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TECHNICAL BULLETIN
SAFELY USING MULTI-SERVICE DISTRIBUTION BOARDS

April 2021

ABOUT BEAMA

BEAMA is the long established and respected trade association for the electrotechnical sector. The association has a strong track record in the development and implementation of standards to promote safety and product performance for the benefit of manufacturers and their customers.

This technical bulletin provides guidance for electrical contractors when contracted to work, by the Building Network Operators (BNO), on Multi Service Distribution Boards (MSDBs).

Details of other BEAMA Technical Bulletins and Guides can be found on the BEAMA website www.beama.org.uk

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SAFELY USING MULTI-SERVICE DISTRIBUTION BOARDS

The BEAMA Cut-out and Feeder Pillar Group and NAPIT explore the types of equipment and the correct safety procedures that the electrical contractor must consider when carrying out work.

Electrical Contractors are not considered to be responsible for any installations which involve the supply authority's equipment, such as service cables, cut-out fuses, or the connection to metering equipment.

There are situations where they become involved and are being contracted to work on the Building Network Operators equipment with apartment buildings and complexes.

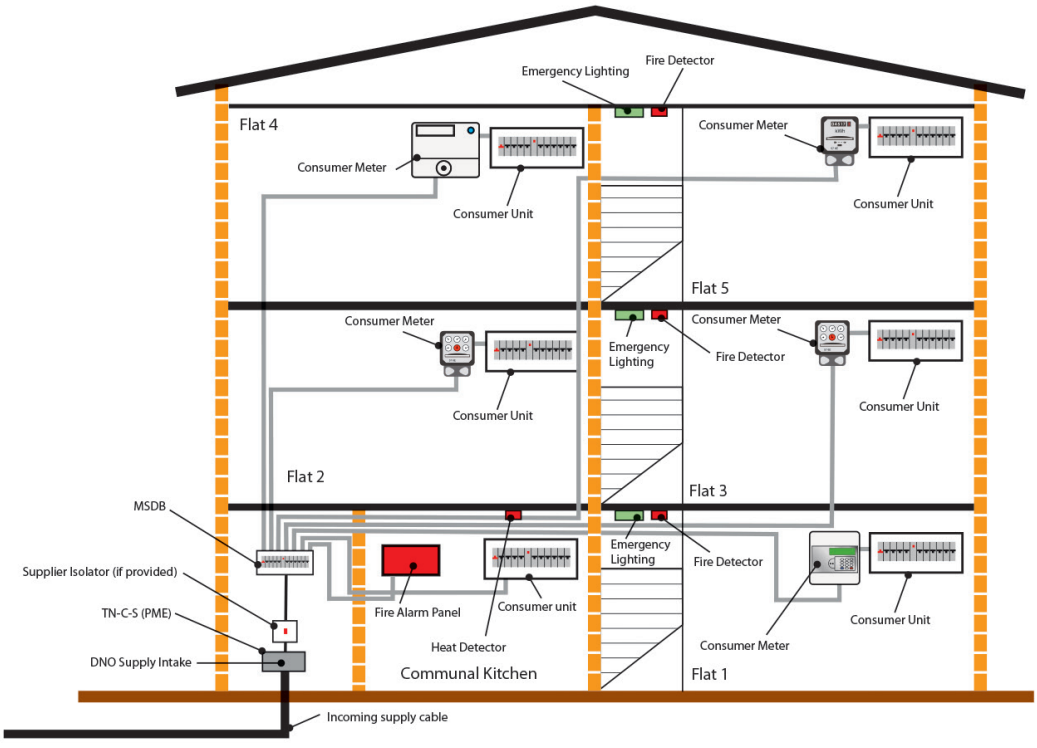
What is a Building Network Operator (BNO)?

A Building Network Operator is a term used to describe an organisation that owns or operates the electricity distribution network within a multi occupancy building, see **Figure 1**. Between the intake cut-out position (the first point of isolation) and the customer's installation.

A Building Network Operator (BNO) is defined in Energy Networks Association (ENA) Engineering Recommendation G87 (ENA EREC G87) as: 'The organisation that owns or operates the electricity distribution network within a multiple occupancy building, between the intake position and customers installations. The BNO may be the DNO, another licensed distributor or a third party exempt from an electricity distribution license (e.g. a facilities management company)'.

A BNO is responsible for the design, installation and maintenance of the building network. The building shall satisfy the requirements of Building Regulations, BS 7671 (IET Wiring Regulations), BS 8313 (code of practice for the accommodation of building services in ducts) and BS 9999 (code of practice for fire safety in the design, management and use of buildings). The developer should liaise with all utilities including the Distribution Network Operator (DNO) at the earliest opportunity to determine what the appropriate arrangement will be.

