NAPIT | technical bulletin

Surge Protective Devices

This technical bulletin is to give NAPIT members advice and guidance when installing surge protective devices (SPDs).

In recent years we have seen a number of SPD assemblies that can be installed directly onto the busbar without the need for an additional overcurrent protective device, as shown in Fig 1. This is applicable in domestic electrical installations within consumer units.

In previous years, the installation of SPDs within consumer units were mostly fitted with an overcurrent protective device by installing a suitably rated circuit-breaker, as shown in Fig 2. It is worth noting that some manufacturers still recommend this method of installation.

Fig 1. SPD installed directly onto the busbar and protected by the DNO cut-out fuse

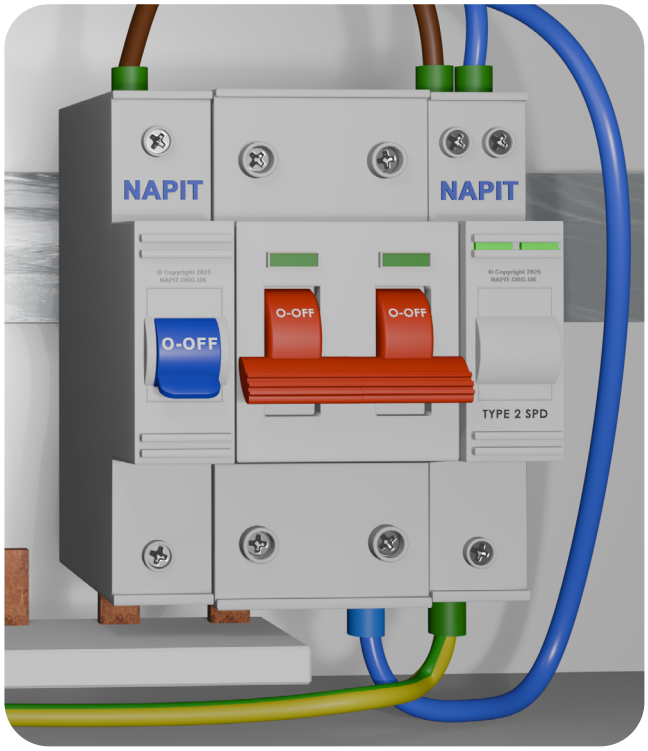

Fig 2. SPD protected by a dedicated circuit-breaker

This change has raised some debate as to whether the example given in Fig 1 is compliant with the requirements of BS 7671:2018+A2:2022+A3:2024, specifically Regulations 534.4.5.1 and 534.4.5.2.

The NAPIT technical team has completed some detailed research and had in-depth communication involving SPD manufacturers and other industry partners to enable us to give clear technical guidance on installing SPDs directly onto the busbar.

The following information is available;

- All SPDs must conform to BS EN 61643-11 and must be protected against overheating and thermal runaway. Therefore, SPD manufacturers include a thermal disconnector, this melts a heat sensitive element (soldered joint) when the internal temperature reaches a certain threshold to prevent a fire hazard. The thermal disconnector has no current rating or breaking capacity and is not classed as an overcurrent protective device according to the BS EN 60898 series.
- The Distributors Network Operators (DNO) cut-out fuse purpose is to protect the distributors service cable to the metering equipment from overload and overcurrent faults. The DNO cut-out fuse and assembly is the property of the DNO and is out of the control of the designer/installer and outside the scope of BS 7671.
- Regulation 534.4.5.2 is very clear that if the OCPD operates, due to SPD failure including end-of-life, then the supply to the electrical installation must not be interrupted. The homeowner could have vital medical equipment or be dependent on a stair lift, where any loss of supply would be a substantial safety and/or health risk. Therefore, the SPD manufacturer will need to prove and confirm (through laboratory testing) that their device will 'fail safe' due to a short-circuit before the OCPD operates.
- BEAMA and the ENA released a joint statement on the 26th January 2026 to clarify the conditions that apply to use the DNO cut-out fuse. It stated that the DNO cut-out fuse can be relied upon in **extreme conditions** to perform a short duration fault clearing role. This is from a safety aspect only and **not** to provide functional protection.

The BEAMA/ENA statement requires that ALL of the following five conditions must be met:

1. The SPD is in a household or similar installation.
2. The SPD is installed either inside a single-phase consumer unit (CU) conforming to BS EN (IEC) 61439-3, or inside an enclosure together with a switch-disconnector supplied as a composite unit conforming to BS EN (IEC) 60947-3. Both these products shall have a rated conditional short-circuit current of 16 kA.

   This conditional rating is qualified using a 100 A BS 88-3 (formerly BS 1361) fuse which also covers 60 A and 80 A fuse ratings. BS 1361 type II and BS 88-3 fuse-link key performance characteristics are identical therefore, either is acceptable.
3. The SPD conforms to BS EN 61643-11.
4. The SPD manufacturer's instructions state that OCPD 2 can be omitted and specify the required OCPD 1 characteristics.
5. The SPD does not require withdrawal of the DNO cut-out fuse for its replacement or maintenance.

Designer/Installer Considerations:

There are a vast range of SPDs on the market. There will be differences in how they are to be installed and how they operate depending on the manufacturers instructions. The SPD must always conform to BS EN 61643-11.

The best approach is to always use an SPD manufacturer that can provide good technical data and clear instructions on how their particular device is to be installed and operates.

The designer/installer may also find that meeting all the five conditions, listed on page 2, to omit a dedicated and suitably rated circuit-breaker and rely on the DNO cut-out fuse for short-circuit protection is difficult to achieve and may be time consuming to investigate with the SPD manufacturer.

Following the information given in this technical bulletin, including the content from the BEAMA/ENA statement, the NAPIT technical team are advising our members to select one of the two following options when installing SPDs in consumer units:

Option 1 (preferred): Install an SPD, taking into account the manufacturer's instructions, **with** a dedicated and suitably rated circuit-breaker to provide overcurrent protection, as shown in Fig 2.

Option 2: Install an SPD (busbar type) **without** a dedicated and suitably rated circuit-breaker. In this case, all of the five conditions must be met as listed in the BEAMA/ENA statement, taking into account the manufacturer's instructions.