

**HITRONIC® HRM-FD Breakout Cable**
**DB\_HRM-FD\_EN (version 3.0)**  
 valid from: 01.09.2014

**1. Product Description**

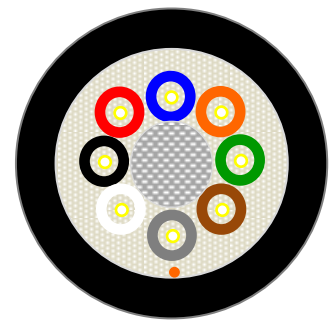
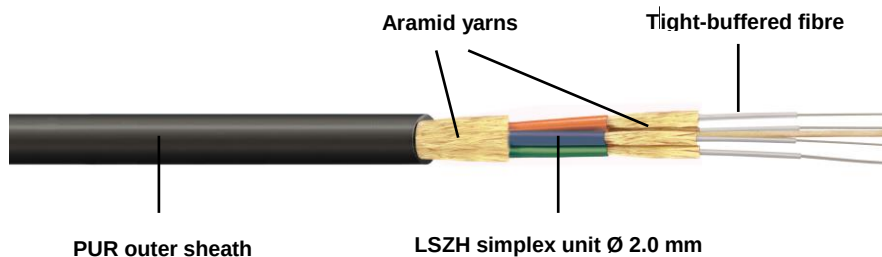
Cable designation: A/J-V(ZN)H(ZN)11Y or U-V(ZN)H(ZN)11Y

Universal mobile breakout cable for direct connector assembly (based on military norm MIL-C-85045), with up to 12 tight-buffered simplex units, flame-retardant and halogen-free sheaths, high flexibility, UV-resistant, and excellent mechanical resistance

**2. Application**

For use in outdoors or indoors, as links between moving parts

Methods of deployment: laying in drag chains, trunking, ducts, trays, building riser, empty plastic pipes, raised floors and plenums for short distances

**3. Product Design**


|                                 |                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Cable core                      | Up to 12 tight-buffered simplex units enclosed by individual aramid fibres and LSZH sheaths ( Ø 2.0 mm), and an overall PUR outer sheath |
| Cable inner sheath              | LSZH, halogen-free, flame-retardant, low smoke                                                                                           |
| Cable outer sheath              | Polyurethane (PUR), halogen-free, flame-retardant, UV-resistant                                                                          |
| Colour of inner sheath          | Blue, orange, green, brown, grey, white, red, black, yellow, violet, pink, turquoise                                                     |
| Colour of outer sheath          | Black                                                                                                                                    |
| Identification of simplex units | Colour-coded (refer to colour of inner sheath)                                                                                           |
| Strain relief                   | Aramid yarns                                                                                                                             |
| Type of armouring               | -                                                                                                                                        |

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**4. Optical and Physical Properties of Cabled Fibre (and Bare Fibre)**

