SAIF

Switched and insulated fusegear
For indoor/outdoor low voltage distribution
up to 3200A

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SAIF: an introduction

Schneider Electric SAIF offers a unique range of switchable fusegear, providing low voltage distribution for applications up to 3200A. Higher ratings available on application.

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, and intelligent controls.

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. We offer a full range of metering and monitoring solutions scalable from single metering breakers to smart panel and remote online enterprise wide power management solutions.

The market leader in fusegear, offering optimum levels of safety

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

Typical SAIF assembles comprise an incoming disconnectors and outgoing SAIF ways. Other combinations are frequently provided, eg; incoming SAIF disconnectors switch, incoming circuit breaker and combinations of outgoing circuit breakers and SAIF ways.

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.

Fault make, load break switching SAIF ways

SAIF achieves fault make, load break switching with the use of a portable,independent manual switching mechanism, providing through-fault capability up to 63kA. SAIF eliminates the need for isolation of the HV supply.

Offering easy operation, the robust switching mechanism is 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 operated 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 use 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: offers significant benefits

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 1600
  > 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 Electrical Network Association (ENA):

- ENA technical specification 37-2 issue 5
- Safety and switching levels comparable to switchboard built to form 4 of IEC 61439-2
- Operator protection to IPXXB of IEC 60529
- Fault make, break switching certified to IEC 60947-3
- Total quality assurance to ISO 9001
- Environmentally accredited to ISO 14001.

Package substations

One-stop… one contact… one complete package.

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

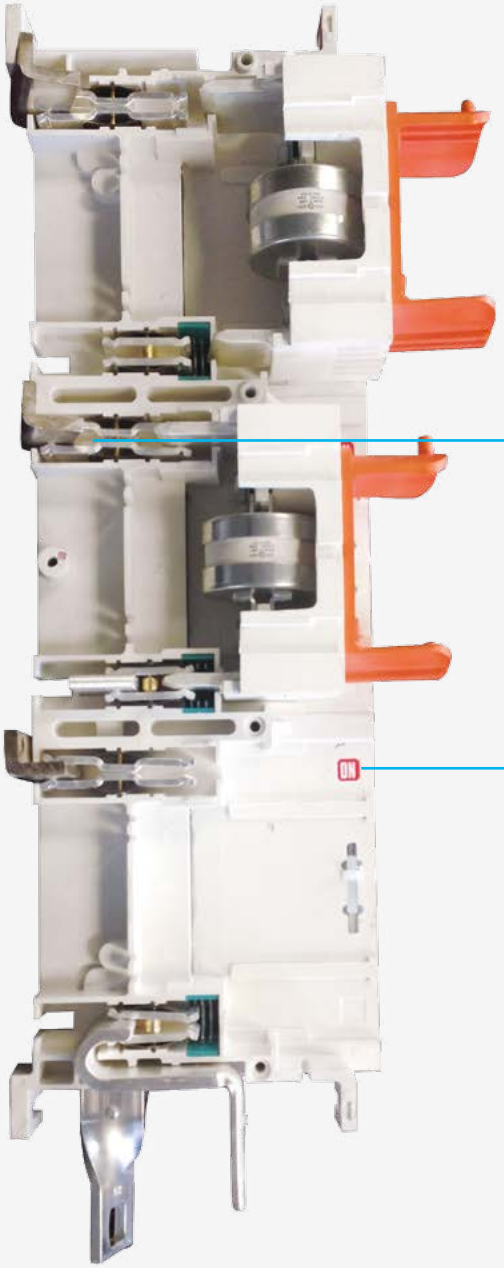
All of which can be managed by PowerLogic software, that allows communication, monitoring and control, giving an 'smart' package substation solution.

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.



Plug-in busbar contacts.

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

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.

Cost effective low maintenance

Choice of standard fuses

Fuse carriers use standard distribution type gU with wedge tightening contacts IEC60269-2 section 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.

