



Qualified Partner Programme QPP

Installation Cables

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Convincing cabling solutions

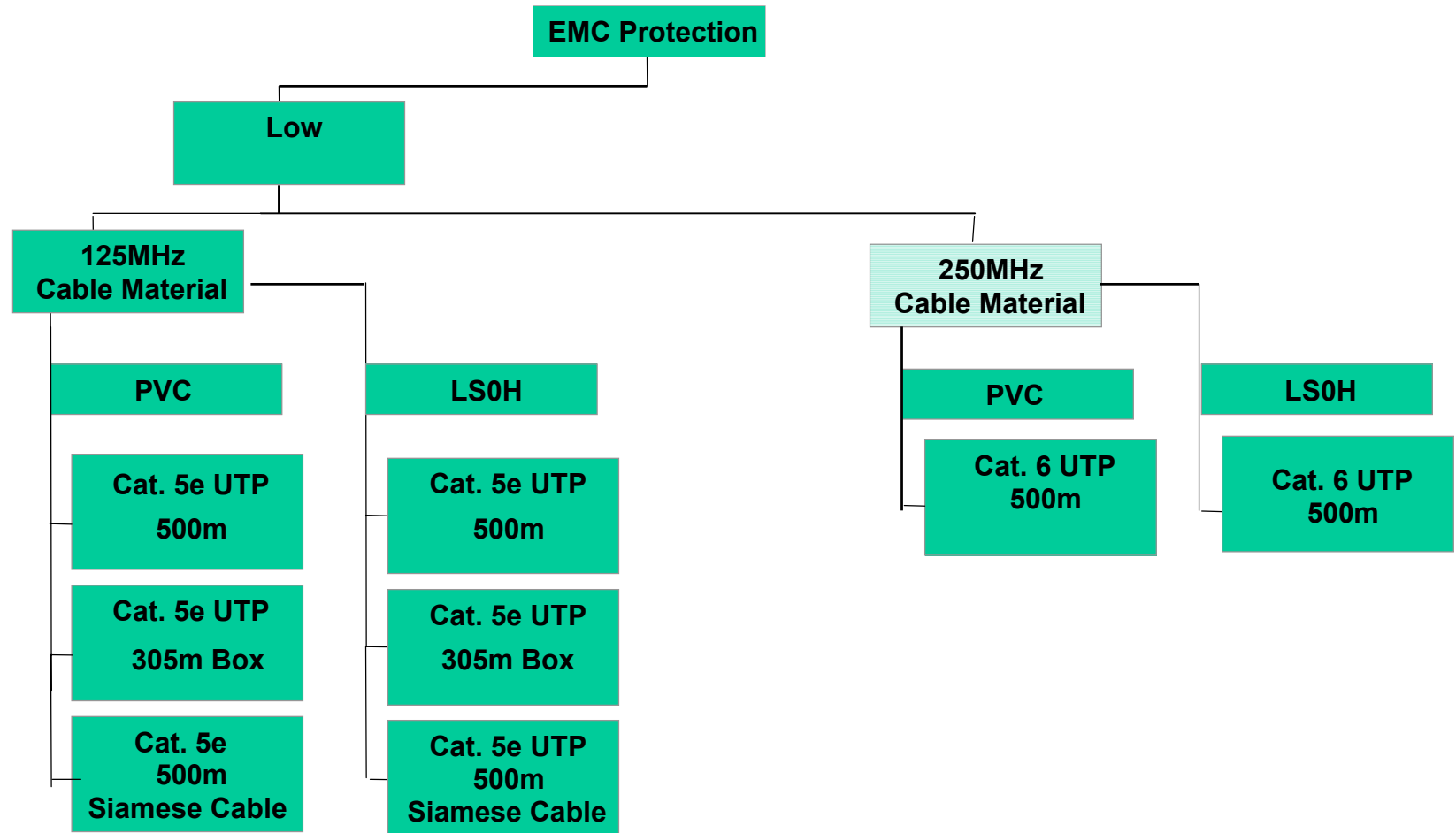
"R&Mfreenet" installation cables

- Comprehensive range of twisted pair cables to set up the R&Mfreenet system
- Products for shielded and unshielded systems
- Different jacket materials
- Different bandwidths of up to 750 MHz available
- All cables 3P tested and listed
- All cables comply with the current standards

