

## OCC CATEGORY 6A COPPER CABLE

### Features & Benefits:

- Tested from 1 to 660 MHz and offers guaranteed headroom to TIA Category 6a Draft 7 cable requirements
- Guaranteed 10GBASE-T performance compliant
- Components are twisted into pairs with varying left hand lays to minimize cross talk
- Power over Ethernet compliant
- RoHS compliant
- Compatible with SMP Cat 6a jacks and patch panels for optimal system performance
- Available in Riser and Plenum; UTP and FTP

### Construction:

- Conductor: 23 AWG (.02 mm) solid bare copper
- Color Code
  - Pair 1: Blue-White/Blue
  - Pair 2: Orange-White/Orange
  - Pair 3: Green-White/Green
  - Pair 4: Brown-White/Brown
- Jacket:
  - Riser – Flame Retardant PVC, UL Listed Type FT4 per UL 444
  - Plenum – Low Smoke Flame Retardant PVC, UL Listed Type FT6 per UL 444
- Cabling:
  - UTP – Four twisted pairs are cabled around a star filler with a left hand lay
  - FTP – Four twisted pairs are cabled around a star filler with a left hand lay and wrapped with polyester tape. An aluminum/polyester tape is applied overall (aluminum side in) and a 24 AWG solid TC Drain Wire is pulled in under the tape.
- Ripcord: Applied longitudinally on UTP Category 6a Riser and Plenum cables

### Applications:

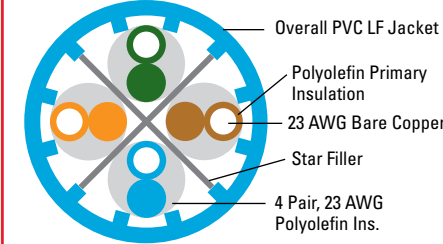
- Voice
- 4/16 Mbps Token Ring
- 100 VG-AnyLAN
- 100 Mbps TP-PMD
- 155/622/1000 Mbps ATM
- 10BASE-T Ethernet
- 100BASE-TX Fast Ethernet
- 1000BASE-T Gigabit Ethernet
- 10GBASE-T Ethernet
- Broadband Video
- All other applications developed for operation over Category 6 cabling

### Electrical Characteristics:

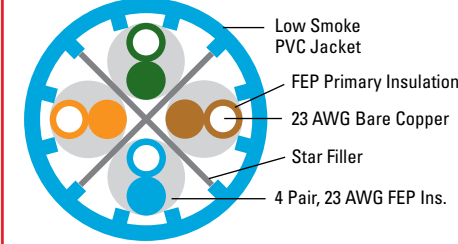
- Category 6a 10GBASE-T Electrical characteristics\*:
  - Characteristic Impedance: 100 ± 15 Ω (.772 to 100 MHz)
  - 100 ± 20 Ω (101 to 250 MHz)
  - 100 ± 25 Ω (251 to 500 MHz)
  - Maximum Conductor Resistance: 9.38 Ω/100 Meters @ 20° C
  - Maximum Resistance Unbalanced: 3%
  - Maximum Mutual Capacitance: 5.6 nF/100 Meters @ 1kHz
  - Maximum Capacitance Unbalanced: 330 pF/100 Meters

\* Discrete values are for information only. Equations for swept frequencies govern limits. Verified to meet Cat 6a TIA-568-B.2-10 performance requirements per the verification requirements defined in E108971.

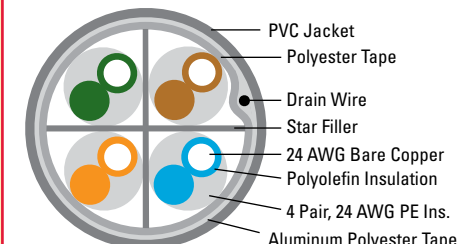
### Cat 6a UTP Riser:



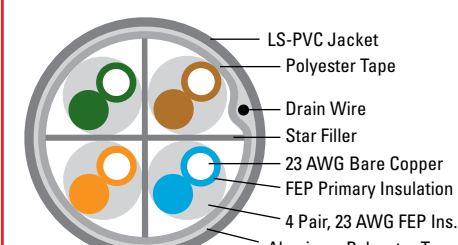
### Cat 6a UTP Plenum:



