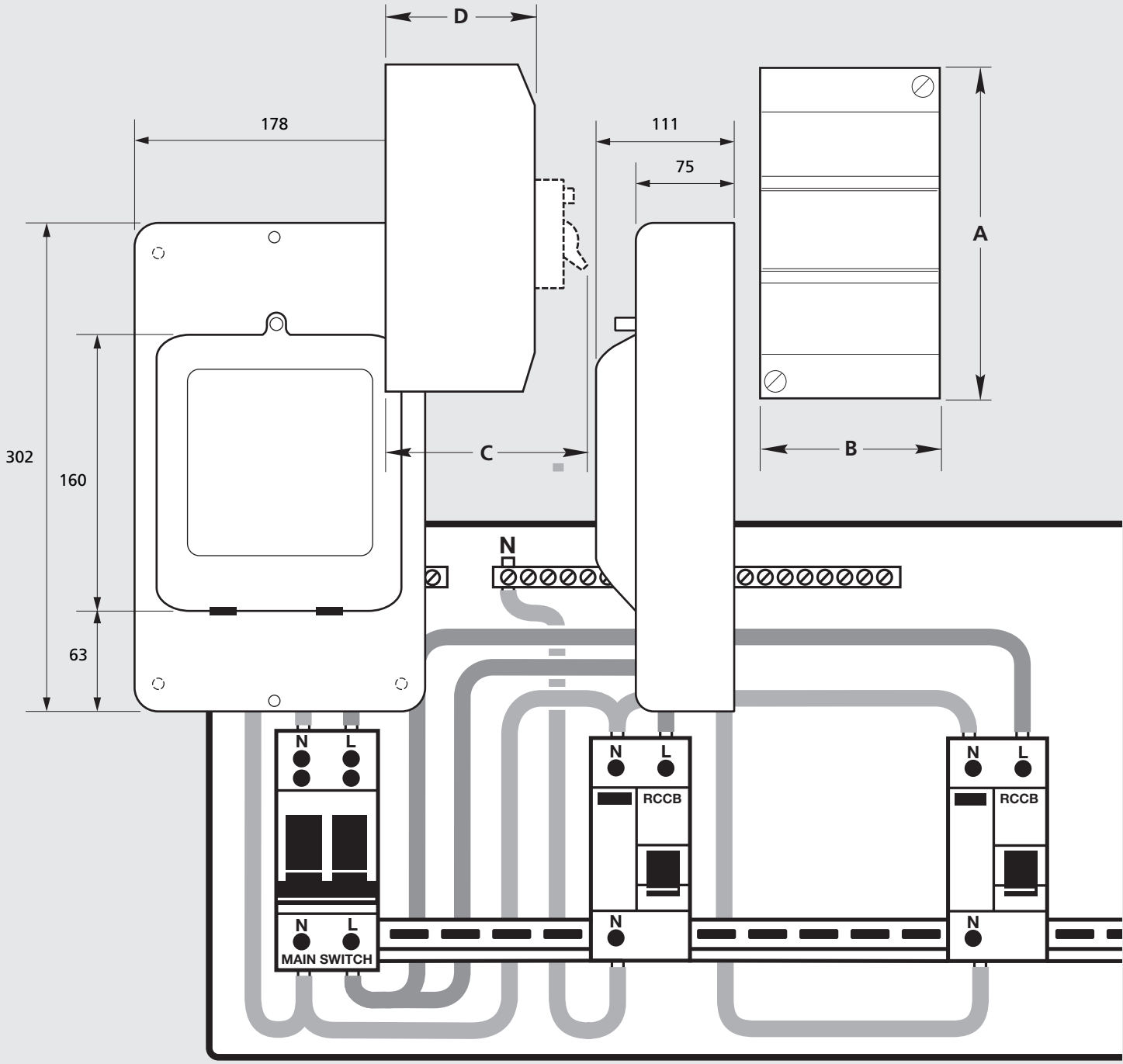
TECHNICAL DATA & DIMENSIONS

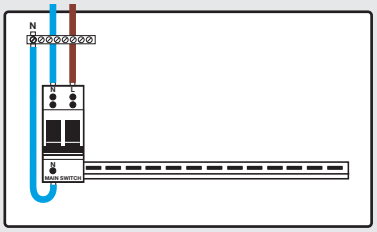


Crabtree

STARBREAKER CONSUMER UNIT APPLICATIONS

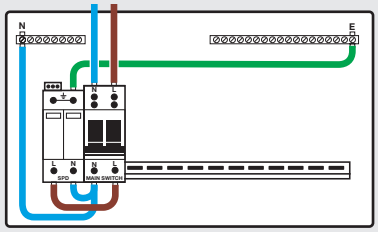
MAIN SWITCH

Allows for the use of MCBs, RCBOs and AFDDs throughout.