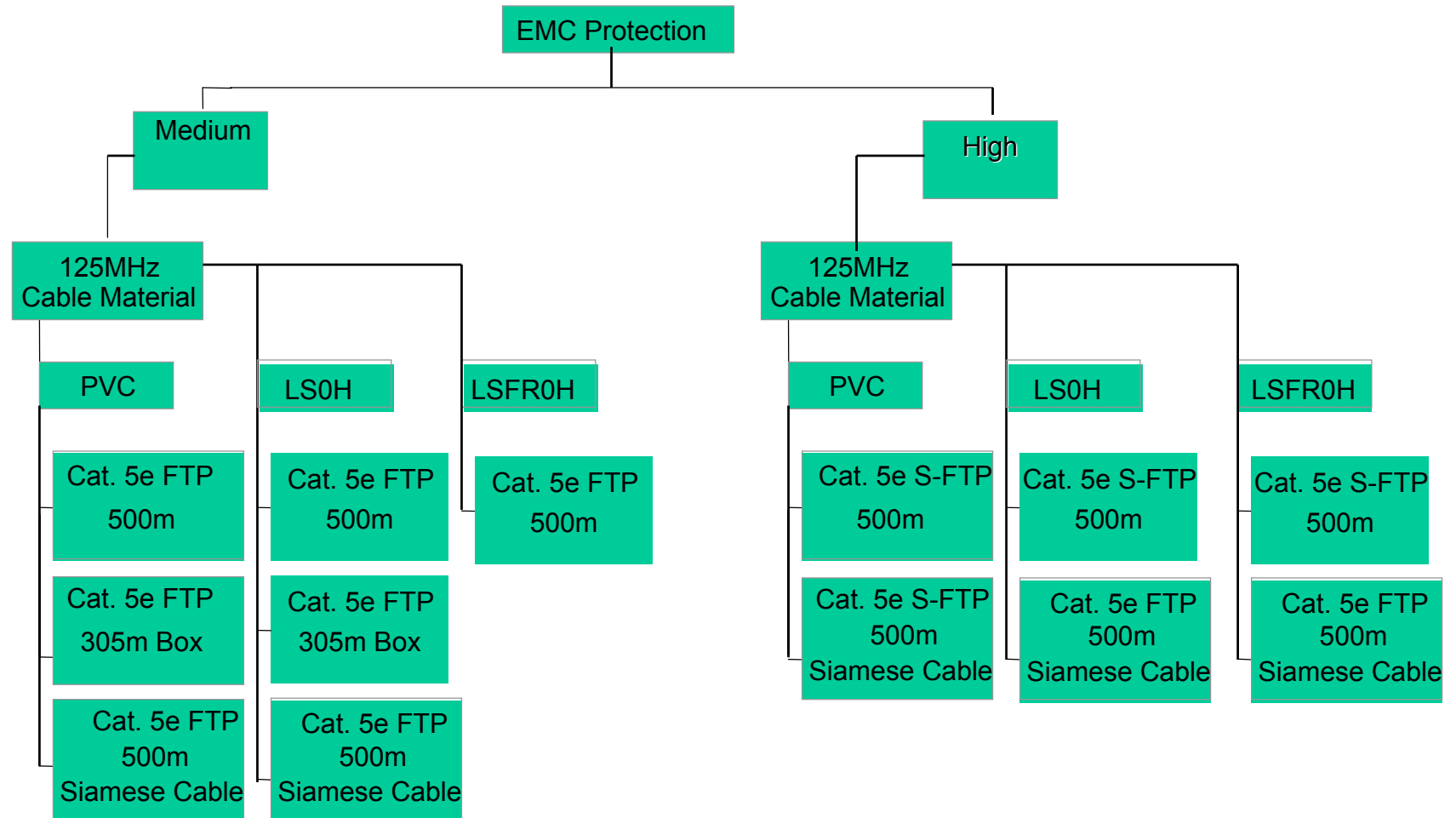
Assortment of cables

Cable type	Cable material	Available lengths
Cat. 5e UTP	PVC and LS0H	500 m reel, 305 m box
Cat. 6 UTP	PVC and LS0H	500 m reel