### Cat 6a FTP Riser:



### Cat 6a FTP Plenum:



### Standards:

- ANSI/TIA/EIA-568-B.2-1, Category 6
- IEE 802.3an (Clause 55.7) 100 meters link segment requirements
- ANSI/TIA/EIA-568-B.2 Annex A

## OCC CATEGORY 6A COPPER CABLE

### Category 6a UTP Riser and Plenum:

FREQUENCY (MHz.)	INSERTION LOSS MAX (dB/100m)	NEXT LOSS MIN (dB/100m)		ELFEXT MIN (dB/100m)		RETURN LOSS MIN (dB/100m)	DELAY MAX (ns/100m)
		WP	PS	WP	PS		
0.772	—	84.0	82.0	78.0	75.0	—	—
1.0	2.0	82.3	80.3	75.8	72.8	20.0	570
4.0	3.7	73.3	71.3	63.8	60.8	23.0	552
8.0	5.2	68.8	66.8	57.7	54.7	24.5	547
10.0	5.8	67.3	65.3	55.8	52.8	25.0	545
16.0	7.3	64.2	62.2	51.7	48.7	25.0	543
20.0	8.2	62.8	60.8	49.8	46.8	25.0	542
25.0	9.2	61.3	59.3	47.8	44.8	24.3	541
31.25	10.4	59.9	57.9	45.9	42.9	23.6	540
62.5	14.9	55.4	53.4	39.9	36.9	21.5	539
100.0	19.2	52.3	50.3	35.8	32.8	20.1	538
200.0	28.1	47.8	45.8	29.8	26.8	18.0	537
300.0	35.3	45.1	43.1	26.3	23.3	16.8	536
400.0	41.7	43.3	41.3	23.8	20.8	15.9	536
500.0	47.5	41.8	39.8	21.8	18.8	15.2	536

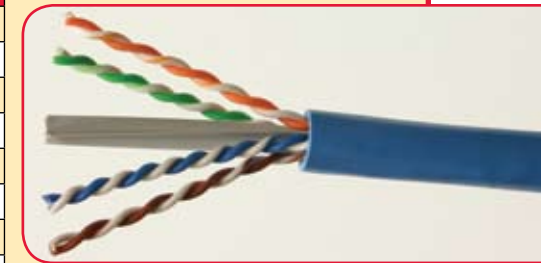
### Category 6a FTP Riser and Plenum:

FREQUENCY (MHz.)	INSERTION LOSS MAX (dB/100m)	NEXT LOSS MIN (dB/100m)		ELFEXT MIN (dB/100m)		RETURN LOSS MIN (dB/100m)	DELAY MAX (ns/100m)
		WP	PS	WP	PS		
0.772	—	76.0	74.0	—	—	—	—
1.0	2.08	74.3	72.3	67.8	64.8	20.0	570
4.0	3.80	65.3	63.3	55.8	52.8	23.0	552
8.0	5.31	60.8	58.8	49.7	46.7	24.5	547
10.0	5.93	59.3	57.3	47.8	44.8	25.0	545
16.0	7.49	56.2	54.2	43.7	40.7	25.0	543
20.0	8.38	54.8	52.8	41.8	38.8	25.0	542
25.0	9.38	53.3	51.3	39.8	36.8	24.3	541
31.25	10.50	51.9	49.9	37.9	34.9	23.6	540
62.5	14.99	47.4	45.4	31.9	28.9	21.5	539
100.0	19.14	44.3	42.3	27.8	24.8	20.1	538
200.0	27.58	39.8	37.8	21.8	18.8	18.0	537
300.0	34.27	37.1	35.1	18.3	15.3	16.8	536
400.0	40.05	35.3	33.3	15.8	12.8	15.9	536
500.0	45.26	33.8	31.8	13.8	10.8	15.2	536

### Ordering Information:

PART NO.	DESCRIPTION	UOM	O.D.	WEIGHT
SMP-U6A4R-XX	Category 6a UTP CMR cable	REEL	0.34"	42 lbs/1000 ft
SMP-U6APLM-XX	Category 6a UTP CMP cable	REEL	0.37"	53.3 lbs/1000 ft
SMP-FTP6A4R-XX	Category 6a FTP CMR cable	REEL	0.29"	40 lbs/1000 ft
SMP-FTP6A4PLM-XX	Category 6a FTP CMP cable	REEL	0.29"	36 lbs/1000 ft

\* Replace "XX" with color code. Contact OCC Inside Sales for available colors.



