

# Improved safety and reliability from Merlin Gerin



**Distribute electricity safely and reliably through shielded indoor/outdoor distribution switchgear.**

**Merlin Gerin low voltage distribution shielded fusegear meets your application requirements with IP2X operator protection.**

Originally launched in 1985 the shielded range replaced “open feeder pillars” offering increased safety features and with the addition of circuit breakers allows for flexibility including remote operation and control.

Important benefits have been achieved by segregating fuseways and busbars and individually shrouding each outgoing circuit, providing operator protection to IP2X BSEN 60529. Manufactured from a flame retardant material, allowing full protection and ease of use, as well as safe cabling of any circuit with the adjacent fuseway live.

For additional protection and ease of use, Shielded fuse carriers incorporate a “through grip” fuse handle for removal and insertion, and requiring no tools for fuselink replacement.

The shielded range for indoor and outdoor applications and substation packages tailored to meet customer requirements.

## Features

- Free standing or transformer mounted
- Indoor/outdoor solutions
- Busbar and disconnectors up to 3200A
- Fuseways 400A, 630A and 800A
- Moulded case circuit breakers up to 1250A
- Air circuit breakers up to 3200A
- Combined circuit breaker and fuseway units
- Metering facilities and accessories
- Weatherproof/Vandalproof enclosures up to IP54

## Benefits

### Safety to personnel

IP2X protection under normal working conditions

### Adaptability

Compact and modular design

### Durability

Indoor and outdoor service and proven performance in temperate and tropical climates

### Cost Advantage

Ease of installation/use and low maintenance

### Reliability

Customised applications  
 Transformer mounted or free standing  
 - proven outdoor service

### Standards

ASTA	BS 5486	EN 60439
EATS	37-2	BSEN 60529

### Quality Assurance

ISO 9001, BS5750



# Application solutions

Merlin Gerin LV distribution units can be customised to form part of a total package solution in conjunction with the wider range of switchgear products for residential, commercial and retail developments. For example, package or unit sub stations comprising of a LV distribution feeder pillar, fuse cabinet or board, MV switches, circuit breakers, ring main units and a transformer.

## Fuse cabinet

The cabinet comprises of up to five outgoing fuseways and incoming disconnector or a combination of fuseways and mccb's up to 1250A. The outdoor enclosure is rated to IP33, is transformer mounted and can be used side by side with MV switchgear on a unit sub station package.



Housing



## Feeder pillars

Indoor or outdoor application to IP33 as standard or to IP54 with the addition of fitted ventilation and door gaskets. The feeder pillar can be transformer mounted with up to 15 outgoing fuseways or free-standing with 14 fuseways and cable connected. Shielded fuseways are rated to 800A and have the flexibility to combine with, air circuit breakers or moulded case circuit breakers and disconnectors dependant on customer requirement.

For easy access, feeder pillars and fuse cabinets have removable front cross member and individually supported gland plates, are vermin proof and can accommodate larger cables by mounting the enclosure on fabricated roots and plinths.



Retail



## Fuseboards

Providing IP2X operator protection with all fuse handles in place, these can be either transformer or floor mounted with the option for top or bottom cable entry. The fuseboards are for indoor application only whilst offering the same versatility as the feeder pillar for instrumentation and outgoing and incoming circuit requirements.



Commercial





## Disconnectors

The Shielded fusegear utilises our Saif disconnectors. Manufactured as single phase units, they can be mounted in the standard vertical three phase and neutral assembly, or horizontal for special applications. The neutral is a bolted type and uses the same mouldings as the phases and are also rated at 50% of phase rating. Three types are available type 3000, 2000 and 1000.

They are tin plated as standard (suffix T) but may be silver plated (suffix S) to give enhanced ratings. Disconnectors are opened and closed with the special operating handle and are for fully shrouded operator protection to IP2X of BSEN 60529, in the open and closed positions and for all normal operations. The disconnector and operating handle can only be removed when:

- contacts are fully closed and locked closed
- fully open and locked open

Disconnectors are extensively used within the Electricity Supply Industry. Padlocking and a range of current transformers are available. Load switching circuit breaker solutions are available.

## Cable termination

Shielded fuseways are suitable for either mechanical connectors or cable lugs and they can be arranged in four positions to eliminate phase core crossovers. Large cables can be accommodated.

# Circuit breaker solutions

Circuit breakers provide application solutions giving greater flexibility for LV distribution.

With traditional sub-stations, 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 also 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 Shielded fuseways and disconnectors.

A comprehensive range of accessories is available for the Compact C and Masterpact circuit breakers including motor mechanisms and dialpact auxiliaries which allow for remote operation and control through SCADA.