Cat. 5e FTP	PVC and LS0H	500 m reel, 305 m box
Cat. 5e S-FTP	PVC and LSFR0H	500 m reel
Cat. 6 S-STP	LS0H	500 m reel
Cat. 7 S-STP	LSFR0H	500 m reel

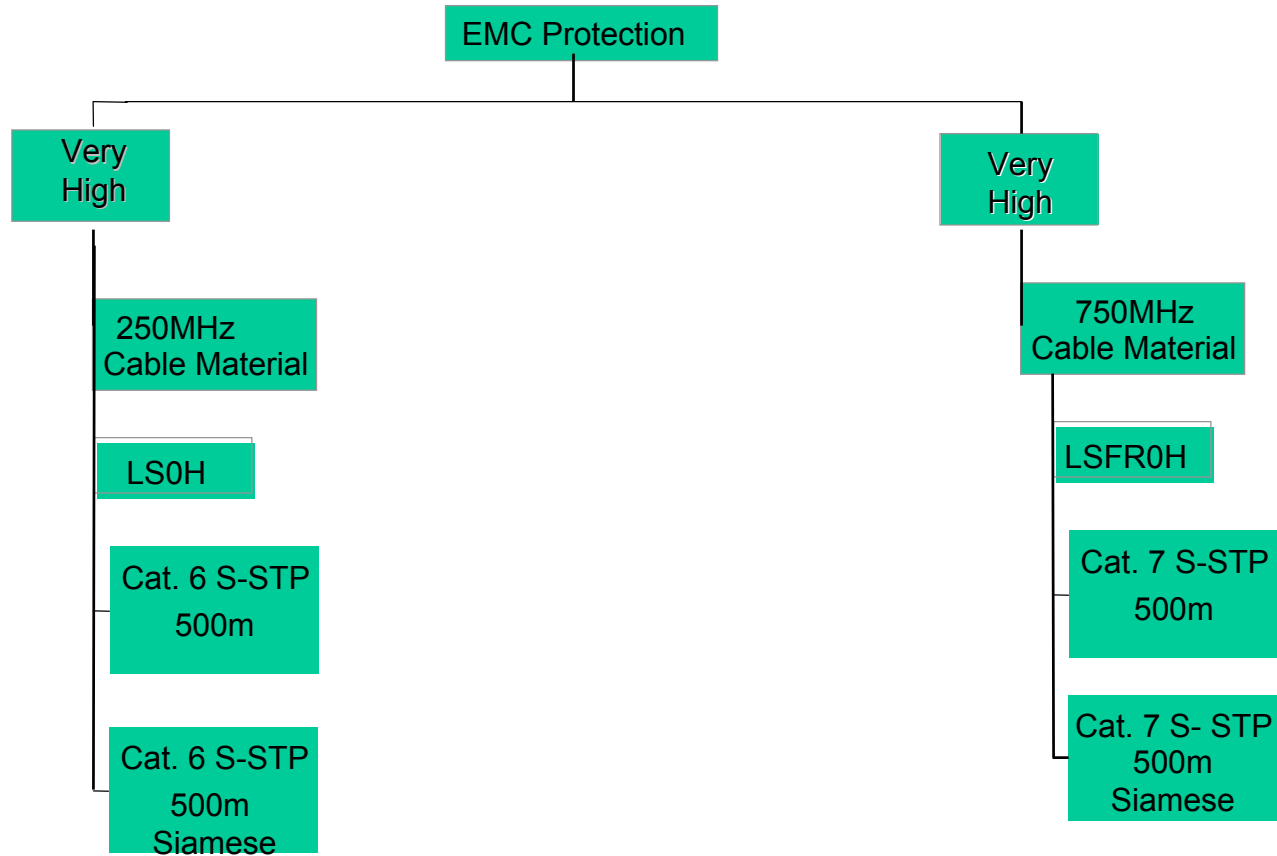
Decision chart (low protection)



