



The Fibreoptic Industry Association

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NEWSLETTER

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THE FIBREOPTIC INDUSTRY ASSOCIATION

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A warm welcome to the following NEW MEMBERS

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ISO/IEC propose new OF Categories

At their meeting in Barcelona (18th - 22nd February 2008), ISO/IEC JTC1 SC25 WG3 proposed the establishment of two new optical fibre types or Categories - one multimode and one singlemode. The multimode variant, currently termed OM4, provides more than twice the laser/VCSEL bandwidth than OM3 and is targeted to provide greater useable distance and/or lower system implementation costs for the next generation 40 Gb/s and 100 Gb/s Ethernet solutions that are currently in development. The singlemode variant, which currently has no designation, provides performance levels somewhere between those of OS1 and OS2.

The discussions in Barcelona highlighted a number of issues regarding the meaning of the OM and OS terminology. It is therefore worth relating them in this Newsletter prior to the publication of an **FIA White Paper** covering the topics. Currently we have five all-silica optical fibre "types" or "Categories" specified in the generic cabling standards. Internationally, ISO/IEC 11801 specifies OM1, OM2, OM3 and OS1. In addition, ISO/IEC 24702 (Generic cabling for industrial premises) specifies OS2. The international standards call these "OF types". In Europe and the UK, BS EN 50173-1:2007 contains all five and calls them "Optical fibre cable Categories". While there is no difference in the actual specifications, it is important to clarify the intention of the schemes as detailed on the following page.

FIA-online.co.uk

Visit the site and familiarise yourselves with its content - to access member-only pages you will need both your FIA membership number and the membership password as issued in January 2008. If you do not know what it is contact your FIA Principal Contact - failing that contact the **FIA** Secretariat

BSI and FIA
BIP 0007:2004

Telecommunication cabling and equipment installations: A guide to requirements and responsibilities

Don't forget - the FIA sponsored the BIP in support of BS 6701:2004 - it's a free download to members.

FIBREOPTIC INDUSTRY ASSOCIATION

The FIA is a Company Limited by Guarantee

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OM1, OM2, OM3, OS1 and OS2 - cables or fibres?

One of most heated debates surrounding the development of new OF types or Categories was their “meaning”. The straight answer is that in all standards the **OM/OS system applies to cabled optical fibre**. The reason for this is obvious - the cabling standards deal with cables and connecting hardware both as products and “as installed”.

Even though they call the OM/OS scheme “OF types”, ISO/IEC 11801 and 24702 make it clear that the designation OM1, OM2, OM3, OS1 and OS2 relate to cable transmission performance. The BS EN 50173 series makes it even clearer by describing the OM/OS scheme as “optical fibre cable Categories”.

Both the IEC and EN committees have strengthened this relationship in the production of their cable standards as detailed on the right. It can be seen that OS2 is included only in the new 60794-3 “outdoor” series standards. This is because OS2 was born in the industrial premises standard ISO/IEC 24702 to support 5 km and 10 km channels - which are by definition “outdoor”. More importantly, the low attenuation values of OS2 are only realistic in loose-tube cables in which the original optical fibre performance is almost unaltered by the cabling process (the same could be said of “blown fibre”).

So why a new OS?

The new OS (exact designation as yet undetermined) reflects the need for an improved “indoor” singlemode optical fibre cable which is compatible with the OS2 product. What does this imply?

It has to be remembered that OS1 defines a very old specification. The original values for OS1 performance came from ISO/IEC 11801:1995 (and EN 50173:1995) and required the use of an optical fibre compliant with ITU-T G.652a/b (Type B1.1 in IEC 60793-2-50). Although the designation OS1 was introduced in 2002 the performance requirements of 1995 did not change.

In comparison OS2, introduced in 2006, requires the optical fibre to be compliant with ITU-T G.652c/d (Type B1.3 in IEC 60793-2-50) which is specified for transmission at 1310 nm, 1550 nm and 1383 nm - i.e. a low water peak optical fibre suitable for CWDM operation. Therefore, the performance of OS1 cables is not directly compatible with OS2 cables and a new specification is required for “indoor” cables that use ITU-T G.652c/d optical fibres. As indoor cables tend to be of a buffered, tight construction, the low attenuation coefficients of an OS2 are unlikely to be maintained - hence the new OS designation. This is shown in Table 1 below. It is worth pointing out that not only is the new designation not agreed - it may be that the new designation replaces OS1 and therefore becomes OS1:2009 for example.

