IEC 60974-14

Edition 1.0 2018-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Arc welding equipment –
Part 14: Calibration, validation and consistency testing

Matériel de soudage à l'arc –
Partie 14: Etalonnage, validation et essais de consistance

IEC 60974-14:2018-10(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform
La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,…). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished
Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc
Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

Electropedia - www.electropedia.org
Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary
67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

IEC 60974-14

Edition 1.0 2018-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Arc welding equipment –
Part 14: Calibration, validation and consistency testing

Matériel de soudage à l'arc –
Partie 14: Etalonnage, validation et essais de consistance

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 25.160.30

ISBN 978-2-8322-8380-6

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

ARC WELDING EQUIPMENT –

Part 14: CALIBRATION, VALIDATION and CONSISTENCY TESTING

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.

International Standard IEC 60974-14 has been prepared by IEC technical committee TC 26: Electric welding.

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

FDIS	Report on voting
26/661/FDIS	26/666/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.

In this standard, the following print types are used:

– terms used throughout this standard which have been defined in clause 3: SMALL ROMAN CAPITALS.

A list of all parts of the IEC 60974 series can be found, under the general title *Arc welding equipment*, 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.

INTRODUCTION

This document is the first international edition for CALIBRATION, VALIDATION and CONSISTENCY TESTING of arc welding equipment. It is based on the European Standard EN 50504:2008 and will replace it. A brief history helps to understand the origin and development of this document.

In Great Britain, BS 7570:1992, *Code of practice for the validation of arc welding equipment*, was published and it became the equivalent European pre-standard ENV 50184:1996 (withdrawn).

The revised second edition of BS 7570 was published in 2000 and was later replaced by the equivalent EN 50504:2008.

For quality management in the field of welding, this document should be used in conjunction with ISO 17662.

The significant changes in respect to EN 50504:2008 are the following:

– terms VERIFICATION and VALIDATION aligned to ISO/IEC Guide 99:2007;
– wire feed equipment moved from the annex to main part of the document;
– new preferred requirement for digital instrument CALIBRATION with fixed tolerance values;
– flow charts for determination of VERIFICATION methods and sample reports added;
– EN 50504:2008 Annex E *Validation of ancillary components in a welding system* and Annex F *Voltage drops in the welding circuit* deleted.

ARC WELDING EQUIPMENT –

Part 14: CALIBRATION, VALIDATION and CONSISTENCY TESTING

1 Scope

This part of IEC 60974 specifies requirements for the VERIFICATION of arc welding and external monitoring equipment. This document also serves for practical implementation of the VERIFICATION procedure for arc welding equipment.

This document can be applied at the time of installation and any other times or intervals the user deems appropriate to ensure the equipment is capable of operating to the manufacturer's specification or other specifications deemed applicable by the user.

This document is not applicable to

– plasma systems used for cutting and gouging;
– arc striking and stabilizing devices;
– arc welding equipment designed in accordance with IEC 60974-6.

NOTE 1 Other components in welding systems such as for example robots, turning devices, gas consoles, etc. also have influence on the welding result and can be verified, if necessary. Additional information can be found in ISO 17662.

NOTE 2 Periodic inspection and testing for arc welding equipment is covered in IEC 60974-4.

This document is applicable for the user, service shop or manufacturer. It can be used

– stand alone;
– in conjunction with manufacturer's instructions; or
– as the basis for an equivalent VERIFICATION procedure written by the manufacturer for specific equipment.

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 60974-1:2017, *Arc welding equipment – Part 1: Welding power sources*

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