For more information call 800-622-7711, or visit occfiber.com.

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## COPPER CABLE SOLUTIONS

### OCC CATEGORY 5E COPPER CABLE

#### Features & Benefits:

- Tested from 1 to 400 MHz and offers guaranteed headroom to Category 5e TIA/EIA-568-B.2 cable requirements
- Guaranteed Gigabit throughput
- Components are twisted into pairs with varying left hand lays to minimize crosstalk.
- Reverse sequential numbering to eliminate guesswork of footage in box or reel
- Compatible with SMP ASE jacks and patch panels for optimal system performance
- RoHS compliant
- Available in UTP Riser and Plenum

#### Construction

- Conductor: 24 AWG (.02 mm) solid bare copper
- Color Code
  - Pair 1: Blue-White/Blue
  - Pair 2: Orange-White/Orange
  - Pair 3: Green-White/Green
  - Pair 4: Brown-White/Brown
- Jacket:
  - Riser – Flame Retardant PVC, UL Listed Type FT4 per UL 444
  - Plenum – Low Smoke Flame Retardant PVC, UL Listed Type FT6 per UL 444
- Ripcord: Applied longitudinally under jacket

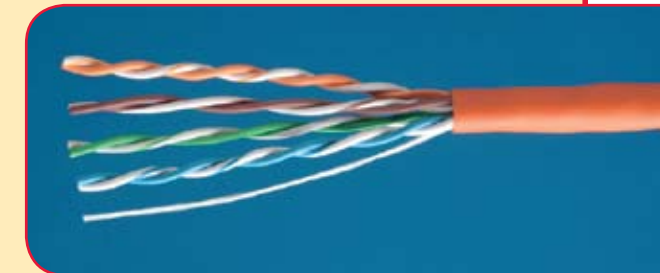
#### Applications:

- Voice
- 4/16 Mbps Token Ring
- 100 VG-AnyLAN
- 100 Mbps TP-PMD
- 10BASE-T Ethernet
- 100BASE-TX Fast Ethernet
- 1000BASE-T Gigabit Ethernet
- Broadband Video
- All other applications for operation over Category 5e or class D cabling

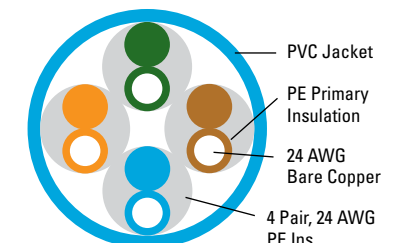
#### Electrical Characteristics:

- Category 5e Electrical characteristics\*:
  - Characteristic Impedance: 100 ± 15 Ω (.772 to 100 MHz)
  - Maximum Conductor Resistance: 9.38 Ω/100 Meters @ 20° C
  - Maximum Resistance Unbalanced: 5%
  - Maximum Mutual Capacitance: 5.6 nF/100 Meters @ 1kHz
  - Maximum Capacitance Unbalanced: 330 pF/100 Meters
  - Maximum Delay Skew: 45 ns/100 Meters

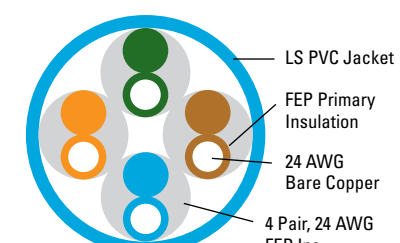
\* Discrete values are for information only. Equations for swept frequencies govern limits. Verified to meet Cat 5e TIA-568-B.2 performance requirements per the verification requirements defined in E108971.



