

# TECHNICAL REPORT



---

## Power supplying scheme for wearable systems and equipment

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 29.200

ISBN 978-2-8322-3685-7

**Warning! Make sure that you obtained this publication from an authorized distributor.**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 System model.....	6
4.1 General.....	6
4.2 Existing model .....	6
4.3 System models of wearable devices.....	7
4.3.1 Wearable devices .....	7
4.3.2 Charging and connections .....	8
4.3.3 Generator utilizing physical activity of organism.....	8
5 Use case .....	9
5.1 General.....	9
5.2 Use case examples.....	9
5.2.1 Generator in shoes .....	9
5.2.2 Animal tracking.....	9
6 Interface.....	10
7 Measurement method .....	10
Bibliography.....	12
Figure 1 – Solar cell with a secondary battery wristwatch.....	7
Figure 2 – Generator with secondary battery.....	7
Figure 3 – Generator in shoe .....	9
Figure 4 – Animal use .....	10

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**POWER SUPPLYING SCHEME FOR WEARABLE  
SYSTEMS AND EQUIPMENT**

**FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a Technical Report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC TR 63071, which is a Technical Report, has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
100/2751/DTR	100/2816/RVC

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

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

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

## INTRODUCTION

Wearable devices are being introduced into the market, but each device employs its own power charging method and power source device. Wearable devices are used to support human life and health. The duration and life of the power source, as well as easy charging and replacing of a power source, is a crucial factor for wearable devices that are primarily powered by batteries. A power generator is one solution for this power duration or life, since it provides power generated by user activities and/or also from environmental sources. Also, connectivity and compatibility of power and data transmission is important.

This Technical Report does not specify the power generating or energy harvesting methods and devices themselves, but focuses on interoperability and measurement methods of power-supplying devices and systems.

## **POWER SUPPLYING SCHEME FOR WEARABLE SYSTEMS AND EQUIPMENT**

### **1 Scope**

This document provides models and frameworks for the power-supplying scheme for wearable systems and equipment. This document does not specify power generating or energy harvesting methods and the devices themselves.

### **2 Normative references**

There are no normative references in this document.