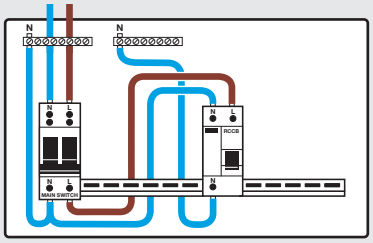
MAIN SWITCH WITH SURGE PROTECTION

Allows for the use of MCBs, RCBOs and AFDDs throughout. With SPD.



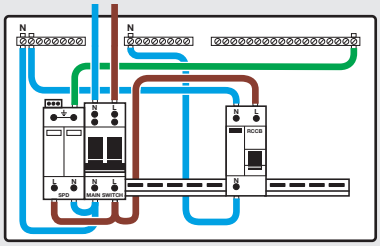
SPLIT LOAD

An arrangement which allows the use of MCBs, RCBOs & AFDDs immediately following the Main Switch and MCBs following the Split Load RCCB.



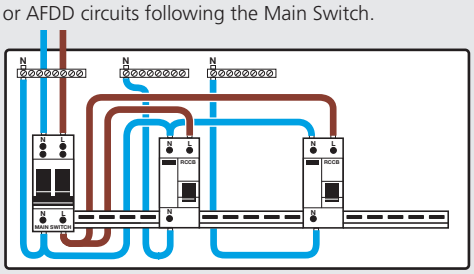
SPLIT LOAD WITH SURGE PROTECTION

An arrangement which allows the use of MCBs, RCBOs & AFDDs immediately following the Main Switch and MCBs following the Split Load RCCB. With SPD.



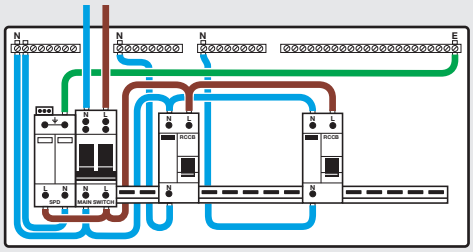
HIGH INTEGRITY

A unit which allows for a number of MCBs used between two RCCBs but retaining provision for a small number of independent MCB, RCBO or AFDD circuits following the Main Switch.



HIGH INTEGRITY WITH SURGE PROTECTION

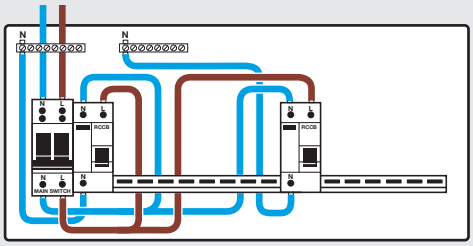
A unit which allows for a number of MCBs used between two RCCBs but retaining provision for a small number of independent MCB, RCBO or AFDD circuits following the Main Switch. With SPD.



Detail above reflects the inclusion of the 2 module wide SPD, CSPD7462-1, within pre-assembled consumer units (pages 8-11)

DUAL RCD

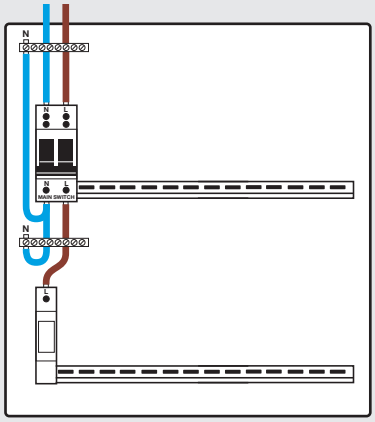
This unit utilizes MCBs throughout divided between two RCCBs. Circuit independance or separate electrical protection cannot be achieved here.



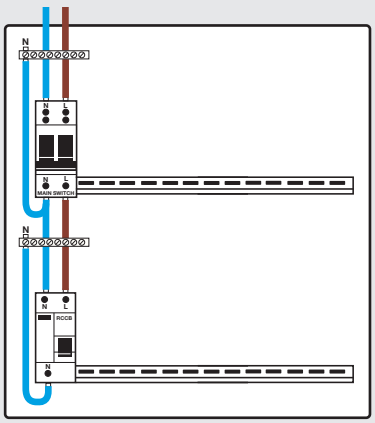
TWO BANK

Two bank consumer units provide the facility to offer a wide range of configurations for applications which demand increased numbers of circuits.

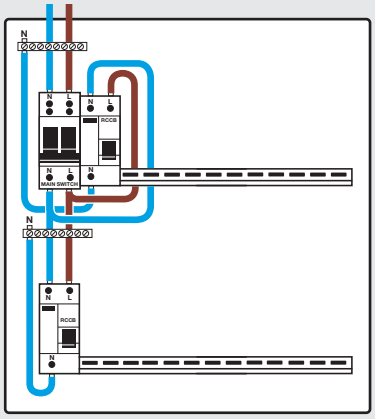
MAIN SWITCH



SPLIT LOAD

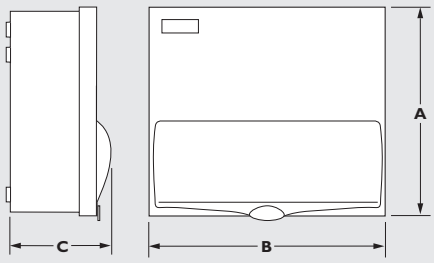


DUAL RCCB



STARBREAKER DIMENSIONS

METAL ENCLOSURES



STARBREAKER SIZE 4 ENCLOSURE (504/0A)

