beama
The trade association for energy infrastructure & systems

DOES IT COMPLY?

CONSUMER UNIT SAFETY CHECK-LIST

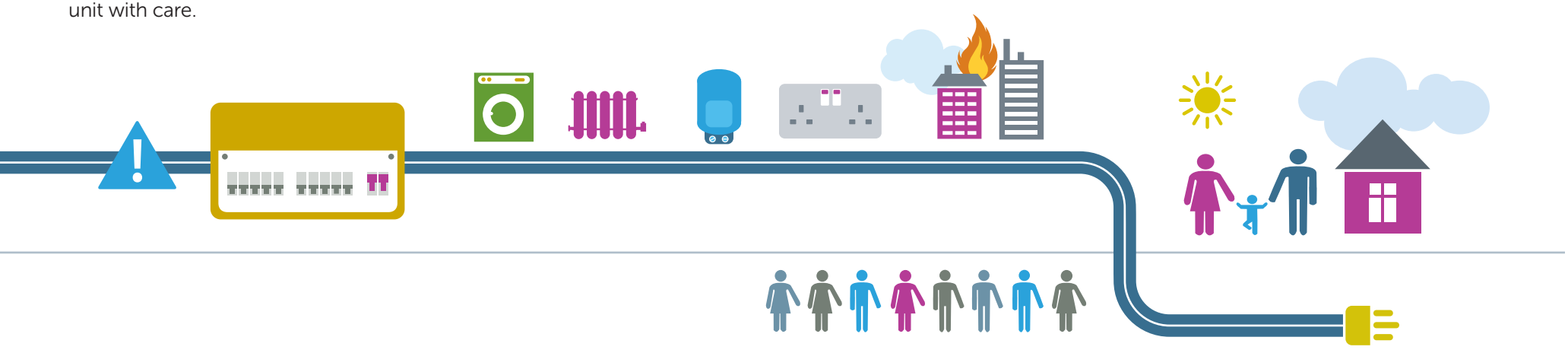
August 2025

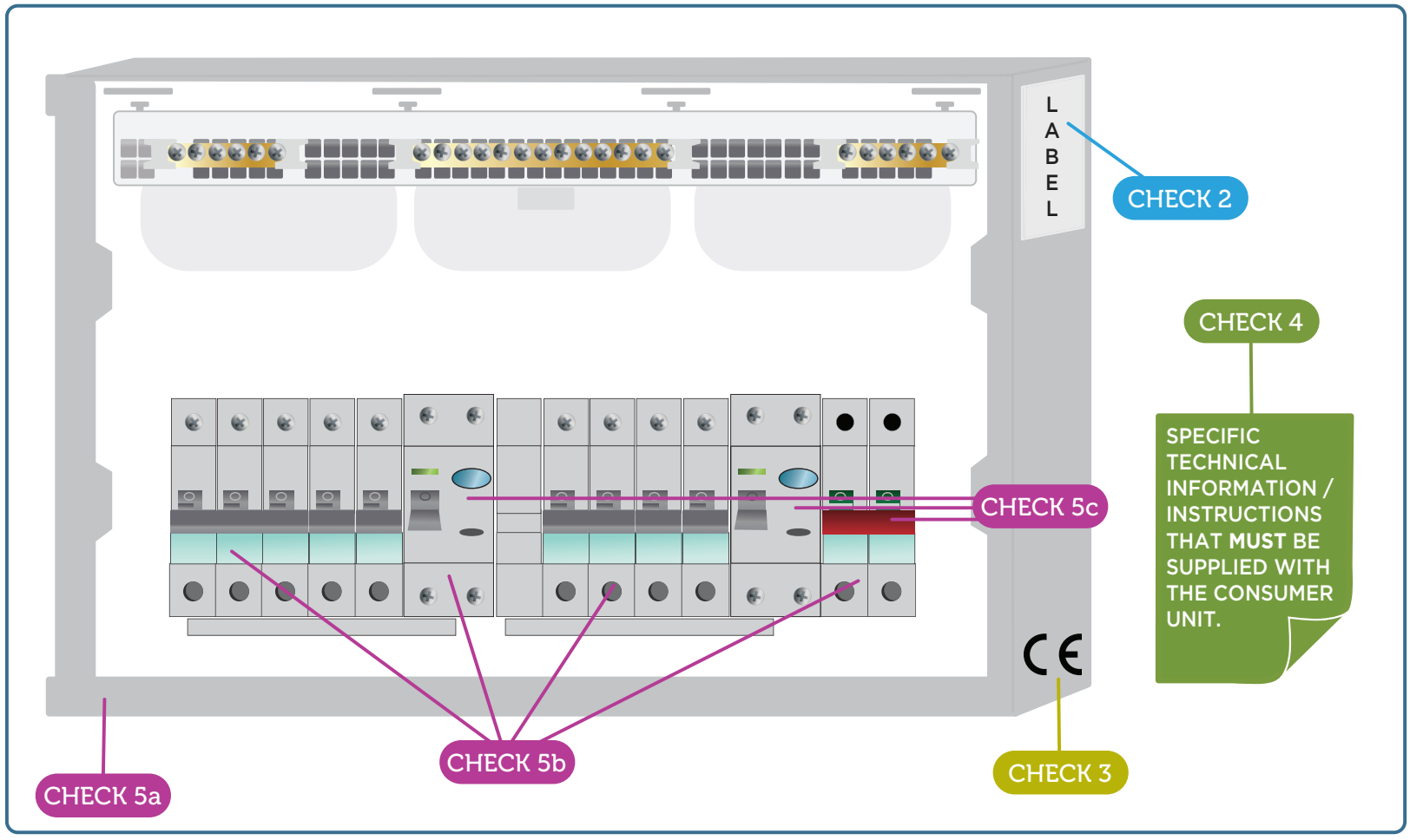
A consumer unit to BS EN / BS EN IEC 61439-3 is a particular type of single-phase distribution board defined by its specific conditional short-circuit rating of 16 kA. It is principally for use in household premises when supplied from a house service cut-out with a maximum 100 A fuse-link.

This safety check-list outlines simple measures to help you to safeguard against being deceived into buying counterfeit or non-compliant products.

Non-compliant products can present significant risks to people and property and carry serious consequences for the distributor and installer of such products. Non-compliant products may not provide protection against fire or electrocution, potentially resulting in lethal consequences. Choose your electrical consumer unit with care.

The use of individual components such as MCBs and RCDs complying with their respective product standard(s) does not indicate their compatibility when installed inside an enclosure. The product standard BS EN / BS EN IEC 61439-3 contains the performance and safety requirements for the integration of devices and components into an enclosure for household and similar installations. It covers subjects such as temperature rise tests to safeguard against overheating and a specific UK test in annex ZB / DD which requires a 16 kA conditional short-circuit test qualifying it as a consumer unit, together with certain constructional requirements.





CHECK 1 – General checks

* Purchasing Channel – do you know and trust the person / organisation offering you this product?
* Can your supplier provide you with a copy of a verification certificate to prove conformity?
* Does the verification certificate come from a recognised laboratory / authority?

The use of **second-hand** consumer units and / or circuit protection devices is NOT recommended because their history of use, possible hidden faults, and wear may compromise their ability to function correctly, increasing the risk of electrical fires, equipment damage, and electric shock. Without proper testing and certification, there is no guarantee that these devices will operate safely or trip reliably in the event of a fault. The manufacturer warranty will no longer be valid.

CHECK 2 – Is the consumer unit label correctly marked?

1. The following information must be provided on the designation label(s) together with specific location requirements (additional information is permitted).

   a) Label is visible and legible when the consumer unit is installed and in operation e.g. the label can be on the outside of the consumer unit or inside the door / lid intended to be opened in normal use.

   b) Consumer unit manufacturer's name or trade mark.

   c) Type designation or identification or any other means of identification number, etc making it possible to obtain relevant information from the consumer unit manufacturer.

   d) Means of identifying date of manufacture (this can be a serial number, etc).

   e) BS EN 61439-3 or BS EN / IEC 61439-3 or BS EN IEC 61439-3.

   f) Rated current of the consumer unit using the symbol I_{nA} e.g. I_{nA} 100 A.

   g) For consumer units conforming to BS EN IEC 61439-3:2024.

   Each consumer unit shall be marked with the I_{nc}, RDF and / or I_{ng} of each outgoing unit e.g. RCCB and each outgoing circuit / functional unit e.g. RCBO, for its specific arrangement / location in the consumer unit. The marking can be by a single label covering various rated currents and/or RDF.

   Where devices are supplied fitted in the consumer unit, the assembly manufacturer shall apply the relevant label to the DBO or device.

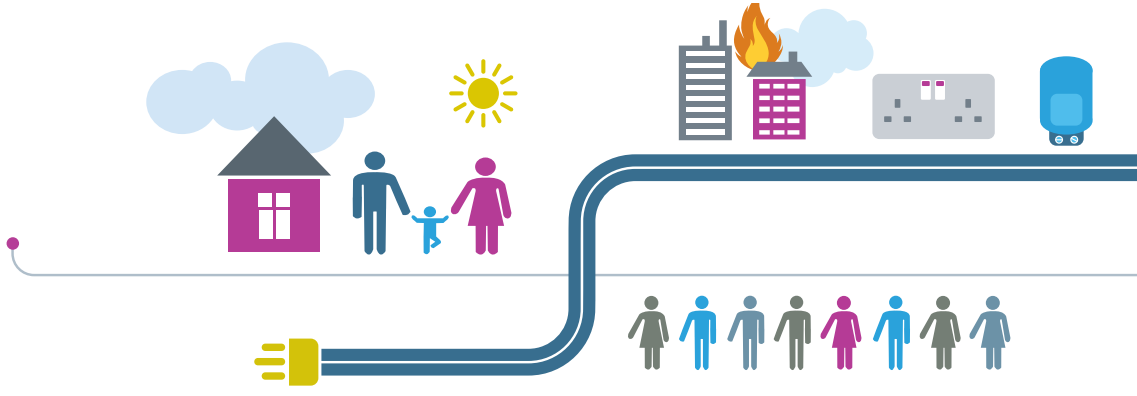
   Where devices are fitted in the consumer unit on site by the installer, the consumer unit manufacturer shall provide labels and instructions with the consumer unit to be marked by the installer on the consumer unit or device.

   All marking shall be readily visible after installation. It can be visible after a hinged/sliding cover or door is opened but not located behind covers designed to be held in place by screws or similar means.

CHECK 3 – Is the consumer unit marked to meet legislative requirements?

a) Is the product CE and / or UKCA marked? (Indicates conformity with all relevant legislation). The CE / UKCA marking can be on the consumer unit label.

b) Manufacturers shall indicate on the consumer unit their name, registered trade name or registered trade mark and the postal address at which they can be contacted. The 'manufacturer' is any natural or legal person who manufactures the consumer unit or has the consumer unit designed or manufactured, and markets it under his name or trade mark.



CHECK 4 – Is the consumer unit supplied with the correct information / documentation for safe selection and installation?

1. Unless required to be marked on the consumer unit, the relevant interface characteristics must be provided in the technical documentation supplied with the consumer unit. Some key safety characteristics to be included in the document are:

   a) Rated current of the consumer unit (I_{nA}).

   - This is the maximum load current the consumer unit is designed to distribute through the main switch / incoming device.

   b) Rated current of a circuit (I_{nc}).

   - The outgoing protection devices such as MCBs or RCBOs would be assigned an I_{nc} for when they are installed in the consumer unit, this can be their marked rated current or a lower value.
   - This would apply to the RCCBs in a split load / dual consumer unit. The rated current I_{nc} of the RCCB when installed in the consumer unit may be lower than its unenclosed marked rated current according to its product standard rating.

   c) Rated diversity factor (RDF).

   - The rated diversity factor (grouping factor) is applied to a group of continuously and simultaneously loaded outgoing circuits. Domestic cooker, shower and socket circuits are not generally considered to be continuously loaded and therefore, are not normally de-rated by the RDF factor.

   g) Rated conditional short-circuit current of an ASSEMBLY (I_{cc}).

   A consumer unit is required to have a 16 kA rated conditional short-circuit current identified by the symbol I_{cc}.

CHECK 5 –Does the consumer unit enable conformity to certain 18th Edition wiring regulations?

1. BS 7671:2018 IET Wiring Regulations 18th Edition contains some specific requirements for consumer units (assemblies).

   a) Within domestic (household) premises, consumer units shall comply with BS EN 61439-3 and shall: have their enclosure manufactured from non-combustible material, or be enclosed in a cabinet or enclosure constructed of non-combustible material. Ferrous metal, e.g. **steel, is deemed to be an example of a non-combustible material.**

   b) **Devices and components** installed in the consumer unit **shall only be those declared suitable by the consumer unit manufacturer.** The use of individual components complying with their respective product standard(s) does not indicate their compatibility when installed in a consumer unit, the consumer unit standard BS EN 61439-3 validates this. It should be noted that incompatible devices in assemblies could result in overheating, electric shock and / or failure.

This relates to

I. The practice of installing devices of one manufacturer into consumer units of another manufacturer.

II. The practice of installing a newer model device e.g. MCB into an older version consumer unit, even if both are from the same manufacturer.

   c) The **main switch and RCCB shall be provided with overload protection by an overcurrent protective device e.g. upstream service fuse-link;** unless the installation designer has determined that they cannot be overloaded. The simplest, most flexible method for RCCB overload protection in split-load / dual RCCB consumer units, to cover all the variables for domestic installations, such as different circuit load arrangements and varying service fuse-link current ratings is a split-load / dual RCCB consumer unit with 100 A* RCCBs. This does not preclude the use of 63 A* or 80 A* rated RCCBs where the electrical installation designer has determined their conformity in relation to the installation arrangements and overload protection.

