

Mains Distribution Assemblies for Construction Sites

B series Mains Distribution Assemblies for Construction Sites (MDAs) have been developed over the past 30 years and used on the majority of major UK construction projects in that period, including Heysham, Torness and Sizewell Nuclear Power Stations in the 1970s and 1980s, the Channel Tunnel and Channel Tunnel Rail Link, Canary Wharf, Jubilee Line Extension, Terminal 5, the Olympics, as well as major current projects such as Hinkley Point C, Thames Tideway and HS2.

MDAs are designed and manufactured in accordance with BS EN 61439-4 and key elements of the designs have been independently type tested, including bus bar systems, lifting arrangements, corrosion resistance, shock and vibration withstand, etc. A range of standard models is stocked which incorporate incoming devices from 100A to 1600A (see back page for details). We are able to make specific assemblies using a range of 9 standard enclosures in current ratings from 100A to 4000A. Assemblies rated up to 250A are presented in wall mounting enclosures with optional stands. MDAs rated at 400A are available in wall mounting or floor standing enclosures. Above 400A all enclosures are free-standing, double-sided.

Enclosures

B series MDA enclosures are manufactured from heavy gauges of mild steel sheet and incorporate projecting canopies, side hinged doors and removable gland plates in the underside of enclosures for incoming and outgoing cables. Smaller enclosures are fabricated from 1.5mm thickness steel and larger sizes from 2mm. Doors and canopies are manufactured from up to 2.5mm thickness steel depending on size.

All doors have a tamper proof, screw-fixed padlock facility, which can be removed when site conditions require unencumbered access to switchgear compartments. When doors are open, screw fixed shield plates prevent access to live parts.

Enclosures are finished by a pre-treatment and painting system which is Type Tested to BS EN 61439-4 for corrosion protection in heavily polluted environments. In practice, this should result in a 5 to 10 year enclosure life in a typical Construction application. Special finishes are available for extreme environments or where a longer life is required. The standard shade of the topcoat is Vermilion, RAL 2002 (bright red). Other shades can be offered but there is likely to be a cost premium and it will extend lead times.

Wall mounting enclosures (up to 400A rating) are available in a range of four sizes and provide protection to IP54 with optional galvanized stands for free-standing applications. Free standing enclosures (400A and above) are available in a range of five sizes and provide protection to IP44. All enclosures can be uprated to IP55 if specified at time of enquiry. We have type tested lifting arrangements for all free standing assemblies.

Please see over the page for details of the switchgear that can be incorporated into the different enclosure sizes, as well as enclosure dimensions, cable termination capacities, protection options, etc.



B2 series 125A MDA with time clock controlled contactors



B7 series 1600A MDA without stand extension fitted

Switchgear

Virtually all switchgear used across the range of MDAs is supplied by Schneider Electric. This world class range of equipment ensures MDAs have the highest level of performance, reliability and range. In the few areas where Schneider equipment is not used, other leading brands of switchgear are utilised. RCD protection is generally provided by Blakley Electrics MRCD series Modular RCDs, which provide protection in accordance with BS EN 60947-2 annex M. See data sheet PDS053 for information on MRCD series devices.

Incoming Terminals

The incoming supply cable terminates directly on to the incoming switch / MCCB on MDAs utilising B1 to B5 series enclosures. The B52, B6, B7 and B8 all incorporate separate incoming termination chambers fitted with heavy duty copper bar terminals enabling multiple incoming cables to be terminated (refer to the adjacent chart for cable acceptance of standard MDAs).

Incoming Devices

Nominal ratings of 100A, 125A, 200A, 250A, 400A, 630A, 800A, 1250A, 1600A, 2000A, 2500A, 3200A and 4000A, TP+N or 4P, all padlockable in the OFF position. A variety of different devices can be fitted including Switch Disconnectors, Switchfuses and MCCBs with or without Variable Time and Current RCD or Earth Fault protection. Where stand-by generators are required to provide power in the event of a mains failure, Auto Mains Failure systems or Manual Changeover Switches can be incorporated into the incoming arrangement. Bus couplers can also be incorporated enabling generators to supply Essential equipment only.

Bus Bars

On assemblies with a nominal rating of up to 200A, distribution switchgear is generally via MCBs mounted within type tested pan assemblies, which have a short circuit rating of 16kA. Higher current MDAs (400A and above) have bus bar systems fully rated at 35° C with ASTA Certified systems rated at 400A, 800A and 1600A. The 400A arrangement is certified at a breaking capacity of 25 kA, the 800A at 46 kA and the 1600A at 50 kA. Full test details can be provided on request. Other bus bar rating designs are derived from the certified systems.

