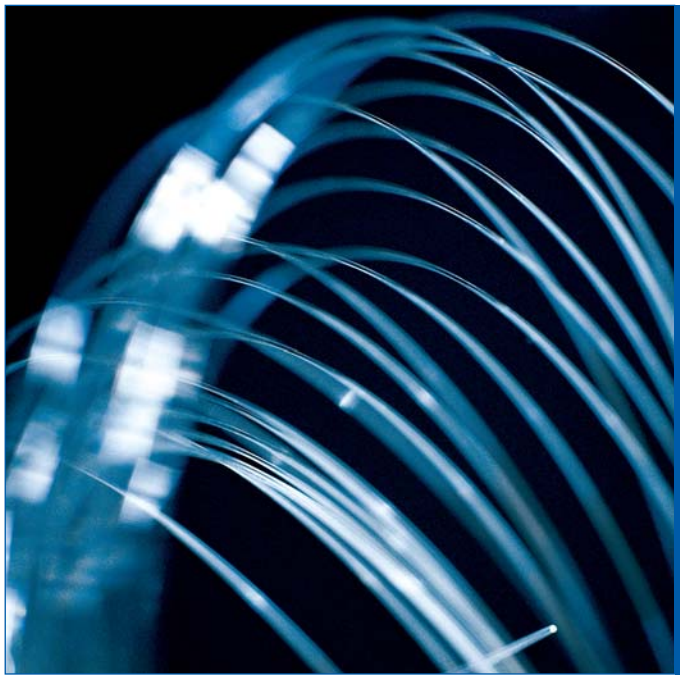
Just the Technical Facts



The latest version of TIA-568 Rev. C allows for greater design flexibility, cost savings and future-proofing in the horizontal network.

TIA-568 Rev. C Impact on Optical Connectivity

What's new?

The TIA-568 Rev. B standards have been updated to include the following new standards:

- TIA-568 Rev. C.0 "Generic Telecommunications Cabling for Customer Premises"
- TIA-568 Rev. C.1 "Commercial Building Telecommunications Cabling Standard"
- TIA-568 Rev. C.3 "Optical Fiber Cabling Components Standard"

The TIA-568 Rev. C.2 "Balanced Twisted-Pair Telecommunications Cabling and Components Standard" document is still in development with a 2009 midyear expected completion date. The document is being updated to provide specific guidance relative to CAT6a copper media.

What is the purpose of the TIA-568 Rev. C.0 standard?

TIA-568 Rev. C.0 facilitates the design and installation of telecommunications cabling systems in any type of customer environment. The document addresses system structure, topologies, distances, testing methods, performance, polarity and installation, thus becoming the foundation for cabling standards.

A primary design consideration included in the document is that media distance is application specific for all cabling subsystems. This means optical media horizontal distances are not restricted to 100 m. Numerous building types such as corporate offices, manufacturing facilities, universities, hospitals, airports, hotels, government facilities and others require extended distances between active equipment and the equipment outlet that benefits from this standard. End-users now have the option of designing premise networks in accordance with the detail guidance of TIA-568 C.1 or the flexible guidance of TIA-568 C.0.

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TIA-568 Rev. C Impact on Optical Connectivity

How does extending the horizontal distance beyond 100 m benefit me?

Utilizing a telecommunications room with a 300 m horizontal reach can serve an area up to 10 times greater than with the current 100 m horizontal channel length restriction.

Benefits include:

- Minimizes telecom room space requirement
- Reduction in installation costs, security costs and maintenance costs
- Greater flexibility given to architect and building designers to account for telecom room requirements
- Saves building floor space to be used for other applications
- Efficient utilization: HVAC systems, fire suppression systems, racks, electronics, cable management, cable trays, grounding locations, etc.
- Future-proof media

Does TIA-568 Rev. C.0 provide array-style MTP® Connector polarity guidance?

Yes. The standard has incorporated the guidance from ANSI/TIA-568-B.1-7-2006, Commercial Building Telecommunications Cabling Standard, Part 1 – General Requirements, Addendum 7 – Guidelines for Maintaining Polarity Using Array Connectors.

Specific guidance is included on three sample methods identified as Method A, Method B and Method C. It is important to note that the standard states in paragraph B.4.1 that "While many methods are available to establish polarity, this standard outlines sample methods that may be employed for array cabling systems where the connectors have one row of fibers only." The word "may" implies that alternate polarity methods, which are not discussed or included in the standard, are available to accomplish the same results. Thus, the standard shows three examples and recognizes that other valid methods also exist, including the Corning Cable Systems Universal polarity management (Figures 1 and 2).