Table 1: Cabled singlemode optical fibre specifications

Wavelength nm	Maximum attenuation dB/km		
	OS1	OS new	OS2
1 310	1,0	>0,4 but <1,0	0,4
1 383	Not specified	>0,4 but <1,0	0,4
1 550	1,0	>0,4 but <1,0	0,4

So why a new OM?

While there is clear logic for a new OS designation, the case for a new OM is more to do with state-of-the-art a la “Category 6_A” etc. It is recognised that while OM3, introduced in 2002, represented a significant development in terms of bandwidth of multimode optical fibre, the performance levels attained today are significantly in excess of that milestone. Manufacturers have long since been describing their products as OM3+, or enhanced OM3 or equivalent and of course there is no basis for comparison for their individual claims.

That in itself does not always justify a new “Category” - although it seems to be enough in the balanced cabling arena - it is also important to offer that performance uplift to an application that can then demonstrate its benefits. This is what happened for OM3 when IEEE used it as their 300 metre mapping of 10GBASE-SR. A further improved bandwidth performance designation “OM4” has been offered to both IEEE and Fibre Channel.

Published cable standards containing OM1, OM2, OM3 and OS1 products

- IEC 60794-2-11:2005 (and BS EN 60794-2-11:2005)
Optical Fibre Cables : Indoor cables - Detailed specification for simplex and duplex cables for use in premises cabling
- IEC 60794-2-21:2006 (and BS EN 60794-2-11:2006)
Optical fibre cables - Indoor cables - Detailed specification for multi-fibre optical distribution cables for use in premises cabling
- IEC 60794-2-31:2006 (and BS EN 60794-2-31:2006)
Optical fibre cables - Part 2-31: Indoor cables - Detailed specification for optical fibre ribbon cables for use in premises cabling
- IEC 60794-3-12:2006 (and BS EN 60794-3-12:2006)
Outdoor cables - Detailed specification for duct and directly buried optical telecommunication cables for use in premises cabling
- IEC 60794-3-21:2006 (and BS EN 60794-3-21:2006)
Outdoor cables - Detailed specification for optical self-supporting aerial telecommunication cables for use in premises cabling
-

New editions, currently under development, containing OS2

- IEC 60794-3-12 (and BS EN 60794-3-12)
Outdoor cables - Detailed specification for duct and directly buried optical telecommunication cables for use in premises cabling
- IEC 60794-3-21 (and BS EN 60794-3-21)
Outdoor cables - Detailed specification for optical self-supporting aerial telecommunication cables for use in premises cabling

The questions raised by this offer begin to grow in number as the offer is analysed. We all know that increased bandwidth should offer greater distances of support for current networks - but that will probably not be of interest to the applications committees who rarely if ever re-visit already published standards (for example we have no standards-based support for 1000BASE-SX over OM3). The main hope is that the new performance specification may be of interest of new applications, currently in development, such as 40 Gb/s and 100 Gb/s Ethernet. The benefits may be that the distance of support may be increased or that the number of parallel optical fibres required (currently at least four in each direction) may be reduced. However, there are many that cast doubt on these hopes, intimating that the equipment providers objective is to reduce the cost of the VCSEL/laser sources which may negate any benefit obtained for the higher bandwidth optical fibre cables.

Nevertheless, history has proved that once a new "Category" of anything is discussed, even at an elementary level, it will become reality. The current proposals are shown in Table 2 below (along with all the other OM specifications). It has at least been agreed that the new specification products have to be backwards compatible with the existing OMs although there may be many twists and turns ahead.

Category	Maximum attenuation (dB/km)		Minimum modal bandwidth MHz×km		
			Overfilled launch		"Laser" launch
	850 nm	1 300 nm	850 nm	1 300 nm	850 nm
OM1	3,5	1,5	200	500	not specified
OM2	3,5	1,5	500	500	not specified
OM3	3,5	1,5	1 500	500	2 000
OM4	3,5	1,5	1 500	500	4 700

When will the new designations appear?

