ME-Cub 2.0

Motor Control Center
with withdrawable units up to 6300 A - 105 Ka

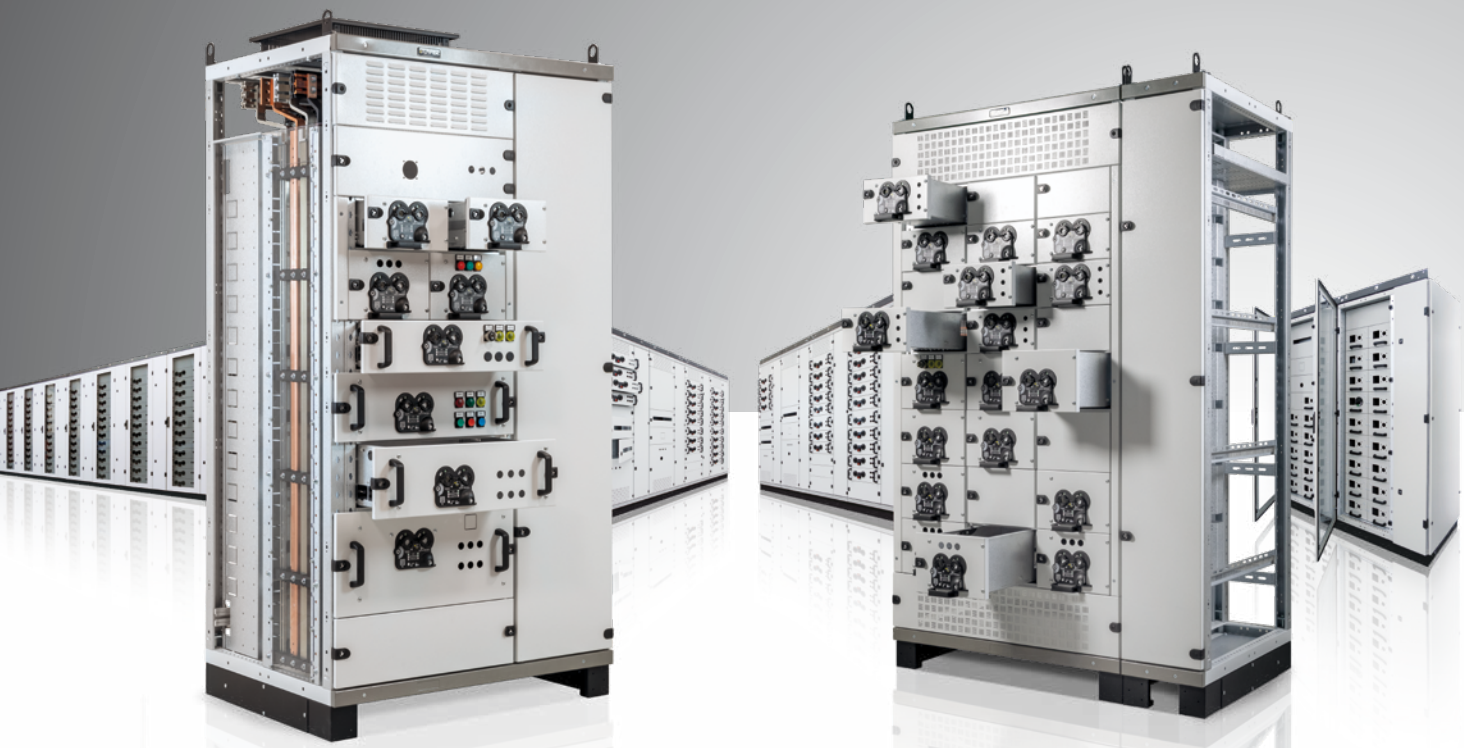




Lafer. Around you

ME-Cub 2.0

Motor Control Center with withdrawable units up to 6300 A



A product range designed for motor starting and control.

Me-cub 2.0 versatile design can accommodate different sizes of withdrawable units providing a solution to all types of applications.

Main characteristics

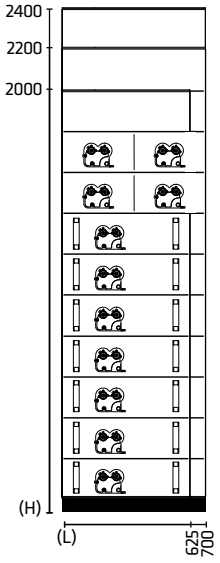
- Assembled sheet metal enclosure (upright thickness: 20/10 mm).
- Degree of protection from IP30 (cabinet without door) up to IP55 (cabinet equipped with transparent tempered glass door).
- Compartment equipped with side and horizontal partitions, rear wiring plate with female connector for auxiliary circuits and power pliers.
- Withdrawable unit equipped with customizable front panel, SwitchLAF™ 2.0 system, male connector for auxiliary circuits and power contacts.
- Possibility of side connection.
- Installation of circuit breakers of all leading manufacturers (ABB, Schneider, Siemens,etc.).
- RAL 7035 B epoxy powder coating (other colours on request).
- Enclosures available in stainless steel on request.
- Patented and certified earthing system.
- Reinforced plinth for a safe handling of the enclosure.
- Full range of internal finishing accessories to meet any requirement.