## Finishing process

The coating for the enclosures and other exterior steel structures encompasses several coating processes. These include being degreased in vaporised solvents before being shot blasted and metal sprayed and costed in electrostatically charged powder paint. Fusion of the paint is achieved by baking in a curing oven for a hard high gloss finish.

The standard colour is dark grey, shade 632 of BS 381C.



Switching on incoming circuit-breaker



Fuseboards with incoming circuit breaker and outgoing fuseways.



Fuse cabinet with 2 x 630A Shielded fuseways and up to 1250A outgoing MCCB.



Flexible supply for larger ratings, combine ACB and Shielded fuseways within a Feeder Pillar.

# Shielded accessories



Padlocking device fitted to incoming disconnector

## Padlocking devices

For vertically mounted disconnectors which can be fitted in open or closed positions and for shielded fuseways to lockoff the busbar and cable termination's.

## Generator connection

For temporary supplies to be connected to the busbars. IP2X operator protection when fuse handles are in place.

## Incoming metering

Test certificate indicating ratio error and phase angle are available for classes 1.0 and 1.5.



Incoming metering

## Neutral link

Allows for easy disconnection of neutral for testing purposes as opposed to direct termination of the neutral busbar.

## Cable clamps

Mechanical cable clamps available for 3 to 4 core cables, 70 to 300mm<sup>2</sup>. Eliminates the need of crimping gear and to check the torque of the termination. The double headed shear bolt ensures joints can be disconnected.

## Outgoing metering

Metering of outgoing supplies is possible with the addition of C.T's to the individual cable termination's.



Load monitoring of outgoing circuits

## Instrument panel

Customised to accommodate a variety of instruments and fittings.

## Additional accessories

Ammeters / voltmeters max. demand indicators anti condensation heaters 13A RCD socket outlets, test plugs, test terminal blocks, internal lights, street lighting circuits and extension trunking / plinths.



Instrument panel accessories

# Shielded selection guide

## Shielded pillars

Doors	Dimensions (mm)		Maximum number of fuseways			
	A	B	Type 2400 & 1600		Type 800	
	Cable Connected		PCC 630 & 400	PCR & PCL 630 & 400	PCC 630 & 400	PCR & PCL 630 & 400
1	740	710	-	1	2	3
2	1020	990	2	4	4	5
2	1300	1270	6	6	7	7
2	1580	1550	8	8	9	10
2	1860	1830	10	11	11	12
2	2140	2110	12	13	13	14
	Flange Connected		PFC 630 & 400	PFR 630 & 400	PFC 630 & 400	PFR 630 & 400
1	740	710	4	4	4	4
2	1020	990	6	6	6	6
2	1300	1270	8	8	8	8
2	1580	1550	10	11	10	11
2	1860	1830	12	13	12	13
2	2140	2110	14	15	14	15

## Shielded boards

Dimensions (mm)		Maximum number of fuseways				
A	B	Type 2400 & 1600		Type 800		
	Cable Connected		BCC 630 & 400	BCR & BCL 630 & 400	BCC 630 & 400	BCR & BCL 630 & 400
810	710	-	1	2	3	
1090	990	2	4	4	5	
1370	1270	6	6	7	7	
1650	1550	8	8	9	10	
1930	1830	10	11	11	12	
2210	2110	12	13	13	14	
	Flange Connected		BFC 630 & 400	BFR 630 & 400	BFC 630 & 400	BFR 630 & 400
810	710	4	4	4	4	
1090	990	6	6	6	6	
1370	1270	8	8	8	8	
1650	1550	10	11	10	11	
1930	1830	12	13	12	13	
2210	2110	14	15	14	15	

## Shielded cabinets

Type	1600 CFR	1600 CFC	800 CFC
Dimension A (mm)	776	656	656
Dimension B (mm)	430	310	310
Dimension C (mm)	460	460	370
Disconnecter type	2000S or 2000T	2000S or 2000T	1000S or 1000T
Maximum number of ways	5	4	4

### Key

P - Pillar	C - Cable connected	C - Incoming unit centre mounted
B - Board	F - Flange mounted	R - Incoming unit mounted on right
C - Cabinet	L - Incoming unit mounted on left	

# Shielded selection guide

## Current transformers

Ratio ----/5 application		Burden (AV) at accuracy class																			
		Class 5.0					Class 3.0					Class 1.0					Class 0.5				
ways	disconnectors	5.5	5.0	7.5	10	15	5.5	5.0	7.5	10	15	5.5	5.0	7.5	10	15	5.5	5.0	7.5	10	15
200		available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	200	200/400	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
250			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	250	250/500	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
300			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	300	300/600	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
400			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	400	400/800	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
500			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	500	500/1000	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
600			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	600	600/12000	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
800			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
	800		available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
		800/1600	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
1000			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
		1000/2000	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
1200			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
1600			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
2000			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
		1200/2400	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
2400			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available
3000			available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available	available

available  
 not available

## Disconnectors

Details	Type					
	3000S	3000T	2000S	2000T	1000S	1000T
Rated insulation voltage (V)	660	660	660	660	660	660
Free air current rating - single phase BSD 5486 and IEC 408 (A)	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 BS60529	IP2X		IP2X		IP2X	
Isolation distance (mm)	19		19		19	
Weight, single pole (kg)	8.7		6.4		4.0	

