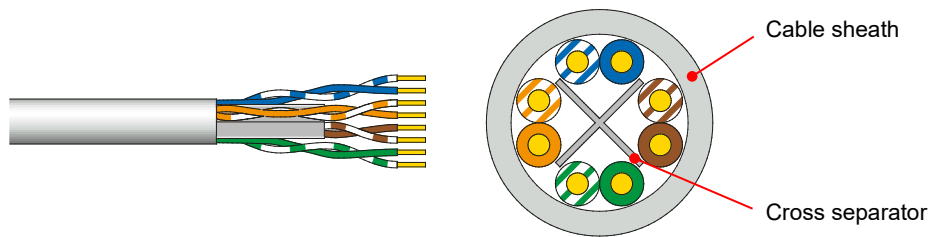


R&Mfreenet U/UTP Cat.6 450MHz 4PxAWG23 LSFRZH B2ca NVP=69% ISO/IEC 11801 ANSI/TIA-568.2 N <batch no.> <dd/mm/yy> <meter> m

|                        |                            |                |
|------------------------|----------------------------|----------------|
| <b>Cable reference</b> | <b>Part number</b>         | R845864        |
|                        | <b>Source code</b>         | N              |
|                        | <b>R&amp;M positioning</b> | Cat.6, Level 3 |

|                           |                       |  |
|---------------------------|-----------------------|--|
| <b>Cable construction</b> | <b>Conductor</b>      | Bare solid copper wire AWG23 ( $\geq \varnothing 0.55$ mm) |
|                           | <b>Insulation</b>     | Polyethylene $\leq \varnothing 1.0$ mm                     |
|                           | <b>Twisting</b>       | 2 wires to the pair  |
|                           | <b>Cable lay up</b>   | 4 pairs to the core with cross separator                   |
|                           | <b>Pair screen</b>    | Non  |
|                           | <b>Overall screen</b> | Non  |
|                           | <b>Sheath</b>         | LSFRZH, gray RAL 7035                                      |



|                    |  |
|--------------------|--|
| <b>Application</b> | 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                 |
|                    | Confirming to European regulation "CPR" EN 50575           |

|                  |   |
|------------------|---|
| <b>Standards</b> | ISO/IEC 11801 2nd ed.; EN 50173-1; ANSI/TIA-568.2                                     |
|                  | IEC 61156-5 2nd ed.; IEC 61156-7; EN 50288-6-1 ; Power over Ethernet (PoE) / Type 1-4 |

|                    |   |
|--------------------|---|
| <b>Fire rating</b> | LSFRZH  |
|                    | IEC 60332-1-2, IEC 60332-3-22; IEC 60754-2; IEC 61034 |
|                    | EN50575; B2ca-s1,d1,a1; DOP B6041                     |

|                       |                          |                             |
|-----------------------|--------------------------|-----------------------------|
| <b>Technical Data</b> | <b>Cable designation</b> | U/UTP Cat.6 450MHz 4PxAWG23 |
|                       | <b>Packaging</b>         | Drum 500m                   |
|                       | <b>Outer diameter</b>    | Nominal 6.6 mm              |
|                       | <b>Weight</b>            | 51.8 kg / km                |
|                       | <b>Thermal load</b>      | 700MJ / km                  |
|                       | <b>Segregation class</b> | B                           |
|                       | <b>Tensile force</b>     | 100 N                       |

|                              |                          |  |                |
|------------------------------|--------------------------|--|----------------|
| <b>Mechanical Properties</b> | <b>Bending radius</b>    | $\geq 25$ mm during operation (without load) |                |
|                              |                          | $\geq 50$ mm during installation (with load) |                |
|                              | <b>Temperature range</b> | During operation                             | -20°C...+ 60°C |
|                              |                          | During installation                          | 0°C...+ 50°C   |

