

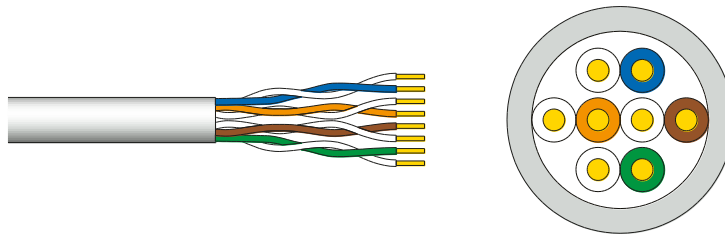
R&Mfreenet U/UTP Cat.6 450 MHz CMR

R&Mfreenet U/UTP Cat.6 450MHz 4PxAWG23 E523517 75°C C(UL) US CMR ETL Verified NVP=68% ISO/IEC 11801 ANSI/TIA 568.2 D <dd/mm/yy> FT

Cable reference	Part number	R see table
	Source code	D
	R&M positioning	Cat.6, Level 1

Cable construction	Conductor	Bare solid copper wire AWG23 $\geq \varnothing 0.0216\text{in}$ ($\geq \varnothing 0.55\text{ mm}$)
	Insulation	Polyolefin $\leq \varnothing 0.0386\text{in}$ (1.03~0.97mm)
	Twisting	2 wires to the pair
	Cable lay up	4 pairs to the core
	Sheath	Flame Retardant PVC

Article no.	Designation	Abbreviation	Colour
883510	White	wt	RAL9003
883511	Blue	bl	RAL5012
886975	Green	gn	GR-69
886976	Yellow	yl	YL-05
886977	Red	rd	RAL3000
886978	Black	bk	A00



Application	Primary (Campus), Secondary (Riser), Tertiary (Horizontal) IEEE 802.3an: 10Base-T; 100Base-TX; 1000Base-T IEEE 802.5 16 MB; ISDN; TPDDI; ATM IEEE 802.3af / IEEE 802.3at / IEEE 802.3bt
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Standards	ANSI/TIA-568.2, UL 444 Power over Ethernet (PoE) / Type 1-4
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Fire rating	CMR
	UL 1666

Flame Test	UL Flame Test: NFPA 262 Plenum Flame Test (UL910)(FT4) C(UL) Flame Test: FT4 CSA Flame Test: FT4
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Technical Data	Cable designation	U/UTP Cat.6 450MHz 4PxAWG23
	Packaging	Box 1000ft (305m)
	Outer diameter	Nominal 0.23 (5.4 mm)
	Weight	23.45 lbs / Box (10.64kg)
	Tensile force	$\leq 110\text{ N}$

Mechanical Properties	Bending radius	$\geq 0.90\text{in}$ (23mm) during operation (without load)
		$\geq 2.12\text{in}$ (54mm) during installation (with load)
	Temperature range	During operation $-20^{\circ}\text{C} \dots + 75^{\circ}\text{C}$ During installation $0^{\circ}\text{C} \dots + 60^{\circ}\text{C}$

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Electrical Properties (at 20°C ± 5°C)



DC loop resistance		≤ 9.38 Ω / 100 m
Resistance unbalance		≤ 5 %
Test voltage	DC, 1 min, core/core	1000 V
Insulation resistance	500 V	≥ 5000 MΩ * km
Capacitance		5.6 nF / 100m
Capacitance unbalance		≤ 330 pF / km
Mean characteristic impedance		100 ± 15 Ω
Nominal velocity of propagation		Approx. 68%
Propagation delay	At 1 MHz	≤ 570 ns / 100 m
Delay skew		≤ 45 ns / 100 m
Coupling attenuation		
Balance TCL	At 1 MHz	≥ 40dB
	At 10 MHz	≥ 40 dB
	At 100 MHz	≥ 30 dB

Typical transmission characteristics (at 20°C)

f (MHz)	Attenuation (dB/100m)		NEXT (dB)		PS-NEXT (dB)		ACR-F ¹⁾ (dB/100m)		PS-ACR-F ¹⁾ (dB/100m)		Return loss (dB)	
	Max	Typ	Min	Typ	Min	Typ	Min	Typ	Min	Typ	Min	Typ
1	2.0	1.7	74.3	94	72.3	92	67.8	86	64.8	84	20	28
4	3.8	3.4	65.3	85	63.3	83	55.8	74	52.8	73	23	33
10	6.0	5.4	59.3	78	57.3	76	47.8	67	44.8	65	25	35
20	8.5	7.7	54.8	74	52.8	72	41.8	61	38.8	59	25	35
62.5	15	14.1	47.4	66	45.4	64	31.9	51	28.9	49	21.5	36
100	19	18.1	44.3	64	42.3	62	27.8	48	24.8	45	20.1	35
250	32	29.8	38.3	58	36.3	55	19.8	40	16.8	37	17.3	32
450	46		34.5		32.5		14.7		11.7		15.5	

¹⁾ ACR-F was formerly known as ELFEXT.

Recommended connection technique

Module	Perm. Link Class D	Perm. Link Class E	Channel Class E _A	Perm. Link Class E _A	Short Link Class E _A
 Cat.6A/u	✓	✓	-	-	-
 Cat.6A EL /u	✓	✓	-	-	-

Third party certificate

ETL Verified Category 6 to ANSI/TIA-568.2