### Cat 5e UTP Riser



### Cat 5e UTP Plenum



### Standards:

- ANSI/TIA/EIA-568-B.1, category 5e
- ANSI/TIA/EIA-568-B.2, category 5e
- ISO/IEC 11801, class D and category 5
- ISO/IEC 11801, 2nd edition, class E and category 5

## OCC CATEGORY 5E COPPER CABLE

### ELECTRICAL PERFORMANCE

#### Category 5e UTP Riser and Plenum:

FREQUENCY (MHz.)	INSERTION LOSS MAX (dB/100m)	NEXT LOSS MIN (dB/100m)		ACR MIN (dB/100m)		ELFEXT MIN (dB/100m)		RETURN LOSS MIN (dB/100m)	DELAY MAX (ns/100m)
		WP	PS	WP	PS	WP	PS		
0.772	1.8	67.0	64.0	65.2	62.2	66.0	63.0	—	—
1.0	2.0	65.3	62.3	63.3	60.3	63.8	60.8	20.0	570
4.0	4.1	56.3	53.3	52.2	49.2	51.8	48.8	23.0	552
8.0	5.8	51.8	48.8	46.0	43.0	45.7	42.7	24.5	547
10.0	6.5	50.3	47.3	43.8	40.8	43.8	40.8	25.0	545
16.0	8.2	47.2	44.2	39.0	36.0	39.7	36.7	25.0	543
20.0	9.3	45.8	42.8	36.5	33.5	37.8	34.8	25.0	542
25.0	10.4	44.3	41.3	33.9	30.9	35.8	32.8	24.3	541
31.25	11.7	42.9	39.9	31.2	28.2	33.9	30.9	23.6	540
62.5	17.0	38.4	35.4	21.4	18.4	27.9	24.9	21.5	539
100.0	22.0	35.3	32.3	13.3	10.3	23.8	20.8	20.1	538
155.0	28.1	32.4	29.4	—	—	20.0	17.0	18.8	537
200.0	32.4	30.8	27.8	—	—	17.8	14.8	18.0	537
250.0	36.9	29.3	26.3	—	—	15.8	12.8	17.3	536
300.0	41.0	28.1	25.1	—	—	14.3	11.3	16.8	536
350.0	44.9	27.1	24.1	—	—	12.9	9.9	16.3	536
400.0	48.5	26.3	23.3	—	—	11.8	8.8	15.9	536

#### Ordering Information:

PART NO.	DESCRIPTION	UOM	O.D.	WEIGHT
SMP-USE4R-XX	Category 5e 400 MHz CMR cable	BOX	0.179"	22 lbs
SMP-USE4PLM-XX	Category 5e 400 MHz CMP cable	BOX	0.180"	21 lbs

\* Replace "XX" with color code. Contact OCC Inside Sales for available colors.

## OCC CATEGORY 6 COPPER CABLE

### CATEGORY 6 4 PAIR, 23 AWG, SHIELDED OR UNSHIELDED, RISER OR PLENUM RATED COPPER CABLE

#### Features & Benefits:

- Tested from 1 to 555 MHz and offers guaranteed headroom to Category 6 TIA-568-B.2.1 cable requirements
- Fully compliant with Power over Ethernet technology
- Components are twisted into pairs with varying left hand lays to minimize cross talk.
- Reverse sequential numbering to eliminate guesswork of footage in box or reel
- Compatible with SMP A6 jacks and patch panels for optimal system performance
- RoHS compliant
- Available in Riser and Plenum; UTP and SCTP



## OCC CATEGORY 6 COPPER CABLE

#### Construction:

- Conductor: 23 AWG (.022 mm) Solid Bare Copper
- Color Code
  - Pair 1: Blue-White/Blue
  - Pair 2: Orange-White/Orange
  - Pair 3: Green-White/Green
  - Pair 4: Brown-White/Brown
- Jacket:
  - Riser – Flame Retardant PVC, UL Listed Type FT4 per UL 444
  - Plenum – Low Smoke Flame Retardant PVC, UL Listed Type FT6 per UL 444
- Cabling: Four twisted pairs are cabled around a star filler with a left hand lay
- Ripcord: Applied longitudinally under jacket