Dimensions: A =185mm B =130mm C =104mm

502/2B **502/363B**
502/26B **502/363GU**

STARBREAKER SIZE 6 ENCLOSURE (506/0A)

Dimensions: A =261mm B =188mm C =121mm

504/2B **504/383B**
502/2BS

STARBREAKER SIZE 9 ENCLOSURE (509/0A)

Dimensions: A =261mm B =242mm C =121mm

507/2B **507/383B**
505/2BS
505/232B

STARBREAKER SIZE 12 ENCLOSURE (512/0A)

Dimensions: A =261mm B =292mm C =121mm

510/2B **510/383B**
508/2BS **508/262B**
508/2483B

STARBREAKER SIZE 15 ENCLOSURE (515/0A)

Dimensions: A =261mm B =343mm C =121mm

513/2B **509/2583BS** **509/2835834B**
511/2BS **509/218484B** **513/313B**
511/2583B **509/2135134B** **511/272B**
511/2683B **509/211414B** **511/282B**
511/2613B **509/238383B**
511/2783B **507/218383BS**

STARBREAKER SIZE 20 ENCLOSURE (520/0A)

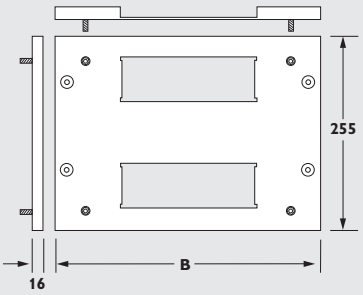
Dimensions: A =261mm B =438mm C =121mm

518/2B **516/2983B** **514/268484B** **514/2838836B**
516/2BS **514/2783BS** **512/228585BS** **516/212B**
516/2783B **514/238685B** **512/248484BS** **516/2112B**
516/2883B **514/231615B** **514/2837837B** **514/272126B**
516/2813B **514/248585B** **514/2137137B**

CONSUMER UNIT PATTRESSES

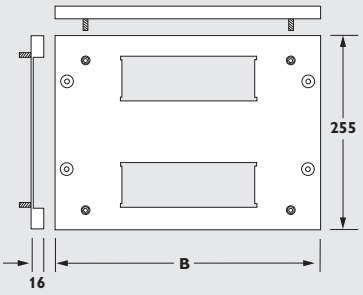
ENCLOSURE WIDTH	DIMENSION B	PATTRESS DEPTH	NORTH/SOUTH ENTRY
6 Module	188mm	16mm	**MNSPE6584/1NR**
9 Module	242mm	16mm	**MNSPE6584/2NR**
12 Module	292mm	16mm	**MNSPE6584/3NR**
15 Module	343mm	16mm	**MNSPE6584/4NR**
20 Module	438mm	16mm	**MNSPE6584/5NR**

NORTH/SOUTH CABLE ENTRY



ENCLOSURE WIDTH	DIMENSION B	PATTRESS DEPTH	EAST/WEST ENTRY
6 Module	188mm	16mm	**MNSPE6670/1NR**
9 Module	242mm	16mm	**MNSPE6670/2NR**
12 Module	292mm	16mm	**MNSPE6670/3NR**
15 Module	343mm	16mm	**MNSPE6670/4NR**
20 Module	438mm	16mm	**MNSPE6670/5NR**

EAST/WEST CABLE ENTRY

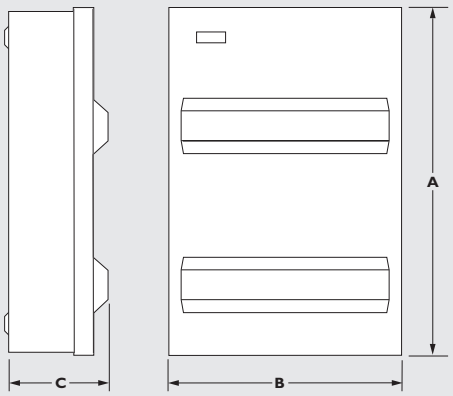


For use with Crabtree All Metal consumer units. Allows surface cable entry through rear knockouts and automatically maintains enclosure IP rating to comply with BS7671 and BSEN61439-3 and the IET onsite guide.

Cable entry slot lines up with rear knockouts, remove only the minimum number of knockouts for cable entry.
Suitable for use with trunking systems.

