# R&M*freenet* S/FTP Cat.6$_A$ 650 MHz

Dca
CPR

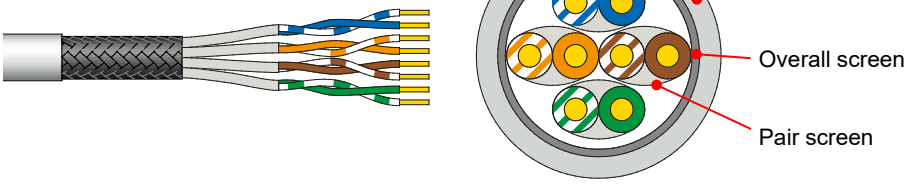
R&Mfreenet S/FTP Cat.6A 650MHz 4PxAWG23 LSZH Dca NVP=82% ISO/IEC 11801 ANSI/TIA-568.2 R <batch no.> <dd/mm/yy> <meter> m

## Cable reference

| | |
|---|---|
| **Part number** | R305649 |
| **Source code** | R |
| **R&M positioning** | Cat.6$_A$, Level 2 |

## Cable construction

| | |
|---|---|
| **Conductor** | Bare solid copper wire AWG23 (≥ Ø 0.56 mm) |
| **Insulation** | Polyethylene ≤ Ø 1.45 mm |
| **Twisting** | 2 wires to the pair |
| **Cable lay up** | 4 pairs to the core |
| **Pair screen** | Alu / polyester tape |
| **Overall screen** | Tin plated copper braid (≥ 25 % coverage) |
| **Sheath** | LSZH, gray RAL 7035 |




## Application

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
Confirming to European regulation “CPR” EN 50575

## Standards

ISO/IEC 11801 2nd ed.; EN 50173-1; ANSI/TIA-568.2
IEC 61156-5 2nd ed.; Power over Ethernet (PoE) / Type 1-4

## Fire rating

LSZH

IEC 60332-1;IEC 60754-1; IEC 60754-2; IEC 61034
EN50575; Dca s2-d1-a1; DOP C6571

## Technical Data

| | |
|---|---|
| **Cable designation** | S/FTP Cat.6$_A$ 650MHz 4PxAWG23 |
| **Packaging** | Drum 500 m |
| **Outer diameter** | Nominal 7.0 mm |
| **Weight** | 48 kg / km |
| **Thermal load** | 525 MJ / km |
| **Segregation class** | D |
| **Tensile force** | 100 N |

## Mechanical Properties

| | | |
|---|---|---|
| **Bending radius** | ≥ 30 mm during operation (without load) | |
| | ≥ 60 mm during installation (with load) | |
| **Temperature range** | During operation | -20°C…+ 70°C |
| | During installation | 0°C…+ 50°C |



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

| | | | |
|---|---|---|---|
| **DC loop resistance** | | ≤ 14.6 Ω / 100 m | |
| **Resistance unbalance** | | ≤ 2 % | |
| **Test voltage** | DC, 1 min, core/core | 1000 V | |
| **Insulation resistance** | 500 V | ≥ 5000 MΩ * km | |
| **Capacitance** | | 50 pF / m max. | |
| **Capacitance unbalance** | | ≤ 1600 pF / km | |
| **Mean characteristic impedance** | | 100 ± 5 Ω | |
| **Nominal velocity of propagation** | | Approx. 82 % | |
| **Propagation delay** | | ≤ 538 ns / 100 m | |
| **Delay skew** | | ≤ 40 ns / 100 m | |
| **Coupling attenuation** | | ≥ 80 dB | Type 1b |
| **Transfer impedance** | At 1 MHz | ≤ 10 mΩ / m | Grade 1 |
| | At 10 MHz | ≤ 10 mΩ / m | |
| | At 100 MHz | ≤ 30 mΩ / m | |
| **Balance TCL** | At 1 MHz | ≥ 50 dB | Level 2 |
| | At 10 MHz | ≥ 40 dB | |
| | At 100 MHz | ≥ 30 dB | |
| **PS-Alien NEXT** | At 100 MHz | Min.62.5 dB | |
| | | Typ. 80 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 |
| **4** | 3.8 | 3.6 | 66.3 | 100 | 63.3 | 100 | 56 | 91.2 | 53 | 88.2 | 23 | 28.0 |
| **10** | 5.9 | 5.7 | 60.3 | 100 | 57.3 | 100 | 48 | 90.2 | 45 | 87.2 | 25 | 30.0 |
| **20** | 8.4 | 8.0 | 55.8 | 100 | 52.8 | 100 | 42 | 89 | 39 | 86 | 25 | 30.0 |
| **62.5** | 15 | 14.2 | 48.4 | 100 | 45.4 | 97.5 | 32.1 | 85.9 | 29.1 | 82.9 | 21.5 | 26.5 |
| **100** | 19.1 | 18.1 | 45.3 | 97.4 | 42.3 | 94.4 | 28 | 84 | 25 | 81 | 20.1 | 25.1 |
| **250** | 34.3 | 31.9 | 39.3 | 91.4 | 36.3 | 88.4 | 20 | 75.7 | 17 | 75.5 | 17.3 | 29.5 |
| **500** | 45.3 | 418 | 34.8 | 86.9 | 31.8 | 83.9 | 14 | 72.1 | 11 | 69.1 | 17.3 | 22.3 |
| **600** | - | 46.0 | - | 85.7 | - | 82.7 | - | 70.2 | - | 67.2 | - | 22.3 |
| **650** | – | 48.0 | – | 84.4 | – | 81.4 | – | 68.0 | – | 65.4 | – | 21.5 |

[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.5e/s | ✓ | – | – | – | – |
|  | Cat.6/s | ✓ | ✓ | ✓ | – | – |
|  | Cat.6$_A$/s | ✓ | ✓ | ✓ | ✓ | ✓ |
|  | Cat.6$_A$ EL/s | ✓ | ✓ | ✓ | ✓ | ✓ |



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