Distribution

B series MDAs are designed to accommodate a very wide range of hard wired and plug-in distribution arrangements and can incorporate many different combinations of isolation, protection and control devices. The different combinations of devices are virtually limitless and we detail in the table opposite the approximate scope of B1 to B7 assemblies (see data sheet DDS121 for details of the new B8 series). See also Product Data Sheet ref. DDS118 for standard MDAs rated up to 250A fitted with socket-outlets

Metering and Instrumentation

A range of Public and Private metering equipment can be incorporated into MDAs. Blakley Electrics are approved suppliers of CT Chambers to a number of DNOs. Alternatively, CT Chambers and metering equipment (including smart meters with comms equipment) can be incorporated into larger MDAs, subject to DNO approval. For private metering applications, kWhr meters can be fitted to main incomers and outgoing sub-circuits, feeding an integral data collection unit, which can be accessed by laptop or via the web. For billing purposes, MID approved meters can be incorporated. See Product Data Sheets DDS110, DDS117 and DDS119 for further information on CT Chambers, sub-metering and smart metering.

Power Factor Correction

The incorporation of Automatic Power Factor Correction (PFC) equipment can reduce the size of supply required for a project. It can also reduce availability charges and eliminate penalties for poor power factor. PFC units are typically stand alone assemblies installed adjacent to the main MDA. See Tech Data Sheet TDS8 and Product Data Sheet DDS114 for additional information on PFC equipment. Also see the Blakley Calculator on our website for assistance in calculating the rating of PF equipment required.

Time Clock Control

In order to reduce overall electricity consumption at night and at the weekends, many sites now require the automatic control of site lighting and site offices. This can be achieved in many different ways and we have provided a number of solutions using time clocks, including assemblies with wireless remote override, which are detailed on Product Data Sheet DDS106. Other control systems can also be supplied, incorporating movement detectors and light sensitive switches. The Blakley Calculator (on the website) enables sites to calculate the savings made by switching off lights “out of hours”. Savings can be considerable.

Test Sockets

To enhance on-site safety, test sockets can be incorporated into MDAs, enabling a range of installation tests to be carried out “live” with a very high degree of safety. See data sheet DDS120 for further details.

