

INTERNATIONAL STANDARD

REDLINE VERSION

**Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -
Part 3-30: Examinations and measurements - Endface geometry of rectangular ferrule**

CONTENTS

FOREWORD	3
1 Scope	1
2 Normative references	5
3 Terms and definitions	5
4 General description	5
5 Measurement regions	6
6 Apparatus	8
6.1 General	8
6.2 Ferrule holder	9
6.3 Positioning stage	9
6.4 Three-dimensional interferometry analyser	10
7 Procedure	10
8 Details to be specified and reported	12
Annex A (normative) Formulae for approximating the endface geometry	14
A.1 Approximation of the ferrule surface	14
A.2 Approximation of the fibre tip radii	14
Annex B (normative) Surface angle sign convention (shown graphically)	15
Annex C (normative) Fibre counting convention (shown graphically)	17
Annex D (normative) Minus coplanarity and fibre plane angle determination	18
D.1 Overview	18
D.1.1 General	18
D.1.2 Minus coplanarity	18
D.1.3 Fibre plane X-axis and Y-axis angles	18
D.2 Method for analysis	18
D.2.1 Single row ferrules	18
D.2.2 Multi-row ferrules	19
D.3 Documentation	20
Annex E (normative) Calculation of core dip using the paraboloid method	20
E.1 General	20
E.2 Method for analysis	20
Annex F (normative) Calculation of <i>GL</i> parameter	22
F.1 General	22
F.2 Method for analysis	22
Bibliography	25
Figure 1 – Measurement regions on ferrule and fibre	7
Figure 2 – Measurement setup	9
Figure B.1 – Surface angle sign convention	16
Figure C.1 – Fibre counting convention	17
Figure D.1 – Illustration of fibre line and minus coplanarity parameters	18
Figure E.1 – Paraboloid fit to a fibre endface exhibiting core dip	21
Table 1 – Ferrule measurement areas and parameters	8
Table F.1 – Parameter constants for 4-fibre ferrules	23

Table F.2 – Parameter constants for 8-fibre ferrules24

Table F.3 – Parameter constants for 12-fibre ferrules24

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Fibre optic interconnecting devices and passive components -
Basic test and measurement procedures -
Part 3-30: Examinations and measurements -
Endface geometry of rectangular ferrule**

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.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61300-3-30:2020. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61300-3-30 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2020. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) clarification of region diameter symbols;
- b) introduction of x116 and x132 region of interest (ROI) to support MT-16 and MT-32 ferrule types;
- c) preparation of geometry limit (GL) parameter tables for 16-, 24- and 32-fibre ferrules;
- d) clarification of the neighbouring fibres definition when computing adjacent height;
- e) improvement of figures in Annexes.

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

Draft	Report on voting
86B/5224/FDIS	86B/5250/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.

A list of all parts in the IEC 61300 series, published under the general title *Fibre optic interconnecting devices and passive components*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and 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.

1 Scope

This part of IEC 61300 describes a method for measuring the endface geometry of rectangular multifibre ferrules having an IEC defined optical interface. The primary attributes are fibre position relative to the endface, ~~either withdrawal or protrusion~~, endface angle relative to the guide ~~pin bores~~ holes, fibre tip radii and core dip for multimode fibres.

2 Normative references

There are no normative references in this document.

Bibliography

IEC 61300 (all parts), *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures*

IEC 61755-3-31:2015, *Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 3-31: Connector parameters of non-dispersion shifted single mode physically contacting fibres - Angled polyphenylene sulphide rectangular ferrules*

IEC 61755-3-32:2015, *Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 3-32: Connector parameters of non-dispersion shifted single mode physically contacting fibres - Angled thermoset epoxy rectangular ferrules*

IEC PAS 63267-3-30:2021, *Fibre optic interconnecting devices and passive components - Fibre optic connector optical interfaces - Part 3-30: End face geometry - Angled PC end face PPS rectangular ferrule multimode A1b fibres*

IEC PAS 63267-3-31:2020, *Fibre optic interconnecting devices and passive components - Fibre optic connector optical interfaces - Part 3-31: End face geometry - Flat PC PPS rectangular ferrule multimode fibres*

IEC 61754-5:2005, *Fibre optic connector interfaces - Part 5: Type MT connector family*

IEC 61754-7 (all parts), *Fibre optic interconnecting devices and passive components - Fibre optic connector interfaces - Type MPO connector family*