Certifications

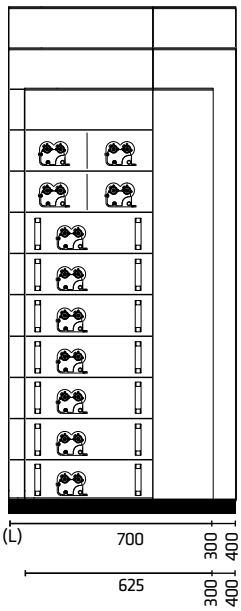
IEC 61439-1	**test n. B0008006** **test n. B8020497**	**Short-circuit withstand In=6300 and Icc=105 kA for 1 sec.** • Verification of the short-circuit withstand • Verification of the effective connection between the equipment masses and the protection circuit
IEC/TR 61641 CEI 17-86	**test n. B0009515**	**Arc conditions due to internal fault 70 kA for 300 msec**
IEC 61439-1 IEC/TR 61641	**test n. B0007840**	**Verification of overtemperature limits** • Verification of overtemperature limits • Verification of dielectric properties: industrial frequency and impulse tests • Verification of air clearance and creepage distances
CEI EN 60529	**test n. EPT16AVM033754359** **test n. EPT16AVM033754359** **test n. EPT16AVM033754359** **test n. CESI A902B006** **test n. B0011835** **test n. B4030377**	**Verification of degree of IP30 degree of protection** **Verification of degree of IP41 degree of protection** **Verification of degree of IP42 degree of protection** **Verification of degree of IP54 category 2 degree of protection** **Verification of degree of IP55 category 2 degree of protection** **Verification of degree of IP56 category 2 degree of protection**
IEEE Std 693-2005 IEC 60068-2-57 IEC 62271-300 Transelec	**test n. B3020295**	**Seismic test with acceleration 1,0g**

Technical specifications

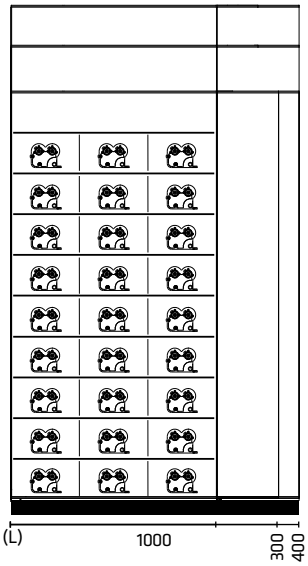
Free-standing cabinet



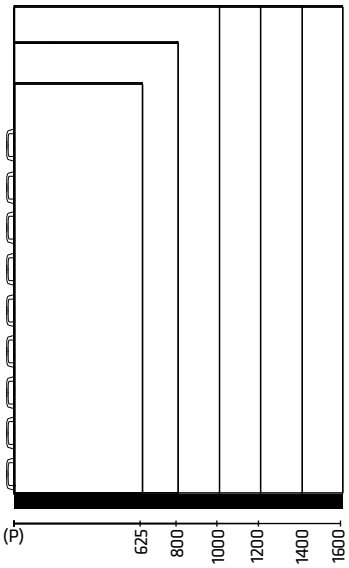
Cabinet with cable compartment



Multiswitch cabinet



Depth (D) mm



	Width (W) mm	Height (H) mm	Depth (D) mm
Free-standing cabinet	625 (24 modules)	2000 / 2200 / 2400 (usable space = H - 200)	625 / 800 / 1000 / 1200 / 1400 / 1600
	700 (24 modules)		
Cabinet with cable compartment	625 + 300 (24 modules)	2000 / 2200 / 2400 (usable space = H - 200)	625 / 800 / 1000 / 1200 / 1400 / 1600
	700 + 300 (24 modules)		
	625 + 400 (24 modules)		
	700 + 400 (24 modules)		
Multiswitch cabinet	1000 + 300 (44 modules)		
	1000 + 400 (44 modules)		
Back-to-back cabinet	Available on request		

