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INTERNATIONAL STANDARD

colour inside

Printed electronics –
Part 301-1: Equipment – Contact printing – Rigid master – Measurement method of plate master external dimension

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PRINTED ELECTRONICS –

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FOREWORD

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International Standard IEC 62903-1 has been prepared by IEC technical committee:119: Printed electronics.

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

FDIS	Report on voting
119/152/FDIS	119/162/RVD

Full information on the voting for the approval of this International Standard 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.

A list of all parts in the IEC 62899 series, published under the general title *Printed electronics*, can be found on the IEC website.

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- withdrawn,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

When dissecting the term “printed electronics”, it can be easily understood that this industry involves electronic devices and products that are made using some kind of printing technique. Printing methods have been widely used in textile and paper type substrates for centuries. In the past, the advent of mass producible printouts has brought huge impacts on how knowledge is stored, transferred and reproduced. At this current stage of technological development, printing on either rigid or flexible substrates is considered to supplement or replace traditional electronic device manufacturing processes. The difference between media printing and printed electronics stems from the fact that media print is used to convey information for humans to process using their eyes while printed electronics requires machines to process electronic information; the level of required resolution and functionality makes the difference. Some of the widely used functional materials for printed electronics are though not limited to: nano- or micro-size metal particles, semiconductive polymers, and dielectric materials. Due to the available and required readout resolution, small feature sizes below 20 μm need to be printed. Layer thickness and registration accuracy of printed products are closely related to the quality control of electronic devices and ink materials require a high level of quality. Overall, printing tolerance is much smaller in printed electronics.

There are two main categories in the printing process for the printed electronics. One is a non-contact printing process, such as inkjet printing and electrostatic discharge (ESD) printing process. The other is a contact printing process such as gravure printing, gravure offset printing, reverse offset printing and screen printing. This document provides a proposal for measuring and assessing the printing master, therefore the scope is limited to the printing process using the printing master.

The quality of the printing master is important because the ink is transferred from the printing master to the substrate directly in these processes, which means that the quality of the results of the printed circuit depends on the quality of the printing master. For a mass production of the printed electronic devices, many companies such as device manufacturers, printing master manufacturers and printing master manufacturing equipment vendors are related to manufacturing and they would be using the printing master and the standardized measurement and assessment methods.

PRINTED ELECTRONICS –

Part 301-1: Equipment – Contact printing – Rigid master – Measurement method of plate master external dimension

1 Scope

This part of IEC 62899 defines measurement terms and methods related to the external dimension of a rigid plate master.

Measurement terms include geometrical size such as edge length, edge squareness, edge straightness and thickness, flatness of plate master substrates, and surface roughness of plate master.

2 Normative references

There are no normative references in this document.

3 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
plate master
device that carries the image to be printed

Note 1 to entry: The image on the plate may be raised above the surface (relief) or may be carved into the surface.

3.2
geometrical definition of plate master
definition which is needed in order to determine the shape and size of the plate

3.3
orientation corner
asymmetric corner specified for the purpose of mechanical orientation and the operator's visual confirmation of plate orientation

Note 1 to entry: This term is introduced graphically in Figure 1.