SAIF

Switched and insulated fusegear

For indoor/outdoor low voltage distribution up to 3200A

a brand of Schneider Electric

Merlin Gerin

Contents

SAIF: an introduction

Merlin Gerin SAIF offers a unique range of switchable fusegear, providing low voltage distribution for applications up to 3200A.

For indoor or outdoor use, SAIF is factory assembled in a choice of product to provide safe solutions for low voltage distribution, with the added benefit of minimum maintenance.

SAIF achieves levels of operator safety unmatched in other ranges of fusegear. Operator protection to IPXXB is maintained in all operating conditions, including fuselink replacement when the pillar is live.

Since its launch, SAIF's unique qualities have proved successful in markets around the world, being extensively used in commercial and public sector buildings and on a vast number of MoD Defence Estates.

The market leader in fusegear, offering optimum levels of safety

Outdoor feeder pillar

Indoor fuseboard

Outdoor fuse cabinet

SAIF provides choice of product range

SAIF is factory assembled and can be incorporated into the following configurations:

- Outdoor feeder pillar
- Outdoor fuse cabinet
- Indoor fuseboard

With easy installation, high safety levels and modular technology, SAIF enables fast product delivery. The plug in feature of SAIF enables new circuits to be easily added to meet future requirements.

SAIF offers diverse solutions for low voltage distribution.

SAIF: offers significant benefits

The innovation of SAIF brings benefits over and above traditional designs of fusegear. It has the safety and switching ability comparable to fuse switchboards manufactured to form 4, achieving optimum levels of safety and segregation.

Manufactured in one complete moulding, the SAIF fuseway offers segregation between phases

Safety levels over and above conventional designs of fusegear

SAIF delivers personnel protection to IPXXB in all operating conditions. SAIF has the ability to protect the operator from contact with live parts in normal service and operating conditions.

Protection is maintained when fully shrouded fuse carriers are switched to either ‘ON’ or ‘OFF’ positions, or completely removed from the three pole fuseway. Fully shrouded fuse carriers held within a fully shrouded three pole fuseway provide additional protection.

Safe switching at a SAIF feeder pillar

Fault make, load break switching

SAIF achieves fault make, load break switching with the use of a portable, independent manual switching mechanism, providing through-fault capability up to 50kA. SAIF eliminates the need for isolation of the HV supply.

Offering easy operation, the robust switching mechanism and disconnectors are fully interlocked to ensure correct operation and does not rely on the skill of the operator, or the speed at which the handle is turned.
SAIF provides certified switching to IEC 60947-3.

Fully transferable across all fuse carriers, once the mechanism is in position, interlocks are defeated and the fuse carrier can be safely switched to the 'ON' or 'OFF' position. The status of each fuse carrier is clearly indicated.

Versatility for future needs

Incorporated into feeder pillar, fuse cabinets and fuseboards, SAIF offers ease of provision for future circuits, enabling additional fuseways to be simply plugged onto existing busbars to meet future needs and minimising costly downtime.

Easy installation, low maintenance

The robust construction of SAIF withstands all weather conditions, providing high levels of performance. Simple installation and minimum maintenance is achieved by the arrangement of the cables at the base of each fuseway. This allows for pre-determined cable cores to be cut, providing easy termination.

Safety

Correct operation is ensured at all times with interlocking between the fuseway and fusecarrier. This is achieved by preventing the fuse carrier being moved from one state to another without the means of the spring assisted switching mechanism.

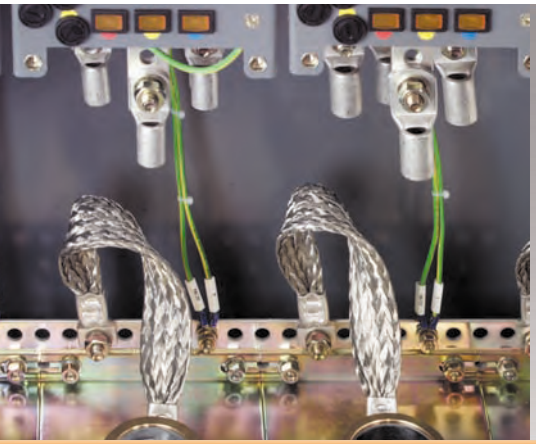
Durability

Fixed and moving contacts within the SAIF fuseway, carriers and busbar are silver-plated to give extended contact life. All non-metallic components are manufactured from flame retardant materials.

Future upgrades

Upgrades are easy. Plug-in features permit the addition or replacement of feeder circuits without the need for insulated tools.

SAIF: low voltage options



Easily accessible terminations at base of fuseway

As an assembled product

SAIF offers a range of low voltage selections for indoor and outdoor use

- Direct mounting via flange to transformer; or free-standing and cable connected
- Busbar systems and disconnectors up to 3200A
- Dual busbar systems with load shedding facilities
  - Essential busbar up to 1600A
  - Non-essential up to 1000A through contactor
- Choice of fuseway ratings: 400A, 630A or 800A
- Combined circuit breaker and fuseways incorporating
  - Moulded case circuit breakers up to 1600A
  - Air circuit breakers up to 3200A
- A wide selection of metering solutions and accessories
- Facilities for safe connection of standby generators

Industry standards

SAIF meets the following industry standards and has obtained approval from the Electricity Association:

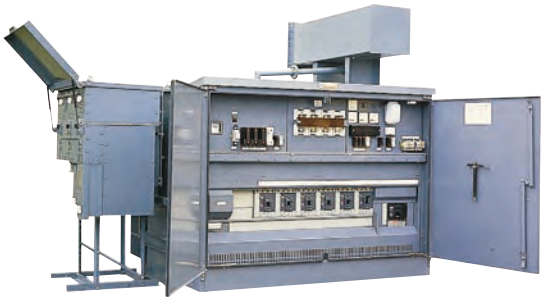
- EA technical specification 37-2 issue 4
- Safety and switching levels comparable to switchboard built to form 4 of IEC 60439-1
- Operator protection to IPXXB of IEC 60529
- Fault make, break switching certified to IEC 60947-3
- 16th Edition IEE regulations for switchgear forming part of an installation BS 7671: 2001
- Total quality assurance to ISO 9001
- Environmentally accredited to ISO 14001.

Package substations

One-stop… one contact… one complete package.

Merlin Gerin provides one-stop engineered packaged substations, tailored to customer requirements using products from our comprehensive range of distribution transformers, MV switchgear and LV equipment.

All of which can be managed by **Power**Logic software, that allows communication, monitoring and control, giving an 'intelligent' package substation solution.

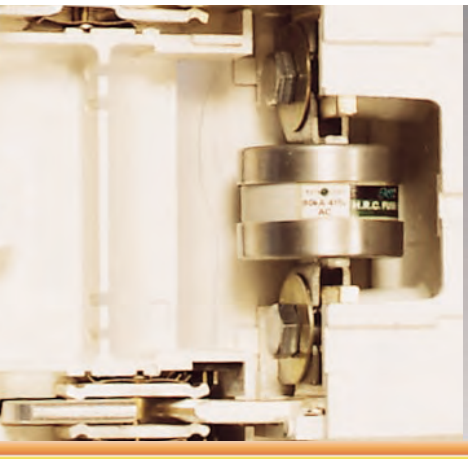


Substations are tailored to customer requirements using products from our comprehensive range of distribution transformers, MV switchgear and LV equipment.