Electrical data	Voltage ratings	Rated insulation voltage (U_i)		1000 V
		Rated operational voltage (U_e)		690 V
		Rated impulse withstand voltage (U_{imp})		6 / 8 / 12 kV
		Rated frequency (f_n)		50 / 60 Hz
	Current ratings	Rated current (I_n)	Main busbar system	Up to 6300 A
			Vertica distribution busbars	400 / 630 / 800 A
		Rated short-time withstand current for 1 sec. (I_{cw})		105 kA
	Internal arc resistance	Permissible current under arcing conditions ($I_{p\,arc}$)		70 kA
		Permissible arc duration (t_{arc})		300 ms
	Withdrawable units pliers			160 / 320 A
	Auxiliary contacts connectors			10 / 16 A
	Auxiliary contacts			6 / 16 / 24 / 42 / 48

Mechanical Characteristics	IP Degree of protection	Internal	Up to IP2X
		External	From IP30 up to IP55
	Withdrawable units height (h)	150 / 200 / 250 /300 / 350 /400 / 450 / 500 /600	
	Protection against mechanical impacts (IK code)	IK09 glass door	
		IK10 blind door	
	Access to the cabinet for circuit breakers connection	From the Front/Side/Rear	
	From of internal separation	Form 3B/4B	
	Material	Structure	Pickled plate, 15/10 - 20/10 mm thick
		Accessories	Aluzinc® sheet steel, 15/10 - 20/10 - 25/10 mm thick
	Powder coating	Standard	RAL 7035B orange peel
		On request	RAL shades / stainless steel
	Plastic components	Halogen-free, flame retardants, self-extinguishing, CFC-free	
	Customizable features	Busbar system	Insulated / Silvering / Tin plating
		Additional components	Position switch “drawer in test position”
			Position switch “drawer in disconnected/ connected position”
			Position switch “drawer in inserted/ withdrawn position”
			Position switch “drawer in inserted/ remote withdrawn position” (n°2)

All Lafer cabinets have been designed to be used in indoor environments. In case of outdoor applications, customers should require the supply of the specific rain canopy. Lafer shall not be held liable for any damage resulting from the non-observance of these guidelines.

UNIT

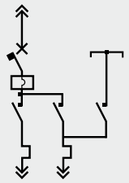
Withdrawable drawer
Suitable for applications from 18.5 Kw up to 200 kw

MOTOR STARTING UNIT
3-pole UNIT withdrawable drawer
4-pole UNIT withdrawable drawer
Available degrees of protection: IP30-IP42-IP55

DIRECT-ON-LINE STARTER

REVERSING STARTER

STAR-DELTA STARTER



Motor starting typologies: **UNIT**

400 V			
withdrawable drawer height mm	drect-on-line starter kW	reversing starter kW	star-delta starter kW
150	≤ 18.5	≤ 18.5	≤ 11
200	≤ 30	≤ 30	≤ 18.5
250	≤ 45	≤ 45	≤ 30
300	≤ 75	≤ 75	≤ 45
400	≤ 110	≤ 110	≤ 75
500	≤ 132	≤ 132	≤ 110
600			≤ 132

690 V			
withdrawable drawer height mm	drect-on-line starter kW	reversing starter kW	star-delta starter kW
150	≤ 18.5	≤ 18.5	≤ 11
200	≤ 37	≤ 37	≤ 30
250	≤ 75	≤ 75	≤ 55
300	≤ 110	≤ 110	≤ 75
400	≤ 160	≤ 160	≤ 110
500	≤ 200	≤ 200	≤ 160
600			≤ 200

½ UNIT

Withdrawable drawer
Suitable for applications from 7.5 kW up to 22 kW

MOTOR STARTING UNIT
3-pole ½ UNIT withdrawable drawer
4-pole ½ UNIT withdrawable drawer
Available degrees of protection: IP30-IP42-IP55

DIRECT-ON-LINE STARTER

REVERSING STARTER

Motor starting typologies: **½ UNIT**

400 V		
withdrawable drawer height mm	drect-on-line starter kW	reversing starter kW
150	≤ 7.5	≤ 7.5
200	≤ 11	≤ 11
250	≤ 18.5	≤ 18.5

690 V		
withdrawable drawer height mm	drect-on-line starter kW	reversing starter kW
150	≤ 7.5	≤ 7.5
200	≤ 18.5	≤ 18.5
250	≤ 22	≤ 22

½ FEEDER

Withdrawable drawer
Suitable for applications from 16A up to 100A

OUTGOING LINE
3-pole ½ FEEDER withdrawable drawer
4-pole ½ FEEDER withdrawable drawer
Available degrees of protection: IP30-IP42-IP55

FEEDER OUTGOING

Motor starting typologies: **½ FEEDER**

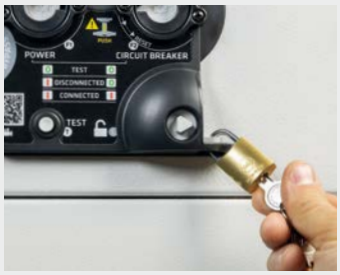
400 V / 690 V	
withdrawable drawer height mm	rated current A
150	≤ 35
200	≤ 80
250	≤ 100

Withdrawable drawer
UNIT

Overview
- SwitchLAF 2.0 system
- Auxiliary connectors
- Outgoing contacts (power pliers)
- Sheet metal bracket
  for motor protection circuit breaker
- 5 position switches
- Lockable drawer for additional
  protection against incorrect operations

Accessories and main features

Safety features:
Drawer lockable in withdrawn position.