Decision chart (medium- / high protection)



Decision chart (very high protection)



Installation cables Cat. 5e, 6 and 7

Features

- All cables comply with the ISO/IEC 11801, EN 50173, EN 50167, EN 50169, EIA/TIA 568A, prEN 50288-x-x specifications
- Fulfill the stricter Cat. 5e requirements
- Fulfill the proposed Cat. 6 and 7 requirements
- All cables are 3P verified

- 100 ohm versions
- IEC colour code
- Operational temperature range: -20°C to +75°C

Requirements of Cat. 5/5e/6/7 installation cables

	Cat. 5		Cat. 5e		Cat. 6		Cat. 7	
	prEN50288-2-1/-3-1		EIA/TIA proposal		prEN50288-5-1		prEN50288-4-1	
Frequency	Attenuation	NEXT	Attenuation	NEXT	Attenuation	NEXT	Attenuation	NEXT
[MHz]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]	[dB]
1	2.1	62	2.1	65	2.1	66	2.1	80
4	4.3	53	4.3	56	3.8	66	3.9	80
10	6.6	47	6.6	50	6	60	6	80
16	8.2	44	8.2	47	7.6	57	7.6	80
20	9.2	42	9.2	45	8.5	55.5	8.5	80
31.25	11.8	40	11.8	43	10.8	52.6	10.6	80
62.5	17.1	35	17.1	38	15.5	48.1	15	75
100	22	32	22	35	19.9	45	19	71
155					25.3	42.2	24	68
200					29.2	40.5	27	66
300							33	64
600							50	60

Fire and smoke gas tests

IEC 60332-1:

- Test on one single cable

IEC 60332-3 Cat. C:

- Test on one bundle of cables

IEC 61034:

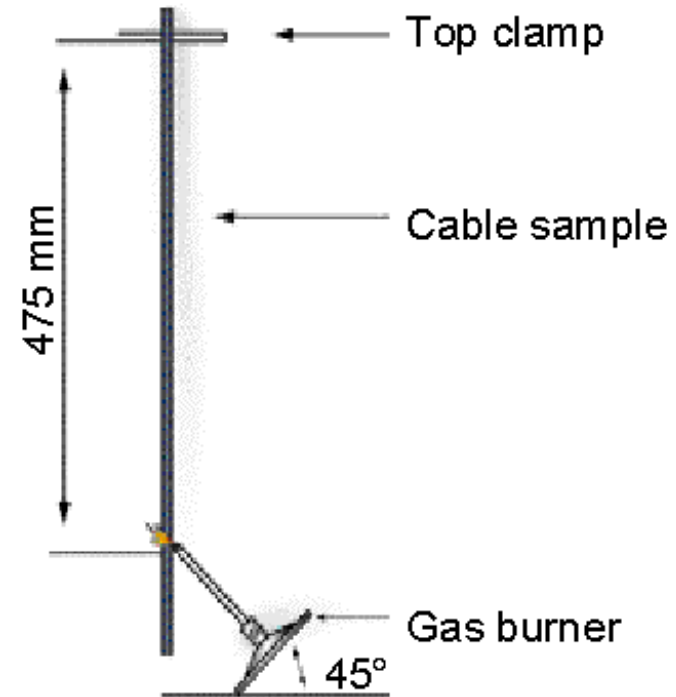
- Measuring the smoke density under the defined conditions