STARBREAKER DIMENSIONS

TWO BANK UNITS



STARBREAKER SIZE 24 ENCLOSURE (524/2A)

Dimensions: A =506mm B =295mm C =121mm

521/2B **519/2BS** **520/283B** **518/28383B**

STARBREAKER SIZE 30 ENCLOSURE (530/2A)

Dimensions: A =506mm B =345mm C =121mm

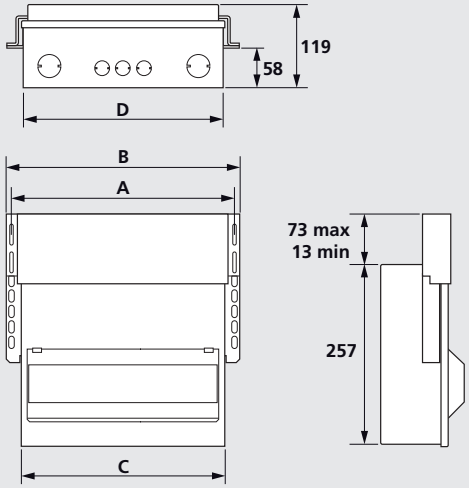
527/2B **525/2BS** **526/283B** **524/28383B**

STARBREAKER SIZE 40 ENCLOSURE (540/2A)

Dimensions: A =506mm B =440mm C =121mm

537/2B **535/2BS** **536/283B** **534/28383B**

CONSUMER UNITS FOR METER CABINETS



9 MODULE

Dimensions: A=273mm, B=289mm, C=241mm, D=235mm

607/2B

12 MODULE

Dimensions: A=320mm, B=335mm, C=292mm, D=286mm

610/2B **608/2BS** **606/2833833B**
606/228282B **608/2483B**

15 MODULE

Dimensions: A=430mm, B=445mm, C=343mm, D=336mm

613/2B **609/2835834B** **609/218484B**
611/2583B

INCOMING DEVICES AND ENCLOSURES

ENCLOSURES

MODULAR SIZE	METAL
4	**504/0A**
6	**506/0A**
9	**509/0A**
12	**512/0A**
15	**515/0A**
20	**520/0A**
24	**524/0A**
30	**530/0A**
40	**540/0A**

FLUSH MOUNTING KIT

MODULAR SIZE	METAL
6	**506/FLA**
9	**509/FLA**
12	**512/FLA**
15	**515/FLA**
20	**520/FLA**
24	**524/DFLA**
30	**530/DFLA**
40	**540/DFLA**

REPLACEMENT COVERS FOR 5 SERIES ENCLOSURES

MODULAR SIZE	METAL
6	**506/CLID**
9	**509/CLID**
12	**512/CLID**
15	**515/CLID**
20	**520/CLID**

DOUBLE POLE MAIN SWITCH DISCONNECTORS

RATING	MODULAR SIZE	LIST No
40A	2	**40/MI2**
63A	2	**63/M12**
100A	2	**100/2MTT**

RESIDUAL CURRENT CIRCUIT BREAKERS

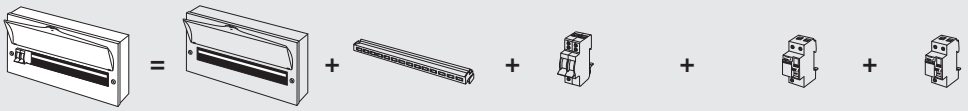
RATING	MODULAR SIZE	LIST No
63A 30mA Type A	2	**363/A030**
80A 30mA Type A	2	**380/A030**
100A 30mA Type A	2	**310/A030**

AM3 UPGRADE / REPLACEMENT COVERS FOR 8 SERIES ENCLOSURES

MODULAR SIZE	LIST No
6	**806/LID255G**
9	**809/LID255G**
12	**812/LID255G**
15	**815/LID255G**
20	**820/LID255G**

Finished in RAL7035 paint.