#### Applications:

- Voice
- 4/16 Mbps Token Ring
- 100 VG-AnyLAN
- 100 Mbps TP-PMD
- 155/622/1000 Mbps ATM
- 10BASE-T Ethernet
- 100BASE-TX Fast Ethernet
- 1000BASE-T Gigabit Ethernet
- TIA/EIA-854 Gigabit Ethernet over Category 6 cabling
- 270 Mbps digital video
- Broadband Video
- All other applications developed for operation over Category 6 or class E cabling

#### Electrical Characteristics:

- Category 6 Electrical Characteristics\*:
  - Characteristic Impedance: 100 ± 15 Ω (1.0 to 550 MHz)
  - 100 ± 20 Ω (101 to 250 MHz)
  - 9.38 Ω/100 Meters @ 20° C
  - 3%
  - Maximum Conductor Resistance: 9.38 Ω/100 Meters @ 20° C
  - Maximum Resistance Unbalanced: 3%
  - Maximum Mutual Capacitance: 5.6 nF/100 Meters @ 1kHz
  - Maximum Capacitance Unbalanced: 330 pF/100 Meters
  - Maximum Delay Skew: 45 ns/100 Meters

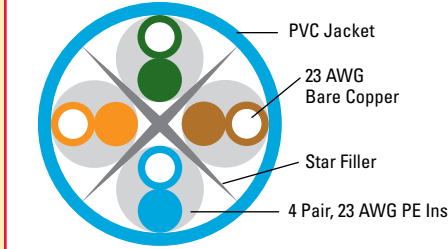
\* Discrete values are for information only. Equations for swept frequencies govern limits. Verified to meet Cat 6 TIA-568-B.2-1 performance requirements per the verification requirements defined in E108971.

#### Ordering Information:

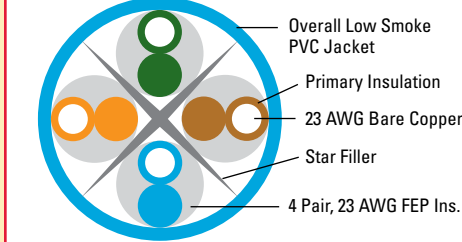
PART NO.	DESCRIPTION	UOM	O.D.	WEIGHT
SMP-U64R-XX	Category 6 CMR cable	BOX	0.24"	23 lbs
SMP-U64PLM-XX	Category 6 CMP cable	BOX	0.22"	24 lbs
SMP-FTP64R-XX	Category 6 SCTP CMR cable	REEL	0.29"	36 lbs/1000 ft
SMP-FTP64PLM-XX	Category 6 SCTP CMP cable	REEL	0.29"	40 lbs/1000 ft

\* Replace "XX" with color code. Contact OCC Inside Sales for available colors.

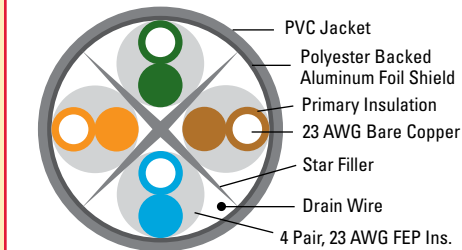
#### Cat 6 UTP Riser:



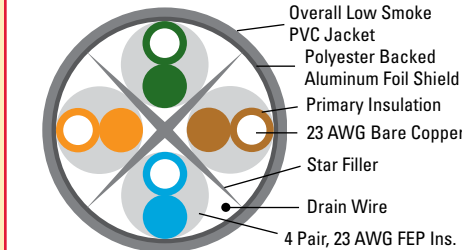
#### Cat 6 UTP Plenum:



#### Cat 6 ScTP Riser:



#### Cat 6 ScTP Plenum:



#### Standards:

- ANSI/TIA/EIA-568-B.1
- ANSI/TIA/EIA-568-B.2
- ISO/IEC 11801
- ANSI/TIA/EIA-568-B.2-1, Category 6
- ISO/IEC 11801, 2nd edition, class E and category 6