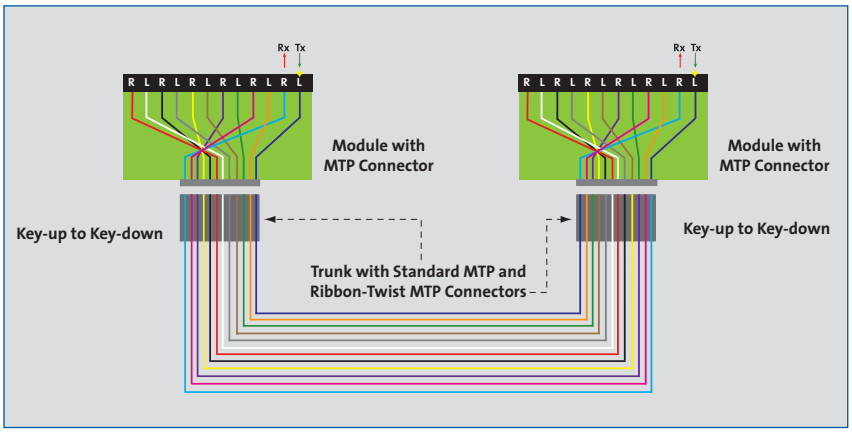

Figure 1: Universal Polarity

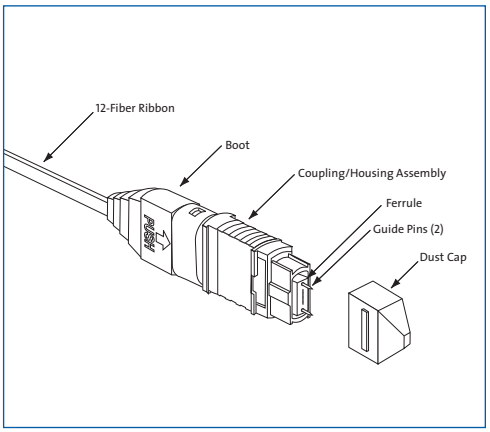

Figure 2: MTP Connector

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What about TIA-568 C.1?

The standard remains the same in structure and coverage as TIA-568-B.1. The standard now recommends 850 nm laser-optimized 50 µm multimode fiber and includes guidance for telecommunications enclosures (TEs).
The standard continues to specify a maximum horizontal cable length of 100 m, independent of media type.
You will need to reference TIA-568 C.0 for horizontal distances greater than 100 m to be standard's compliant.

Finally, what about TIA-568 C.3?

Major changes include:

- Increase in minimum OFL bandwidth for 62.5 µm fiber (200/500 MHz·km)
- Specifications for 850 nm laser-optimized, 50/125 µm multimode optical fiber
- Specifications for indoor/outdoor cabling
- Specifications for multi-fiber array connectors (MTP®)

The standard utilizes OM multimode and OS single-mode fibers nomenclature from IEC 11801 to define detail fiber criteria (Table 1).

Table 1

Optical Fiber and Cable Type[2]	Wavelength (nm)	Maximum Attenuation (dB/km)	Minimum Overfilled Modal Bandwidth-Length product (MHz•km)[1]	Minimum Effective Modal Bandwidth-Length product (MHz•km)[1]
62.5/125 µm Multimode TIA 492AAAA (OM1)	850 1300	3.5 1.5	200 500	Not Required Not Required
50/125 µm Multimode TIA 492AAAB (OM2)	850 1300	3.5 1.5	500 500	Not Required Not Required
850 nm Laser-Optimized 50/125 µm Multimode TIA 492AAAC (OM3)	850 1300	3.5 1.5	1500 500	2000 Not Required
Single-Mode Indoor-Outdoor TIA 492CAAA (OS1) TIA 492CAAB (OS2)[3]	1310 1550	0.5 0.5	N/A N/A	N/A N/A
Single-Mode Inside Plant TIA 492CAAA (OS1) TIA 492CAAB (OS2)[3]	1310 1550	1.0 1.0	N/A N/A	N/A N/A
Single-Mode Outside Plant TIA 492CAAA (OS1) TIA 492CAAB (OS2)[3]	1310 1550	0.5 0.5	N/A N/A	N/A N/A

Notes:
[1]The bandwidth-length product, as measured by the fiber manufacturer, can be used to demonstrate compliance with this requirement.
[2]The fiber designation (OM1, OM2, OM3, OS1 and OS2) corresponds to the designation of ISO/IEC 11801 or ISO/IEC 24702.
[3]OS2 is commonly referred to as "low-water-peak" single-mode fiber and is characterized by having a low attenuation coefficient in the vicinity of 1383 nm.

notes |

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