Safety features:
Padlockable drawer in case of a temporary breakdown.

5 position switches - drawer:
- in “Test” position
- in “Disconnected/ Connected” position
- in “Inserted/Withdrawn” position
- in “Inserted/Withdrawn/Remote” position (n°2)

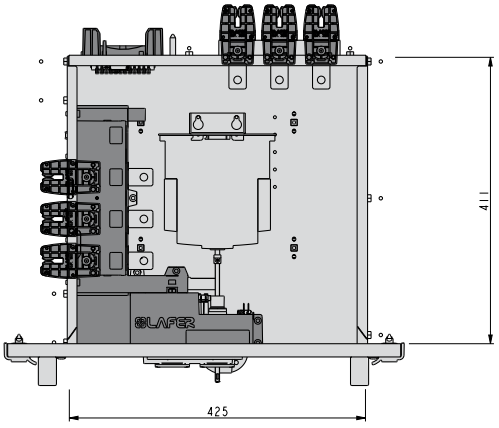
Withdrawable units coding:
Optional drawers identification system allowing an easy and unique identification of the position of each drawer in the cabinet.

Electrical data

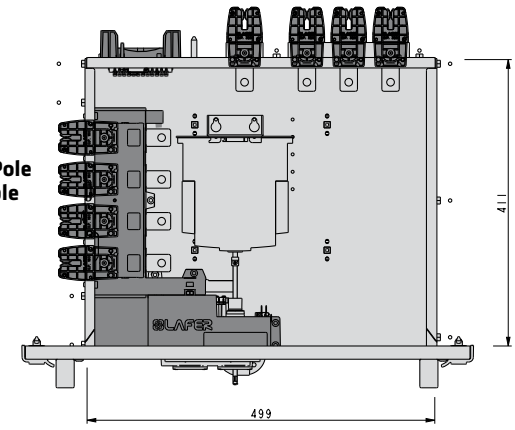
Electrical data	Voltage ratings	Rated insulation voltage (U_i)	1000 V
		Rated operational voltage (U_e)	400 / 500 / 690 V
		Rated impulse withstand voltage (U_{imp})	6 / 8 / 12 Kv
		Rated frequency (f_n)	50 / 60 Hz
	Power pliers	3-pole or 4-pole version*	
		Rated current [In]	160 /320 A
		Rated short-circuit current [Ip]	15 / 38 kA
	Auxiliary connectors	Rated current [In]	10 / 16 A
		N° of auxiliary contacts	24 / 42/ 48
	Auxiliary contacts	Rated current [In]	16 A
		N° of cycles	20000000
		Contact type	2 changeover contacts
		Connection type	Fast-on 6,3 mm
Mechanical Characteristics	Drawers width (l)	625 / 700	
	Drawers height (h)	150 / 200 / 250 /300 / 350 /400 / 450 / 500 /600	

*Not available for cabinets 625 mm wide

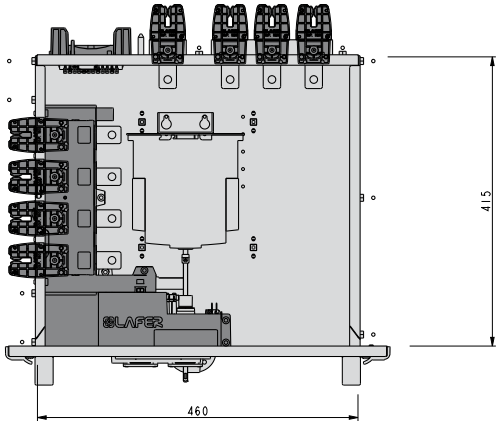
3-Pole withdrawable drawer IP30/IP42 W=625

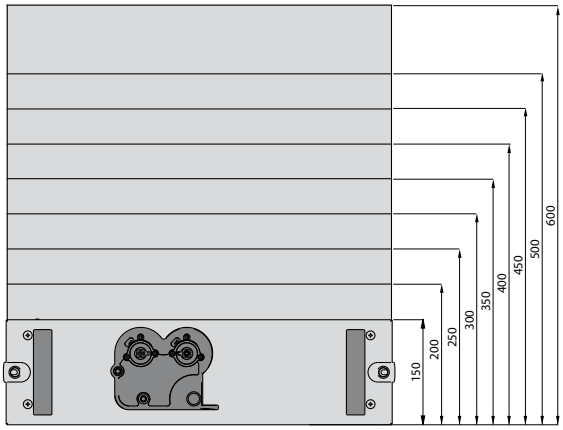


3-Pole / 4-Pole withdrawable drawer IP30/IP42 W=700

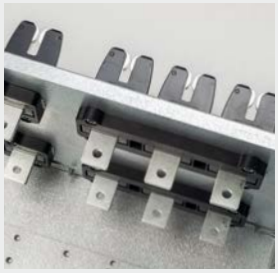


3-Pole / 4-Pole withdrawable drawer IP55 W=700





Customizable connectors: 24 pins, 42 pins or double connector.