IEC 60754:

- Measuring the halogen gases during the combustion of plastic

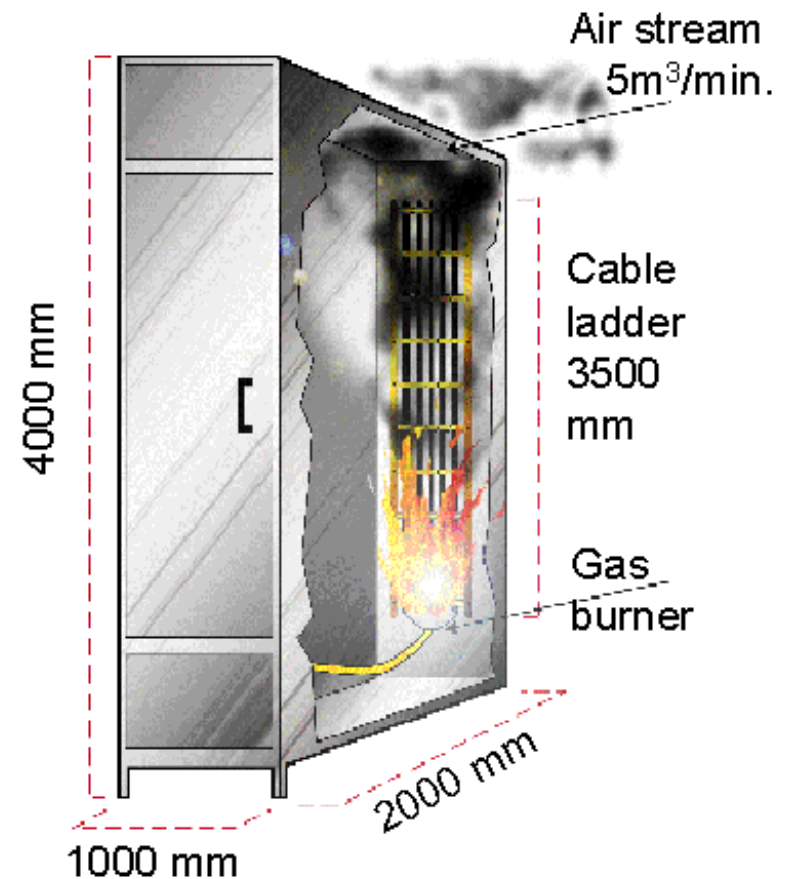
IEC 60332-1 fire test

- A gas burner is held against the cable during 1 minute.
- After 1 minute the gas burner is switched off. The cable must extinguish on its own. The burnt zone must not exceed 425 mm.
- Simple test
- PVC and LS0H fulfill this test



IEC 60332-3 Cat. C / fire test on bundles of cables

- Complete fire test. Carried out in a special fire chamber.
- Approx. 100 pieces of cables required.
- Fire duration 20 min. The flames must only spread on a height of 2.5m.
- FR (Fire Retardant) cables have special additives.
- Only LSFR0H fulfill this test.



IEC 61034 smoke gas test

- Measuring the smoke density under the given conditions.
- PVC produces thick, black smoke. Visibility 10%.
- Escape routes are not visible anymore. The smoke is toxic.
- Problematical in the cabling in air shafts.
- LS (Low Smoke) cables produce less smoke. Visibility 90%.
- Escape routes are visible.
- Persons can be rescued.

IEC 60754 measuring halogen gases

Measuring the quantity of halogen smoke gas produced in the combustion of plastic.

- Halogen gases in connection with quenching water are highly corrosive and cause damage to the building ("rusting" of reinforcing steel, etc.).
- Halogen gases cause symptoms of intoxication in persons.
- PVC contains halogen elements.
- 0H (Zero Halogen) cables produce no halogen gases.