Scope of B1 to B7 MDAs (see data sheet DDS121 for details of the B8 series MDA)								
	B1	B2	B3	B4	B5	B52	B6	B7
Incoming Device Options (4P unless stated otherwise)	• 125A Isolator • 100A 100mA RCD • 125A MCB	• 125A or 200A Isolator • 100A 100mA RCD • 125A MCB with or without variable RCD	• 125A or 200A Isolator • 100A 100mA RCD • 125A MCB with or without variable RCD • 200A MCCB with or without variable RCD	• 400A Isolator • 400A Switchfuse, TP • 400A MCCB with or without variable RCD	• 400A Isolator • 400A Switchfuse, TP • 400A MCCB with or without variable RCD	• 400A or 630A Isolator • 400A or 630A Switchfuse, TP • 400A or 630A MCCB, with or without variable RCD • AMF / MCO	• 630A or 800A Isolator • 630A or 800A Switchfuse, TP • 630A or 800A MCCB, with or without variable RCD • AMF / MCO	• Isolator from 1000A to 3200A • MCCB from 1000A to 3200A with or without RCD or EF protection • AMF / MCO
Max Incoming 4C Cable	100A: 35mm ² 125A: 50mm ²	100A: 35mm ² 125A: 50mm ² 200A: 70mm ²	100A: 35mm ² 125A: 50mm ² 200A: 95mm ²	240mm ²	2 x 120mm ²	2 x 240mm ²	8 x 300mm ² 1C (2 per phase) 2 x 300mm ² 4C	24 x 400mm ² 1C (6 per phase) 3 x 400mm ² 4C
Distribution Switchgear Options	• 4W TP MCB Pan Assembly • 4 x TP MCBs + 4 x 4P RCDs	• 8W TP MCB Pan Assembly • 12W TP MCB Pan Assembly • 8 x TP MCBs + 8 x 4P RCDs	• 2 x TP MCCBs + 8W TP MCB Pan Assembly • 12W or 16W TP MCB Pan Assembly • 12 x TP MCCBs + 12 x 4P RCDs	• 4 x TP MCCBs + 8W TP MCB Pan Assembly • 16 x TP MCCBs + 16 x 4P RCDs	Up to 12 no. TP MCCBs or 8 no. 4P MCCBs rated at up to 250A, with or without RCD protection.	Up to 12 no. TP MCCBs or 8 no. 4P MCCBs rated at up to 250A, with or without RCD protection.	Up to 16 no. TP MCCBs or 12 no. 4P MCCBs rated at up to 250A, with or without RCD protection. Distribution MCCBs up to 630A rating can be fitted. Please refer inquiries and include the cable sizes to be terminated.	Up to 16 no. TP MCCBs or 12 no. 4P MCCBs rated at up to 250A per distribution section, with or without RCD protection. Distribution MCCBs up to 2000A rating can be fitted. Please refer inquiries and include the cable sizes to be terminated.
Socket Options	As a high number of sockets can be incorporated, please detail socket and protection requirements at time of inquiry. BS7671 Regulation 704.410.3.10 states that on Construction Sites mains voltage sockets up to 32A rating must be protected by a 30mA RCD to provide supplementary Basic (Direct Contact) protection. Regulation 704.411.3.2.1 states that mains voltage sockets rated above 32A must be protected by an RCD with a sensitivity not exceeding 500mA. BS7375 states that on Construction Sites all socket outlets rated above 32A must be interlocked to prevent insertion or withdrawal of plugs on load. See also DDS118 for standard MDAs fitted with sockets.							
Dimensions H x W x D mm	452 x 627 x 165 H = 1304 on stand	654 x 735 x 165 H = 1304 on stand	865 x 735 x 282 H = 1304 on stand	1050 x 980 x 332 H = 1600 on stand	1372 x 1105 x 562 Height to gland plate: 500mm	1480 x 1314 x 562 Height to gland plate: 500mm	1789 x 1753 x 688 Height to gland plate: 630mm	1770 x 1888# x 824 Height to gland plate: 300mm ##
## B7 MDAs are supplied on low stands and a separately ordered stand extension kit is required for most site installations, which increases the height / ground clearance by 600mm.								
Typical Wt.	20 kgs	30 kgs	60 kgs	125 kgs	200 kgs	225 kgs	300 kgs	520 kgs
Short Circuit Rating	At time of inquiry please specify the PSC rating at the point of installation and we will incorporate switchgear to suit. Alternatively we can advise the standard short circuit rating of an MDA at the time of inquiry. Please note: if MCCBs are incorporated, the maximum short circuit rating of the MDA will be 30 kA.							
Pan Assemblies	Pan assemblies can be incorporated within high current MDAs. As pan bus bars are rated at 250A, they must be protected by a suitably rated MCCB with or without RCD. Please note: pans reduce the number of MCCBs that can be accommodated within a high current MDA. Alternatively a segregated end box can be fitted to house the pan. Pans accept Schneider Acti9 series MCCBs to BS EN 60947-2: SP, DP or TP; rated up to 63A; Types "B", "C" or "D". Pans also accept SP RCBOs up to 45A and VIGI Add-on RCDs to convert MCCBs to MCB/RCDs. All MCCBs have a short circuit rating of 15 kA (unconditional). Please refer to our Customer Service Centres for details of enhanced short circuit protection through cascading.							
Other Options	MDAs can incorporate the following additional equipment: PF Correction; Lightning / Surge Protection; Bus Couplers; Thermostatically controlled anti-condensation heaters; Test sockets; Photocell or time clock controlled lighting contactors, etc							
Standards	MDAs are designed and manufactured in accordance with BS EN 61439-4 and incorporate high quality components to the following Standards: MCCBs to BS EN 60947-2; Pan Assemblies to BS EN 60493-3; MCCBs to BS EN 60898; Switchfuses and Switch Disconnectors to BS EN 60947-3; Variable RCDs to BS EN 60947-2 annex m; fixed RCBOs to BS EN 61008; RCBOs to BS EN 61009; Socket Outlets to BS EN 60309-2; RLV Transformers to BS EN 61558 Parts 1, 4 and 23.							

Stock Mains Distribution Assemblies for Construction Sites

B series Mains Distribution Assemblies (MDAs) are stocked with incoming devices rated from 100A to 1600A. Below are part numbers and outline specifications of the stocked products. If the standard configurations are not suitable for your project, please contact our Customer Service Centres who would be pleased to quote you for assemblies configured to your exact requirements.

Please refer to Tech Data Sheet TDS3 for additional information on the full range of MDAs and data sheet DDS118 for standard MDAs fitted with socket outlets.

