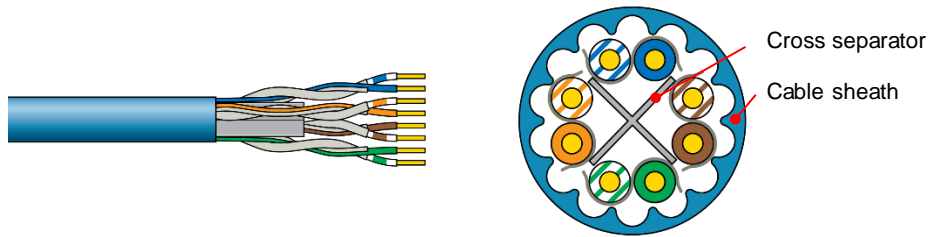


# R&M freenet U/UTP Cat.6<sub>A</sub> 650 MHz CMR

R&M freenet U/UTP Cat.6A 650MHz 4PxAWG23 E523517 75°C C(UL)US CMR ETL Verified NVP=68% ISO/IEC 11801 ANSI/TIA 568.2 D <batch no> <dd/mm/yy> <feet> ft

<b>Cable reference</b>	<b>Part number</b>	R883515
	<b>Source code</b>	D
	<b>R&amp;M positioning</b>	Cat.6 <sub>A</sub> , Level 1

<b>Cable construction</b>	<b>Conductor</b>	Bare solid copper wire AWG23 $\geq \varnothing 0.0224\text{in}$ ( $\geq \varnothing 0.57\text{ mm}$ )
	<b>Insulation</b>	FEP $\leq \varnothing 0.0431\text{in}$ ( $\leq \varnothing 1.1\text{ mm}$ )
	<b>Twisting</b>	2 wires to the pair
	<b>Cable lay up</b>	4 pairs to the core
	<b>Pair screen</b>	Non
	<b>Sheath</b>	Flame Retardant PVC, blue RAL 5015



<b>Application</b>	Primary (Campus), Secondary (Riser), Tertiary (Horizontal)
	IEEE 802.3an: 10Base-T; 100Base-TX; 1000Base-T; 10GBase-T
	IEEE 802.5 16 MB; ISDN; TPDDI; ATM
	IEEE 802.3af / IEEE 802.3at / IEEE 802.3bt

<b>Standards</b>	ANSI/TIA-568.2, UL 444
	Power over Ethernet (PoE) / Type 1-4

<b>Fire rating</b>	CMR
	UL 1666

<b>Technical Data</b>	<b>Cable designation</b>	U/UTP Cat.6 <sub>A</sub> 650MHz 4PxAWG23
	<b>Packaging</b>	Reel 1000ft (305m)
	<b>Outer diameter</b>	Nominal 3.18in (8.1 mm)
	<b>Weight</b>	55 lbs/kft (71kg/km)
	<b>Tensile force</b>	110 N

<b>Mechanical Properties</b>	<b>Bending radius</b>	$\geq 0.90\text{in}$ (32mm) during operation (without load)
		$\geq 2.12\text{in}$ (54mm) during installation (with load)
	<b>Temperature range</b>	During operation
	During installation	0°C...+ 60°C

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## Electrical Properties (at 20°C ± 5°C)



<b>DC loop resistance</b>		≤ 9.38 Ω / 100 m
<b>Resistance unbalance</b>		≤ 4 %
<b>Test voltage</b>	DC, 1 min, core/core	1000 V
<b>Insulation resistance</b>	500 V	≥ 5000 MΩ * km
<b>Capacitance</b>		≤ 56 pF / m
<b>Capacitance unbalance</b>		≤ 3.3 pF / m
<b>Mean characteristic impedance</b>		100 ± 15 Ω
<b>Nominal velocity of propagation</b>		Approx. 68 %
<b>Propagation delay</b>	At 1 MHz	≤ 570 ns / 100 m
<b>Delay skew</b>		≤ 45 ns / 100 m
<b>Balance TCL</b>	At 1 MHz	≥ 40 dB
	At 10 MHz	≥ 40 dB
	At 100 MHz	≥ 30 dB
<b>PS-Alien NEXT</b>	At 500 MHz	Min. 55 dB
		Typ. 65 dB

## Typical transmission characteristics (at 20°C)

f (MHz)	Attenuation (dB/100m)		NEXT (dB)		PS-NEXT (dB)		ACR-F <sup>1)</sup> (dB/100m)		PS-ACR-F <sup>1)</sup> (dB/100m)		Return loss (dB)	
	Max	Typ	Min	Typ	Min	Typ	Min	Typ	Min	Typ	Min	Typ
4	3.8	3.7	65.3	75	63.3	73	56	62	53	59	23	23.7
10	5.9	5.8	59.3	69	57.3	65	48	54	45	51	25	25.8
20	8.4	8.2	54.8	65	52.8	63	42	48	39	45	25	25.8
62.5	15	14.7	47.4	57	45.4	56	32	38	29	35	21.5	22.2
100	19.1	18.8	44.3	54	42.3	52	28	34	25	31	20.1	20.7
250	31.1	30.4	38.3	48	36.3	46	20	25	17	23	17.3	17.8
500	45.3	44.4	33.8	44	31.8	42	14	20	11	17	15.2	15.7
600	50.5	49.5	32.6	43	30.6	41	12.	18	9	15.2	14.7	15.1
650	52.3	52.3	31.10	41	30.1	40	11	17	8	14.8	14.5	14.8

<sup>1)</sup> ACR-F was formerly known as ELFEXT.

## Recommended connection technique

Module		Perm. Link Class D	Perm. Link Class E	Channel Class E <sub>A</sub>	Perm. Link Class E <sub>A</sub>	Short Link Class E <sub>A</sub>
	Cat.6A/s	✓	✓	✓	✓	✓
	Cat.6A/u	✓	✓	✓	✓	✓

## Third party certificate

ETL Verified Category 6A to ANSI/TIA-568.2