Safety features

Segregation

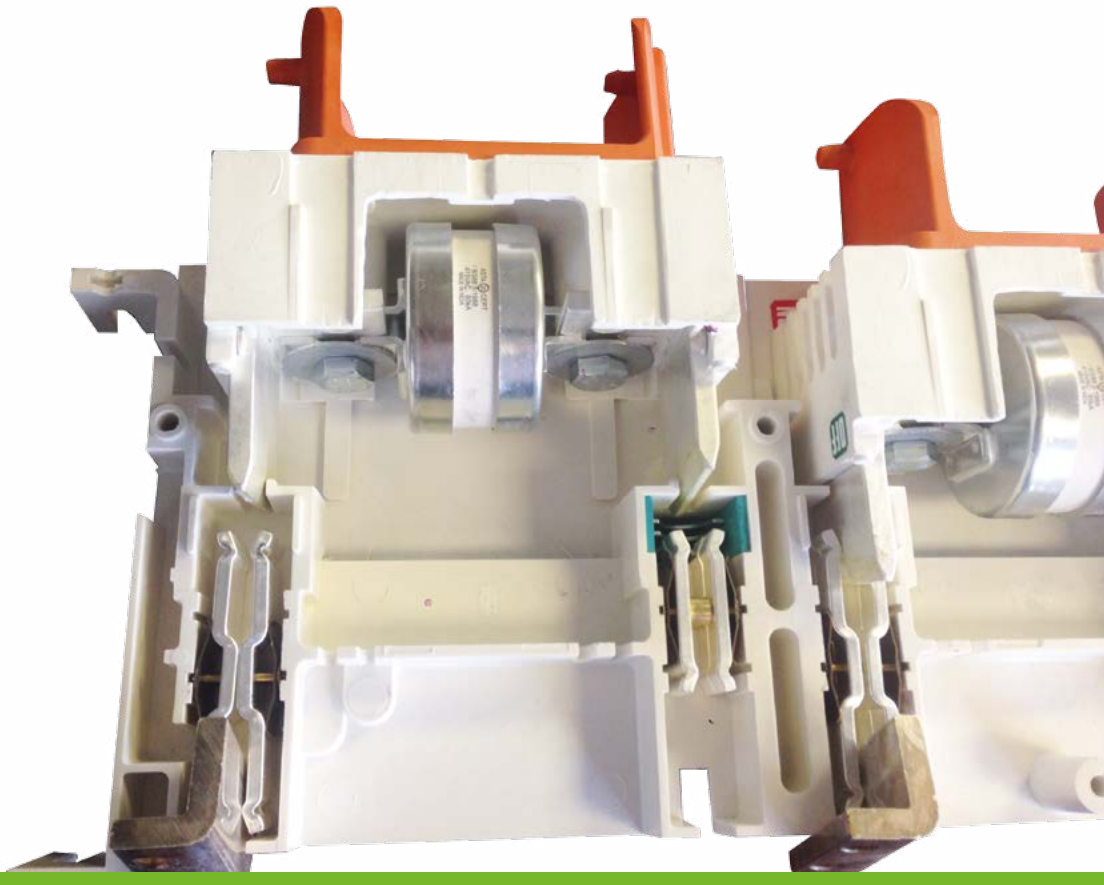
Each fuse of the fuseway is segregated into a single pole fuse switch disconnector complete with arc chutes. Each outgoing cable termination is supplied complete with flexible PVC shroud.

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.

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.



Incoming disconnectors and switch disconnectors

– two dedicated, cost efficient incoming devices.

Schneider Electric's range of disconnectors provide operator protection to IPXXB in all operating conditions

Assembled from single unites as either a TP / TP&N horizontal or vertical arrangement the compact and flexible design has enhanced ratings and can accommodate an integral CT for transformer load monitoring

Incoming disconnector

- Off-load disconnector used to provide a visible point of isolation from the incoming transformer supply
- Operator protection from the live conductors to IPXXB in closed, open and transitional positions
- Special insulated tool to operate the disconnector
- Disconnector and insulated handle fully interlocked to ensure that the disconnector cannot be left in a transient position
- Operational integral current transformers for monitoring transformer load
- Vertical and horizontal configurations available as either three pole or three pole and neutral positions
- Neutral link is rated at 50% that of the phase rating as standard, full size neutrals available upon request.

Incoming switch disconnector

- On load switch that can be used in conjunction with the generator backup for a 'no break' changeover to generator and vice-versa
- Certified manually dependent switching capability
- Operator protection from live conductors to IPXXB in 'on', 'off' and transitional positions
- Special insulated tool to operate the switch disconnector
- Switch disconnector and insulated handle fully interlocked to ensure that the switch disconnector cannot be left in a transient position.
- Optional integral current transformers for monitoring transformer load
- Vertical and horizontal configurations available as either three pole or three pole and neutral assemblies
- Neutral link is rated at 50% that of the phase rating as standard, full size neutrals available upon request.

SAIF way: features & operation

Flexible low maintenance solutions

SAIF switching system offers:

- Fault making and on load switching
- Fault make and through fault up to 63kA
- Category AC22B of IEC 60947-3.

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

(If fuselinks are required they should be specified in the contract).

