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Switching device for islanding (SDFI)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC 63552 has been prepared by subcommittee 23K: Electrical energy efficiency products, of IEC technical committee 23: Electrical accessories. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
23K/133/FDIS	23K/135/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

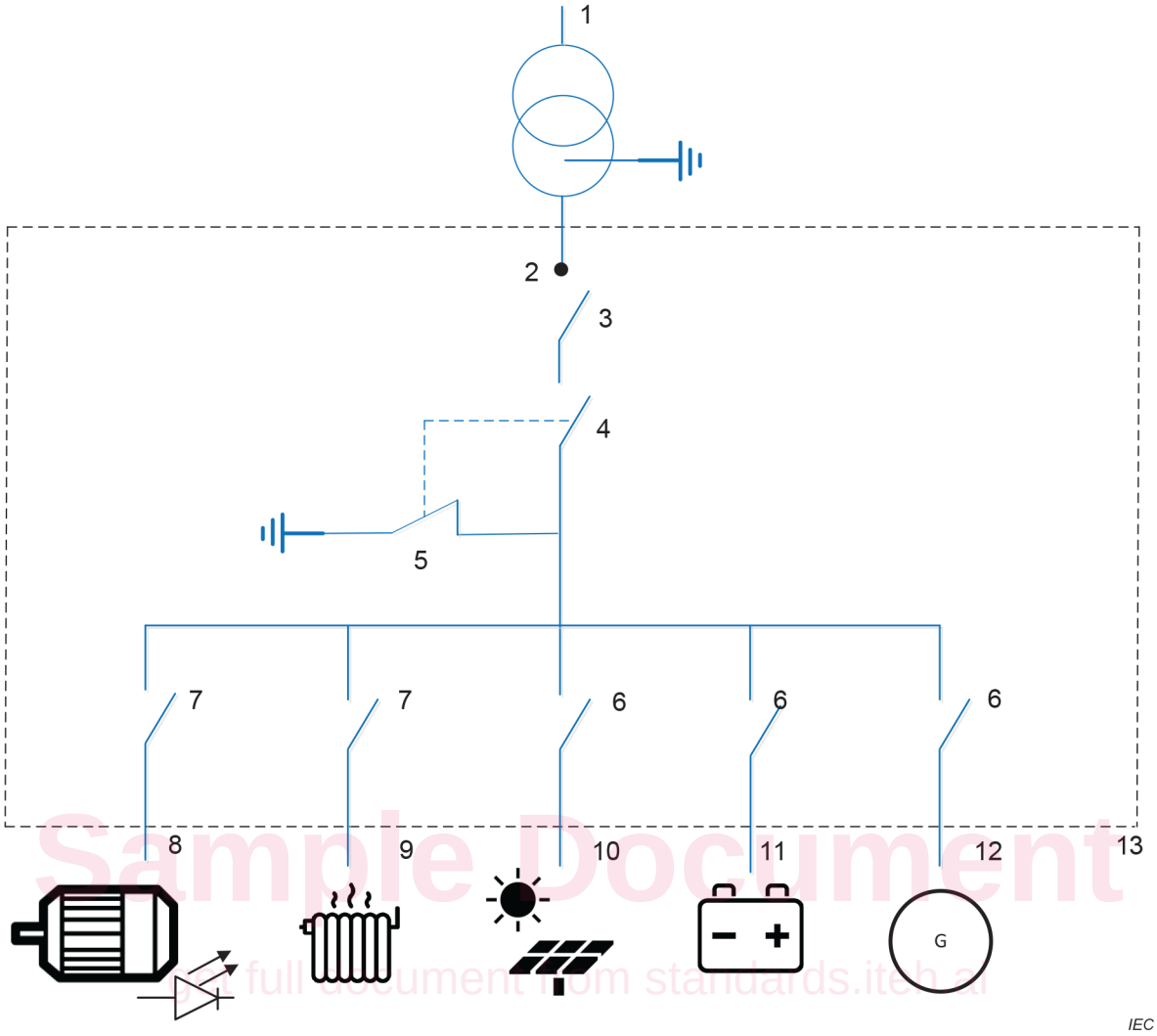
IEC 60364-8-82 aims to ensure that low-voltage electrical installations are compatible with both current and future methods for safely and effectively delivering electrical energy to current-using equipment, regardless of whether the energy comes from Distribution System Operator (DSO) or local generation. IEC 60364-8-82 provides requirements and recommendations for to low-voltage electrical installations, whether or not they are connected to a distribution network, and are capable of operating:

– with either local power supplies,
– or with local storage units,
– or with both,

and that monitors and controls the energy from the locally connected sources delivering it to:

– either current-using equipment,
– or local storage units,
– or distribution networks.

