

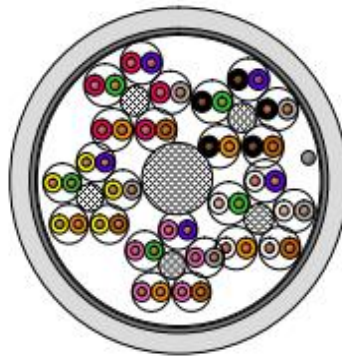
R&Mfreenet Multipair F/UTP Cat.3 16MHz

Cable reference	Part number	R311321 / R311323 / R311324
	Source code	Z
	R&M positioning	Cat.3

Cable construction	Conductor	Bare solid copper wire AWG24 ($\geq \varnothing 0.52$ mm)
	Insulation	Polyethylene $\leq \varnothing 0.95$ mm
	Twisting	2 wires to the pair
	Pair screen	Non
	Overall screen	Non
	Sheath	LSZH, gray RAL 7035

Construction

Stranding 5 or 10 pairs stranded to sub units. Cables with 100 pairs are built up with 1st layer 3 basic units, 2nd layer: 7 basic units
 Identification Pair 1-5: a-Core wt; b-Core bl, or, gn, br, gr
 Pair 6-10: a-Core rd; b-Core bl, or, gn, br, gr
 Sub units 1-10: color of binding tapes acc. to IEC 60304: bl, or, gn, br, gr, wt, rd, bk, ye, vi
 Wrapping Plastic foils; Sheath FRNC (H),



Application

Primary (Campus), Secondary (Riser), Tertiary (Horizontal)
 IEEE 802.3an: 10Base-T; 100Base-TX; 1000Base-T
 IEEE 802.5 16 MB; ISDN; TPDDI; ATM
 Confirming to European regulation "CPR" EN 50575

Standards

ISO/IEC 11801 ANSI/TIA-568-A
 IEC 61156;

Fire rating

LSZH
 IEC 60332-1; IEC 60754-2; IEC 61034
 EN50575; Eca; DOP E3003 / E3004 / E3005

Technical Data	Cable designation	F/UTP Cat.3 16MHz(xx)AWG24
	Packaging	Drum
	Outer diameter mm	Nominal 25P = 12.7 / 50P = 16.1 / 100P = 21.9
	Weight / Km	25P = 170KG / 50P = 297KG / 100P = 560KG
	Tensile force	25P = 500N / 50P = 1000N / 100P = 2000N

Mechanical Properties

Bending radius	$\geq 4 \times D$ during operation (D = Outerdiameter)
	$\geq 8 \times D$ during installation (D = Outerdiameter)
Temperature range	During operation -20°C...+ 60°C
	During installation 0°C...+ 50°C

Electrical Properties (at 20°C ± 5°C)

DC loop resistance		$\leq 19.2 \Omega / 100 \text{ m}$
Resistance unbalance		$\leq 2 \%$
Test voltage	DC, 1 min, core/core	1000 V
Insulation resistance	500 V	$\geq 5000 \text{ M}\Omega \cdot \text{km}$
Capacitance		45 pF / m max.
Capacitance unbalance		$\leq 1600 \text{ pF} / \text{km}$
Mean characteristic impedance		$100 \pm 5 \Omega$
Nominal velocity of propagation		Approx. 66 %
Propagation delay	At 1 MHz	$\leq 538 \text{ ns} / 100 \text{ m}$
Delay skew		$\leq 40 \text{ ns} / 100 \text{ m}$
Balance TCL	At 1 MHz	$\leq 50 \text{ m}\Omega/\text{m}$
	At 10 MHz	$\leq 100 \text{ m}\Omega/\text{m}$
	At 100 MHz	$\leq 200 \text{ m}\Omega/\text{m}$
Insulation resistance	500 V	$\geq 5000 \text{ M}\Omega \cdot \text{km}$

Typical transmission characteristics (at 20°C)

f (MHz)	Attenuation (dB/100 m)	NEXT (dB)	ACR-F (dB/100 m)	Return loss (dB)
1	1.9	71	69.1	20
4	3.7	62	58.3	23
10	6.0	56	50.0	25
16	7.6	53	45.4	25
20	8.5	51	42.5	25
31.5	10.7	49	38.3	24
62.5	15.7	44	28.3	22
100	19.8	41	21.2	20

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.5e/s	✓	–	–	–	–

Third party certificate