Double outgoing plier: Double outgoing plier for star-delta starters.

Universal shaft adapters: 3 different interchangeable shaft adapters compatible with all types of circuit breakers installed.

Connectors available on request: Wide range of special connectors available on request for Profibus, Modbus, Ethernet protocols etc.

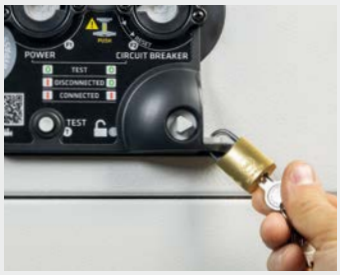
Earthing: Self-centering grounding system.

Withdrawable drawer
½ UNIT

Overview
- SwitchLAF 2.0 system
- Auxiliary connectors
- Outgoing contacts (connectors)
- Sheet metal bracket for motor protection circuit breaker
- 5 position switches
- Lockable drawer for additional protection against incorrect operations

Accessories and main features

Safety features:
Drawer lockable in withdrawn position.



Safety features:
Padlockable drawer in case of a temporary breakdown.

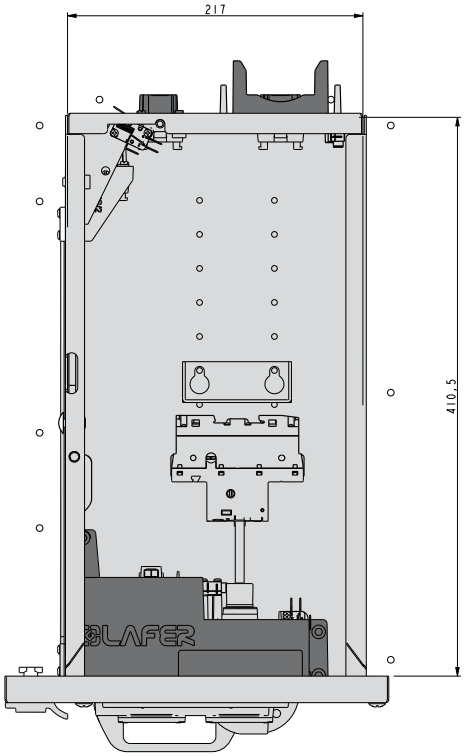
5 position switches - drawer:
- in “Test” position
- in “Disconnected/ Connected” position
- in “Inserted/Withdrawn” position
- in “Inserted/Withdrawn/Remote” position (n°2)

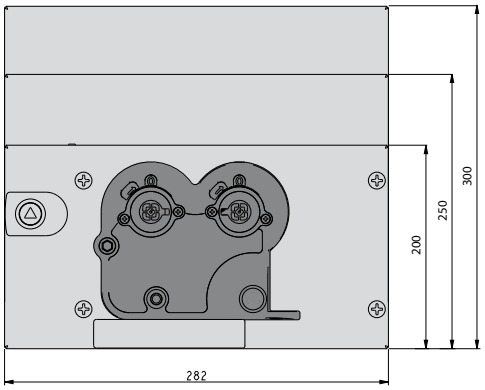
Withdrawable units coding:
Optional drawers identification system allowing an easy and unique identification of the position of each drawer in the cabinet.

Electrical data

Electrical data	Voltage ratings	Rated insulation voltage (U_i)	1000 V
		Rated operational voltage (U_e)	400 / 500 / 690 V
		Rated impulse withstand voltage (U_{imp})	6 / 8 / 12 Kv
		Rated frequency (f_n)	50 / 60 Hz
	Power contacts	Rated current [In]	16A
	Auxiliary connectors	Rated current [In]	10 / 16A
		N° of auxiliary contacts	24 / 42
	Auxiliary contacts	Rated current [In]	16 A
		N° of cycles	20000000
		Contact type	2 changeover contacts
		Connection type	Fast-on 6,3 mm
Mechanical Characteristics	Drawers width (l)	350	
	Drawers height (h)	150 / 200 / 250	