FIGURE 1 – Typical electrical distribution system within a multiple occupancy building



Building Network Operators Equipment

Multi-Service Distribution Boards (MSDBs) are an essential part of the electrical distribution in multi-occupancy buildings (apartment blocks), see **Figure 2**. Essentially, they are a fuseboard receiving a supply from the electricity utility and distributing it via 63 to 100A fuses to individual dwellings.

Historically, MSDBs were installed and operated by the Distribution Network Operator (DNO). Increasingly, they are installed and/or operated by the Building Network Operator (BNO) and their electrical contractor.

With the door open, older MSDBs may have large areas of unshrouded hazardous live conductors and provide little or no protection against contact with hazardous live parts. More recent designs usually provide protection against electric shock by barriers, etc. When all the fuse carriers are in place, protection is in accordance with IPXXB of BS EN 60520.

When the 63 or 100A fuse carriers are removed the fuse base provides protection close to IPXXB. However, this is not the case when higher rating circuits are incorporated in larger MSDBs. The larger circuits are usually based on the use of 'J' type fuse carriers with ratings up to 630A, or even 800A. When a fuse carrier is removed to isolate a circuit, a large contact that can be live, is exposed. In addition, a 'J' type fuse handle has no proven load breaking or fault making capability when it is inserted and removed.

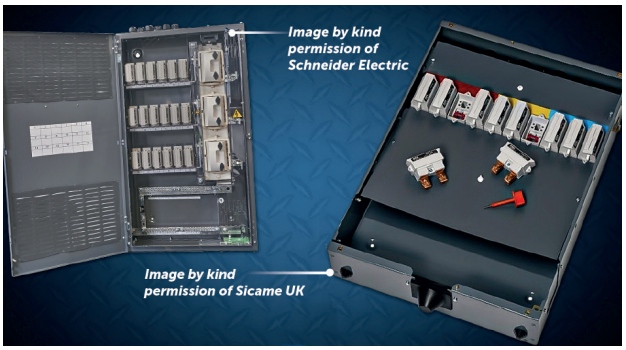


FIGURE 2 – Examples of MSDB's

MSDBs are very simple, reliable, low-voltage assemblies that benefit from incorporating components manufactured specifically for the application. The 63 or 100A fuse units are essentially house service cut-outs. Currently these include double screw cable terminals and are stringently tested to more onerous standards than most equivalent industrial products. The 'J' type fuse links include a fast-acting characteristic, thereby, minimising the energy let-through in the event of a fault and much reducing the risk of a fire.

DNOs are very familiar with operating MSDBs and similar equipment; they have an enviable record to demonstrate that MSDBs can be operated safely. Operations involving switching of circuits and/or exposure to live parts are all carried out following rigorous training, risk assessment and then working in accordance with a strict procedure.

Image by kind permission of Kelvatek

FIGURE 3 – Checking safety before inserting 'J' Type Fuse

Suitable PPE must be worn while carrying out the tasks (visor, gloves, etc). When appropriate a Fusemate, or equal, is used to check a circuit is not faulted before a fuse carrier is inserted.

Inevitably, the training required is of a specialist nature and is best provided by an organisation with experience in operating such equipment. Most DNOs and a number of private organisations offer this type of training.

PPE is available from specialist organisations. The level of protection provided by the PPE is dictated by the risk associated with the task to be undertaken. To demonstrate it is safe to insert a 'J' type fuse link, typically a device such as Fusemate is inserted in place of a 'J' type fuse, see **Figure 3.** These are designed to carry maximum load current for a short period of time in order to allow a circuit to be tested. When closed under 'normal load' current conditions the device will complete the circuit and generally display the current level. If closed under fault current conditions, the fuse in the Fusemate blows, clearly indicating it is not safe to insert the fuse link in a standard 'J' type fuse handle.

Safety precautions for working on MSDB's

Anyone involved in working on or near live equipment needs to discharge their obligations under the Electricity at Work Act. BNOs, and when relevant their contractors, need to operate MSDBs safely. This needs to include the earlier and less well shrouded MSDBs. Working practices at least equal to those used by the DNOs are essential.

When it is necessary to work on energised MSDBs, more in-depth guidance on the practises necessary than can be provided in this paper is available from a number of sources. These include the Health and Safety Executive's Guide HSG85 and BS EN 50110.

When followed, these documents provide guidance on good practise when working on energised equipment and a means of quantifying risks and the level of PPE required to mitigate those risks.

MSDB's are a very reliable, time proven, form of low voltage distribution assembly that requires specific safety considerations to ensure the safety of operators and anyone adjacent to them. This includes specialist training, use of the appropriate procedures and PPE, and when necessary, suitable test equipment, see **Figure 4**. The necessary measures to ensure the safe use of MSDBs are available and should always be used to ensure there are no issues.

Image by kind permission of Lucy Electric

FIGURE 4 – Carrying out safe working

For further information please visit:

ENA: http://www.energynetworks.org/

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