STARBREAKER CONSUMER UNIT COMPONENTS



513/2B

513/2BS

511/2683B

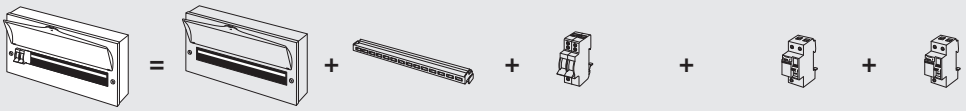
526/283B

514/238685B

Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	RCCB 1	RCCB 2
Main Switch					
502/2B	504/0A	included	40/MI2	-	-
502/26B	504/0A	included	63/MI2	-	-
504/2B	506/0A	9060	100/2MTT	-	-
507/2B	509/0A	9090	100/2MTT	-	-
510/2B	512/0A	9120	100/2MTT	-	-
513/2B	515/0A	9150	100/2MTT	-	-
518/2B	520/0A	9200	100/2MTT	-	-
Main Switch duplex					
521/2B	524/2A	9120 + 9120	100/2MTT + 100/DC1	-	-
527/2B	530/2A	9150 + 9150	100/2MTT + 100/DC1	-	-
537/2B	540/2A	9200 + 9200	100/2MTT + 100/DC1	-	-
Main Switch with SPDs*					
502/2BS	506/0A	9060/1S	100/2MTT	-	-
505/2BS	509/0A	9090/1S	100/2MTT	-	-
508/2BS	512/0A	9120/1S	100/2MTT	-	-
511/2BS	515/0A	9150/1S	100/2MTT	-	-
516/2BS	520/0A	9200/1S	100/2MTT	-	-
519/2BS	524/2A	9120/DS	100/2MTT	-	-
525/2BS	530/2A	9150/DS	100/2MTT	-	-
535/2BS	540/2A	9200/DS	100/2MTT	-	-
Split Load					
508/2483B	512/0A	9650/1	100/2MTT	380/A030	-
511/2583B	515/0A	9770/1	100/2MTT	380/A030	-
511/2683B	515/0A	9860/1	100/2MTT	380/A030	-
511/2783B	515/0A	9950/1	100/2MTT	380/A030	-
516/2783B	520/0A	9910/1	100/2MTT	380/A030	-
516/2883B	520/0A	9109/1	100/2MTT	380/A030	-
516/2983B	520/0A	9118/1	100/2MTT	380/A030	-
Split Load duplex					
520/283B	524/2A	9120 + 9120	100/2MTT	380/A030	-
526/283B	530/2A	9150 + 9150	100/2MTT	380/A030	-
536/283B	540/2A	9200 + 9200	100/2MTT	380/A030	-
Split Load with SPD*					
509/2583BS	515/0A	9950/1S	100/2MTT	380/A030	-
514/2783BS	515/0A	9118/1S	100/2MTT	380/A030	-
Split Load 100A					
511/2613B	515/0A	9860/1C	100/2MTT	310/A030	-
516/2813B	515/0A	9109/1C	100/2MTT	310/A030	-
High Integrity					
509/218484B	515/0A	9355/HI	100/2MTT	380/A030	380/A030
509/238383B	515/0A	9544/HI	100/2MTT	380/A030	380/A030
514/238685B	520/0A	9576/HI	100/2MTT	380/A030	380/A030
514/248585B	520/0A	9666/HI	100/2MTT	380/A030	380/A030
514/268484B	520/0A	9855/HI	100/2MTT	380/A030	380/A030
High Integrity with SPD*					
507/218383BS	515/0A	9544/HIS	100/2MTT	380/A030	380/A030
512/228585BS	520/0A	9666/HIS	100/2MTT	380/A030	380/A030
512/248484BS	520/0A	9855/HIS	100/2MTT	380/A030	380/A030

*SPD type Consumer Units require the addition of part reference CSPD7462-1
For dual RCD, split load & high integrity applications 100A rated RCDs can only be used in conjunction with the C suffixed busbar kits.

STARBREAKER CONSUMER UNIT COMPONENTS



Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	RCCB 1	RCCB 2
High Integrity 100A					
509/211414B	515/0A	9355/HIC	100/2MTT	310/A030	310/A030
514/231615B	520/0A	9576/HIC	100/2MTT	310/A030	310/A030
Dual RCD					
509/2835834B	515/0A	9265/DR	100/2MTT	380/A030	380/A030
514/2837837B	520/0A	9288/DR	100/2MTT	380/A030	380/A030
514/2838836B	520/0A	9297/DR	100/2MTT	380/A030	380/A030
Dual RCD Duplex					
518/28383B	524/2A	9212/D+9120	100/2MTT	380/A030	380/A030
524/28383B	530/2A	9290/D+9150	100/2MTT	380/A030	380/A030
534/28383B	540/2A	9217/D+9200	100/2MTT	380/A030	380/A030
Dual RCD 100A					
509/2135134B	515/0A	9265/DRC	100/2MTT	310/A030	310/A030
514/2137137B	520/0A	9288/DRC	100/2MTT	310/A030	310/A030
RCD Incoming					
502/363B	504/0A	included	363/A030	-	-
502/363GU	504/0A	included	363/A030	-	-
504/383B	506/0A	9060	380/A030	-	-
507/383B	509/0A	9090	380/A030	-	-
510/383B	512/0A	9120	380/A030	-	-
513/313B	515/0A	9150	310/A030	-	-
Dual Tariff					
505/232B	509/0A	9530	100/2MTT+100/2MTT	-	-
508/262B	512/0A	9830	100/2MTT+100/2MTT	-	-
511/272B	515/0A	9950	100/2MTT+100/2MTT	-	-
511/282B	515/0A	9104	100/2MTT+100/2MTT	-	-
516/212B	520/0A	9127	100/2MTT+100/2MTT	-	-
516/2112B	520/0A	9136	100/2MTT+100/2MTT	-	-
514/272126B	520/0A	9716/M	100/2MTT+100/2MTT	-	-
Main Switch Meter Cabinet Units					
607/2B	Available as built only		-	-	-
610/2B	Available as built only		-	-	-
613/2B	Available as built only		-	-	-
Main Switch Meter Cabinet Units with SPD					
608/2BS	Available as built only		-	-	-
Split load Meter Cabinet Units					
608/2483B	Available as built only		-	-	-
611/2583B	Available as built only		-	-	-
High Integrity Meter Cabinet Units					
609/218484B	Available as built only		-	-	-
606/228282B	Available as built only		-	-	-
High Integrity Meter Cabinet Units					
606/2833833B	Available as built only		-	-	-
609/2835834B	Available as built only		-	-	-

