



# Copper solutions

Since TIA officially issued the Cat.3 copper twisted pair standard (16Mhz bandwidth) based on 10BASE-T in 1990, the copper generic cabling system has been evolving iteratively.

ISO followed closely, issuing the class C standard (equivalent to Cat.3) in 1995, and then upgrading the cabling of Cat.3/class C to the transmission application of 100BASE-T4.

\*Rongyang enterprise was established in Taipei in 1995 and has been rooted in the field of Ethernet generic cabling until now.

Later, TIA issued Cat.4 standard (20MHz bandwidth) supporting 16mbps token ring network transmission application and Cat.5 (Class D) standard supporting 100BASE-TX, which were also abolished at the beginning of the 21st century.

(Cat.5 standard mentioned in some cabling and network technical indicators now actually refers to Cat.5e. However, in some special occasions, there are still a few applications of Cat.5 cables with expired standards. These cables have not passed the test of TSB95, so they are not products of Cat.5e standard.)

		TIA	ISO
25GBASE-T/ 40GBASE-T	Category 8.1 / Class I (RJ45)	2017	2017
	Category 8.2 / Class II (ARJ45)	n/a	2017
	Class FA	n/a	2008
	Class F (TERA / GG45)	n/a	2002
10GBASE-T	Category 6A / Class EA (RJ45)	2008	2008
1000BASE-TX ATM 1.2/2.4 Gbps	Category 6 / Class E	2002	2002
1000BASE-T ATM 155 Mbps	Category 5e / Class D	1999	2002
100BASE-TX	Category 5 / Class D	1995	1995
10Mbps Token & Ring	Category 4	1991	n/a
10BASE-T 100BASE-T4	Category 3 / Class C	1990	1995

10G and above is selected for DC  
(Shielded Cabling System is strongly recommended)

Commercial buildings choose UTP Cable  
TIA-568.1

Intelligent Industrial selection  
100M~10G Shielded Cabling System  
TIA-1005

100K 1M 16M 20M 100M 250M 500M 600M 1G 2G Frequency (Hz)

Long Yang Enterprise Co., Ltd.

At present, Cat.5e unshielded twisted pair supporting 100Base-TX and 1000Base-T network transmission protocol and Cat.6 unshielded twisted pair supporting 1000Base-TX network transmission protocol are usually selected in the field of TIA-568.1 commercial building wiring standard.

In the field of TIA-942 data center cabling standard, 10GBase-T Cat.6A and Cat.7 or even Cat.8 (currently only supporting 30 meter links) cabling products are selected for the copper cable part. Although there are unshielded Cat.6A in the market, it is difficult to test the unshielded 6-pack-1 on-site, so most manufacturers choose shielded Cat.6A.

At present, the shielded system is strongly recommended for the copper cable in DC. According to the MICE standard, the strong electromagnetic interference caused by the very centralized power supply and other equipment in DC must be resisted by the Shielded Cabling System.

In the field of TIA-1005 Industrial plant Cable standard, because the electromagnetic interference in the factory environment is too strong and complex (time and space are uncertain, sometimes not), in order to avoid network data packet loss and even network transmission interruption caused by electromagnetic interference, it is necessary to use the shielded cabling system. The products cover 100m Cat.5e (100Mbps)、Cat.6(1Gbps)、Cat.6A(10Gbps), even Cat.7 or Cat.7A Shielding Cabling System.