Features and benefits

- Simple specification
- Factory assembled
- Variety of MV/LV options
- Flexible, tailored configurations to customer needs
- Single lift arrangements
- Directly mounted switchgear
- Choice of arrangements of terminations
- Operator protected
- Minimised costs

SAIF: fuse switching



The equipment consists of three phase fuseway moulding that accommodates busbar, fuse carriers and solid copper outgoing connections for cable termination

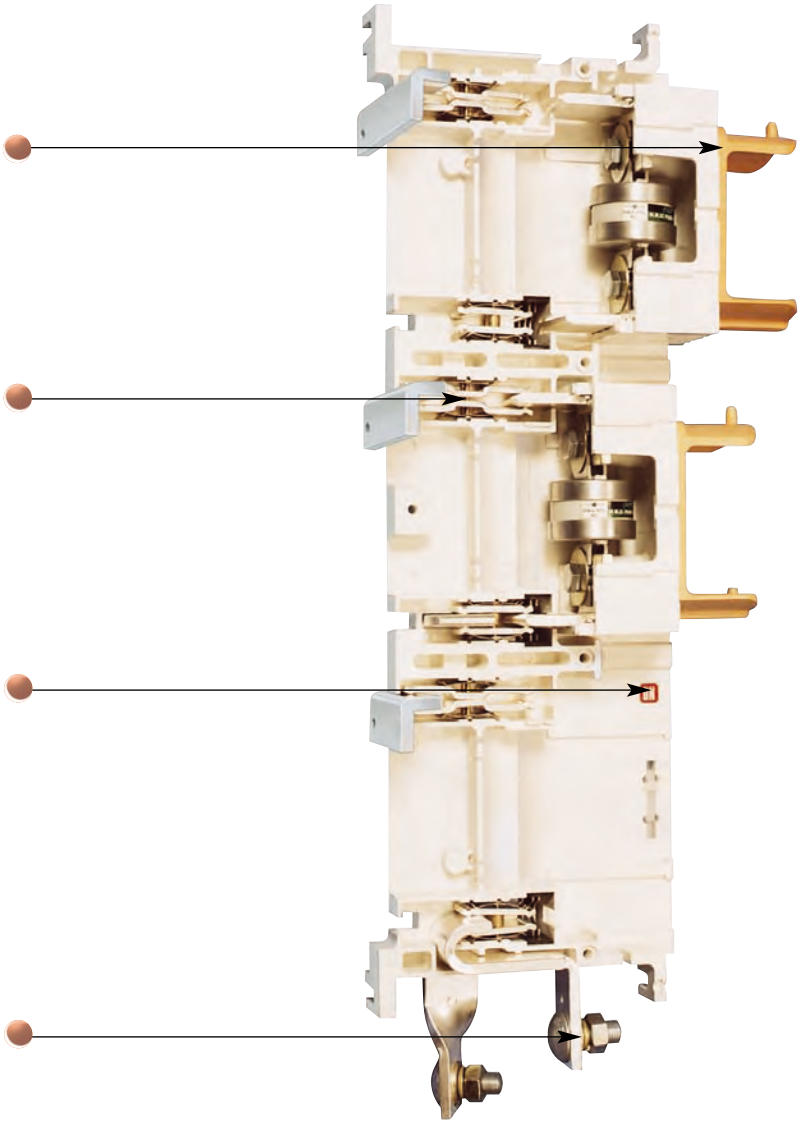
Sectionalised fuseway with type 630 BS fuse carriers ‘OFF’ (top), ‘ON’ (centre) and removed (bottom). ‘L’ section busbars at left.

Illustrates when the fuse is in the ‘OFF’ position interlock prevents it being inserted unless the switching mechanism is used.

Plug-in busbar contacts.

Indication labels ensure the position of any fuse carrier can be determined at a glance.

Solid copper outgoing connections can accommodate cable lugs or mechanical connectors.



Safety features

Segregation
Each fuse of the fuseway is segregated into a single pole fuse switch disconnector complete with arc chutes. Each outgoing cable termination is supplied complete with flexible PVC shroud.

Fault make/load break switching
Achieved by using the spring assisted mechanism, when fitted onto the fuseway moulding at each fuse position. This locks onto the bosses on the side walls and at the same time engages the fuse carrier drive arms. It cannot be operated until it is correctly positioned.

Cost effective low maintenance

- Choice of standard fuses
  Fuse carriers use standard distribution type gU with wedge tightening contacts IEC60269-2-1 section VI fuselinks.

- Durability
  The fixed and moving contacts within SAIF ways, carriers and busbar connections are silver plated for extended life and reduced maintenance.

- Reduced costs
  The switching mechanism can be stored with the unit, or issued to operators for use across several SAIF units.

- Future upgrades
  Plug-in features permit the addition or replacement of feeder circuits without the need for insulated tools.

Security

Full interlocking between the fuseway and the spring mechanism prevents any carrier being moved from ‘ON’ to ‘OFF’ position or vice versa except by use of the transferable switching mechanism.

SAIF fuse carriers

Type 630BS
92mm centres

Type 400BS
82mm centres

SAIF: features and operation

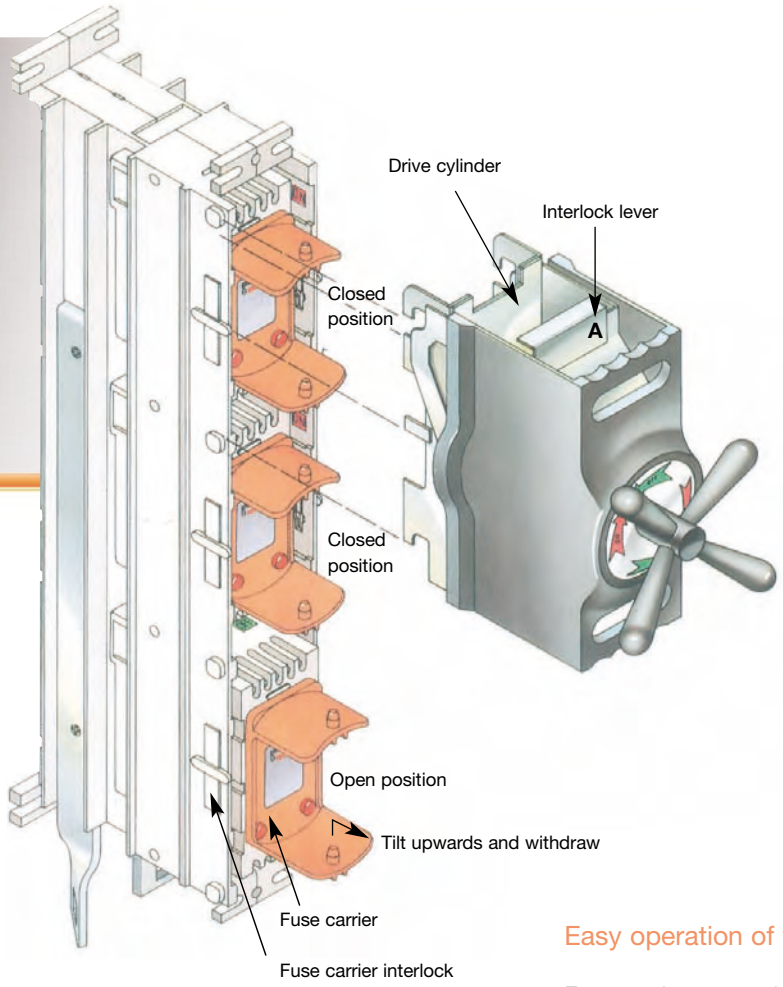
Flexible low maintenance solutions

SAIF switching system offers:

- Fault rating and on load switching
- Fault make and through fault up to 50kA
- Category AC22B of IEC 60947-3.

Proven technology

- Operator protection
  Minimum IPXXB under all operating conditions.
- Arc control
  De-ion grid per phase.
- Contacts
  Silver faced for extended life.
- Mechanical endurance
  10,000 operations on mechanism, 1,000 operations on fuse carrier/fuseway.
- Load monitoring of circuits
  A range of current transformers can be accommodated to permit tariff metering of individual feeder circuits
- SAIF carriers
  SAIF fuse carriers accept a standard distribution fuselink type gU, with wedge tightening contacts IEC 60269-2-1 section VI
  (If fuselinks are required they should be specified in the contract).
- Termination of outgoing cables
  Ideally situated at the base of the fuseway, all outgoing terminations are supplied with a push-on shroud to maintain IPXXB operator protection when final termination has been achieved.
- Testing and maintenance
  Testing is easily carried out without disturbance to the fuse carrier, with access gained via the front of the catch plate.
- Accessories
  A wide choice of padlocking, earthing devices and test plugs are available, see pages 22-24.



Easy operation of the switching mechanism

Fuse carriers are switched using the transferable independent manual spring assisted switching mechanism, operated as follows:

1 Hold mechanism top and bottom, and pull interlock lever in direction to A.

2 Move the mechanism forwards and down onto the locating bosses, drive cylinder engages the fuse carrier. The Interlocks on the fuse carrier will be released and position controlled by the drive cylinder.

3 Release the interlock lever to secure the mechanism, the handle can now be rotated.

4 To close circuit, rotate mechanism handle 90 degrees clockwise.

5 To open rotate anti-clockwise.

6 Reverse procedure for removal of mechanism.

SAIF: operation and disconnectors

Operating the disconnector

Fuse carriers are switched using the transferable independent manual spring assisted switching mechanism, operated as follows:

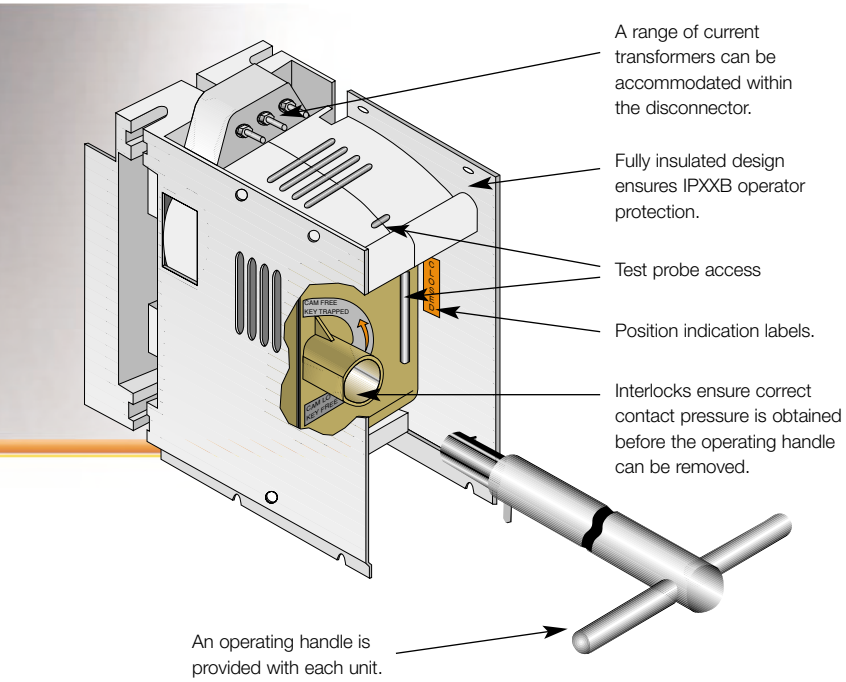
1 Insert operating handle and rotate 180 degrees anti-clockwise, releasing contact pressure.

2 With the handle still in position hinge the front down to the isolated position.

3 Rotate handle 180 degrees clockwise to lock disconnector open and free handle.

4 Remove the handle.

Note: to close a disconnector use the reverse procedure to opening.



SAIF disconnectors provide a point of isolation per phase. Manufactured as single-phase units, they are mounted as standard in a vertical three phase and neutral assembly. The disconnector can contain a C.T. for transformer load monitoring.

Protection from live conductors

Disconnectors are fully shrouded to protect the operator from live conductors. Safety is further enhanced by restricting the opening and closing of the unit by the use of a special insulated operating handle.

The disconnector and operating handle are fully interlocked to ensure the removal of the handle only when the contact is fully closed and locked closed, or fully open and locked open.

Features

- Type 3000 - Type 2000 - Type 1000
- Rated up to 3200A
- Standard plate tin (Suffix T) or silver-plated (Suffix S) refer to page 27 for free air ratings
- Fully shrouded to IPXXB, IEC 60529
- Cable connected or direct through flange to transformer
- Neutrals are rated at 50% of phase rating - as standard
- Horizontal configuration available for special applications
- For on load switching other options are available:
- SAIF fuseways up to 800A
- Moulded case circuit breakers up to 1600A
- Air circuit breakers up to 3200A
- Wide selection of current transformer ratios, class and burden - refer to page 27 for further information

SAIF: equipment types

Supplied as a range of products to suit LV requirements, SAIF offers easy upgrade for system needs.

SAIF is available as cabinets, pillars and boards in a range of sizes, types 2500, 1600 and 800, that determines the type and rating of disconnectors and busbars used within any particular unit.

Busbars do not rely on the outgoing SAIF ways for mechanical support as they are independently mounted and supported within the steel enclosure.

Plug-in contacts between the SAIF ways and busbar allow partly equipped units to be added to later. Operator protection is provided when these sections are not in use, by an integral blanking plate.

Outdoor fuse cabinet with choice of fuseways

Fuse cabinets offer a choice of up to seven outgoing fuseways with an incoming disconnector, or a combination of fuseways and mccb's up to 1600A.

SAIF enclosures and structural items are electrostatically treated to produce a superior gloss finish, complying fully with all industrial standards. The strong outdoor weatherproof enclosure is IP33 ingress protected and is only flange connected to the transformer.

For easy access, fuse cabinets have removable front cross members.

Outdoor feeder pillar with circuit breaker option

Flexibility is provided by the option of circuit breakers as incoming devices. Feeder pillars can be either transformer mounted with up to 15 outgoing SAIF fuseways or free-standing with 14 outgoing fuseways and cable connected.

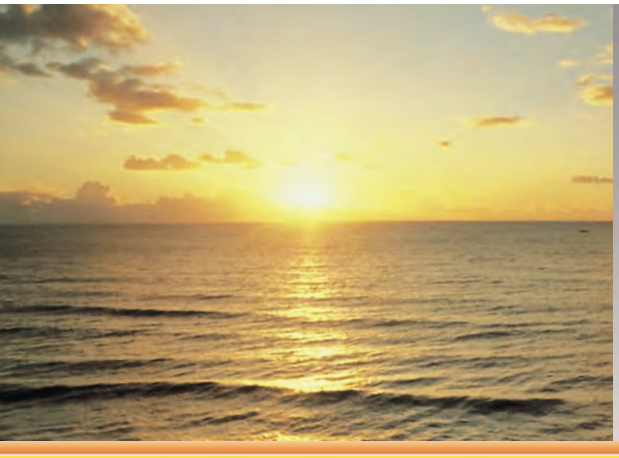
Feeder pillars are manufactured to IP33 ingress protection as standard with the option for IP54 through the use of door gaskets and filtered ventilation.

Indoor fuseboard with option of transformer, wall or floor mounted

Fully shrouded to provide IPXXB operator protection from live conductors, a fuseboard can be either transformer, wall, or floor mounted with the option for the fuseways to accept outgoing cables from either above or below. Fuseboards offer the flexibility of choice of instrumentation, accessories and incoming/outgoing circuit requirements.

Factory assembled products are customised to suit a diverse range of LV distribution applications, indoor and outdoor.

SAIF: the right fusegear for your application



New and replacement installations

There are two types of fusegear available from Merlin Gerin, that provide compliance with the 'Electricity at Work' Regulations. These are Shielded and SAIF type units.

There are significant differences between the two.

Shielded

This type of equipment will provide IPXXB protection with the doors of the pillar open and all the fuse handles in place. The major drawback of Shielded equipment is the operational limitations. Although it is possible to safely check the readings of any metering etc; for an operation as simple as changing fuses the operator is exposed to live copperwork. Insertion or removal of the fuse handle is reliant on the skill and dexterity of the operator to minimise contact arcing or resist the possible force a fault condition could produce. To avoid risk and guarantee compliance with regulation 14 of 'Electricity at Work', it is necessary to isolate the supply from the HV switchgear and ensure no back feeds exist, prior to removal of the fuse handle.

SAIF

Superior to all other types of fusegear in that it provides IPXXB operator protection in all operating conditions, that includes fuse replacement with the pillar live. The transferable, switching mechanism provides a proven fault make and through fault capability up to 50KA. It is fully interlocked to ensure correct on-load operation.

An operator opening the doors of SAIF equipment cannot accidentally touch live metal whether the fuses are switched to the 'ON' or 'OFF' position, completely removed, or whether the disconnector is open or closed. It is not necessary to isolate the HV supply or check for back feeding as with Shielded pattern equipment. As SAIF is the only fusegear that can be assumed to meet regulation 14 under all circumstances, in addition to its many other benefits, it is being selected for new and replacement applications.


Pendennis Castle


Hong Kong


Bristol Hospital

SAIF: choice, flexibility, protection

SAIF is increasingly being used with circuit breakers to provide greater flexibility for LV distribution.

With traditional substations, transformer overload protection is provided by the medium voltage unit on the primary side of the transformer. If the overload is one phase of the LV then the protection provided by the MV is minimal. Therefore in networks where loadings are not very predictable, this can be an unacceptable situation. An incoming circuit breaker can provide genuine overload protection and be able to switch the total LV load in a single, safe operation, whilst the circuit breaker protects the transformer from premature ageing due to persistent overloading.

Outgoing circuit breakers offer better flexibility and protection especially where a large LV supply is required.

Merlin Gerin range of air and moulded case circuit breakers are rated from 250A to 3200A when combined within the LV feeder pillar with SAIF fuseways and disconnectors.

Pendennis Castle, Falmouth, Cornwall

A popular tourist attraction managed by English Heritage, Pendennis Castle was built during the reign of Henry VIII. It was subsequently extended and remained in military use until the 1950s.

A Merlin Gerin SAIF 4-way free-standing outdoor feeder pillar, rated to 800A, has updated the castle's electrical distribution system, as part of a project to upgrade its electrical distribution, telecommunications and sub-distribution systems.

The feeder pillar feeds most parts of the castle, including an area called the Half Moon Battery and its observation post, used during World War II, and the Elizabethan East Bastion.

"Safety, quality of construction and ease of use were primary considerations in the choice of equipment," comments consulting engineer Alan Traynor of Hoare, Lee and Partners. "Flexibility was also a factor in that additional circuits can be readily added to the unit in the future, if required."

SAIF in all climates

SAIF is a worldwide solution, extensively used on Hong Kong Island where it ensures security of supply in a busy commercial centre.

Safe and reliable

Six SAIF feeder pillars have been installed in Bristol hospital, providing low voltage supplies to the hospital wards and operating theatres.

SAIF: MoD Defence Estates application

General existing installations

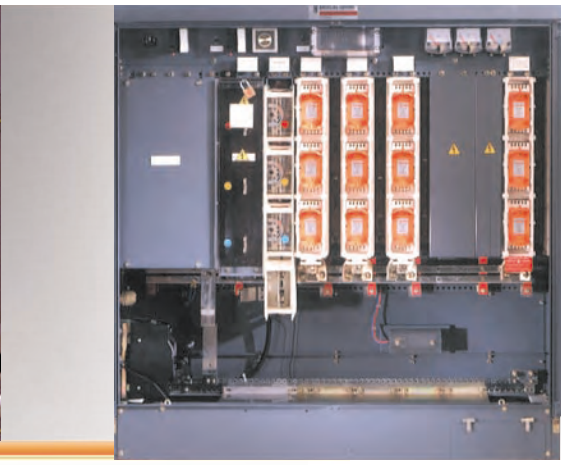
Many MoD Defence Estates have been supplied in the past with conventional designs of feeder pillars.

These are the most basic form of fusegear and expose the operator to live conductors when the equipment doors are open.

The introduction of the 'Electricity at Work' Regulations place greater restrictions when working on, or near live conductors (Regulation 14).

The effect of the Regulations has meant that to avoid the risk of prosecution in the event of an accident, the entire feeder pillar must be isolated and made dead before opening the doors.

Many MoD Defence Estates have had to replace the conventional designs of feeder pillars and choose Merlin Gerin SAIF for its optimum levels of supply.



Load shedding contactor pillar

Applications and requirements

SAIF has been used extensively by a large number of UK and overseas sites since its launch in 1984. Today, the wide product range covers most applications and requirements, with an Electricity Association approved design that conforms to MoD Defence Estates specification 039 fuse pillars.