Termination of outgoing cables

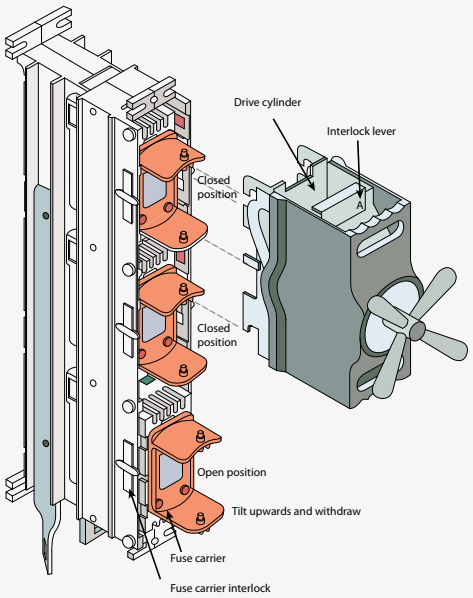
Ideally situated at the base of the fuseway, all outgoing terminations are supplied with a push-on shroud to maintain IPXXB operator protection when final termination has been achieved.

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
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 of disconnectors and disconnector switches

Operating the disconnector or disconnector switch

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

- Insert operating handle and rotate 180 degrees anti-clockwise, releasing contact pressure.
- With the handle still in position hinge the front down to the isolated position.
- Rotate handle 180 degrees clockwise to lock disconnector open and free handle.
- To close circuit, rotate mechanism handle 90 degrees clockwise.
- Remove the handle.

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

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.

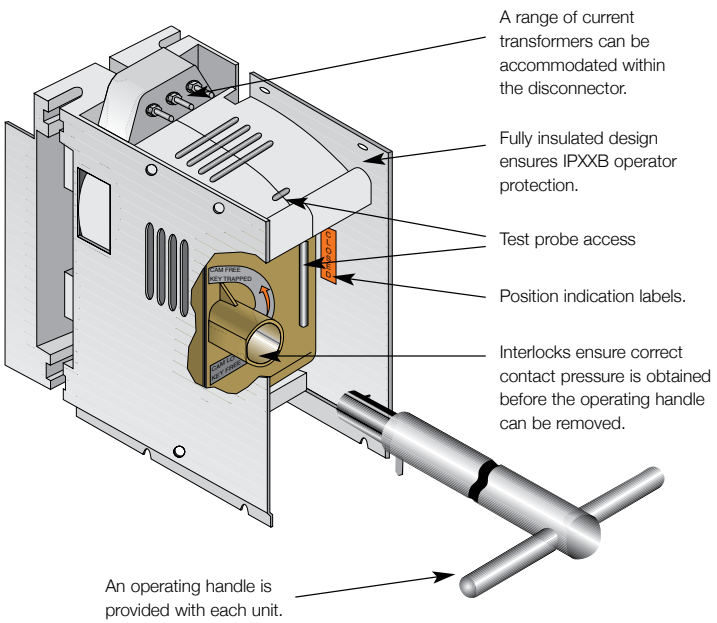
The disconnector and operating handle are fully interlocked to ensure the removal of the handle only when the contact is fully closed and locked closed, or fully open and locked open.

Features

- 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
- Option of 100% rated neutral
- 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 disconnectors provide a point of isolation per phase.

Manufactured as single-phase units, they are mounted as standard in a vertical three phase. The disconnector can contain a C.T. for transformer load monitoring.



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 or circuit breaker

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.

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 unacceptable. An incoming circuit breaker can provide genuine overload protection for the transformer and be able to switch the total LV load in a single, safe operation. 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. Schneider Electric's 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 Schneider 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."

