

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Power sources for a wireless communication device –
Part 1: General requirements of power modules**
(standards.iteh.ai)

**Sources d'énergie pour un appareil de communication sans fil –
Partie 1: Exigences générales relatives aux modules d'alimentation**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER SOURCES FOR A WIRELESS COMMUNICATION DEVICE –**Part 1: General requirements of power modules**

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International Standard IEC 62952-1 has been prepared by subcommittee 65B: Measurement and control devices, of IEC technical committee 65: Industrial-process measurement, control and automation.

This International Standard is based on VDI/VDE 2185 Blatt 3.

The text of this standard is based on the following documents:

FDIS	Report on voting
65B/1053/FDIS	65B/1056/RVD

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

A list of all parts of the IEC 62952 series, published under the general title *Power source for a wireless communication device*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

Industrial wireless communication network devices like a pressure transmitter or a valve positioner are mostly using non-copper-cable power sources. These devices are using a power module for their power source that can contain a battery and / or an energy harvesting element. In order to increase usability, power source of wireless sensors and actuators require a standardized interface and harmonized requirements.

This part of IEC 62952 specifies interface and specification of power source of wireless devices and does not specify the mechanical interface within a wireless communication device and the power source. Additionally, energy harvesting is a key technology for power source of wireless devices. This document also specifies interface and specification of energy harvesting devices.

This document addresses the general requirements of power sources for wireless communication devices.

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POWER SOURCES FOR A WIRELESS COMMUNICATION DEVICE –

Part 1: General requirements of power modules

1 Scope

This part of IEC 62952 specifies the general requirements of power modules for wireless communication devices (WCD). This document includes additional optional specifications to permit use in explosive atmospheres and harsh environments.

This document specifies the usability over the life-cycle of a power module including replacing in explosive atmosphere. Unreplaceable batteries such as memory backup are out of the scope of this standard.

Secondary batteries or power modules are covered by this document, but method of its power charging is out of scope.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- IEC 62952-1:2016
<http://standards.iteh.ai/catalog/standards/sist/62952-1-2016/iec-62952-1-2016>
 ab9e15fd7f3/iec-62952-1-2016
- IEC 60079-0:2011, *Explosive atmospheres – Part 0: Equipment – General requirements*
- IEC 60079-11:2011, *Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"*
- IEC 60086-1, *Primary batteries – Part 1: General*
- IEC 60654-3, *Operating conditions for industrial-process measurement and control equipment – Part 3: Mechanical influences*
- IEC 60721-3-4:1995, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 4: Stationary use at non-weatherprotected locations*
- IEC 61326 (all parts), *Electrical equipment for measurement, control and laboratory use – EMC requirements*
- IEC 62952-2:2016, *Power sources for a wireless communication device – Part-2: Profile for power modules with batteries*
- IEC 62952-3: —1, *Power sources for a wireless communication device – Part-3: Generic energy harvesting adapter module*

¹ Under preparation. Stage at the time of publication: IEC/CDV:2016.

3 Terms, definitions, abbreviated terms, acronyms and conventions

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

battery

one or more cells electrically connected by permanent means, fitted in a case, with terminals, markings and protective devices etc., as necessary for use

[SOURCE: IEC 60086-1:2015, 3.2, modified – Addition of "by permanent means".]

3.1.2

power module

stand-alone power supply element

3.1.3

power source

mechanical unit with electrical interface in order to provide power for a wireless communication device

Note 1 to entry: A power source can contain a power module or a line powered module.

<https://standards.iteh.ai/catalog/standards/sist/c2029ea2-8990-4250-bea7-ab9e15fdc7f3/iec-62952-1-2016>

3.1.4

primary battery

battery that is not designed to be electrically recharged

[SOURCE: IEC 60086-1:2015, 3.9, modified]

3.1.5

secondary battery

battery that is designed to be electrically recharged

Note 1 to entry: The recharge is accomplished by way of a reversible chemical reaction.

[SOURCE: IEC 60050-482:2004, 482-01-03, modified – Replacement of "cell" by the term "battery".]

3.1.6

wireless communication

communication in which electromagnetic radiations are used to transfer information without the use of wires or optical fibers

3.2 Abbreviated terms and acronyms

For the purposes of this document, the following abbreviated terms and acronyms apply.

