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

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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– withdrawn, or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, endface angle relative to the guide holes, fibre tip radii and core dip for multimode fibres.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

– ISO Online browsing platform: available at https://www.iso.org/obp

4 General description

Guide pin based multifibre connector plugs in IEC 61754-5 and all parts of IEC 61754-7 typically have a rectangular endface with a long axis and a short axis. Ideally a flat polish is desired on the endface with the fibres protruding slightly and all in the same plane to assure physical contact of the fibre cores when two connectors are intermated. In practice, the endface typically has two different curvatures across the surface along the long and short axis. Since mated ferrules are aligned by pins in the guide holes, the endface of the ferrule shall be properly oriented (SX and SY angles) with respect to the guide holes to achieve positive contact. The endface angle SX in the long axis (X-axis) and the endface angle SY in the short axis (Y-axis) (as defined in Annex B) are measured by finding the best fit plane (P_J), based on a percentage of the highest points in a specified region of interest. The highest points typically show the greatest modulation from an interferometric standpoint. This allows for more robust measurements and greater repeatability between different interferometers.

The angle of the best fit plane P_J is calculated by comparing it to the reference plane P which is perpendicular to the averaged axis of the guide holes. The height H (positive is a protrusion) of the fibres is a planar height defined as the distance between the fibre endface and the best fit plane. Core dip is only relevant to multimode fibres because the large core is softer than the cladding of the fibre and tends to polish away faster. Core dip is calculated using the paraboloid method described in Annex E.

One method is described for measuring the polish angle and fibre position for a single ferrule multifibre connector by analysing the endface with a three-dimensional interferometry type surface analyser.