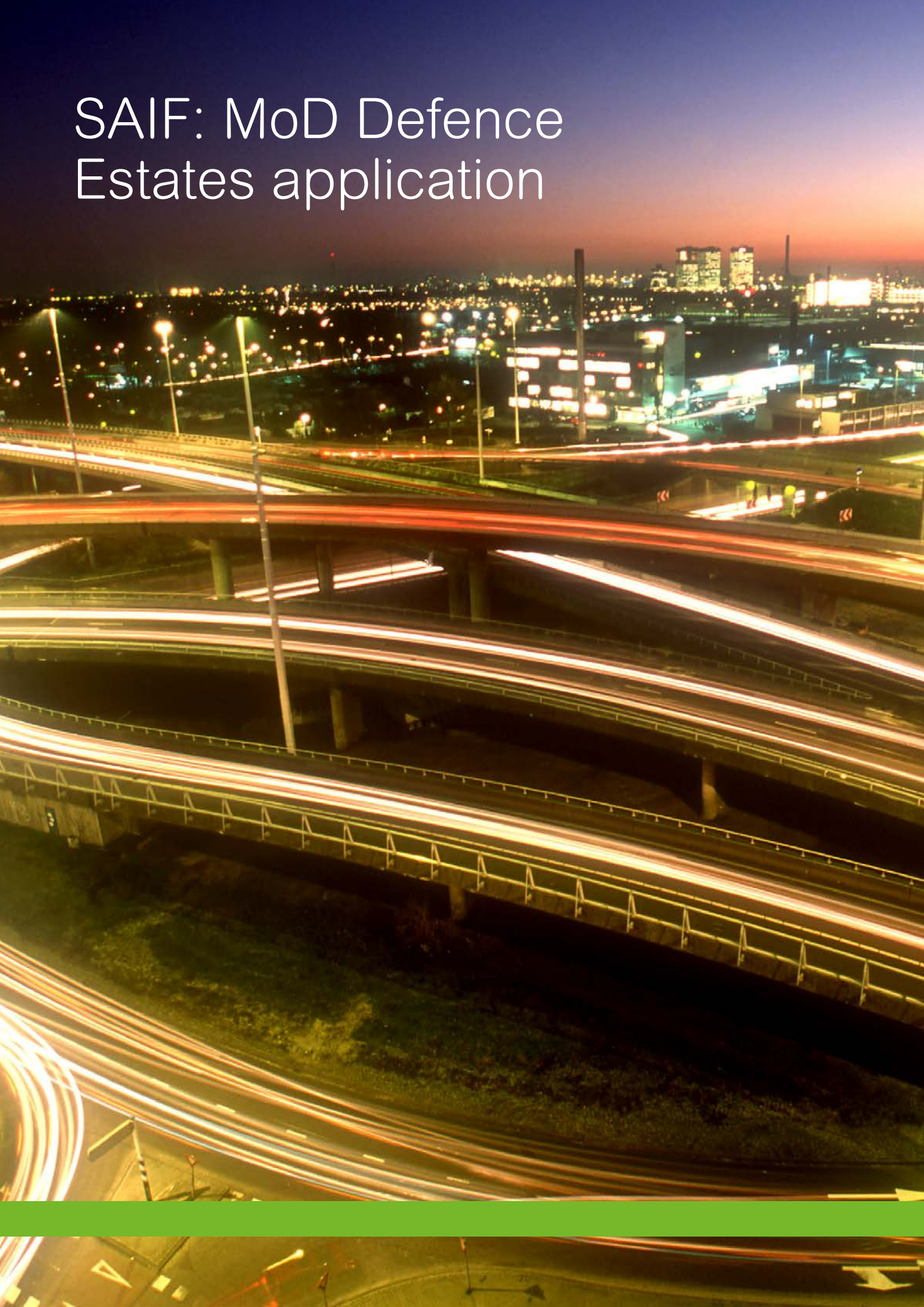
SAIF in all climates

SAIF is a worldwide solution, extensively used on Hong Kong 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 Schneider Electric SAIF for its optimum levels of supply.

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 Networks 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 connected to the 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

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.

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. Supplemented unit rigid polycarbonate screens.

Accessories examples include:

- 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 - 300mm^2
- PVC cable shrouds for use with cable lugs
- PVC cable shroud for use with cable clamps

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 polyurethane resin within moulded cases, complying with IEC61869-2.

Test certificates indicating ratio error and phase angle are available upon request for classes 1.0, 0.5 and 0.5s. 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 padlocks not included

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.

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.

Accessories continued

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.

Accessories examples include:

- TP6 attached to type 630 fuseway
- Earthing device ED6
- Incoming earthing device INC-ED-SA
- Instrument panel To customer specification

Smart Panels

Data acquisition for switched and insulated fusegear

SAIF pillars can accommodate a multitude of monitoring and remote operating facilities, particularly with circuit breakers. Examples of this include smart panel, which can be fully connected directly to the company IT network, to help your customers improve their energy performance.

Smart Panels digitized by Enerlin'X

1 Measure

Embedded and stand-alone metering & control capabilities

2 Connect

> Integrated communication interfaces

> Ready to connect to energy management platforms

3 Save

> Data-driven energy efficiency actions

> Real time monitoring and control

> Access to energy and site information through on-line services

5 types of information

To determine the equipment required according to the information which will be useful to your customer, we can classify this information by making an analogy with a car.

Metering

This is the car's odometer.

Here, the circuit breakers indicate the electricity consumption.