514/2137137B

502/363B

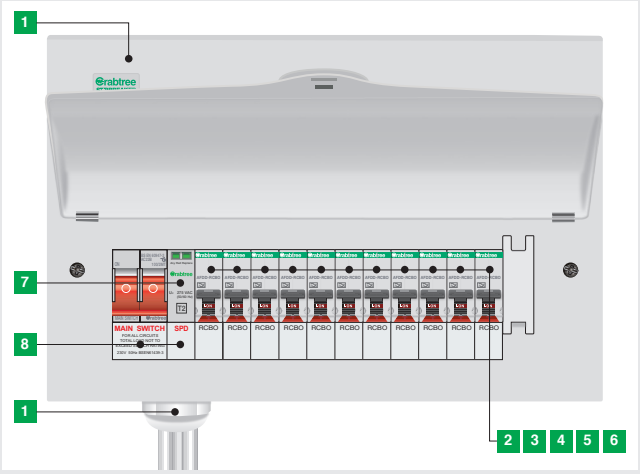
511/282B

811/282B

For dual RCD, split load & high integrity applications 100A rated RCDs can only be used in conjunction with the C suffixed busbar kits.

STARBREAKER MCB & RCBO - TECHNICAL DATA

MODEL	AFDD & RCBO	RCBO	MCB
Product brand name	Starbreaker	Starbreaker	Starbreaker
Product designation	AFDD and RCBO	RCD operated circuit breaker	Miniature circuit breaker
Product standard	BS EN 62606 & IEC 61009-1	IEC 61009-1	BS EN 61008
GENERAL TECHNICAL DATA			
Number of poles	2	2	1
Number of poles / switched	1P+N	1P+N	1P
Number of poles / with protection (overcurrent)	1	1	1
Tripping characteristics class	B or C	B or C	B or C
RCD type	A	A	-
Mechanical service life (switching cycles) / typical	10,000	10,000	-
Overvoltage category	III	III	3
PRODUCT FUNCTION			
Product function / neutral conductor switching	Yes	Yes	N/A
VOLTAGE			
Surge current resistance / at (8/20) µs	1kA	1kA	N/A
SUPPLY VOLTAGE			
• at AC / rated value	240V	240V	250V
• for testing equipment / minimum	195V	195V	-
Supply voltage frequency / rated value	50Hz	50Hz	50Hz
PROTECTION CLASS			
Protection class IP	IP20	IP20	IP20
Energy limiting class	3	3	3
SWITCHING CAPACITY CURRENT			
• acc. to EN 60898 / rated value	6kA	6kA	6kA
ELECTRICITY			
Tripping residual current / rated value	30mA	30mA	N/A
Current / at AC / rated value	6A - 40A	6A - 40A	6A - 50A
CONNECTIONS			
Connectable conductor cross-section / stranded			
• minimum	0.75mm^2	0.75mm^2	0.75mm^2
• maximum	16mm^2	16mm^2	25mm^2
Connectable conductor cross-section			
• solid - minimum	0.75mm^2	0.75mm^2	0.75mm^2
• solid - maximum	16mm^2	16mm^2	25mm^2
• fine strand / with core end processing - minimum	0.75mm^2	0.75mm^2	0.75mm^2
TIGHTENING TORQUE / WITH SCREW-TYPE TERMINALS			
Load terminal			
• minimum	1.2Nm	1.2Nm	2.3Nm
• maximum	2.0Nm	2.0Nm	3.0Nm
MECHANICAL DESIGN			
Height x Width x Depth	90mm x 36mm x 77mm	90mm x 18mm x 77mm	90mm x 18mm x 77mm
Mounting position	DIN	DIN	DIN
Installation depth	70mm	70mm	70mm
Number of width units	2	1	1
Connection	Plug in	Plug in	Plug in
ENVIRONMENTAL CONDITIONS			
Degree of pollution	2	2	2
Influence of the surrounding temperature	Maximum 95% humidity	Maximum 95% humidity	Maximum 95% humidity
Ambient Temperature			
• minimum	-25°C	-25°C	-25°C
• maximum	55°C	55°C	45°C
• during storage / minimum	-40°C	-40°C	-40°C
• during storage / maximum	75°C	75°C	75°C



1 ENCLOSURES BARRIERS & FIXINGS

421.1.201 Consumer units shall have enclosures manufactured from non combustible materials (e.g. steel) and comply with BS EN 61439-3.

416.2.1 Basic protection - live parts must be inside enclosures and suitable provisions must be made to prevent contact with live parts.

416.2.2 Installed consumer units must achieve IP4X on the top elevation of the enclosure.

416.2.3 Barriers must be secured in place with sufficient stability and durability to achieve and maintain appropriate levels of protection from live parts.