## OCC CATEGORY 6 COPPER CABLE

### ELECTRICAL PERFORMANCE

#### Category 6 UTP Riser and Plenum:

FREQUENCY (MHz.)	INSERTION LOSS MAX (dB/100m)	NEXT LOSS MIN (dB/100m)		ACR MIN (dB/100m)		ELFEXT MIN (dB/100m)		RETURN LOSS MIN (dB/100m)	DELAY MAX (ns/100m)
		WP	PS	WP	PS	WP	PS		
0.772	—	77.0	75.0	—	—	73.0	70.0	—	—
1.0	2.0	75.3	73.3	73.3	71.3	70.8	67.8	20.0	570
4.0	3.8	66.3	64.3	62.5	60.5	58.8	55.8	23.0	552
8.0	5.3	61.8	59.8	56.4	54.4	52.7	49.7	24.5	547
10.0	6.0	60.3	58.3	54.3	52.3	50.8	47.8	25.0	545
16.0	7.6	57.2	55.2	49.7	47.7	46.7	43.7	25.0	543
20.0	8.5	55.8	53.8	47.3	45.3	44.8	41.8	25.0	542
25.0	9.5	54.3	52.3	44.8	42.8	42.8	39.8	24.3	541
31.25	10.7	52.9	50.9	42.2	40.2	40.9	37.9	23.6	540
62.5	15.4	48.4	46.4	33.0	31.0	34.9	31.9	21.5	539
100.0	19.8	45.3	43.3	25.5	23.5	30.8	27.8	20.1	538
155.0	25.2	42.4	40.4	17.3	15.3	27.0	24.0	18.8	537
200.0	29.0	40.8	38.8	11.8	9.8	24.8	21.8	18.0	537
250.0	32.8	39.3	37.3	6.5	4.5	22.8	19.8	17.3	536
300.0	36.4	38.1	36.1	—	—	21.3	18.3	16.8	536
350.0	39.8	37.1	35.1	—	—	19.9	16.9	16.3	536
400.0	43.0	36.3	34.3	—	—	18.8	15.8	15.9	536
500.0	48.9	34.8	32.8	—	—	16.8	13.8	15.2	536
555.0	52.0	34.1	32.1	—	—	15.9	12.9	14.9	536

#### Category 6 ScTP Riser and Plenum:

FREQUENCY (MHz.)	INSERTION LOSS MAX (dB/100m)	NEXT LOSS MIN (dB/100m)		ACR MIN (dB/100m)		ELFEXT MIN (dB/100m)		RETURN LOSS MIN (dB/100m)	DELAY MAX (ns/100m)
		WP	PS	WP	PS	WP	PS		
0.772	—	76.0	74.0	—	—	70.0	67.0	—	—
1.0	2.0	74.3	72.3	72.3	70.3	67.8	64.8	20.0	570
4.0	3.8	65.3	63.3	61.5	59.5	55.8	52.8	23.0	552
8.0	5.3	60.8	58.8	55.4	53.4	49.7	46.7	24.5	547
10.0	6.0	59.3	57.3	53.3	51.3	47.8	44.8	25.0	545
16.0	7.6	56.2	54.2	48.7	46.7	43.7	40.7	25.0	543
20.0	8.5	54.8	52.8	46.3	44.3	41.8	38.8	25.0	542
25.0	9.5	53.3	51.3	43.8	41.8	39.8	36.8	24.3	541
31.25	10.7	51.9	49.9	41.2	39.2	37.9	34.9	23.6	540
62.5	15.4	47.4	45.4	32.0	30.0	31.9	28.9	21.5	539
100.0	19.8	44.3	42.3	24.5	22.5	27.8	24.8	20.1	538
155.0	25.2	41.4	39.4	16.3	14.3	24.0	21.0	18.8	537
200.0	29.0	39.8	37.8	10.8	8.8	21.8	18.8	18.0	537
250.0	32.8	38.3	36.3	5.5	3.5	19.8	16.8	17.3	536
300.0	36.4	37.1	35.1	—	—	18.3	15.3	16.8	536
350.0	39.8	36.1	34.1	—	—	16.9	13.9	16.3	536
400.0	43.0	35.3	33.3	—	—	15.8	12.8	15.9	536
500.0	48.9	33.8	31.8	—	—	13.8	10.8	15.2	536
555.0	52.0	33.1	31.1	—	—	12.9	9.9	14.9	536