The range comprises:

- Load shedding contactor pillars
- Ring pillars utilising SAIF ways, disconnectors, MCCBs or ACBs
- Pillars, boards and cabinets for general radial distribution
- Provision for inclusion within package substations

Unique design saves installation time

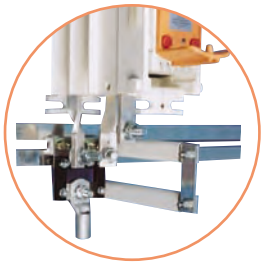
The load shedding contactor is supplied fitted within the main enclosure to reduce installation time. The contactor is fully segregated from all other circuits with earthed metal screens. The outgoing SAIF fuseways can be essential or non-essential busbars as required by means of a selector link. This unique Merlin Gerin design is such that IPXXB operator protection is maintained whilst selecting the appropriate busbar and without disturbing the fuseway or cable connections.

Load shedding contactor pillars

The low voltage pillars employ the same enclosures used for our standard range. The incoming supply cables bolt directly onto the SAIF disconnector which also provides IPXXB operator in all conditions i.e. open, closed and during operation.

Simple selection of essential or non-essential circuits, whilst IPXXB operator protection is maintained

SAIF: accessories



Bolted neutral link instead of direct cable connection to neutral busbar

Mechanical cable clamp instead of bolt for cable lug, for 3 or 4 core cables, 70 - 300mm²

PVC cable shrouds for use with cable lugs

PVC cable shroud for use with cable clamps

A wide range of accessories can be integrated to customise SAIF units to meet specific cabling and operational needs

Neutrals

One neutral terminal point is provided for each SAIF way, located on the neutral busbar assembly.

Horizontal movement of the terminal provides easier crossover of the cores, facilitated by direct connection of the normal cable to the neutral busbar. Removable neutral links can be supplied.

Colour

Dark Grey shaded 632 of BS 381C is supplied as standard. Other colours are available upon request.

Cable terminations

Blank gland plates are supplied as standard unless specified otherwise and/or in the absence of cable details. Cable terminations to suit all types and sizes of cable can be provided subject to the maximum sizes given on page 26.

Various termination arrangements are available that include split mechanical cable clamps, PVC shrouds, compression glands or wiping glands. Cable end sockets are not included, but can be supplied if specified.

Cabinets, pillars and boards are supplied with flexible PVC shrouds to provide individual shrouding and segregation for each terminal.

Sectionalised SAIF disconnector showing integral CT

SAIF way CT

Three phase padlocking device
Part no. PDI - fuse carriers in situ

Padlocking device
Part no.PDO - fuse carriers removed

Three phase incoming disconnector padlocking device.
Part no. PDT

Padlocking device.
Part no. PDP - single fuse carrier removed

Operating equipment

Storage brackets for the transferable fuse switch mechanism and the disconnector operating handle are incorporated in all units as standard. Door trays are also available for additional storage within an enclosure.

Street lighting

Comprising of a contactor and back-up fuses contained in a segregate compartment and controlled by either a time switch or photo electric cell.

Current transformers

Incoming and outgoing current transformers (CT's) are encapsulated in epoxy resin within moulded cases, complying with IEC60044 (pt1).
Test certificates indicating ratio error and phase angle are available upon request for classes 1.0 and 0.5. For information on ratio, class and burden see page 27.

Internal lights

Fuse protected with manual or door operated switches.

Anti-condensation heaters

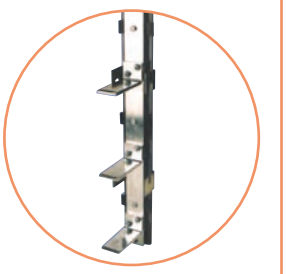
Supplied through a fuse with an option of manual or thermostatic control.

Padlocking devices

PDO: For padlocking feeder circuits with fuse carriers removed.
PDI: For padlocking feeder circuits with fuse carriers in situ. It has the advantage of retaining fuse holders when device is attached, preventing damage or loss of fuse holders when no suitable storage is available.
PDH: For padlocking horizontally mounted disconnectors. Can be fitted with disconnector open or closed.
PDV: For padlocking vertically mounted disconnectors. Can be fitted with disconnector open or closed. Padlocks not included.
PDP: For padlocking a single phase of a SAIF fuseway with carrier removed.
PDT: For padlocking all three phases of a vertical mounted disconnector in open position.

SAIF: accessories

TP6 attached to type 630 fuseway



Earthing device ED6

Incoming earthing device
INC-ED-SA

Instrument panel
To customer specification

Test plugs

For attaching test devices such as fault make MCCB's or other test equipment to outgoing cables and/or busbars. Supplied with a 2m cable.

Type	Application
TP4	Type 400 way
TP6	Type 630 way
TP6	Type 800 way

Earthing devices

Universal earthing devices offer busbar or circuit earthing on SAIF fuseway.

Application	Type	Fault rating
Type 400 fuseway ED4	18.0kA	0.5secs.
Type 630 fuseway ED6	35.5kA	0.5secs.
Type 800 fuseway ED6	35.5kA	0.5secs.

Incoming earthing devices

Incoming device allows for easy installation without the need for insulated tools to earth the incoming cable cores.

Busbar rating	Type
800A	INC-ED-SA 800
1600A	INC-ED SA 1600

This incoming earthing device can only be installed on fusegear manufactured to the DEO specification 039 fuse pillars manufactured after December 1998.

Instrument panels

Each unit is fitted with an integral instrument panel that can accommodate a variety of instruments and fittings. Where none is specified, the panel will be left empty.

SAIF: general technical information

SAIF fuseways

Fuseway types	800	630	400
Fuse carrier type	800BS	630BS	400BS
Current rating (A)	800	630	400
Operator protection	IPXXB	IPXXB	IPXXB
Minimum distance between centres of ways of the same rating (mm)	160	120	120
Approx. weight (kg)	10.0	9.7	8.0

Free air rating of SAIF fuseways

Type	Fuse fitted	Current rating (A) at ambient temperature (°C)						
		35°	40°	45°	50°	55°	60°	65°
800BS	800A	800	770	730	685	640	595	540
630BS	630A	630	630	625	600	570	535	490
400BS	400A	400	390	370	350	330	305	275

SAIF disconnectors

Details	Type					
	3000S	3000T	2000S	2000T	1000S	1000T
Rated insulation voltage (V)	690	690	690	690	690	690
Free air current rating-single phase IEC 60947-3 and BSEN 60947-3	3752	3367	2720	2520	1595	1455
Short time current withstand (kA)	60 for 1.0s 40.0 for 3.0s		60 for 1.0s 35.5 for 3.0s		35.5 for 1.0s 18.0 for 3.0s	
Degree of protection BS 60529	IPXXB		IPXXB		IPXXB	
Isolation distance (mm)	19		19		19	
Weight, single pole (kg)	8.7		6.4		4.0	