3-Pole / 4-Pole withdrawable unit IP30/IP42 W=350



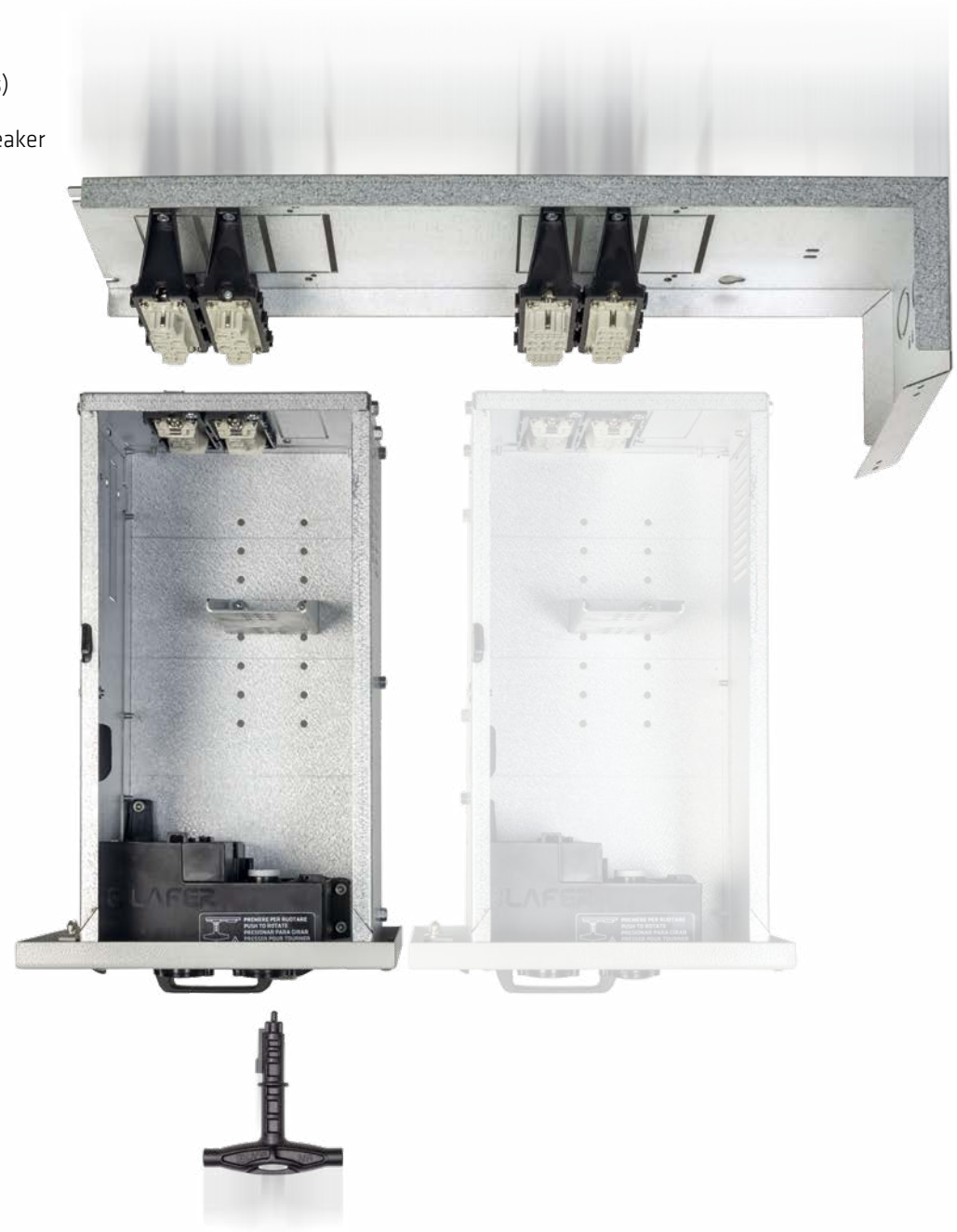


Universal shaft adapters:
3 different interchangeable shaft adapters compatible with all types of circuit breakers installed.

Connectors available on request:
Wide range of special connectors available on request for Profibus, Modbus, Ethernet protocols etc.

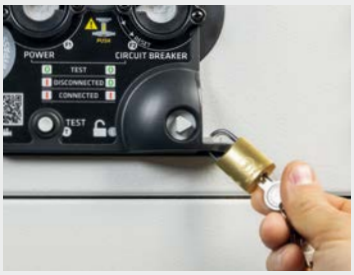
Withdrawable drawer
½ FEEDER

Overview
- SwitchLAF 2.0 system
- Auxiliary connectors
- Outgoing contacts (connectors)
- Sheet metal bracket for motor protection circuit breaker
- Lockable drawer for additional protection against incorrect operations



Accessories and main features

Safety features:
Drawer lockable in withdrawn position.



Safety features:
Padlockable drawer in case of a temporary breakdown.