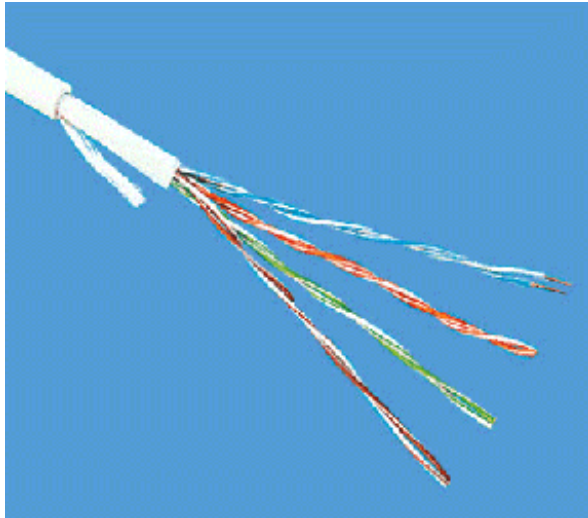
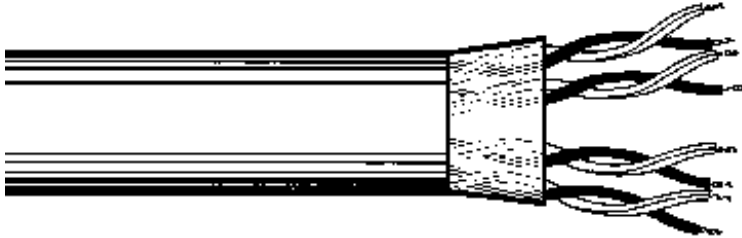
Multipair installation cables, Cat. 3



Features

- Multipair cables for telephonic applications.
- Suitable for voice, video and data transmission at frequencies of up to 16 MHz. (Cat. 3 compliant)
- Dimension: pair x2x0.5 mm (AWG24).
- Versions: 20, 25, 40, 50 or 100 pairs.
- UTP or FTP versions.
- PVC or LSOH cable jacket.
- Flame retardant/zero halogen according to IEC 332-1.

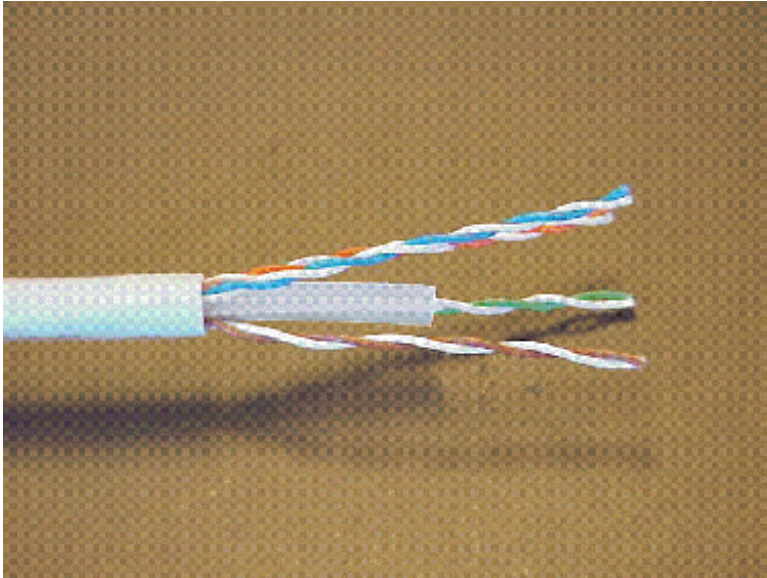
Installation cables, Cat. 5e, UTP



Features

- Unshielded, 100 ohm installation cables.
- 4 pairs or 2x4 pairs.
- 0.5 mm conductor diameter.
- Best pair symmetry, very good NEXT values.
- Plastic foil as protection; no cutting into the conductor insulation.
- PVC or LS0H cable jackets.
- Max. 5.4 mm overall diameter.