522.8.5 Every cable must be installed so that there is no undue stress or strain on the conductors & terminations (including meter tails) appropriate supports, clips/fixing should be used.

2 DEVICES & COMPONENTS

536.4.203 Only manufacturer approved parts can be used in low voltage assemblies i.e. consumer units. Do not mix brands. If in doubt, check with the manufacturer, otherwise the installer becomes the responsible manufacturer. Those introducing components not included within the original manufacturers verification take on the original manufacturers obligations.

3 ADDITIONAL PROTECTION BY 30mA RCD

415.1.1 RCDs (including RCBOs) with a residual operating current of no more than 30mA are prescribed for provision of additional protection.

411.3.4 Additional protection by use of a 30mA RCD shall be provided for all luminaire circuits in domestic household premises.

411.3.3 Additional protection by use of a 30mA RCD shall be provided for all socket outlets up to & including 32A rating.

411.3.3 Additional protection by use of a 30mA RCD shall be provided for all mobile equipment (for use outdoors) up to & including 32A rating.

522.6.201 Cables concealed in walls or partitions as less than 50mm depth and without earthed mechanical protection (e.g. conduit), shall be protected by 30mA RCD.

522.6.203 Cables buried in walls or partitions (which include metallic parts in their construction) shall be provided with additional protection by 30mA RCD, or be installed in earthed metallic carrier systems that also provide mechanical protection.

701.411.3.3 Additional protection by use of a 30mA RCD, shall be provided for all circuits serving or passing through a location with a fixed bath or shower.

531.1.1 Devices for protection against electric shock must be suitable for isolation as required in Chapter 46 & Section 537.

4 PROTECTION AGAINST UNWANTED TRIPPING OF RCDs & DIVISION OF THE INSTALLATION

314.1 (iv) Every installation shall be divided into circuits as necessary to reduce the possibility of unwanted tripping of RCDs from PE current (not due to a fault).

314.1 (i) Every installation shall be divided into circuits as necessary to avoid danger and inconvenience in the event of a fault.

314.1 (iii) Every installation shall be divided into circuits as necessary to take account of hazards that may arise from the failure of a single circuit such as a lighting circuit.

531.3.2 RCDs shall be selected and installed so as to limit the risk of unwanted tripping, by either dividing the installation into individual circuits using a 30mA RCBO on each circuit, or by ensuring that PE current (leakage current not due to a fault) is no more than 30% of 30mA.

560.7.1 Circuits of safety services, e.g. fire detection and alarm systems, CO detection and alarm systems, shall be independent of other circuits.

5 PROTECTION AGAINST FIRES CAUSED BY ARC FAULTS

131.1.1 The risk of ignition of flammable materials from high temperature or electric arc shall be minimized, there should be minimal risk of burns to people.

421.1.1 Protection against harmful effects from fire caused by electrical equipment is required. Such effects from heat or fire may be caused by failure of equipment or insulation faults, or arcs, sparks and high temperature particles.

421.1.7 AFDDs (arc fault detection devices) are devices that are recommended as a method for providing additional protection against fires caused by arc faults in final AC circuits. Such devices can be used in premises with sleeping accommodation and several other types of location/building.

532.6 AFDDs should be installed at the origin of each final (230V AC) circuit that is being protected i.e. in the consumer unit.

6 SAFE ISOLATION USING MAIN SWITCHES / PROTECTIVE DEVICES

462.1.201 A mains switch intended to be operated by ordinary persons (e.g. in domestic household premises) must switch both live conductors (L&N) of a single phase supply.

462.2 A means of isolation shall be provided for each circuit, for all live conductors (except as in 461.2) where the neutral is reliably to earth by a low resistance and required disconnection times can be met.

422.3.13 Every circuit requires a means of isolation from all live supply conductors. Common isolation of a group of circuits may be provided if service conditions allow.

7 PROTECTION AGAINST OVERVOLTAGE

443.4 (&5) Overvoltage protection is required in single dwellings where the value of the installation and equipment connected to it justifies the protection.

8 IDENTIFICATION

514.1.1 A suitable means of identification shall be provided for the identification & purpose of each item of switchgear.

Assembly utilises type A RCD protection. Other types of RCD may be necessary depending on application.

This is not a substitute for BS7671, other regulations also apply see BS7671 for full details.

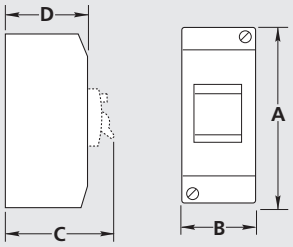
DIN ENCLOSURES DIMMENSIONS

APPROXIMATE DIMENSIONS (mm)

3 MODULE GENERAL PURPOSE ENCLOSURE IP20

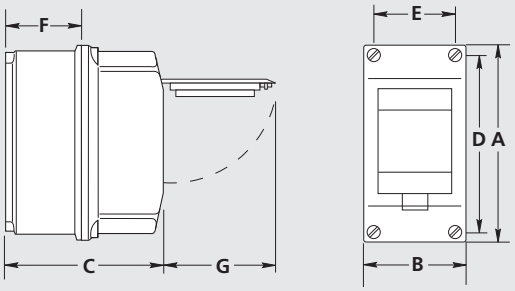
List No	A	B	C*	D
744/3	150	60	79	60

* Allow 4mm for dolly clearance.



