



IEC 63563-4

Edition 1.0 2025-02

INTERNATIONAL STANDARD

**Qi Specification version 2.0 –
Part 4: Power Delivery**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.240.99; 35.240.99

ISBN 978-2-8327-0187-4

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

QI SPECIFICATION VERSION 2.0 –

Part 4: Power Delivery

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 63563-4 has been prepared by technical area 15: Wireless Power Transfer, of IEC technical committee 100: Audio, video and multimedia systems and equipment. It is an International Standard.

It is based on *Qi Specification version 2.0, Power Delivery* and was submitted as a Fast-Track document.

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

Draft	Report on voting
100/4249/FDIS	100/4279/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.

The structure and editorial rules used in this publication reflect the practice of the organization which submitted it.

This document was 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.

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

- reconfirmed,
- withdrawn, or
- revised.



Qi Specification

Power Delivery

Version 2.0

April 2023

DISCLAIMER

The information contained herein is believed to be accurate as of the date of publication, but is provided “as is” and may contain errors. The Wireless Power Consortium makes no warranty, express or implied, with respect to this document and its contents, including any warranty of title, ownership, merchantability, or fitness for a particular use or purpose. Neither the Wireless Power Consortium, nor any member of the Wireless Power Consortium will be liable for errors in this document or for any damages, including indirect or consequential, from use of or reliance on the accuracy of this document. For any further explanation of the contents of this document, or in case of any perceived inconsistency or ambiguity of interpretation, contact: info@wirelesspowerconsortium.com.

RELEASE HISTORY

Specification Version	Release Date	Description
2.0	April 2023	Initial release of the v2.0 Qi Specification.

Table of Contents

1	General	3
1.1	Structure of the Qi Specification	3
1.2	Scope	4
1.3	Compliance	4
1.4	References	4
1.5	Conventions	5
1.6	Power Profiles	7
2	Introduction	8
3	Power Receiver construction	10
3.1	Dual resonant circuit	13
3.2	Rectification circuit	15
3.3	Sensing circuits	15
3.4	Communications modulator	15
3.5	Communications demodulator	15
3.6	Output disconnect	15
3.7	Shielding	16
4	Power Receiver design guidelines (informative)	17
4.1	Large-signal resonance check	17
4.2	Power Receiver coil design	18
5	Power Transmitter construction	19
5.1	Power Transmitter reference designs	19
5.2	Power transfer control	19
6	Power consumption	22
7	Meaningful functionality	23
8	Unintentional Magnetic Field Susceptibility (Informative)	24
8.1	Limits	24
8.2	Protection	24
8.3	Power Transmitter detection	24
9	Load Steps	25
9.1	Load step test procedure	25
9.2	Load dump test procedure	28

10 Over-voltage protection	30
11 External Power Input (Informative)	37
11.1 Available power—Extended Power Profile only	37
12 Power Levels (Extended Power Profile only)	38
12.1 Potential Load Power	38
12.2 Light load	38
13 System Efficiency (Informative)	39
13.1 Definition	39
13.2 Power Transmitter efficiency	40
13.3 Power Receiver efficiency	42
14 Stand-by Power (Informative)	43
14.1 Transmitter Measurement Method	43
15 Object Detection (Informative)	44
15.1 Resonance shift	44
15.2 Capacitance change	46
16 Power Receiver Localization (Informative)	47
16.1 Primary Coil array based Free Positioning	47
16.2 Moving Primary Coil based Free Positioning	50
16.3 User-assisted positioning	51

1 General

The Wireless Power Consortium (WPC) is a worldwide organization that aims to develop and promote global standards for wireless power transfer in various application areas. A first application area comprises flat-surface devices such as mobile phones and chargers in the Baseline Power Profile (up to 5 W) and Extended Power Profile (above 5 W).

1.1 Structure of the Qi Specification

General documents

- Introduction
- Glossary, Acronyms, and Symbols

System description documents

- Mechanical, Thermal, and User Interface
- Power Delivery
- Communications Physical Layer
- Communications Protocol
- Foreign Object Detection
- NFC Tag Protection
- Authentication Protocol

1.2 Scope

The *Qi Specification, Power Delivery* (this document) comprises guidelines and requirements for Power Receiver design, including circuitry, power consumption, operating power levels, power transfer efficiency, and standby power.

1.3 Compliance

All provisions in the *Qi Specification* are mandatory, unless specifically indicated as recommended, optional, note, example, or informative. Verbal expression of provisions in this Specification follow the rules provided in ISO/IEC Directives, Part 2.

Table 1: Verbal forms for expressions of provisions

Provision	Verbal form
requirement	“shall” or “shall not”
recommendation	“should” or “should not”
permission	“may” or “may not”
capability	“can” or “cannot”

1.4 References

For undated references, the most recently published document applies. The most recent WPC publications can be downloaded from <http://www.wirelesspowerconsortium.com>.