Measurement

This is the speed indicator. Your customer has a real-time indication of their electricity consumption and can track its rise or fall.

Quality

This is the rev counter. For the same electricity consumption, the installation may be over-used or under-used just like an engine over-revving or under-revving.

Availability

These are the warning lights for the battery, tyre wear, or even the fuel gauge. If one of these lights up, a maintenance operation is required.

Controls

These are the steering wheel levers. Just like the lights, horn, indicators, etc., signals from this control will switch the loads on or off.

Two ways of accessing information

- Directly via the front panel

- Remotely via the company IT network.

Acti 9

Data acquisition

Metering	Measurement	Quality	Availability (states/statuses)	Control
			■	
				■
■				

Compact NSX 100-630

Data acquisition

Metering	Measurement	Quality	Availability (states/statuses)	Control
	■			
	■		■	
	■		■	■
			■	■

Compact NS Masterpact NT/NW

Data acquisition

Metering	Measurement	Quality	Availability (states/statuses)	Control
	■			
	■			■
	■			
	■			■

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

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	63	63	63
Rated fused short circuit current Three phase through fault IEC 60439 (kA)	63	63	63
Rated fuse short circuit making capacity with solid links instead of fuses IEC 60947-3 and BSEN 60947-3	25 r.m.s	25 r.m.s	18 r.m.s
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 (mm2)	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)	160	120	120
Minimum distance between centre of ways of same rating with bolted neutral link (mm)	180	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 (92mm)	IEC60269 (92mm)	IEC60269 (82.5mm)
Fuse range	20-800	20-630	20-400
Weight (kg)	1.8	1.4	1.0

General technical information

Free air rating of SAIF fuseways

Type	Fuse fitted							
		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

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

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 50.0 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 disconnector switches - according to IEC 60947-3, BSEN 60947-3

Characteristics	SSD 1250	SSD2000	SSD3200
Rated insulation voltage (Ui)	690V	690V	690V
Rated operational voltage (Ue)	240V	240V	240V
Rated impulse withstand voltage (Uimp)	8kV	8kV	8kV
Rated operational current (Ie)	1250A	2000A	3200A
General performance - AC21B	1875A	3000A	4800A
Operational performance - AC21B	500 no-load & 100 operations @1xIe 0.95pf	500 no-load & 100 operations @1xIe 0.95pf	300 no-load & 100 operations @1xIe 0.95pf
Short time withstand current (1 sec)	24kA	24kA 25kA*	
Short time withstand peak current	50.4kA	50.4kA	50.4kA
Degree of protection - IEC 60529	IPXXB	IPXXB	IPXXB
Visible isolation distance (mm)	19mm	19mm	19mm

* Fault current rating of SSD3200 is less than 12x rated current prescribed in IEC 60947-3 due to it being manually dependant device

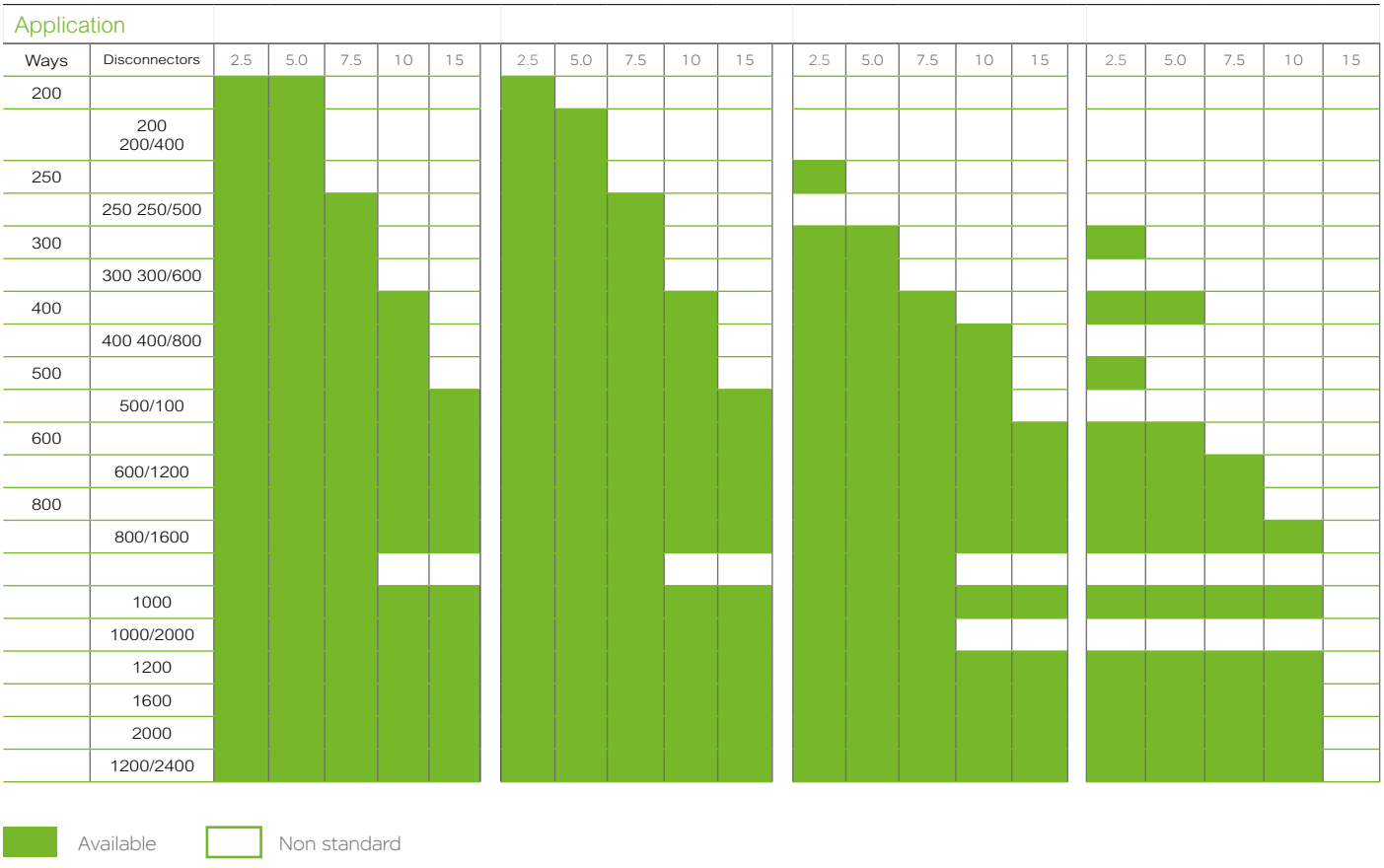
Free air rating of switch disconnectors

Type	Current rating (A) at ambient temperature (°C)						
	35°	40°	45°	50°	55°	60°	65°
SSD 3200S	3150	3200	3200	3200	3098	2917	2728
SSD 2000S	2000	2000	2000	2000	2000	2000	2000
SSD 1250S	1250	1250	1250	1250	1250	1250	1170

Notes:

Due to the manually dependent switching operation, we recommend that suitable Personal Protective Equipment (PPE) should be worn. All details and dimension are for guidance and are subject to confirmation at the time of contract.

Current transformers: ratios, class and burden



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	11345	1065	1000	945	890
			1000T	1065	1010	955	905	850	800
Board	IP2X	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	2400	3000s	2500	Available on request				
		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.

Appendix

General technical information		Pillars			Boards			Cabinets	
Details		2400	1600	800	2400	1600	800	1600	800
Enclosures and protection BSEN 60529 and IEC 529									
weatherproof, vermin proof and ventilated	(IP33)	standard			no			standard	
dust proof with fitted ventilation	(IP54)	optional			no			no	
Indoor mounting frame	(IPXXB)	no			standard			no	
personnel protection		IPXXB			IPXXB			IPXXB	
Disconnectors and mounting									
incoming disconnector type	type	3000	2000	1000	3000	2000	1000	2000	1000
incoming neutral type	type	1500	1000	500	1500	1000	500	1000	500
mounting vertical(V) horizontal(H)		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
Rated short time current withstand current BS5486 and IEC439									
flange connected 1 second	(kA)	50	50	35.5	50	50	35.5	50	35.5
flange connected 3 seconds	(kA)	50	35.5	18	50	35.5	18	35.5	18
cable connected 1 second	(kA)	60	60	35.5	60	60	35.5	-	-
cable connected 3 seconds	(kA)	50	35.5	18	50	35.5	18	-	-
Minimum creepage and 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 phase	(mm)	19			19			19	
with type 400 ways phase to phase	(mm)	19			25			25	
with type 800 ways phase to phase	(mm)	19			19			19	
Standards listed are applicable to all Types and ratings									
standards are complied with:	(EN)	61439			61439			61439	
	(IEC)	61439			61439			61439	
	(EWA)	37-2			37-2			37-2	
Maximum size of disconnector cable incoming									
(terminal screws: phase and neutral M16)	(mm^2)	14xSC960	7xSC960	4xSC960	14xSC960	7xSC960	4xSC960	-	-
		-	2x4C400	1x4C400	-	2x4C400	1x4C400	-	-
		-	4x4C300	3x4C300	-	4x4C300	3x4C300	-	-
Maximum size of outgoing fuseway cable									
type 800(terminal screws: phase and neutral M16 and neutral M12)	(mm^2)	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300
		SC600	SC600	SC600	SC600	SC600	SC600	SC600	SC600
type 630(terminal screws: phase and neutral M16 and neutral M12)	(mm^2)	4C300	4C300	4C300	4C300	4C300	4C300	-	-
type 400(terminal screws: phase and neutral M16 and neutral M12)	(mm^2)	4C300	4C300	4C300	4C300	4C300	4C300	-	-