To achieve overload protection of RCCBs or switches, the rated current of the overcurrent protective device shall be selected according to the manufacturer's instructions.

*Note *The RCCB enclosed rated current of the circuit inside the consumer unit is denoted by the symbol I_{nc} and unless required to be marked on the consumer unit, should be stated in the documentation supplied with the consumer unit.*

d) The correct type of RCD e.g. RCCB or RCBO shall be selected from the following types: AC, A, B or F. Further guidance on selecting the correct type of RCD can be found in BEAMA publication: THE RCD HANDBOOK from which the following table is extracted.

Note: Three phase applications are not applicable to consumer units.

APPLICATION EXAMPLES OF TYPES AC, A, B AND F RCDS

In all cases equipment / appliance manufacturers instructions must be considered when selecting the Type of RCD.

RCD	Examples of type of equipment / load
Type AC	Resistive, Capacitive, Inductive loads generally without any electronic components, typically: • Immersion heater • Oven/Hob with resistive heating elements • Electric shower • Tungsten & halogen lighting NOTE: BS 7671:2018+A2:2022 Regulation 531.3.3 states that RCD Type AC shall only be used to serve fixed equipment, where it is known that the load current contains no DC components.
Type A	Single phase with electronic components, typically: • USB socket outlets (unless specifically advised by the USB socket outlet manufacturer that Type AC RCDs are suitable). • Single phase invertors • Class 1 IT and Multimedia equipment • Power supplies for Class 2 equipment • Appliances such as a washing machine that is not frequency controlled e.g. d.c. or universal motor • Lighting controls such as a dimmer switch and home and building electronic systems LED drivers • Induction hobs • Electric Vehicle charging where any smooth DC fault current is less than 6 mA **Type A is also suitable for Type AC applications.**
Type F	Frequency controlled equipment / appliances, typically: • Some washing machines, dishwashers and driers e.g. containing synchronous motors* • Some air conditioning controllers using variable frequency speed drives **Type F is also suitable for Type AC and Type A applications.**

Type B	• Heat Pumps[1] • Electric Vehicle charging • Photo voltaic Three phase electronic equipment typically: • Inverters for speed control • UPS Power Electronic Converter Systems (PECS) typically: • industrial machines • cranes **Type B is also suitable for Type AC, Type A and Type F applications.** Care should be taken to avoid confusing Type B RCD characteristics with type B circuit breaker instantaneous tripping, particularly when considering RCBOs.
Type B+	Type B+ RCDs are not recognised in BS 7671 and do not have an international or harmonised (BS EN) standard. Care should be taken to avoid confusing Type B+ RCD characteristics with type B circuit breaker instantaneous tripping, particularly when considering RCBOs.

[1] A Type B RCD with a specific characteristic suited for certain types of heat pumps can be required. BS EN IEC 60335-2-40:2023+A11:2023 (Household and similar electrical appliances. Safety – Particular requirements for electrical heat pumps, air-conditioners and dehumidifier) requires the installation instructions to specify the RCD to be installed, generally for heat pumps intended to be installed in residential buildings an RCD having a rated residual operating current not exceeding 30 mA. BEAMA recommends contacting the heat pump manufacturer for specific advice on the type of RCD.

BS EN 62423:2012+A12:2022 states that that Type B RCDs have high resistance against unwanted tripping even if the surge voltage causes a flashover and a follow-on current occurs and in case of inrush residual currents with a maximum duration of 10 ms which can occur in case of switching ON electronic equipment or EMC-filters. This maximum duration of 10 ms / Non-Tripping time is sometimes referred to as a "short-time delay" and can still provide additional protection, however, it must not be confused with an RCCB of type S which is not permitted to be 30 mA and cannot afford additional protection.

Power electronic converter PEC
device or part thereof for the purpose of electronic power conversion, including signalling, measurement, control circuitries and other parts, if essential for the power conversion function

Power electronic converter system PECS
one or more power electronic converters intended to work together with other equipment. For PECS, if a Type B RCD is required, the product will be marked with the symbol ⚠. The instructions shall include a caution notice highlighting that where an RCD is used for protection against electrical shock, only an RCD of Type B is allowed on the supply side of this product.

* Manufacturer's instructions should be taken into account.