GEHAM	Generic energy harvesting adapter module
WCD	Wireless communication device

3.3 Convention for capitalizations

Capitalized terms are either based on the rules given in the ISO/IEC Directives Part 2 or emphasize that these terms have a specific meaning throughout this series of IEC 62952.

4 General requirements

4.1 General

A WCD contains typically a sensor or an actuator or communication routing capability with a wireless interface for example according to IEC 62601, IEC 62591, or IEC 62734. The WCD is powered by replaceable batteries or power modules.

Figure 1 shows the possible various types of power modules that can be used as a power source within a wireless communication device and that are specified in this series of IEC 62952.

This document does not address the safety, fire and regulatory requirements typically imposed on batteries and other power sources.

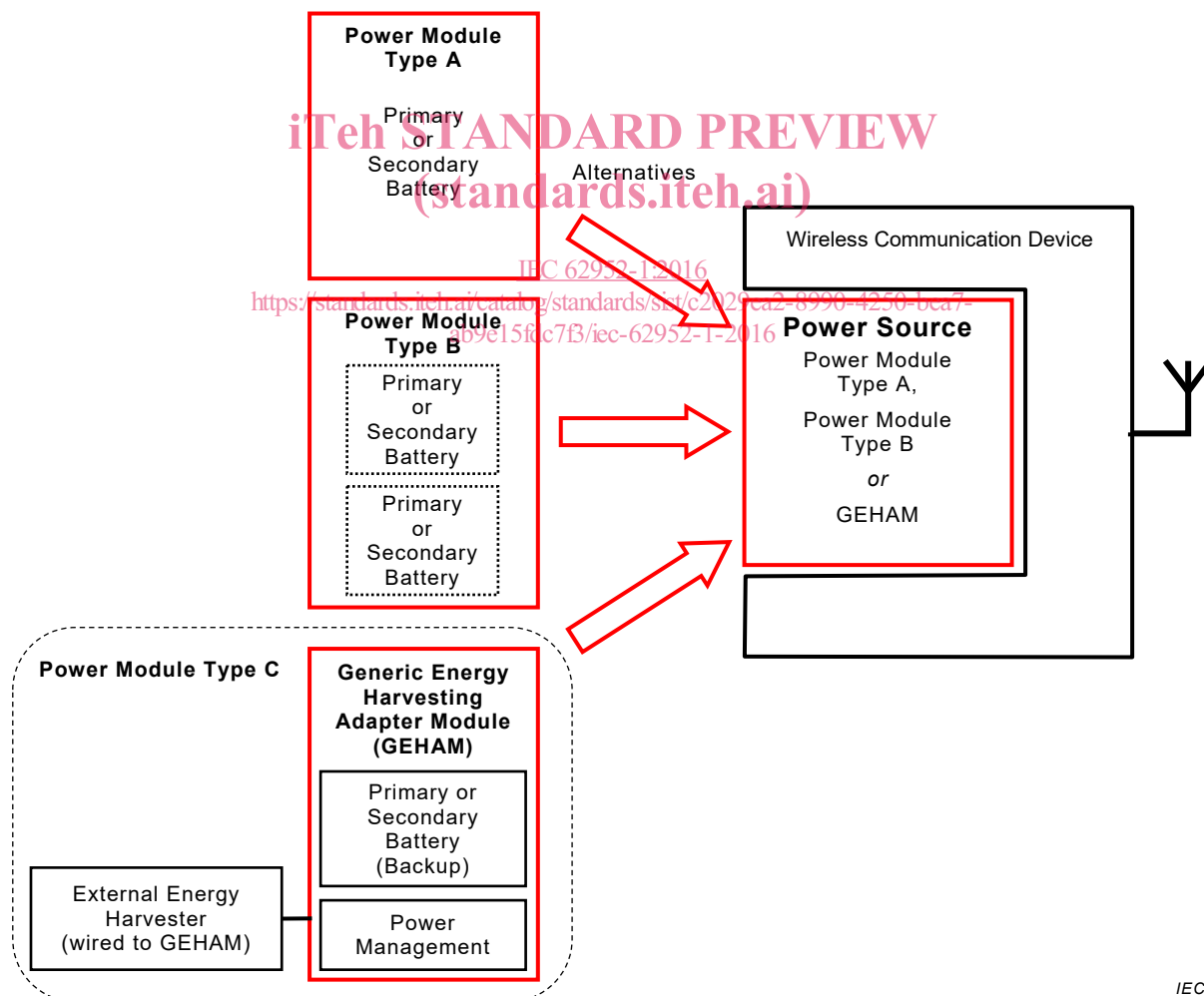


Figure 1 – Various power sources applicable for a wireless communication device

NOTE The IEC 62952 series does not describe the mechanical interface within a wireless communication device and the power source as it could be interpreted by Figure 1. The red colored elements in Figure 1 are the subject of this IEC 62952 series and might not have identical dimension.