## Free air rating of 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
1000T	1595	1540	1485	1420	1340	1260	1170
1000T	1455	1400	1330	1265	1200	1125	1045

# Appendix

General technical information Details		Pillars			Boards			Cabinets	
		2400	1600	800	2400	1600	800	1600	800
<b>Enclosures and protection BSEN 60529 and IEC 529</b>									
weatherproof, vermin proof and ventilated	(IP33)	standard			no			standard	
dust proof with fitted ventilation	(IP54)	optional			no			no	
Indoor mounting frame	(IP2X)	no			standard			no	
personnel protection		IP2X			IP2X			IP2X	
<b>Disconnectors and mounting</b>									
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
<b>Rated short time current withstand current BS5486 and IEC439</b>									
flange connected 1 second	(kA)	50	50	35.5	50	50	35.5	50	35.5
flange connected 3 seconds	(kA)	-	35.5	18	-	35.5	18	35.5	18
cable connected 1 second	(kA)	60	60	35.5	60	60	35.5	-	-
cable connected 3 seconds	(kA)	40	35.5	18	40	35.5	18	-	-
<b>Minimum creepage and clearance distance</b>									
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			19			19	
with type 800 ways phase to phase	(mm)	19			19			19	
<b>Standards listed are applicable to all Types and ratings</b>									
standards are complied with:	(EN)	60439			60439			60439	
	(IEC)	439			439			439	
	(EA)	37-2			37-2			37-2	
<b>Maximum size of disconnector cable incoming</b> (terminal screws: phase and neutral M16)									
	(mm <sup>2</sup> )	14xSC960	7xSC960	4xSC960	14xSC960	7xSC960	4xSC960	-	-
		-	2x4C400	1x4C400	-	2x4C400	1x4C400	-	-
		-	4x4C300	3x4C300	-	4x4C300	3x4C300	-	-
<b>Maximum size of outgoing fuseway cable</b>									
type 800(terminal screws: phase and neutral M16 and neutral M12)	(mm <sup>2</sup> )	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 <sup>2</sup> )	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300
type 400(terminal screws: phase and neutral M16 and neutral M12)	(mm <sup>2</sup> )	4C300	4C300	4C300	4C300	4C300	4C300	4C300	4C300

\* all terminations are single fixing per cable lug

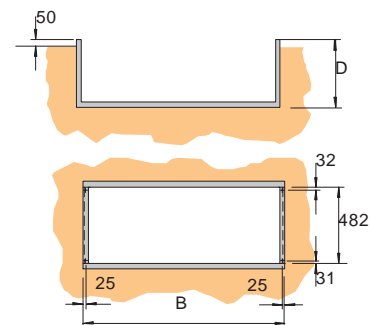
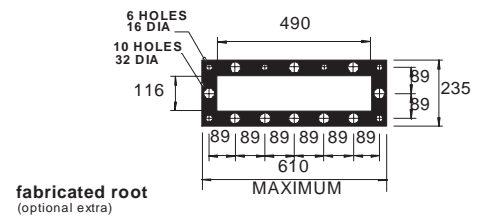
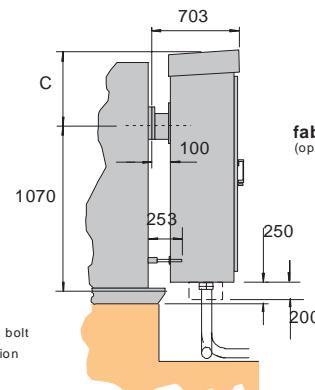
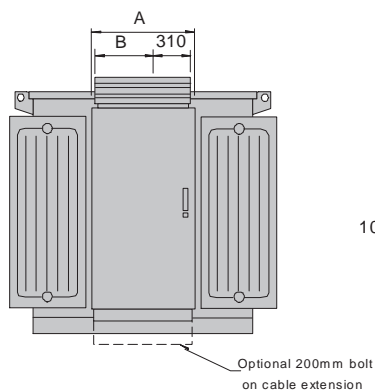
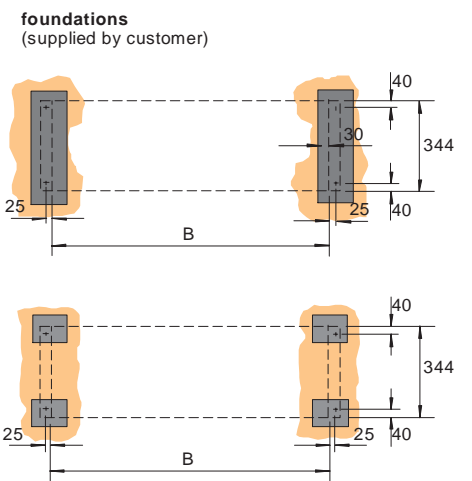
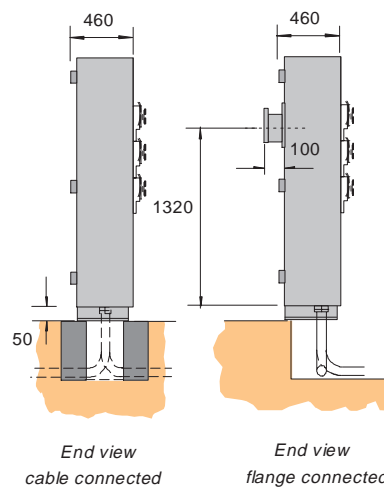
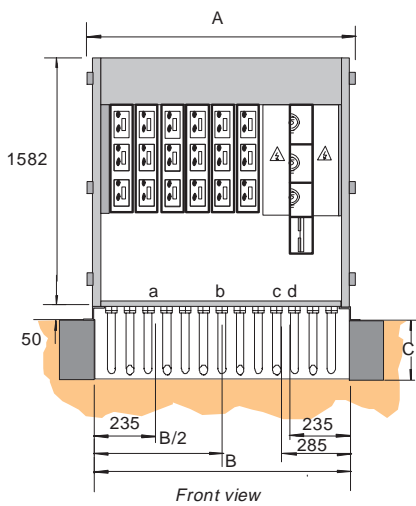
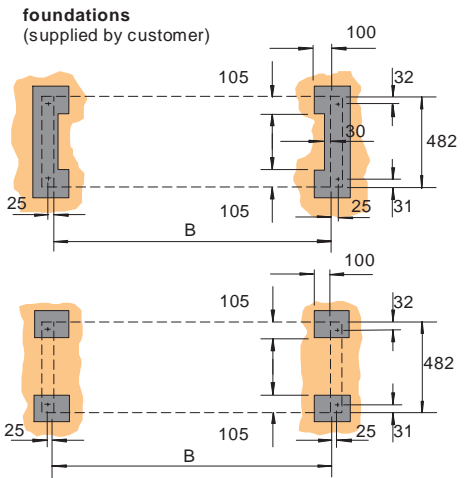
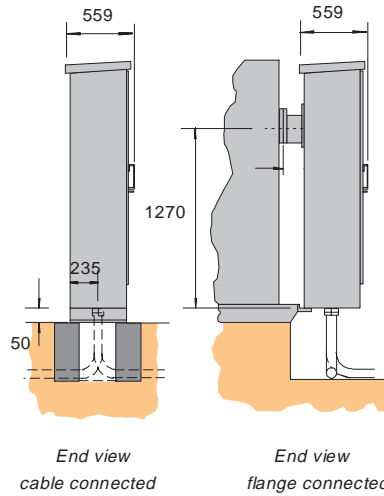
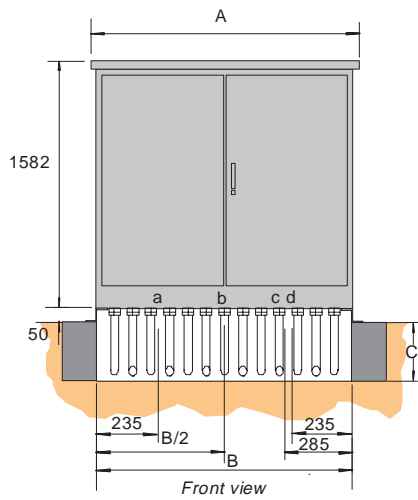
Rating of Shielded equipment									
Equipment arrangement	Enclosure protection	Equipment type	Disconnector	Current rating(A) at ambient temperature(°C)					
				35°	40°	45°	50°	55°	60°
pillar	IP33	2400*†	3000S	3160	3037	2910	2780	2646	2508
			3000T	2780	2646	2508	2365	2216	2060
		1600	2000S	2100	2000	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
board	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
cabinet	IP33	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

\* ratings apply for incoming disconnector only †higher ratings available on request

# Shielded suggested mountings



WWW.CABLEJOINTS.CO.UK  
**THORNE & DERRICK UK**  
 TEL 0044 191 490 1547 FAX 0044 477 5371  
 TEL 0044 117 977 4647 FAX 0044 977 5582  
 WWW.THORNEANDDERRICK.CO.UK



### Dimensions

- A - refer to selection guide
- B - refer to selection guide
- C - to suit cable bending radius
- D - 450mm or 900mm