3 MODULE ALL-PURPOSE ENCLOSURE IP65

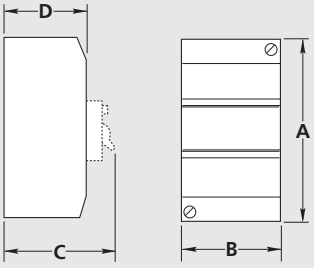
List No	A	B	C	D	E	F	G
CBE3	160	85	114	140	65	69	96



4 MODULE GENERAL PURPOSE ENCLOSURES IP20

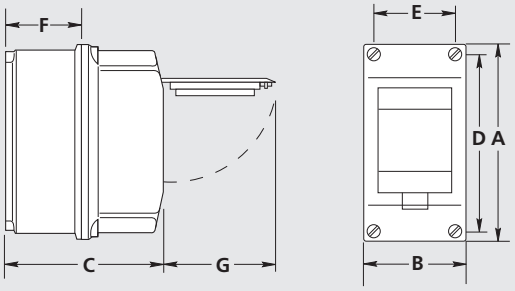
List No	A	B	C*	D
744/4	150	79	79	60

* Allow 4mm for dolly clearance.



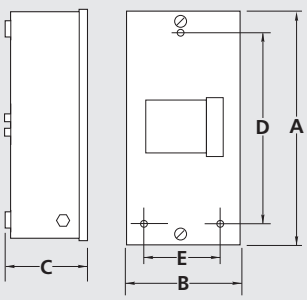
4 MODULE ALL-PURPOSE ENCLOSURE IP65

List No	A	B	C	D	E	F	G
CBE4	160	110	114	140	90	69	96

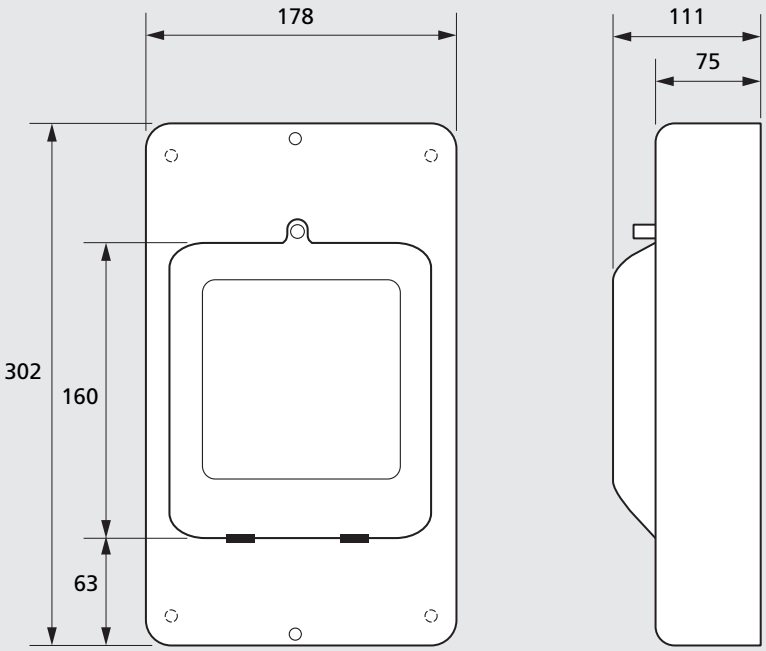


4 MODULE FABRICATED STEEL ENCLOSURE IP20

List No	A	B	C	D	E
844/4	223	112	66	184	73



APPROXIMATE DIMENSIONS (mm)



RECOMMENDED TIGHTENING TORQUES

Live and Neutral terminal cage	Earth Terminal cage	Earth Terminal bar (metal clad only)
2.3Nm	0.7Nm	1.2Nm
16mm² min	10mm² min	10mm² min
35mm² max	16mm² max	16mm² max

FUSE LINKS SPECIFICATION

Class of Operation: gG
Standards/Approvals: • ASTA Certified
• BS 1361 : 1971 including anendments 1, 2 and 3
TECHNICAL DATA
Rated Voltage: 415Vac
Amps: 5 to 100A
Rated breaking capacity: 33kA

FUSE LINKS DATA

		I^2t (AMP² SECONDS)			
CAT REF	AMP RATING	PRE-ARCING	TOTAL at 240V	TOTAL at 415V	NOM. WATTS LOSS
DSF40FL	40	2500	6800	14000	3.8
DSF45FL	45	3600	9880	20500	3.8
DSF50FL	50	4720	13000	27000	4.2
DSF60FL	60	9100	25000	52000	4.3
DSF80FL	80	24500	41500	58500	5.4
DSF100FL	100	43500	73500	105000	6.1