It is likely that marketing literature will contain the new designations quite soon. In terms of standardisation, it is unlikely that changes to the list of "OM"s and "OS"s will take place before 2009.

TIA-B Update

As reported in the last Newsletter, the TIA-B has brought together the FIA, CMA and ECA-ITEC under one umbrella covering the topic of telecommunications infrastructure.

February 13th 2008 saw the first meeting of the key individuals responsible for ensuring the effective co-working of the three organisations - Mike Gilmore on behalf of the FIA met with David Stefanowicz of ECA-ITEC and Mike Daly, the CMA member appointed to be leader of the CMA Forum created to work with TIA-B. Also at the meeting was Glenn Powell, Chief Executive of CMA.

The objective of the meeting was to ensure that all the parties have a common understanding of the processes within the TIA-B, to introduce the existing work packages and to explain how each host may contribute most effectively to the TIA-B.

One element of the meeting concentrated on the development of the relationships between TIA-B and BICSI. Andrew Stevens, of CNet Training (FIA member) and BICSI UK Director, reviewed how the TIA-B could establish the link between national requirements as defined in UK standards and regulations and the BICSI qualifications in general and the RCCD qualification in particular. It is hoped that this could be a model that would work in other countries as well.

REMEMBER - any member of a TIA-B host is automatically a member of TIA-B, but does not have membership rights to the other hosts - therefore FIA members will have seamless access to the TIA-B members site, but will not have access to the members sites of the ECA-ITEC or CMA.



www.fia-online.co.uk/TIA-B



FIA Standards Forum

- **documents available for download and comment NOW**

The Standards Forum offers **FIA** Members the opportunity to comment on standards in development by the fibre optics and cabling committees in ISO/IEC, IEC, CENELEC and BSI. These standards cover a wide range of optical fibre products such as optical fibres, cables, connectors and system components together with the design, installation and commissioning standards for cabling.

To get involved - go to the members-only area of the **FIA** site area, go to Standards Forum and follow the instructions. Why not bookmark this page for easy access – it is always easier to influence standards in development than fix them later

New editions of EN 50174 impact **FIA** AIS database

EN 50174-1 and EN 50174-2 are two of the four standards that directly influence the installation of telecommunications cabling in the UK - the other two being EN 50174-3 and BS 6701. The next editions of these two standards have reached the final draft stage and will be published later this year. There are dramatic changes to these standards when compared to the published documents, making them easier to read and more easily referenced. Their contents will be reflected in the **FIA** Approved Installers Database (AID) that links directly to the **FIA** Approved installer Scheme.

The AID will be updated in June in readiness for the final publication of the standards as British Standards in late 2008.

FIA Membership password system - changes for 2008

If you have recently tried to enter the FIA members site you will have noticed a different system in operation which involves both a "Username" and a "Password".

The username is your three digit FIA Membership number and the password is the one that has been issued to all members in January 2008.

The reason for the change is the development of the new TIA-B site that will use the same system to access the members area. The new system automatically restricts access to members who have not paid their fees.

How about sponsoring a Newsletter?

The FIA Newsletter continues to develop and we are now offering the opportunity to sponsor each of our bi-monthly Newsletters. The sponsors details will appear on each page and be hyperlinked to their web-site and e-mails as appropriate. For more details contact Jane Morrison via jane@fiasec.demon.co.uk

New cost structure for **FIA** Qualification Scheme

The cost structure for registration and ongoing maintenance of your award under the **FIA** Qualification Scheme has been dramatically simplified. The admittedly rather complex structure has been replaced by a simple once-only fee as follows. The once-only Enrolment Fee of £49+VAT covers the establishment of the Learner Record and a hard-copy certificate detailing the Award achieved. The FIA uses this fee for administration costs to monitor and cross-check trainee progress. This fee is waived for FIA Personal Members. Also the ongoing charges have been dispensed with as detailed below.

- **ANNUAL FEE:** There is **NO** annual fee for learners, but there is a commitment to do at least one unit per year.
- **NO ADDITIONAL UNIT FEES:** After achieving a Unit award with a training provider as part of a Level II-IV Award, the learner will need to register this Unit with the FIA by submitting a Unit Feedback Form. There is **NO** fee for this.
- **NO ADDITIONAL AWARD FEES (- LEVEL IV):** After achieving the next Award level a new hard-copy certificate will be issued. There is **NO** fee for this.

