

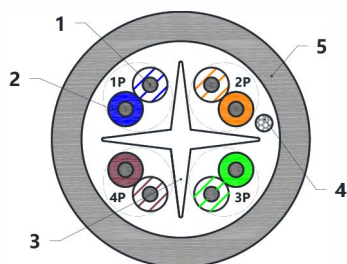
Cable Specification



Product Name: Cat6 U/UTP 4X2X23AWG (CMR)

BV SECURITY

Schema



Product Description

①	Inner Conductor
②	Insulation
③	Cross Member
④	Ripcord
⑤	Jacket

Construction Item Description

		Construction Item Description	
Conductor	Construction	AWG	23 AWG
	Material	/	Bare Solid Copper
Insulation	Material	/	HDPE 8303
	Proportion	g/cm ³	0.97
	Outside Diameter	mm	1.01 ± 0.01
	Average Thickness	mm	0.22
	Color	/	1p: blue stripe + white + blue stripe & blue 2p: orange stripe + white + orange stripe & orange 3p: green stripe + white + green stripe & green 4p: brown stripe + white + brown stripe & brown
Pair Twist	Lay & Direction	/	1p: S=18.5 mm (26%)
			2p: S=15.5 mm (21%)
			3p: S=20.5 mm (30%)
			4p: S=14.0 mm (19%)
Inner Assemble	Lay & Direction	/	S=90 ± 5 mm
Filler	Ripcord	/	300D
	Cross Member	/	HDPE
Outside Shield	Shield	/	/
	Construction	mm	/
	Material	/	/
	Coverage	%	/
Jacket	Material	/	PVC , Rated 60 or 75°C
	Hardness	A	81 ± 3
	Outside Diameter	mm	6.0 ± 0.2
	Average Thickness	mm	0.55 ~ 0.60
	Color	/	according to the customer's requirements
	Marking Color	/	according to the customer's requirements
Marking	Jacket	/	E502490 UL C(UL) CMR 4PR ...

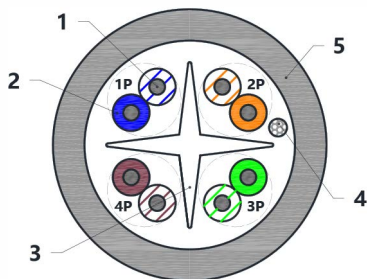
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Schema



Product Description

1 Inner Conductor	Composition : Solid Bare Copper (BC)
	Diameter : See table below
2 Insulation	Composition : High density Polyethylene (HDPE)
	Diameter : See table below
3 Filler	Type of filler : Cross-Member
	Composition : High density Polyethylene (HDPE)
4 Filler	Type of filler : Ripcord
	Composition : Polyester
5 Jacket	Composition : PVC, Rated 60 or 75°C
	Dimensions : See table below
	color : according to the customer's requirements

Dimensional Table

Nb pairs	Section	Diameter of	Diameter of insulated conductor (mm)	Minimal thickness of jacket (mm)	Diameter of outer jacket (mm)
	(AWG)	inner conductor (mm)			
4	23	NA	1.01 ± 0.01	0.55 ~ 0.60	6.0 ± 0.2

Diameters of inner conductor and insulated conductor must be designed in order to reach the electrical and transmission properties of CAT6.

Color Table

Pair No.	Conductor 1	Conductor 2
1	blue stripe + white + blue stripe	Blue
2	orange stripe + white + orange stripe	Orange
3	green stripe + white + green stripe	Green
4	brown stripe + white + brown stripe	Brown

Reference Standard

Materials		Fire performance	Electrical performance	Low	Zero Halogen (ZH)		Reach regulation	RoHs Directive
Insulation	Jacket			Smoke Density during combustion	Amount of Halogen acid gas during combustion	Degree of acidity (corrosivity) of gases for materials during combustion		
UL444 CSA C22.2 No. 214	UL444 CSA C22.2 No. 214	UL 1666 (RISER CABLE FLAME TEST)	ANSI/TIA-568.2-D ISO/IEC 11801 EN 50173 IEC 61156-5	NA	NA	NA	NA	

Mechanical Properties

Test Method	According to		
	In Standard	UL444 & CSA C22.2 No. 214	
	$L_0=200mm$, speed $=100mm/min$	$L_0=20mm$, speed $=250mm/min$ (or $25mm/min$ for PE&PP insulation)	
	INNER CONDUCTOR	INSULATION	JACKET
Tensile Strength (MPa)	-	≥ 10.5 MPa	≥ 13.5 MPa
Elongation (%)	9%~24%	≥ 150 %	≥ 150 %

Thermal Properties

Operating Temperature Range (°C)	Rated 60 or 75°C
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Electrical Properties

Conductor Resistance at 20°C	UL 444 & CSA C22.2 No. 214	≤ 9.5 Ω / 100m
Resistance unbalance within a pair		≤ 2%
Dielectric Strength <i>Test Voltage (cd/cd): 1.00KV DC or 0.7 KV AC for 1 min</i> <i>Test Voltage (cd/screen): 1.00KV DC or 0.7 KV AC for 1 min</i>		No breakdown
Insulation Resistance at 20°C after 2min of electrification under a DC voltage between 100 & 500V		>1500 MΩ / 100m
Mutual capacitance		5600pF / 100m MAX
Capacitance unbalance pair to ground at 800Hz or 1 kHz		≤ 160 pF / 100m
Characteristic impedance at 100MHz		100 ± 15 Ω
Spark Test		2000 ± 250VOC