• all terminations are single fixing per cable lug

Mountings feeder pillars

SAIF Feeder Pillar - Standard Distribution

Doors	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
1	740	710	-	-	-	1	2	3
2	1020	990	-	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

Doors	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
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

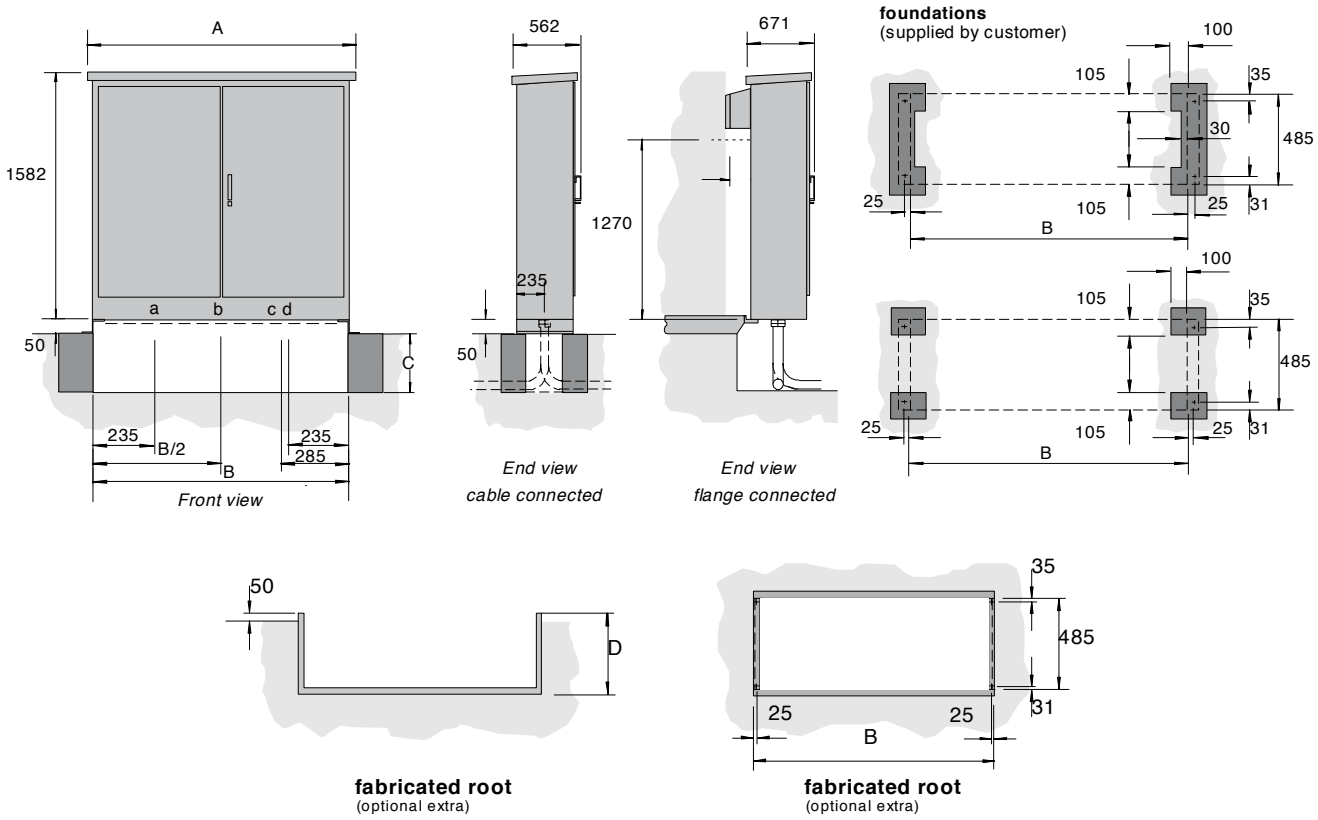
SAIF Feeder Pillar to DEO specification 039 Standard Distribution - single busbar