For details for the Qualification Scheme go to <http://www.fia-online.co.uk/equal01.htm>. To download the FIA Newsletter dedicated to the **FIA** Qualification Scheme go to <http://www.fia-online.co.uk/pdf/NL/QSNewsletter-L4692.pdf>.



If you already receive **networking+** magazine you will have seen that the FIA produces a half-page editorial in each issue. In order to save space in this Newsletter we have arranged for all recipients of this e-mail to also receive a free-copy of **networking+**. So - you can keep in touch with the FIA and the other contributors to this broad-based, well balanced networking magazine. If you want to download the text of earlier **FIA** articles go to <http://www.fia-online.co.uk/earticles.htm>.

FIA AGM 2007

The Annual General Meeting of the **FIA** was held on Thursday 6th December 2007 at The Saracens Head Hotel, Towcester, Northants NN12 7BX - starting at 11:30 a.m. The accounts for 2007-2007 and the Minutes of the AGM are listed on the web-site at <http://www.fia-online.co.uk/eoverview.htm>.

Are you an FIA member? Have you got any NEWS?

This Newsletter is provided as a means of maintaining communication between and with our Members. It can, therefore, promote the activities of Members to other Members. Articles, product information, news items etc. are always welcome. Please send the information via email (jpg illustrations) to Jane Morrison via jane@fiasec.demon.co.uk

FIA plans new range of White Papers

In the next few weeks the **FIA** will be making changes to its list of White Papers. First, we will be updating the existing White Papers covering singlemode optical fibres and plastic optical fibres. Then we plan to issue White Papers covering the following topics:

- **testing of installed optical fibre cabling:** (reflecting changes to the standards currently in development) and explaining the keys aspects covered by them;
- **polarity maintenance;**
- **administration:** new documents are being produced that directly affect the identification, labelling and record-keeping associated with optical fibre cabling;
- **calibration of test equipment.**

The first two directly affect published **FIA** Technical Support Documents that will then be updated accordingly.

OPTO 2008

Once more we are pleased to announce the details of the premier opto-electronics show in France in October 2008

Sept 30th, Oct 1st & 2nd 2008
Parc des Expositions de Paris Nord
Villepinte
Halls 1 & 2

4 trade shows in one venue:
Forum de L'Electronique
Measurexpo
OPTO
Vision-Show

For further details go to www.forum4s.com

Linbrooke win FIA Approved Training Provider status

Linbrooke Services Limited, one of our newest members, has been awarded Approved Training Provider status under the **FIA** Qualifications Scheme - well done.

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Is the environment important to you?

Like it or not, environmental legislation affects everybody and everybody has to provide evidence and data for compliance. **E4environment Ltd** is an independent environmental consultancy and we would be happy to work with the **FIA** to raise the environmental profile and awareness amongst your members. It is very unlikely that all **FIA** members are aware of or are compliant with the relevant environmental legislation they are required to follow by law.

This legislation includes, for example,:

- Pre-treatment of Waste (in force as of 30 October);
- Packaging waste Regulations;
- Waste Electronic and Electrical Equipment Regulations;
- Hazardous Waste Regulations;
- Duty of Care Regulations.

E4environment has developed a package of services that the **FIA** members may benefit from. This package includes "**E4e-manager**", a complete on-line environmental manager service (www.e4e-manager.co.uk) and "**WasteConnect**", a searchable database of UK recycling sites and facilities (www.wasteconnect.co.uk).

**HOT OFF THE PRESS****TIA-B White Paper to cover new copper cabling standards**

As part of the commitment to the TIA-B, the FIA Standards Directorate will produce a White Paper covering the specification of balanced cabling to support 10GBASE-T and above.

This follows the ratification of Augmented Category 6 standards in the USA and the approval of the Class E_A and Class F_A channel specifications in ISO/IEC. The problem is that the ISO/IEC channel specs are more stringent than those of Augmented Category 6 product but there are no installed link or component limits to support them yet. The White Paper will try to steer users, specifiers and installers through this "muddle" - watch this space.