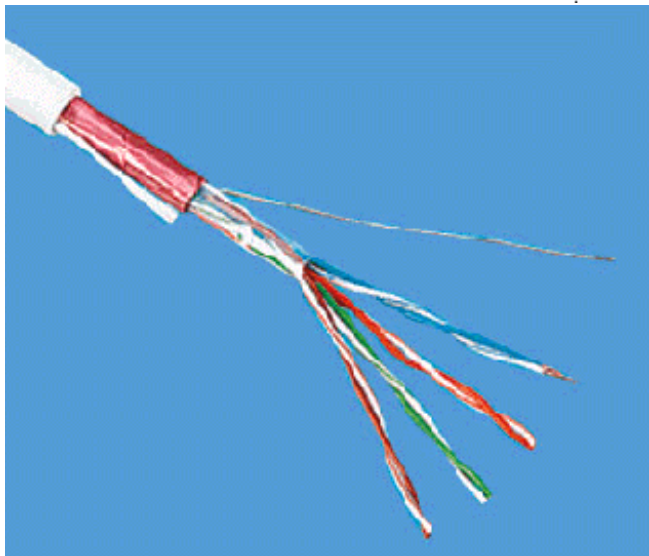
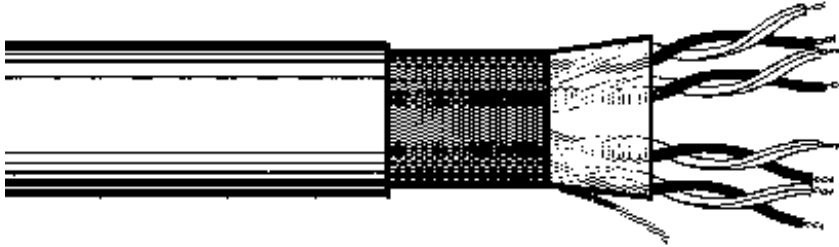
Installation cables, Cat. 6, UTP



Features

- Unshielded, 100 ohm installation cables.
- 4 pairs.
- 0.57 mm conductor diameter.
- Spacer for improved NEXT values.
- Better test values of up to 250 MHz also after installation.
- PVC and LS0H cable jackets.

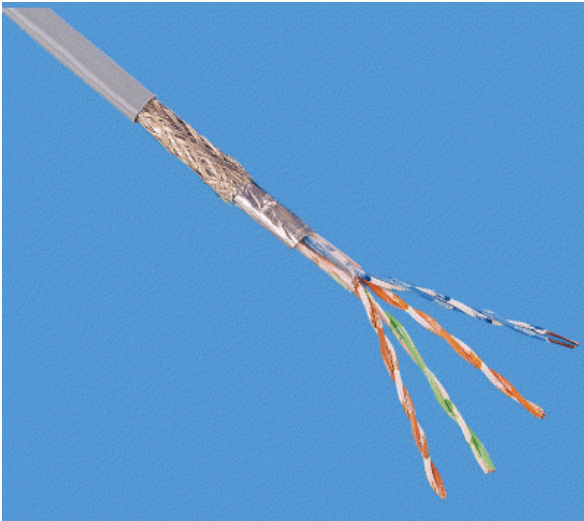
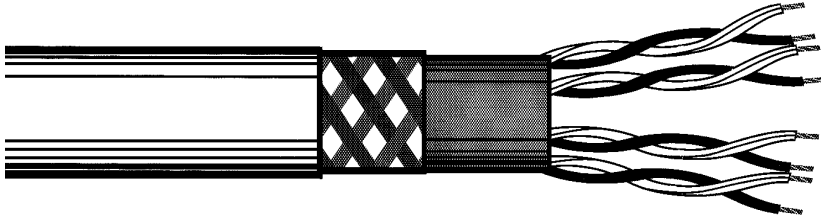
Installation cables, Cat. 5e, FTP



Features

- Foil-screened, 100 ohm installation cables.
- 4 pairs or 2x4 pairs.
- 0.5 mm conductor diameter.
- Alu-foil inside conductive; contact with earth wire (0.5 mm).
- Plastic foil for stabilisation and galvanic separation of the shield.
- PVC and LS0H cable jackets.