SAIF: general technical information

General technical specification of SAIF fuseways

Details	800BS	630BS	400BS
Rated insulation voltage (V)	690	690	690
Rated operational voltage (V)	415	415	415
Rated operational current to category of duty AC22B of IEC 60947-3 and BSEN 60947-3	800	630	400
Rated operational performance in accordance with AC22B of IEC 60947-3 and BSEN 60947-3 Tested load make and break current (A)	2400 at 436V & 0.65 p.f.	1890 at 456V & 0.65 p.f.	1200 at 485V & 0.65 p.f.
Rated fused short circuit current Through fault and make onto fault Single pole IEC 60947-3 and BSEN 60947-3	50	50	50
Rated fused short circuit current Three phase through fault IEC 60439 (kA)	50	50	50
Rated fuse short circuit making capacity with solid links instead of fuses IEC 60947-3 and BSEN 60947-3	25	25	18
Rated fuse short time withstand current with solid links instead of fuses IEC 60947-3	25 for 0.5 seconds	25 for 0.5 seconds	18 for 0.5 seconds
Degree of protection, IEC 60529	IPXXB	IPXXB	IPXXB
Maximum cable to be accommodated with standard terminals (mm^2)	2 x 4C240 1 x 4C300 1 x SC630	1 x 4C300	1 x 4C300
Minimum distance between centre of ways with same rating (mm)	200	120	120
Minimum distance between centre of ways of same rating with bolted neutral link (mm)	240	140	140
Isolation distance (double break) (mm)	12+12	12+12	12+12

SAIF carriers

Carrier types	800BS	630BS	400BS
Current rating (A)	800	630	400
Fuse type	IEC60269 -2-1 SECT VI (92mm)	IEC60269 -2-1 SECT VI (92mm)	IEC60269 -2-1 SECT VI (82.5mm)
Fuse range	20-800	20-630	20-400
Weight (kg)	1.8	1.4	1.0

Free air rating of SAIF disconnectors

Type	Current rating (A) at ambient temperature (°C)						
	35°	40°	45°	50°	55°	60°	65°
3000S	3752	3597	3437	3271	3098	2917	2728
3000T	3367	3224	3076	2921	2759	2588	2408
2000S	2720	2630	2530	2420	2300	2180	2030
2000T	2520	2420	2310	2200	2060	1920	1760
1000S	1595	1540	1485	1420	1340	1260	1170
1000T	1455	1400	1330	1265	1200	1125	1045

Current transformers: ratios, class and burden

Available Not available

Ratio---/5 Application			Burden (VA) at accuracy class																						
			Class 5.0					Class 3.0					Class 1.0					Class 0.5						
Ways	Disconnectors		2.5	5.0	7.5	10	15		2.5	5.0	7.5	10	15		2.5	5.0	7.5	10	15		2.5	5.0	7.5	10	15
200																									
	200	200/400																							
250																									
	250	250/500																							
300																									
	300	300/600																							
400																									
	400	400/800																							
500																									
	500	500/100																							
600																									
	600	600/1200																							
800																									
	800																								
		800/1600																							
	1000																								
		1000/2000																							
	1200																								
	1600																								
	2000																								
		1200/2400																							
	2400																								
	3000																								

SAIF: general technical information

Rating of SAIF equipment

Equipment arrangement	Enclosure protection	Equipment type	Disconnector	Current rating (A) at ambient temperature (°C)					
				35°	40°	45°	50°	55°	60°
Pillar	IP33	2400*†	3000S	3160	3037	2910	2780	2646	2508
			3000T	2780	2646	2508	2365	2216	2060
		1600	2000S	2100	2000	1900	1790	1650	1510
			2000T	1805	1700	1600	1490	1375	1260
		800	1000S	1340	1290	1240	1150	1065	970
			1000T	1185	1125	1065	1000	935	860
	IP54	2400*	3000S	2814	2693	2570	2444	2314	2181
			3000T	2444	2314	2181	2044	1903	1756
		1600	2000S	1950	1880	1780	1635	1550	1400
			2000T	1730	1635	1540	1425	1300	1175
		800	1000S	1220	1135	1065	1000	945	890
			1000T	1065	1010	955	905	850	800
Board	IPXXB	2400*	3000S	3235	3091	2943	2790	2631	2466
			3000T	2871	2733	2591	2433	2290	2130
		1600	2000S	2250	2130	2025	1920	1815	1715
			2000T	1920	1815	1715	1616	1520	1420
		800	1000S	1400	1340	1285	1215	1110	1010
			1000T	1225	1165	1100	1035	975	910
Cabinet	IP33	1600	2000S	2150	1975	1830	1705	1600	1510
			2000T	1705	1600	1510	1425	1350	1270
		800	1000S	1220	1105	1025	960	900	835
			1000T	1050	985	935	880	825	770

* Ratings apply for incoming disconnector in centre only.

† Higher ratings available upon request.

General technical information

Equipment arrangement		Pillars			Boards			Cabinets		
Equipment type		2400	1600	800	2400	1600	800	2500	1600	800
Enclosures and protection BSEN 60529 & IEC 60529										
Weatherproof, vermin proof & ventilated	IP33	Standard			No			Standard		
Dust proof with filtered ventilation	IP54	Optional			No			No		
Indoor mounting frame	IPXXB	No			Standard			No		
Personnel protection		IPXXB			IPXXB			IPXXB		
Disconnectors and mounting										
Incoming disconnector	type	3000	2000	1000	3000	2000	1000	3001	2001	1001
Incoming neutral	type	1500	1000	500	1500	1000	500	1500	1000	500
Mounting vertical (V) horizontal (H)		V	V	V	V	V	V	V	V	V
Connection flange (F) cable (C)		F or C	F or C	F or C	F or C	F or C	F or C	F only	F only	F only
Rated short time current withstand current IEC 60439										
Flange connected 1 second	(kA)	50	50	35.5	50	50	35.5	**50**	**50**	**35.5**
Flange connected 3 second	(kA)	–	35.5	18	–	35.5	18	**50**	**50**	**18**
Cable connected 1 second	(kA)	60	60	35.5	60	60	35.5	–	–	-
Cable connected 3 second	(kA)	40	35.5	18	40	35.5	18	–	–	-
Minimum creepage & clearance distance										
With type 800 ways phase to phase	(mm)	25			25			25		
With type 800 ways phase to earth	(mm)	19			19			19		
With type 630 ways phase to phase	(mm)	25			25			25		
With type 630 ways phase to earth	(mm)	19			19			19		
With type 400 ways phase to phase	(mm)	19			19			19		
With type 400 ways phase to earth	(mm)	19			19			19		
Standards listed are applicable to all types and ratings										
Standards are complied with:	BSEN	60439-1			60439-1			60439-1		
	IEC	60439-1			60439-1			60439-1		
	EA	37-2			37-2			37-2		
Maximum size of disconnector cable (mm^2) incoming										
Terminal screws: phase & neutral (M16)		14xSC960	7xSC960	4xSC960	14xSC960	7xSC960	4xSC960	–	–	–
		–	2x4C400	1x4C400	–	2x4C400	1x4C400	–	–	–
		–	–	2x4C185	–	–	2x4C185	–	–	–
with special connections		–	4x4C300	–	–	4x4C300	–	–	–	–
Maximum size of outgoing fuseway cable (mm^2)										
Type 800 way (terminal screws: phase M16 & neutral M12)	(mm^2)	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630	4C300 SC630
Type 630 way (terminal screws: phase M16 & neutral M12)	(mm^2)	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300
Type 400 way (terminal screws: phase M16 & neutral M12)	(mm^2)	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300

