63	10	DF3 FA63	0.045
		80	10	DF2 FA80	0.045		80	10	DF3 FA80	0.045
	~ 500	100	10	DF2 FA100	0.045		100	10	DF3 FA100	0.045
		125	10	DF2 FA125	0.045		125	10	DF3 FA125	0.045

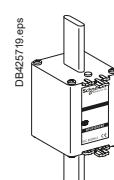
F



DF2 GA●●●●●



DF4 GA●●●●●



DF2 JA●●●●●

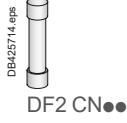
Fuse type	Maximum rated voltage	Rating	Set of	Fuses without striker		Fuses with striker	
				Unit reference	Weight	Unit reference	Weight
Blade NH 000	V ~ 690	25	3	DF2 FGA25	0.160	-	-
		32	3	DF2 FGA32	0.160	-	-
		40	3	DF2 FGA40	0.160	-	-
		50	3	DF2 FGA50	0.160	-	-
		63	3	DF2 FGA63	0.160	-	-
Blade NH 00	~ 690	80	3	DF2 FGA80	0.160	-	-
		100	3	DF2 FGA100	0.160	-	-
		125	3	DF2 FGA125	0.160	-	-
Blade NH 0	~ 690	50	3	DF2 GA1051	0.230	-	-
		63	3	DF2 GA1061	0.230	-	-
		80	3	DF2 GA1081	0.230	-	-
		100	3	DF2 GA1101	0.230	-	-
		125	3	DF2 GA1121	0.230	DF4 GA1121	0.230
		160	3	DF2 GA1161	0.230	DF4 GA1161	0.230
	~ 500	200	3	DF2 GA1201	0.230	DF4 GA1201	0.230
Blade NH 1	~ 690	160	3	DF2 HA1161	0.400	-	-
		200	3	DF2 HA1201	0.400	DF4 HA1201	0.400
		250	3	DF2 HA1251	0.400	DF4 HA1251	0.400
	~ 500	315	3	DF2 HA1311	0.400	DF4 HA1311	0.400
Blade NH 2	~ 690	250	3	DF2 JA1251	0.560	-	-
		315	3	DF2 JA1311	0.560	DF4 JA1311	0.560
		400	3	DF2 JA1401	0.560	DF4 JA1401	0.560
	~ 500	500	3	DF2 JA1501	0.560	DF4 JA1501	0.560
Blade NH 3	~ 690	400	1	DF2 KA1401	0.850	-	-
		500	1	DF2 KA1501	0.850	DF4 KA1501 [1]	0.850
	~ 500	630	1	DF2 KA1631	0.850	DF4 KA1631	0.850

[1] Set of 3.

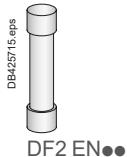
Fupact protection components

Cartridge fuses type gG

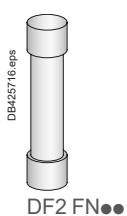
For protection of circuits without significant current peaks



DF2 CN●●

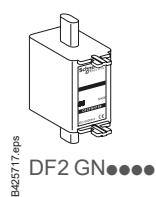


DF2 EN●●

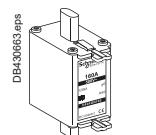


DF2 FN●●

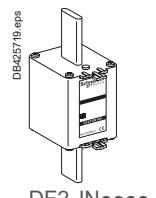
Fuse type	Maximum rated voltage	Rating	Set of Fuses without striker			Maximum rated voltage	Rating	Set of Fuses with striker		
			Unit reference	Weight	Unit reference			Unit reference	Weight	kg
Cylindrical 10 x 38	V ~ 500	20	10	DF2 CN20	0.010	-	20	-	-	-
	~ 400	25	10	DF2 CN25	0.010	-	25	-	-	-
		32	10	DF2 CN32	0.010	-	32	-	-	-
Cylindrical 14 x 51	~ 690	20	10	DF2 EN20	0.020	~ 500	20	10	DF3 EN20	0.020
		25	10	DF2 EN25	0.020		25	10	DF3 EN25	0.020
	~ 500	32	10	DF2 EN32	0.020		32	10	DF3 EN32	0.020
		40	10	DF2 EN40	0.020		40	10	DF3 EN40	0.020
		50	10	DF2 EN50	0.020	-	50	10	-	-
Cylindrical 22 x 58	~ 690	20	10	DF2 FN20	0.045	~ 690	20	10	DF3 FN20	0.045
		25	10	DF2 FN25	0.045		25	10	DF3 FN25	0.045
		32	10	DF2 FN32	0.045		32	10	DF3 FN32	0.045
		40	10	DF2 FN40	0.045		40	10	DF3 FN40	0.045
		50	10	DF2 FN50	0.045		50	10	DF3 FN50	0.045
		63	10	DF2 FN63	0.045	~ 500	63	10	DF3 FN63	0.045
		80	10	DF2 FN80	0.045		80	10	DF3 FN80	0.045
	~ 500	100	10	DF2 FN100	0.045		100	10	DF3 FN100	0.045



DF2 GN●●●●



DF4 GN●●●●



DF2 JN●●●●

Fuse type	Maximum rated voltage	Rating	Set of		Fuses without striker	Fuses with striker	
			Unit reference	Weight		Unit reference	Weight
Blade NH 000	~ 690	25	3	DF2 FGN25	0.160	-	-
		32	3	DF2 FGN32	0.160	-	-
		40	3	DF2 FGN40	0.160	-	-
		50	3	DF2 FGN50	0.160	-	-
		63	3	DF2 FGN63	0.160	-	-
		80	3	DF2 FGN80	0.160	-	-
	> 500	100	9	DF2 FGN100	0.160	-	-
Blade NH 00	~ 690	125	3	DF2 FGN125	0.160	-	-
	~ 500	160	3	DF2 FGN160	0.160	-	-
Blade NH 0	~ 690	50	3	DF2 GN1051	0.230	-	-
		63	3	DF2 GN1061	0.230	-	-
		80	3	DF2 GN1081	0.230	-	-
		100	3	DF2 GN1101	0.230	-	-
		125	3	DF2 GN1121	0.230	-	-
		160	3	DF2 GN1161	0.230	-	-
	~ 500	125	3	-	-	DF4 GN1121	0.230
		160	3	-	-	DF4 GN1161	0.230
Blade NH 1	~ 690	160	1	DF2 HN1161	0.400	-	-
		200	1	DF2 HN1201	0.400	DF4 HN1201 [1]	0.400
	~ 500	250	3	DF2 HN1251	0.400	DF4 HN1251	0.400
Blade NH 2	~ 690	250	3	DF2 JN1251	0.560	-	-
		315	3	DF2 JN1311	0.560	DF4 JN1311	0.560
	~ 500	400	3	DF2 JN1401	0.560	DF4 JN1401	0.560
Blade NH 3	~ 690	500	3	-	-	DF4 KN1501	0.850
	~ 500	500	1	DF2 KN1501	0.850	-	-
		630	1	DF2 KN1631	0.850	DF4 KN1631 [1]	0.850

[1] Set of 3.

F

F

Life Is On | Schneider
Electric

Schneider Electric Industries SAS

35, rue Joseph Monier
CS 30323
92506 Rueil Malmaison Cedex
France

RCS Nanterre 954 503 439
Capital social 896 313 776 €
www.schneider-electric.com

10-2019
ART119883

© 2018 - Schneider Electric. All Rights Reserved.
All trademarks are owned by Schneider Electric Industries SAS or its affiliated companies.
Document reference: LVPED216031EN

This document has been
printed on recycled paper