Doors	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector			
	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	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

Doors	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with direct 'F' type flange connected disconnector			
	A	B	1600A Busbar		800A Busbar	
Flange 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

Doors	Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector	
	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	-	-
2	1020	990	-	-
2	1300	1270	2	3
2	1580	1550	4	5
2	1860	1830	6	7
2	2140	2110	8	9



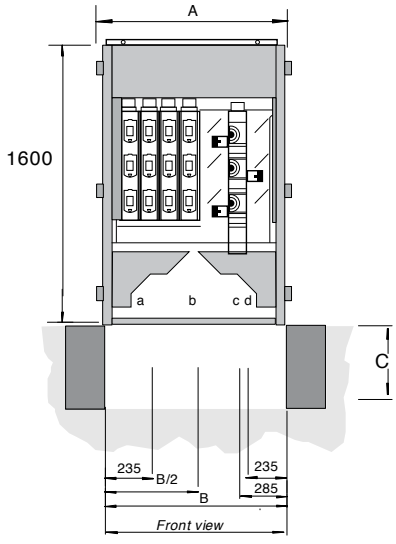
Cable connected		Flange connected	
Type	Details	Type	Details
PCC	Disconnector at b	PFC	Flange at a
PCR	Disconnector at d	PFR	Flange at c
PCL	Disconnector at a	-	-

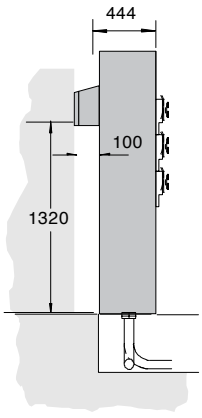
Mounting fuseboards

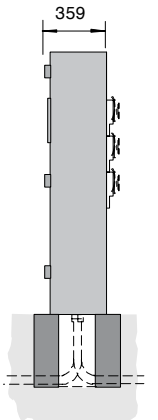
SAIF Fuseboards - Standard Distribution

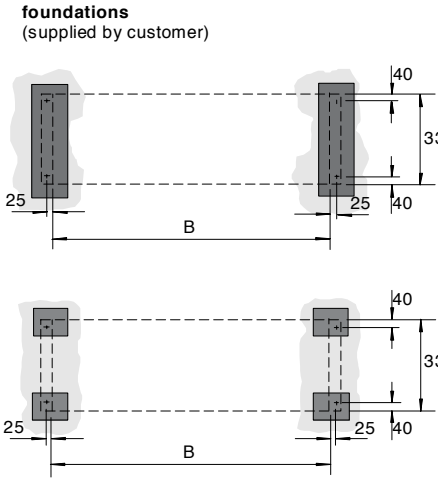
Dimensions (mm)		Maximum number of outgoing SAIF fuseways with incoming cable connected disconnector					
A	B	2500A Busbar		1600A Busbar		800A Busbar	
Cable Connected		PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing	PCC 630A Or 400A outgoing	PCR & PCL 630A Or 400A outgoing
740	710	-	-	-	1	2	3
1020	990	-	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





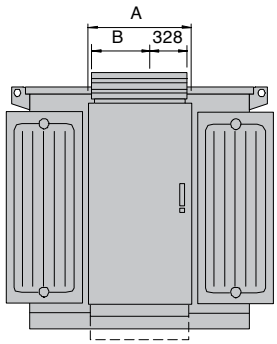


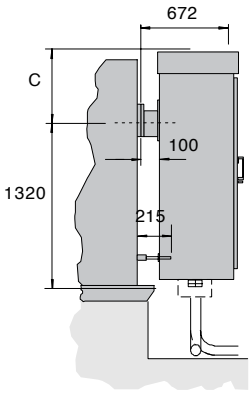


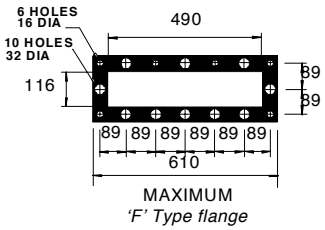
Mounting fuse cabinets

SAIF Fuse Cabinets

Type					
	2500 CFR	1600 CFR	1600 CFR	1600 CFC	800 CFC
Dimension A (mm)	1036	1036	776	656	656
Dimension B (mm)	680	680	430	310	310
Dimension C (mm)	363	363	363	363	363
Disconnector type	3000S	2000S or 2000T	2000S or 2000T	2000S or 2000T	2000S or 2000T
Maximum number of ways	7	7	5	4	4







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

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

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