All terminations are single fixing per cable lug

SAIF: selection guide and mountings - feeder pillars

SAIF Feeder Pillar - Standard Distribution

	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector					
No of doors	A	B	2500A Busbar		1600A Busbar		800A Busbar	
Cable Connected			PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing
1	740	710	N/A	N/A	N/A	1	2	3
2	1020	990	N/A	2	2	4	4	5
2	1300	1270	4	4	6	6	7	7
2	1580	1550	6	6	8	8	9	10
2	1860	1830	7	8	10	11	11	12
2	2140	2110	9	10	12	13	13	14

	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with direct 'F' type flange connected disconnector					
No of doors	A	B	2500A Busbar		1600A Busbar		800A Busbar	
Flange Connected			PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing
1	740	710	4	4	4	4	4	4
2	1020	990	6	6	6	6	6	6
2	1300	1270	8	8	8	8	8	8
2	1580	1550	10	11	10	11	10	11
2	1860	1830	12	13	12	13	12	13
2	2140	2110	14	15	14	15	14	15

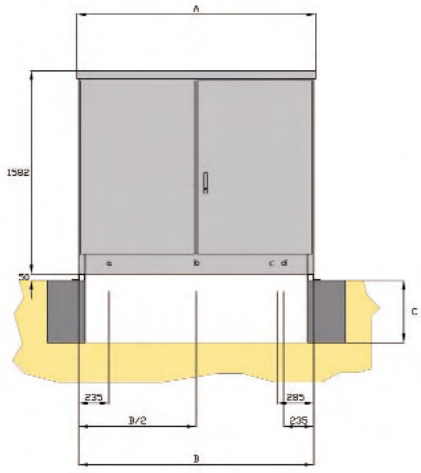
SAIF Feeder Pillar to DEO specification 039 Standard Distribution - single busbar

	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector			
No of doors	A	B	1600A Busbar		800A Busbar	
Cable Connected			PCC 630A outgoing	PCR & PCL 630A outgoing	PCC 630A outgoing	PCR & PCL 630A outgoing
1	740	710	N/A	N/A	N/A	2
2	1020	990	2	3	3	4
2	1300	1270	4	5	5	6
2	1580	1550	6	7	7	8
2	1860	1830	8	9	9	10
2	2140	2110	10	11	11	12

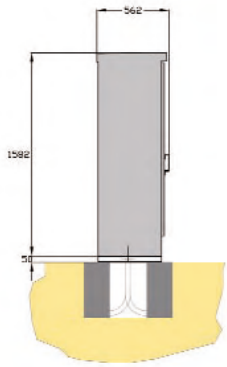
	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with direct 'F' type flange connected disconnector			
No of doors	A	B	1600A Busbar		800A Busbar	
Cable Connected			PCC 630A outgoing	PCR & PCL 630A outgoing	PCC 630A outgoing	PCR & PCL 630A outgoing
1	740	710	2	2	2	2
2	1020	990	4	4	4	4
2	1300	1270	6	6	6	6
2	1580	1550	8	8	8	8
2	1860	1830	10	10	10	10

SAIF Load shedding feeder pillar to DEO specification 039 - essential and non essential busbars

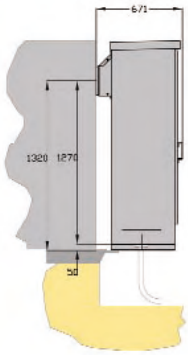
	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector	
No of doors	A	B	1600A Essential Busbar	800A Essential Busbar
Cable Connected			800A or 1000A Non essential busbar	250A up to 800A Non essential busbar
			PCL 630A outgoing	PCL 630A outgoing
1	740	710	N/A	N/A
2	1020	990	N/A	N/A
2	1300	1270	2	3
2	1580	1550	4	5
2	1860	1830	6	7
2	2140	2110	8	9



Front View

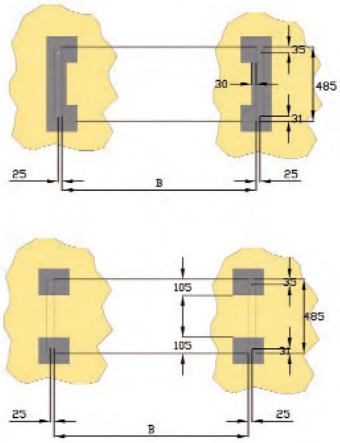


End View
cable connected

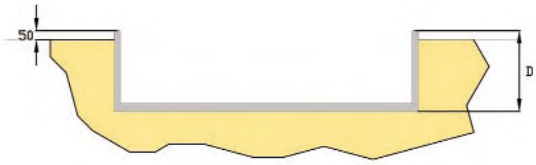


End View
flange connected

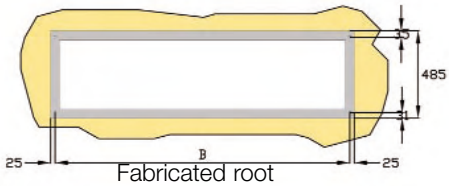
Foundations
Supplied by customer



Front



Fabricated root
(optional extra)



Fabricated root
(optional extra)

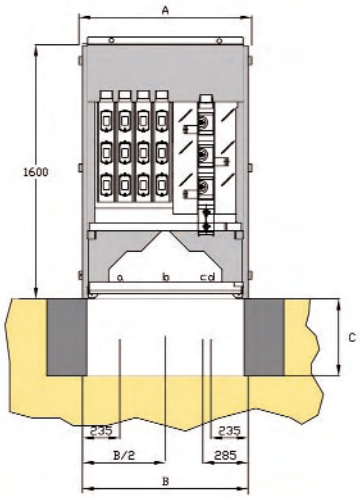
Cable connected		Flange connected	
Type	Details	Type	Details
PCC	Disconnector at b	PFC	Flange at a
PCR	Disconnector at d	PFR	Flange at c
PCL	Disconnector at a		

SAIF: selection guide and mountings - fuseboards

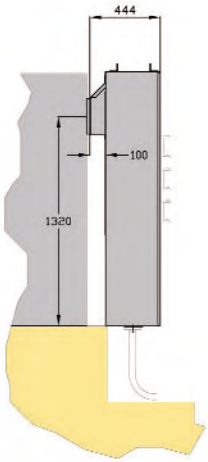
SAIF Fuseboards - Standard Distribution

Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector					
A	B	2500A Busbar		1600A Busbar		800A Busbar	
Cable Connected		PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing
740	710	N/A	N/A	N/A	1	2	3
1020	990	N/A	2	2	4	4	5
1300	1270	4	4	6	6	7	7
1580	1550	6	6	8	8	9	10
1860	1830	7	8	10	11	11	12
2140	2110	9	10	12	13	13	14