The Power Modules Type A, Type B and Type C are the internal energy source for the WCD. The Power Modules Type A and Type B shall provide the capability that only batteries with identical electro-mechanical parameters, as specified in IEC 62952-2, can be used. IEC 62952-3 specifies requirements and profiles of Power Module Type C.”

A power module shall

- be a primary or secondary battery (Type A);
- be a mechanical unit that contains primary or secondary batteries (Type B);
- consist of generic external energy harvesting adapter module (GEHAM) and external energy harvester (Type C).

4.2 Compliance

Claims of compliance shall clearly indicate compliance to the complete part or a subset of a part of the IEC 62952. Part 2 and Part 3 of IEC 62952 provide tables that allow the vendor to claim assertion of compliance to a specific clause or subclause of Part 1.

The vendor shall make an explicit claim in the conformance statement table if intrinsic safety is supported.

An example of an Implementation conformance statement of a vendor is given in Table 1.

The conformance tables produced by the vendor shall be a copy of the conformance table provided in the relevant profile document (for example IEC 62952-2), with the column “Assertion” added and filled in with the description of what is implemented. This filled table should be part of the product documentation if a claim of compliance to the referenced profile document (for example IEC 62952-2) is made.

Table 1 – Example of an implementation conformance statement

(Sub-) Clause	Header	Presence	Constraints	Assertion
1	Scope	YES	Does not contain requirements	—
2	Normative references	Partial	—	IEC 62952-3 does not apply
3	Terms, definitions, abbreviated terms, acronyms and conventions	YES	Does not contain requirements	—
4	General requirements	—	—	—
4.1–4.4.4	—	YES	—	—
4.5	Protection for explosive atmospheres	Partial	—	Supports Zone 1
4.6	Harsh environment	—	—	—
4.6.1	General	YES	—	—
4.6.2	Vibration and shock	YES	—	Supports the full range
4.6.3	Humidity	NO	—	Not supported.
4.6.4	Temperature	Partial	—	Supports the range 10 °C to 30 °C
4.6.5	Corrosive environment	YES	—	Supports the full range
4.6.6	Air pressure	YES	—	Supports the full range
4.7	Interchangeability	YES	—	—
4.8	Electrical parameters	YES	—	—

4.3 Design

For the conceptual design of the power modules the following points shall apply.

- Anti slip-, grip-surfaces;
- Wear less or non-wearing materials for brackets and other stressed components;
- Resistant materials against material fatigue;
- Low proper weight or self-weight;
- Electrolyte emission prevention;
- Single handed use/handling (transportation and exchange including handling of the locking device).

4.4 Logistics

4.4.1 Storage and marking

The storage conditions and marking of batteries shall be according to IEC 60086-1 (Primary batteries), or relevant secondary battery standards.

The end user shall establish an appropriate process to handle the batteries in the power modules. This includes the marking process of the power modules during the maintenance process if the batteries are exchangeable.

4.4.2 Maintenance

For an easy maintenance of the power modules the following points shall apply.

- Simple assembly or disassembly under hindered/harsh conditions (darkness and badly accessible control/ metering points);
- Exchangeability and battery handling with the use of gloves;
- No use of special tools for the entire battery exchange;
- Marking, see 4.4.1;
- Exchangeability in rain and snow;
- For an on-site inspection of the power module, a mechanism for direct measurement of capacity or voltage shall be provided.

4.4.3 Transportation in a plant

Measures shall ensure the protection of the device from electro static discharges and short circuits. The requirements in IEC 60086-1 about transport shall apply.

4.4.4 Disposal

It shall be easy to separate the battery from power modules without a special tool for handling and to recycle the battery. The design should promote the ability to recycle and properly dispose of the battery.

4.5 Protection for explosive atmospheres

4.5.1 General

Products claiming compliance for use in hazardous areas shall comply with all of the requirements of 4.5 dependent on the selected Zone.

4.5.2 Transportation and replacement

The power module shall be according to IEC 60079-0 and IEC 60079-11: