

Cat. 5e SF/UTP

LAN cable with 4 pairs category 5e,
with common Al-foil screen and braid

Alternative mark: **Cat. 5e S/FTP, STP**
standards: ISO/IEC 11801, IEC 61156-5
EN 50173, EN 50288-3-1
TIA/EIA-568-B (older: TIA/EIA-568-A)

Cat. 5e - category 5e, for class D systems, up to 100 MHz
SF/UTP - Screened and Foiled / Unshielded Twisted Pair (twisted pair
without individual screen, with common screen of Al-foil and braided
copper wires)



Technical data

Temperature range:

- during installation: 0 °C do 50 °C
- operating temperature: -20 °C do +60 °C

Minimal inner bending radius: (D = external cable diameter)

- fixed: 4D (25 mm)
- at installation: 8D (50 mm)

Behaviour in fire:

- self-extinguishing cable acc. to **IEC 60332-1** / EN 60332-1 / VDE 0482-332-1
- LSHF (FRNC) version, additionally:
 - halogen-free acc. to **IEC 60754-1**
 - non-corrosive combustion gases acc. to **IEC 60754-2**
 - minimal smoke release acc. to **IEC 61034-2**
- LSHF-FR (FRNC-C) version, additionally:
 - without flame propagation in vertical cable bundle acc. to **IEC 60332-3-24**

Fire load:

- PVC: 474 MJ/km; 0.132 kWh/m
- LSHF: 433 MJ/km; 0.120 kWh/m

Maximal tensile strength: 120 N

Cable weight: PVC: 46 kg/km; LSHF: 47 kg/km

Copper weight: 27 kg/km

Electrical characteristics:

Characteristic impedance Z_0 (at 1-100 MHz)	100 ± 15	Ω
DC loop resistance, max.	190	Ω/km
Resistance unbalance, max.	2	%
DC conductor resistance, max.	89,4	Ω/km
Insulation resistance, at 500 V, min.	2000	MΩxkm
Capacitance at 800 Hz	48	nF/km
Capacitance unbalance (pair towards ground), max.	1500	pF/km
Nominal velocity of propagation v/c	0,67	
Delay, max.	535	ns/100m
Delay skew, max.	20	ns/100m
Operating voltage, max.	125	V
Test voltage (DC, 1 min.) core/core	1000	V
Coupling attenuation, min.	75	dB



Construction

1. **Conductor:** copper(bare, single wired/solid)
 - diameter 0,51 mm, AWG24
2. **Insulation:** polyethylene (PE)
 - external diameter 1,1 mm
 - per two conductors are twisted in pairs
3. **Common screen:** aluminium-laminated plastic foil + braid of tinned copper wires
4. **Sheath:**
 - possible designs: PVC; halogen-free (LSHF, LSOH, FRNC); resistant to flame propagation acc. to IEC 60332-3 (LSHF-FR, LSFROH, FRNC-C)
 - external diameter 6,4 - 6,6 mm
 - **sheath colour:** grey RAL 7035

Conductor colour marking:

- 1. pair: blue / white with blue line
- 2. pair: orange / white with orange line
- 3. pair: green / white with green line
- 4. pair: brown / white with brown line

Nominal characteristics of signal transmission

Frequency	Attenuation	NEXT	PS-NEXT	ACR	PS-ACR	ELFEXT	PS-ELFEXT	Return loss
MHz	dB/100m	dB	dB	dB/100m	dB/100m	dB/100m	dB/100m	dB
1	1,9	71	68	69,1	66,1	68	65	20
4	3,7	62	59	58,3	55,3	56	53	23
10	6	56	53	50	47	48	45	25
16	7,6	53	50	45,4	42,4	44	41	25
20	8,5	51	48	42,5	39,5	42	39	25
31,2	10,7	49	46	38,3	35,3	38	35	24
62,5	15,7	44	41	28,3	25,3	32	29	22
100	19,8	41	38	21,2	18,2	28	25	20
125	22,3	40	37	17,7	14,7	26	23	19
155,5	24,2	38	35	13,8	10,8	24	21	
175	25,7	37	34	11,3	8,3	23	20	
200	27,5	36	33	8,5	5,5	22	19	
250	29,2	35	32	5,8	2,8	20	17	
300	32	34	31	2	-1	16	13	



Application

Cable applied in structured cabling system of class D for high speed data and voice transmission, at primary, secondary (vertical) and tertiary (horizontal) level.

Standardized for application up to **100 MHz** (in certain configurations even up to 300 MHz).

Used in the following types of networks:

- ISDN
- IEEE 802.3 10BASE T Ethernet 10Mb/s
- IEEE 802.3u 100BASE T Fast Ethernet 100Mb/s
- IEEE 802.3ab 1000BASE T Gigabit Ethernet 1000Mb/s
- IEEE 802.5 Token ring 16MB
- IEEE 802.12 100VG AnyLAN
- TP-DDI
- ATM(TP)

Length of this cable in Ethernet networks is restricted at max. 100 m (usually installed cable max. 90 m, with connecting cables of up to 5 m at both ends). Can be laid in cable canals.