

# Ethernet over Copper Reference Guide

Ethernet Standard	Twisted Pair Cable		Data <sup>1</sup> Bandwidth (Mbit/s)	Bits/Hz	Spectral Bandwidth (MHz)	Data lanes per direction
	Name	Rating (MHz)				
40GBASE-T	Cat 8	2,000	40,000	6.25	1,600	4 lanes <sup>2</sup>
25GBASE-T			25,000	6.25	1,000	
10GBASE-T	Cat 6a	500	10,000	6.25	400	
5GBASE-T	Cat 6	250	5,000	6.25	200	
2.5GBASE-T	Cat 5e	100	2,500	6.25	100	
1000BASE-T			1,000	4	100	
100BASE-TX	Cat 5	100	100	3.2	100	1 lane <sup>3</sup>
10BASE-T	Cat 3	16	10	1	10	

1. Effective data bandwidth (after encoding overhead) is calculated as:  
**Bits/Hz × Spectral Bandwidth × Data lanes per direction.**
2. All four twisted pairs operate at full duplex (thus 4 lanes per direction)
3. One twisted pair operates TX at half duplex and another operates RX at half duplex. Two twisted pairs are unused.

Ethernet Standard	Maximum Run Length		
	<30m	<55m	<100m
40GBASE-T	Cat 8	—	—
25GBASE-T	Cat 8	—	—
10GBASE-T	Cat 5e/6	Cat 6	Cat 6a
5GBASE-T	Cat 5e	Cat 5e/6	Cat 6
2.5GBASE-T	Cat 5e	Cat 5e	Cat 5e
1000BASE-T	Cat 5e	Cat 5e	Cat 5e

Lengths as recommended by 802.3x standards. It is generally possible to use lower rated cables for shorter runs.

## What About Cat 7 / 7a Cables?

These were originally intended for 10GBASE-T and higher but were supplanted by Cat 6a for 10GBASE-T and bypassed by the 25 and 40GBASE-T standards.

Cat 7 is rated to 600MHz and Cat 7a is rated to 1000MHz.

The twisted pairs are individually shielded and the cables are shielded overall, providing better resistance to crosstalk.

These cables are not ratified by TIA/EIA.

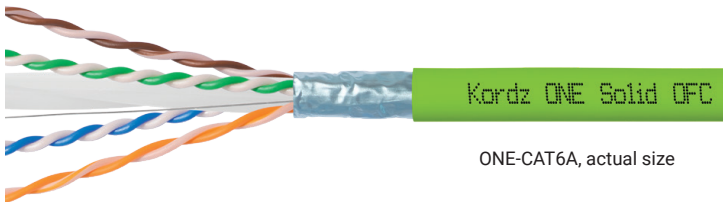
# ONE

## Unterminated Network Cabling

# kordz®

Connectivity. Assured

Models Available	Class	Construction		Spool Length	Jacket Options	
		Type	Conductors		Rating	Colour
ONE-CAT6	Cat 6	U/UTP	Solid OFC 24AWG	305m 1000ft	LSZH or UL CM	Blue Green Purple Yellow White
ONE-CAT6A	Cat 6a	F/UTP	Solid OFC 23AWG	152.5m 500ft		



ONE-CAT6A, actual size

Common Construction Names (ISO/IEC 11801 Annex E)		
Name	Cable Shielding	Twisted Pair Shielding
U/UTP	—	—
U/FTP	—	Foil
F/UTP	Foil	—
S/UTP	Braiding	—
SF/UTP	Braiding + Foil	—
F/FTP	Foil	Foil
S/FTP	Braiding	Foil
SF/FTP	Braiding + Foil	Foil

- Metre-marked
- All models in plastic spool box 340H x 265W x 335D (mm).
- 12 cartons per pallet layer, maximum 3 layers per pallet.

### Compliance - LSZH models

CPR Declared Performance:

**ONE-CAT6:**  
Dca-s2,d2,a1  
(EN 50575:2014+A1:2016)

**ONE-CAT6A:**  
Dca-s1,d2,a1  
(EN 50575:2014+A1:2016)