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





|  |                      |                  |
|--|----------------------|------------------|
| <b>DC loop resistance</b>                      |                      | ≤ 9.38 Ω / 100 m |
| <b>Resistance unbalance</b>                    |                      | ≤ 5 %            |
| <b>Test voltage</b>                            | DC, 1 min, core/core | 1000 V           |
| <b>Insulation resistance</b>                   | 500 V                | ≥ 5000 MΩ * km   |
| <b>Capacitance</b>                             |                      | 56 pF / m max.   |
| <b>Capacitance unbalance</b>                   |                      | ≤ 1500 pF / km   |
| <b>Mean characteristic impedance @ 100 MHz</b> |                      | 100 ± 5 Ω        |
| <b>Nominal velocity of propagation</b>         |                      | Approx. 69 %     |
| <b>Propagation delay</b>                       | At 1 MHz             | ≤ 570 ns / 100 m |
| <b>Delay skew</b>                              |                      | ≤ 40 ns / 100 m  |
| <b>Coupling attenuation</b>                    |                      | ≥ 45 dB          |
| <b>Balance TCL</b>                             | At 1 MHz             | ≥ 40 dB          |
|  | At 10 MHz            | ≥ 40 dB          |
|  | At 100 MHz           | ≥ 30 dB          |

**Typical transmission characteristics (at 20°C)**

| f<br>(MHz) | Attenuation<br>(B/100m) |      | NEXT<br>(dB) |      | PS-NEXT<br>(dB) |      | ACR-F <sup>1)</sup><br>(dB/100m) |      | PS-ACR-F <sup>1)</sup><br>(dB/100m) |      | Return loss<br>(dB) |      |
|------------|-------------------------|------|--------------|------|-----------------|------|----------------------------------|------|-------------------------------------|------|---------------------|------|
|            | Max                     | Typ  | Min          | Typ  | Min             | Typ  | Min                              | Typ  | Min                                 | Typ  | Min                 | Typ  |
| 4          | 3.8                     | 3.8  | 65.3         | 65.3 | 63.3            | 63.3 | 55.8                             | 55.8 | 52.8                                | 52.8 | 23                  | 23   |
| 10         | 6.0                     | 6.0  | 59.3         | 59.3 | 57.3            | 57.3 | 47.8                             | 47.8 | 44.8                                | 44.8 | 25                  | 25   |
| 20         | 8.5                     | 8.5  | 54.8         | 54.8 | 52.8            | 52.8 | 41.8                             | 41.8 | 38.8                                | 38.8 | 25                  | 25   |
| 62.5       | 15.5                    | 15.5 | 47.4         | 47.4 | 45.4            | 45.4 | 31.9                             | 31.9 | 28.9                                | 28.9 | 21.5                | 21.5 |
| 100        | 19.9                    | 19.9 | 44.3         | 44.3 | 42.3            | 42.3 | 27.8                             | 27.8 | 24.8                                | 24.8 | 20.1                | 20.1 |
| 250        | 31                      | 31.0 | 38.3         | 38.3 | 36.3            | 36.3 | 19.8                             | 19.8 | 16.8                                | 16.8 | 17.3                | 17.3 |
| 400        | 40                      | 40.0 | 35.3         | 35.3 | 33.3            | 33.3 | 15.8                             | 15.8 | 12.8                                | 12.8 | 16.8                | 16.9 |
| 500        | 45.3                    | 4.3  | 33.8         | 33.8 | 31.8            | 31.8 | 13.8                             | 13.8 | 10.8                                | 10.8 | 16.3                | 16.3 |

<sup>1)</sup> ACR-F was formerly known as ELFEXT.

**Recommended connection technique**

| Module  |                       | Perm. Link<br>Class D | Perm. Link<br>Class E | Channel<br>Class E <sub>A</sub> | Perm. Link<br>Class E <sub>A</sub> | Short Link<br>Class E <sub>A</sub> |
|---|-----------------------|-----------------------|-----------------------|---------------------------------|------------------------------------|------------------------------------|
|  | Cat.5e/u              | ✓                     | -                     | -                               | -                                  | -                                  |
|  | Cat.6/u               | ✓                     | ✓                     | -                               | -                                  | -                                  |
|  | Cat.6/u               | ✓                     | ✓                     | -                               | -                                  | -                                  |
|  | Cat.6 <sub>A</sub> /u | ✓                     | ✓                     | -                               | -                                  | -                                  |