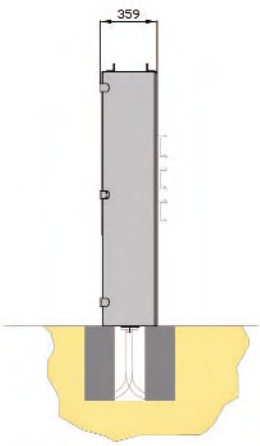
Dimensions (mm)		Maximum number of outgoing SAIF fuseways with direct 'F' type flange connected disconnector					
A	B	2500A Busbar		1600A Busbar		800A Busbar	
Flange Connected		PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing
740	710	4	4	4	4	4	4
1020	990	6	6	6	6	6	6
1300	1270	8	8	8	8	8	8
1580	1550	10	11	10	11	10	11
1860	1830	12	13	12	13	12	13
2140	2110	14	15	14	15	14	15



Front View

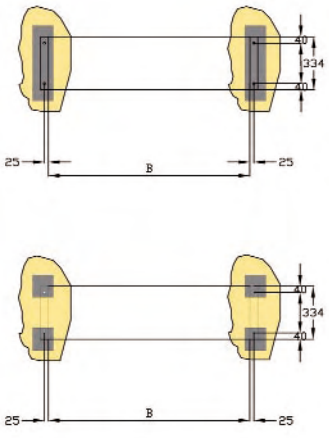


End View
cable connected



End View
flange connected

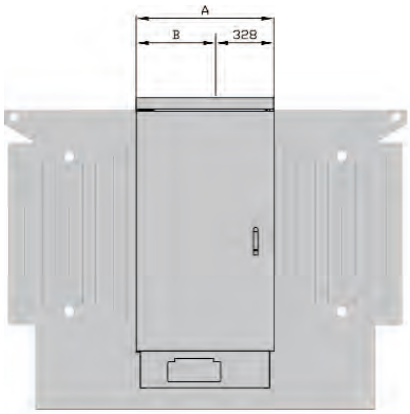
Foundations
Supplied by customer

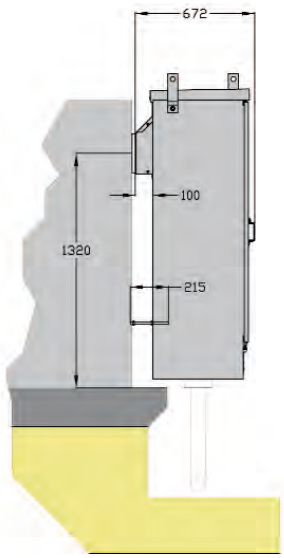


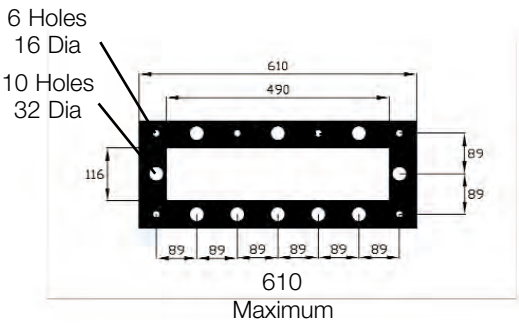
SAIF: selection guide and mountings - fuse cabinets

SAIF Fuse Cabinets

	2500A Busbar	1600A Busbar			800A Busbar
Type	2500 CFR	1600 CFR	1600 CFR	1600 CFR	800 CFR
Dims A	1036	1036	776	656	656
Dims B	685	685	425	328	328
Dims C	363	363	363	363	363
Max No of 630A outgoing ways	7	7	5	4	4







610
Maximum
'F' Type flange

SAIF: key and information required

Key

Enclosure
P - Outdoor feeder pillar
B - Indoor fuseboard
C - Outdoor fuse cabinet

Incoming Connections
C - Cable connections
F - Flange mounted

Disconnector / flange position
C - Incoming centre of unit
R - Incoming right of unit
L - Incoming left of unit

Information required

For enquires or order specification, please include as much of the following information as possible:

Format and rating

- Pillar, board or cabinet
- Type 2400, 1600 or 800
- Cable or flange connected
- Central or off-set

SAIF ways

- Number of ways
- Future way spaces
- Type 800, 630 or 400

Cables

- Size and type
- Glands required

Auxiliaries

- Instrument and CTs
- Interior light
- Socket outlet
- Space heater
- Street lighting, etc

Circuit breakers

- Incoming and outgoing MCCB's up to 1250A,
- ACB's up 3200A

Protection unit

Notes: Applies to standard units incorporating disconnectors and fuseways only.

– Outline drawings of individual requirements are available upon request.

– All details and dimensions are for guidance and subject to confirmation at the time of contract.

Nationwide support on one number - call the Customer Information Centre on

0870 608 8 608

Fax 0870 608 8 606

Schneider Electric's local support

Schneider Electric is committed to supporting its customers at every stage of a project. Our 180 sales engineers, the largest dedicated sales force in the UK electrical industry, operate from 4 customer support centres.

Our sales engineers are skilled at assessing individual requirements and combined with the expert support of our product specialists, will develop the most effective and economical answer taking relevant regulations and standards fully into account.

To access the expertise of the Schneider Electric group, please call 0870 608 8 608. Each customer support centre includes facilities for demonstrations and training, and presentation rooms fully equipped with audio visual and video, providing excellent meeting facilities.

Merlin Gerin

Merlin Gerin is a world leader in the manufacture and supply of high, medium and low voltage products for the distribution, protection, control and management of electrical systems and is focused on the needs of both the commercial and industrial sectors. The newly launched VDI Network Solutions offer provides flexible, configurable ethernet systems for all communication needs.

Square D

Square D is a total quality organisation and its business is to put electricity to work productively and effectively, protecting people, buildings and equipment. Its low voltage electrical distribution equipment, systems and services are used extensively in residential and commercial applications.

Telemecanique

Telemecanique is a UK market leader and world expert in automation and control. It provides complete solutions, with its range of components, Modicon range of high technology programmable controllers (PLCs), multiple fieldbus and ethernet communication networks, HMI, motion control systems, variable speed drives and communications software. In addition, it offers power distribution through prefabricated busbar trunking.

Local customer support centres

Scotland
Schneider Electric Ltd
Unit 18
Claremont Centre
112a Cornwall Street South
Kinning Park
Glasgow G41 1AA

South West
Schneider Electric Ltd
PO Box 41
Langley Road
Chippenham
Wiltshire SN15 1JJ

North West
Schneider Electric Ltd
First Floor
Market House
Church Street
Wilmslow
Cheshire SK9 1AY

Product showrooms

Industrial systems and solutions showroom
Schneider Electric Ltd, University of Warwick Science Park, Sir William Lyons Road, Coventry CV4 7EZ

Building systems and solutions showroom
Schneider Electric Ltd, Stafford Park 5, Telford, Shropshire TF3 3BL

Energy and Infrastructure systems and solutions showroom
Schneider Electric Ltd, 123 Jack Lane, Hunslet, Leeds LS10 1BS

Schneider Electric

member of voltimum .co.uk

www.schneider-electric.co.uk