Part	Type	Incoming Device, 4 pole	Outgoing Configurations
S140495	B1/I125-4P/MGPA4, Wall Mounting	125A Switch	MCB Pan Assembly, 4W TP+N
S140491	B1/RCD100-4P/MGPA4, Wall Mounting	100A 100mA RCD	
S140492	B2/I125-4P/MGPA8, Wall Mounting	125A Switch	MCB Pan Assembly, 8W TP+N
S140496	B2/RCD100-4P/MGPA8, Wall Mounting	100A 100mA RCD	
S140497R	B2/MRCD125C-4P/MGPA8, Wall Mounting	125A MCB + Variable RCD	
S140441	B2/I125-4P/MGPA8/TC-CC6, Wall Mounting (see data sheet for full details)	125A Switch	MCB Pan Assembly, 8W TP+N c/w 8 x 32A TP MCBs & 6 x contactors, time clock controlled
S140479	B2/I200-4P/MGPA12, Wall Mounting	200A Switch	MCB Pan Assembly, 12W TP+N
S140494	B3/MC200-4P/3CBR/MGPA8, Wall Mounting	200A MCCB	Facility for 3 x 4P CBRs rated up to 160A MCB Pan Assembly, 8W TP+N
S140493R	B3/MRCD200-4P/3CBR/MGPA8, Wall Mounting	200A MCCB+Variable RCD	
S140498	B3/MC200-4P/MGPA16, Wall Mounting	200A MCCB	MCB Pan Assembly, 16W TP+N
S140499R	B3/MRCD200-4P/MGPA16, Wall Mounting	200A MCCB+Variable RCD	
S140490R	B3/I200-4P/CBR3/MGPA8, Wall Mounting	200A Switch	2 x 160A 4P CBRs each with variable RCD protection and 1 no. 160A 4P CBR feeds an MCB Pan Assembly, 8W TP+N
S140290R ##	B4/MC400-4P/MRCD3-4P/MGPA8 Wall Mounting	400A MCCB	1 x 250A 4P MCCB + variable RCD # 1 x 160A 4P MCCB + variable RCD # 1 x 125A 4P MCCB + variable RCD feeds an MCB Pan Assembly, 8W TP+N
S140593	Galvanized Stand for B1 to B3 MDAs	Part S140809	Galvanized Stand for B4 MDA
S141459 ##	B5/MC400-4P/MRCD3-4P/MGPA12x2 Free-standing, double-sided	400A MCCB	1 x 250A 4P MCCB + variable RCD # 2 x 160A 4P MCCBs + variable RCD each feeding a Pan Assembly, 12W TP+N
S140261R ##	B52/ITC/MC630-4P/MRCD5-4P/MGPA8 Free-standing, double-sided	630A MCCB	2 x 250A 4P MCCBs + variable RCDs # 2 x 160A 4P MCCBs + variable RCDs # 1 x 160A 4P MCCB + variable RCD feeds an MCB Pan Assembly, 8W TP+N
S140285R ##	B6/ITC/MC800-4P/MRCD7-4P/MGPA12 Free-standing, double-sided	800A MCCB	2 x 400A 4P MCCBs + variable RCDs # 2 x 250A 4P MCCBs + variable RCDs # 2 x 160A 4P MCCBs + variable RCDs # 1 x 160A 4P MCCB + variable RCD feeds an MCB Pan Assembly, 12W TP+N
S140308R ##	B7/ITC/MC1600-4P/MRCD8-4P/MGPA12 Free-standing, double-sided From January 2022, B7 MDAs are supplied on low stands and a stand extension kit (S140308SE) should be ordered to achieve a ground clearance of 900mm.	1600A MCCB	1 x 800A 4P MCCB + variable RCD # 1 x 630A 4P MCCB + variable RCD # 2 x 400A 4P MCCBs + variable RCDs # 2 x 250A 4P MCCBs + variable RCDs # 1 x 160A 4P MCCB + variable RCD # 1 x 160A 4P MCCB + variable RCD feeds an MCB Pan Assembly, 12W TP+N

- MCCBs are adjustable on site from 100% to 40% of their In rating i.e. 160A-64A, 250A-100A, 400A-160A, 630A-250A, 800A-320A. See elsewhere on this data sheet for information on the full range of MDAs and separate data sheets for detailed information on the stock 400A, 630A, 800A and 1600A MDAs outlined above.

- If Test Sockets are required, add TS to the part number i.e. S141459TS, S140290TSR, S140261TSR, S140285TSR and S140308TSR.