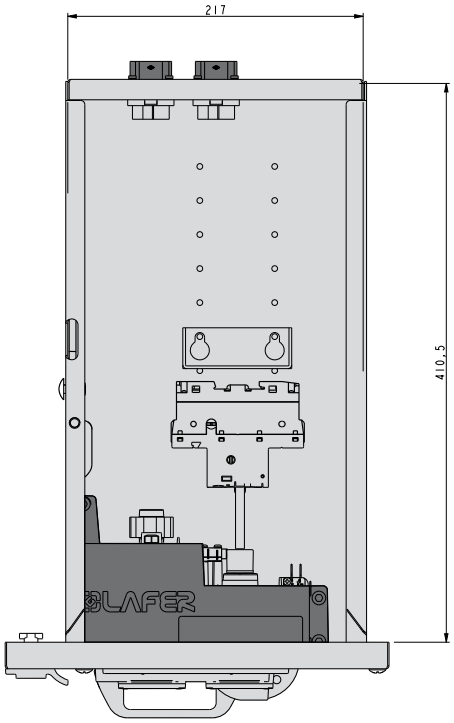
Withdrawable units coding:
Optional drawers identification system allowing an easy and unique identification of the position of each drawer in the cabinet.

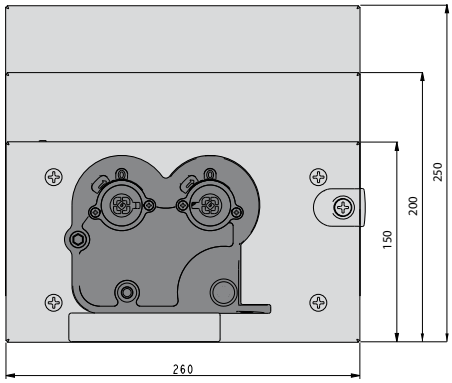
Universal shaft adapters: 3 different interchangeable shaft adapters compatible with all types of circuit breakers installed.

Electrical data

Electrical data	Voltage ratings	Rated insulation voltage (U_i)	1000 V
		Rated operational voltage (U_e)	400 / 500 / 690 V
		Rated impulse withstand voltage (U_{imp})	6 / 8 / 12 Kv
		Rated frequency (f_n)	50 / 60 Hz
	Power contacts	Rated current [In]	16 / 35 / 80 /100 A
	Auxiliary connectors	Rated current [In]	10 / 16A
		N° of auxiliary contacts	6 / 16 / 24 / 42
	Auxiliary contacts	Rated current [In]	16 A
		N° of cycles	20000000
		Contact type	2 changeover contacts
		Connection type	Fast-on 6,3 mm
Mechanical Characteristics	Drawers width (l)	350	
	Drawers height (h)	150 / 200 / 250	

3-Pole / 4-Pole withdrawable unit
IP30/IP42
W=350





Connectors available on request: Wide range of special connectors available on request for Profibus, Modbus, Ethernet protocols etc.

Earthing: Self-centering grounding system.

Operation of **UNIT** and **½ UNIT** drawers

Commissioning of the drawer

1. drawer in “test” position
Push the test button (grey button) with the aid of SwitchLAF™ Key. The circuit will open and the physical correct insertion of the drawer checked. In case of a positive test, the hole allowing the performance of operation no.02 will open.

2. drawer in “disconnected” position
Insert SwitchLAF™ Key into the left-hand side hole, press and rotate 180° clockwise until the position “I”
is reached. In this way the right-hand hole will open allowing the subsequent performance of operation no.3.

3. drawer in “connected” position
Press and rotate clockwise till reaching position “I”

Replacement of the drawer

1. drawer in “connected” position
Insert SwitchLAF™ Key into the right-hand side hole, press and rotate 180° anticlockwise until the position “0” is reached.

2. drawer in “disconnected” position
Insert SwitchLAF™ Key into the left-hand side hole, press and rotate 180° anticlockwise until the position “0” is reached.

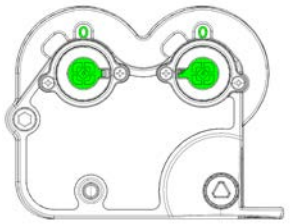
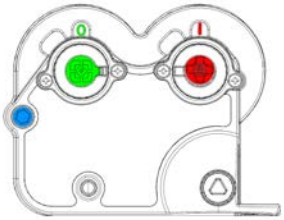
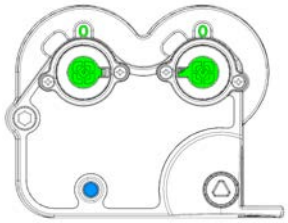
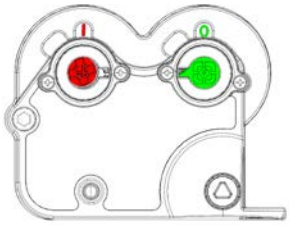
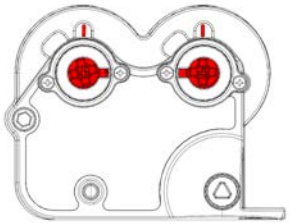
Test of the drawer

By-pass test
While the drawer is in Test position it is possible to carry out the electrical test downstream the main circuit breaker of the drawer.