Such electrical installations are designated as prosumer's electrical installations (PEIs) by IEC 60364-8-82 which defines specific devices (or functions) to ensure the correct and safe operation of PEI depending on their operating mode. In the case of an islandable PEI, IEC 60364-8-82 defines a "Switching Device For islanding (SDFI)", identified as device 4 in Figure 1.



Key

1	Distribution network	8	Non-sheddable loads (sensitive loads)
2	Point of connection (POC)	9	Sheddable loads (adjustable loads)
3	Main switching device	10	Solar generator
4	Switching device for islanding (SDFI)	11	Electrical energy storage system
5	System referencing conductor switching device	12	Other generator (wind, etc.)
6	Source switching device	13	Main distribution board
7	Load switching device		

SOURCE: IEC 60364-8-82:2022, Figure 4.

Figure 1 – Example of islandable PEI architecture

The objectives of this document is to define the functions, requirements and tests of a SDFI in line with the requirements stated in IEC 60364-8-82.

1 Scope

This document applies to switching device for islanding, hereafter referred to as SDFI, for household and similar uses, primarily intended to be used for energy efficiency (EE) purposes with local production or local storage of energy, or with both.

SDFI are intended to be installed in low voltage prosumer electrical installations (PEI) able to operate in island mode as defined in IEC 60364-8-82, so called islandable PEI.

SDFI are used to disconnect the PEI from the grid to allow operating the PEI in island mode and further reconnect the PEI to the grid.

They are intended to be used in islandable PEI which operate:

– in connected mode (direct feeding mode or reverse feeding mode), and

– in island mode,

as defined in IEC 60364-8-82.

NOTE 1 See definitions 3.10 and 3.13 of island mode and for connected mode respectively.

NOTE 2 Switching of a PEI to island mode can be subject to local regulations (grid codes) or to specific agreement with system operators. Reverse feeding is also usually subject to local regulations (grid codes).

SDFI are part of the electrical installation.

This document applies to SDFI for operation in AC single or multiphase main circuits with rated voltages not exceeding 440 V AC, frequencies of 50 Hz, 60 Hz or 50/60 Hz. They are intended to be used in installations with prospective short circuit currents not exceeding 25 000 A.

NOTE 3 DC operations are not covered by this edition and are kept under consideration for a future revision of this document.

The SDFI is composed at least of one switching unit (SU) and a control unit (CU) to monitor its switching operations from grid connected to island mode and reverse wise.

The SDFI can be provided with a communication interface for exchange with external systems such as the Customer Energy Manager (CEM) defined in IEC 63402 series.

According to the intended use, the SDFI can be interlocked with a system referencing conductor switching device (SRCSD) according to IEC 63445 or it can be integrated with a SRCSD in a single unit.

NOTE 4 According to its intended use, the SDFI can also be used as an interface switch with the interface protection (integrated or not). See 3.19 and 3.20.

SDFI are intended for use in circuits where protection against electrical shock and overcurrent is provided according to installation rules for low voltage electrical installations, unless the SDFI already contains such protective function. SDFI are not requested to provide isolation function and overcurrent protection according to IEC 60364-8-82. However, the isolation function can be provided by a SDFI fulfilling the requirements of the relevant product standards.

SDFI are installed by instructed persons (IEC 60050-195:2021, 195-04-02) or skilled persons (IEC 60050-195:2021, 195-04-01). They are intended to be used by ordinary persons (IEC 60005-195:2021, 195-04-03) and do not require maintenance.

It is important to note that the main overcurrent protective device of installations cannot be used as a SDFI in single dwellings or similar islandable PEI (see Clause D.5 of IEC 60364-8-82:2022)