

40G/100G cable relevant standards

The IEEE 802.3bm (100G 4 * 25G) standard, approved in March 2015, is the latest transmission standard for fiber optic cables 40G/100G, which is different from the original IEEE 802.3ba standard and is based on OM3/OM4 multimode fiber. But the IEEE 802.3bm (100G 4 * 25G) standard uses optical parallel 4-channel, 25G per channel transmission mode, to achieve 100G transmission. The new standard will reduce the physical link from 20 to 8 core, this approach will benefit the transition from 40G networks to the future 100G networks, as there is no need to change any existing system components. At the same time, the new standard also provides a single-mode 40 km standard, that can use those long-distance network applications.

Here, we look back at the entire IEEE 40G / 100G network standard development.

IEEE 802.3ba Standard

In 2010, IEEE released the IEEE 802.3ba application standard - that is the most commonly used 40G/100G transmission standard right now. The standard also defines two rates (40 GBE and 100 GBE) based on optical fiber transmission network applications there are 4 different application standards:

- ◇ 40GBASE-CR4
- ◇ 40GBASE-SR4
- ◇ 100GBASE-CR10
- ◇ 100GBASE-SR10
- ◇ 40GBASE-SR4 (40GBE)
- ◇ 40GBASE-SR4 (100GBE)

CR standard refers to coaxial transmission.

The SR standard refers to multimode fiber transmission.

Based on the 2-core optical fiber transmission technology, the 40GBASE-SR4 has 8-core by 4 pairs of transmission, each pair of 10G; 100GBASE-SR4 with 20-core 10 pairs of transmission, each pair of 10G. A 12/24 core MPO / MTP connector is required.

IEEE 802.3bg Standard

March 2011, IEEE officially approved 802.3bg standard, the 802.3ba standard has been expanded, mainly 2 km within the 40GBASE-FR single-mode fiber through the transmission theory and related configuration.

IEEE 802.3bj Standard

In September 2011, IEEE approved the establishment of a task force for the development of printed circuit boards and biaxial copper P802.3bj 100Gbps, defining so the four-channel physical layer specifications and management parameters.

IEEE 802.3bm Standard

In May 2013, IEEE approved the establishment of a task force for the development of fiber-based P802.3bm 40/100Gbps, dedicated to define the 100Gbps fiber-optic physical link layer specifications and four-channel multi-mode and single-mode management parameters.

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IEEE 802.3bq Standard

In May 2013, the IEEE approved the establishment of a task force for P802.3bq 40GBASE-T, which defines 40Gbps Ethernet over 30 meters balanced twisted copper pairs, including the use of existing media access control and extends to the corresponding physical layer parameter