Insert an Allen key (size n° 6) into the appropriate space as shown in the figure, rotate clockwise until hole “F2” is completely opened.

Insert SwitchLAF™ Key into “F2” hole and power the circuit breaker by rotating the key 180° clockwise until the position “I” is reached.

SwitchLAF™ 2.0 positions

SWITCHLAF™ 2.0 POSITION	CIRCUITS	SAFETY LOCKS	POSITION OF THE DRAWER
 0 0 **WITHDRAWN**	Main circuit opened Auxiliary circuits opened	The drawer can be locked by padlock	The drawer is advanced by 20 cm from the cabinet
 0 I **TEST BY PASS**	Main circuit opened Auxiliary circuits closed	SwitchLAF™system can be locked by padlock	The drawer is physically inserted and blocked in the cabinet
 0 0 **TEST**	Main circuit opened Auxiliary circuits closed	SwitchLAF™system can be locked by padlock	The drawer is physically inserted and blocked in the cabinet
 I 0 **DISCONNECTED**	Main circuit opened Auxiliary circuits closed		The drawer is physically inserted and blocked in the cabinet
 I I **CONNECTED**	Main circuit closed Auxiliary circuits closed		The drawer is physically inserted and blocked in the cabinet

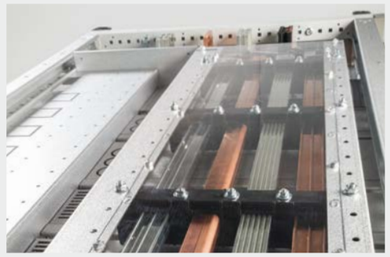
Available configurations

Cabinet with cable compartment
Enclosure compatible with **UNIT** , **½ UNIT** and **½ FEEDER** withdrawable drawers and fixed drawer.
-Form of segregation (3B-4B-4A)
-Access to the cabinet for connections: front/rear

Cabinet MULTISWITCH
Enclosure compatible with **½ UNIT** and **½ FEEDER** withdrawable drawers.
• Form of segregation (3B-4B-4A)
• Access to the cabinet for connections: front/rear

Cabinet with glass door:
All available layouts (free-standing cabinet, cabinet with cable compartment or **MULTISWITCH** cabinet) can be equipped with glass door to achieve an IP55 degree of protection.

Vertical distribution busbars and main horizontal busbar system

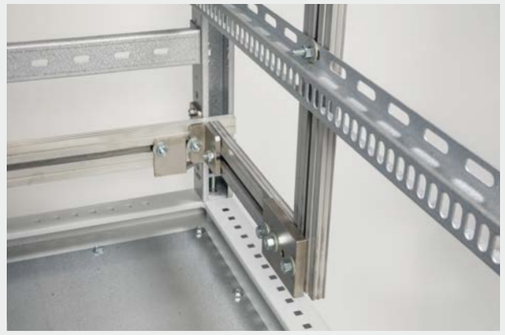


Vertical distribution busbars up to 800A:
Available solutions: aluminium or copper profiles, flat copper or tin-plated copper bars

Main horizontal busbar system up to 4000A:
Available solutions: aluminium, copper or silver-plated copper profiles, copper profiles treated with protective coat or flat copper bars

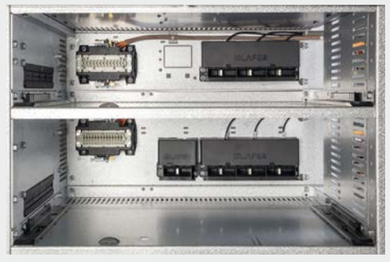
Main horizontal busbar system partitions
Sheet steel partition to prevent any contact with live parts

Cable compartment

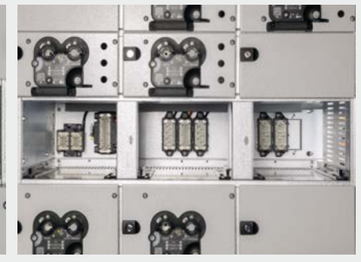


Lateral compartment for terminal block and aluminium or copper earth bar

Fixed compartments for Unit, ½ Unit and ½ Feeder drawers



UNIT



½ UNIT / ½ FEEDER

Unit, ½ Unit and ½ Feeder withdrawable drawers

UNIT

½ UNIT / ½ FEEDER