Transmission Properties

CAT 6 U/UTP

No.	Frequency	Attenuation (Max)	Propagation Delay (MAX)	Propagation Delay Skew (MAX)	Return Loss (Min)	NEXT (Min)	PS NEXT (Min)	EL-FEXT (Min)	PS EL-FEXT (Min)
	MHz	dB/100m	ns/100m	ns/100m	dB(on 100m)	dB(on 100m)	dB(on 100m)	dB(on 100m)	dB(on 100m)
1	4	3.78	552	45	23.01	66.27	63.27	55.96	52.96
2	8	5.32	546.73	45	24.52	61.75	58.75	49.94	46.94
3	10	5.95	545.38	45	25	60.3	57.3	48	45
4	16	7.55	543	45	25	57.24	54.24	43.92	40.92
5	20	8.47	542.05	45	25	55.78	52.78	41.98	38.98
6	25	9.51	541.2	45	24.32	54.33	51.33	40.04	37.04
7	31.25	10.67	540.44	45	23.64	52.88	49.88	38.1	35.1
8	50	13.66	539.09	45	22.21	49.82	46.82	34.02	31.02
9	62.5	15.38	538.55	45	21.54	48.36	45.36	32.08	29.08
10	100	19.8	537.6	45	20.11	45.3	42.3	28	25
11	125	22.36	537.22	45	19.43	43.85	40.85	26.06	23.06
12	200	28.98	536.55	45	18	40.78	37.78	21.98	18.98
13	250	32.85	536.28	45	17.32	39.33	36.33	20.04	17.04
14	350 *	39.8	/	45	16.3	36.1	34.1	16.9	13.9
15	400 *	43	/	45	15.9	35.3	33.7	15.7	12.7
16	450 *	46.3	/	45	15.5	34.5	32.5	14.7	11.7
17	500 *	48.9	/	45	15.2	33.8	31.8	13.8	10.8
18	550 *	51.8	/	45	14.9	33.2	31.2	12.9	9.9

Remarks: * are the reference values.

Application

The cable must support class E applications and must be compatible POE, POE+ and UPOE.

Marking

Type	ink
Color	According to the customer's requirements
Text	E502490 UL C(UL) CMR 4PR ...

Packing

Type of Packing	Dimension (mm)	Qt of per Packing (m)	Label Type	Cut Allowed	Tolerance Length (%)
Inner Box	395 X 395 X 230	305	UL 0444 Standard Label	No	0
Master Carton	480 X 410 X 415	305		No	0

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Product Name: Cat6 U/UTP 4X2X23AWG (CMR)

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Product Design Card

Product Description: Cat 6 U/UTP 4 X 2 X 23AWG (CMR)

Rev.: A

ECN Description:

Construction Item Description		Electrical Property			
Conductor	Material	Bare Solid Copper (elongation: 19-24%)	Conductor Resistance at 20°C	≤ 9.5 Ω / 100m	
	OD	23 AWG	Resistance unbalance within a pair	≤ 5%	
Insulation	Material	HDPE 8303	Insulation Resistance at 20°C after 2min of electrification under a DC voltage between 100 & 500V	>1500 MΩ / 100m	
	OD	1.01 ± 0.01 mm	Mutual capacitance	5600 pF / 100m MAX	
	Average THK	0.22 mm	Capacitance unbalance pair to ground at 800Hz or 1 kHz	≤ 160 pF / 100m	
	Color	1p: white + 2 blue stripes & blue	Dielectric Strength Test Voltage (cd/cd,cd/screen): 1.00KV DC or 0.7 KV AC for 1 min	Characteristic impedance at 100MHz	100 ± 15 Ω
2p: white + 2 orange stripes & orange		No breakdown			
3p: white + 2 green stripes & green		Mechanical Property			
4p: white + 2 brown stripes & brown					
Pair Twist	Lay & Direction	1p: S=18.5 mm (26%)	insulation	elongation before aging	≥ 300%
		2p: S=15.5 mm (21%)		tensile strength before aging	≥ 12 MPa
		3p: S=20.5 mm (30%)		elongation after aging	≥ 150 %
		4p: S=14.0 mm (19%)		tensile strength after aging	≥ 10.5 MPa
Inner Assemble	OD	/	jacket	elongation before aging	≥ 150 %
		/		tensile strength before aging	≥ 13.5 MPa
		/		elongation after aging	≥ 125 %
		/		tensile strength after aging	≥ 12.5 MPa
Filler	Lay	S=90±5 mm	Packing		
	Direction	according to the drawing	Inner Box + UL 0444 Standard Label		395 X 395 X 230mm
Outer Shield	Filler	cross member 4.8X4.8X0.5mmT	Master Carton		480 X 410 X 415mm
	OD	/			
Shield	/				
Construction	/				
Material	/				
Coverage	/				
Jacket	Material	PVC, Rated 60 or 75°C			
	Hardness	81 ± 3			
	OD	6.0 ± 0.2			
	Average THK	0.55~0.60			
	Color	according to the customer's requirements			
Marking	Marking Color	according to the customer's requirements			
	Marking	E502490 UL C(UL) CMR 4PR...			

Prepared by		
Checked by		
Approval by		