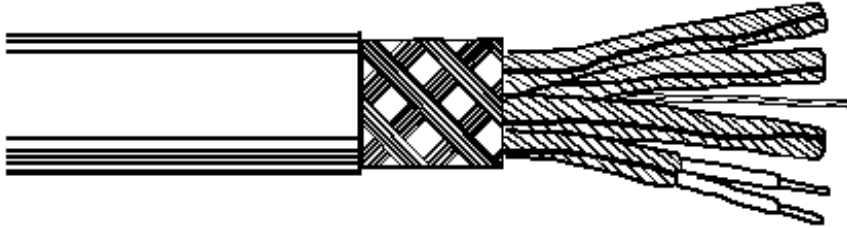
Installation cables, Cat. 5e, S-FTP



Features

- Braided/foil-screened, 100 ohm installation cables.
- 4 pairs or 2x4 pairs.
- 0.5 mm conductor diameter.
- Shield: alu-foil and tin-plated copper braid for high and low frequency interference fields.
- PVC and LSFR0H cable jackets.
- Fulfill the tests according. to EN 60332-3c.

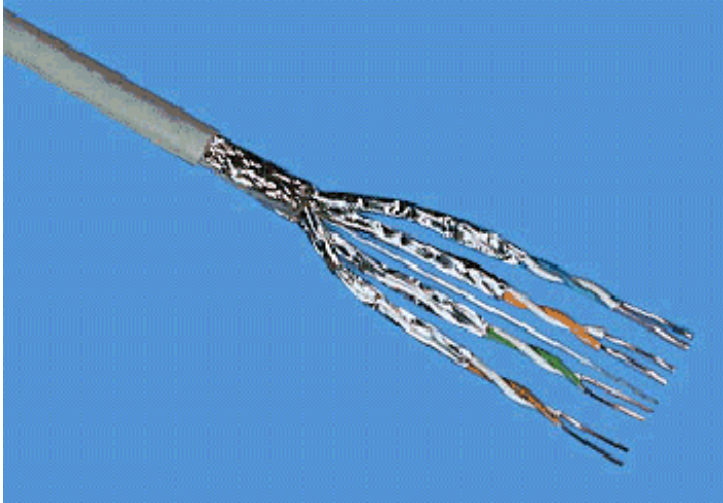
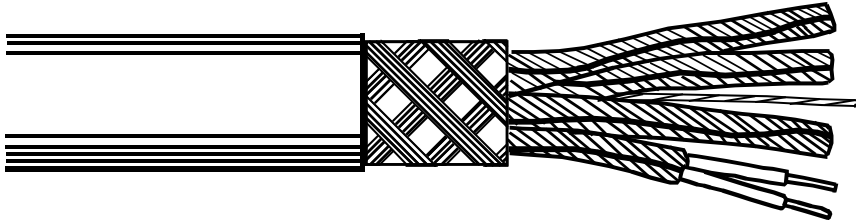
Installation cables, Cat. 6, S-STP



Features

- Pair-shielded, 100 ohm installation cables.
- 4 pairs or 2x4 pairs.
- 0.55 mm conductor diameter.
- 41% surface covered by braid.
- Cable trimmed to a small overall diameter (7.4 mm) and best performance (Cat. 7).
- LS0H cable jacket.

Installation cables, Cat. 7, S-STP



Features

- Individually shielded pairs with overall, shielding braid.
- Flame retardant/zero halogen according to IEC 332-3c.
- 4 pairs or 2x4 pairs.
- 0.57 mm conductor diameter.
- 65% optical braid coverage.
- Large performance reserves
> 30dB ACR at 600 MHz.