| <b>Multimode fibre</b>     |           |            | <b>50/125 µm</b>       | <b>50/125 µm</b> | <b>50/125 µm</b> | <b>62.5/125 µm</b> |
|----------------------------|-----------|------------|------------------------|------------------|------------------|--------------------|
|                            |           |            | <b>OM4</b>             | <b>OM3</b>       | <b>OM2</b>       | <b>OM1</b>         |
| Attenuation                | @ 850 nm  | dB/km      | ≤ 3.5 (2.5)            | ≤ 3.5 (2.5)      | ≤ 3.5 (2.5)      | ≤ 3.5 (3.0)        |
|                            | @ 1300 nm | dB/km      | ≤ 1.5 (0.7)            | ≤ 1.5 (0.7)      | ≤ 1.5 (0.7)      | ≤ 1.5 (0.7)        |
| Bandwidth                  | @ 850 nm  | MHz-km     | ≥ 3500                 | ≥ 1500           | ≥ 500            | ≥ 200              |
|                            | @ 1300 nm | MHz-km     | ≥ 500                  | ≥ 500            | ≥ 500            | ≥ 500              |
| Numerical aperture         |           |            | 0.2 ± 0.015            | 0.2 ± 0.015      | 0.2 ± 0.015      | 0.275 ± 0.015      |
| Core diameter              |           |            | 50 ± 2.0               | 50 ± 2.0         | 50 ± 2.0         | 62.5 ± 2.5         |
| Cladding diameter          |           |            | 125 ± 1.0              | 125 ± 1.0        | 125 ± 1.0        | 125 ± 2            |
| Primary coating diameter   |           |            | 242 ± 5                | 242 ± 5          | 242 ± 5          | 245 ± 10           |
| <b>Single-mode fibre</b>   |           |            | <b>9/125 µm</b>        |                  |                  |                    |
|                            |           |            | <b>(ITU-T G.652.D)</b> |                  |                  |                    |
| Attenuation                | @ 1310 nm | dB/km      | ≤ 0.4 (0.35)           |                  |                  |                    |
|                            | @ 1550 nm | dB/km      | ≤ 0.4 (0.21)           |                  |                  |                    |
| Chromatic dispersion       | @ 1310 nm | ps/(nm-km) | ≤ 3.0                  |                  |                  |                    |
|                            | @ 1550 nm | ps/(nm-km) | ≤ 18                   |                  |                  |                    |
| Zero dispersion wavelength |           |            | 1300 – 1322            |                  |                  |                    |
| Cut-off wavelength         |           |            | ≤ 1260                 |                  |                  |                    |
| PMD                        |           |            | ≤ 0.1                  |                  |                  |                    |
| Mode field diameter        |           |            | 9.0 ± 0.4              |                  |                  |                    |
| Cladding diameter          |           |            | 125 ± 1                |                  |                  |                    |
| Primary coating diameter   |           |            | 242 ± 7                |                  |                  |                    |

**5. Thermal Properties**

|                          |                |
|--------------------------|----------------|
| Operating temperature    | -40°C to +70°C |
| Installation temperature | 0°C to +50°C   |
| Storage temperature      | -40°C to +70°C |

**6. Mechanical Properties**

|                                          |                      |                         |
|------------------------------------------|----------------------|-------------------------|
| Max. number of fibres                    |                      | 12                      |
| Simplex cable diameter (mm)              |                      | 2.0                     |
| Outer cable diameter (mm)                |                      | refer to range overview |
| Cable weight                             |                      | refer to range overview |
| Min. bending radius (mm)                 | without tensile load | 15 x D                  |
|                                          | with tensile load    | 20 x D                  |
| Max. tensile strength (N)                | long-term            | refer to range overview |
|                                          | short-term           |                         |
| Max. crush resistance (N)                |                      | 2000                    |
| Fire load (MJ/m) for cable diameter 13mm |                      | 4.26                    |

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## 7. Chemical Properties

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| LSZH inner sheath | Flame-retardant (IEC 60332-3), halogen-free, low smoke    |
| PUR outer sheath  | Flame-retardant (IEC 60332-3), halogen-free, UV-resistant |

## 8. EC Directives

Not applicable for fibre optics

## 9. Approvals

- RoHS
- Environmental and mechanical tests comply to EN 187000 and IEC 60794
- Fire resistance tested according to IEC 60332-1, IEC 60332-3
- Halogen free according to IEC 60754-1

## 10. Product Range Overview

| Article number            | Article designation  |                | No. of Fibres | Outer Ø (mm) | Weight (kg/km) | Tensile Strength long/short (N) |
|---------------------------|----------------------|----------------|---------------|--------------|----------------|---------------------------------|
| Multimode 50/125 µm OM4   |                      |                |               |              |                |                                 |
| 26300402                  | HITRONIC® HRM-FD800  | 2G 50/125 OM4  | 2             | 7.8 ± 0.3    | 50             | 800/1450                        |
| 26300404                  | HITRONIC® HRM-FD1000 | 4G 50/125 OM4  | 4             | 7.8 ± 0.3    | 50             | 1000/1800                       |
| 26300408                  | HITRONIC® HRM-FD1400 | 8G 50/125 OM4  | 8             | 10.4 ± 0.5   | 93             | 1400/2500                       |
| 26300412                  | HITRONIC® HRM-FD1800 | 12G 50/125 OM4 | 12            | 13.0 ± 0.5   | 98             | 1800/3250                       |
| Multimode 50/125 µm OM3   |                      |                |               |              |                |                                 |
| 26300302                  | HITRONIC® HRM-FD800  | 2G 50/125 OM3  | 2             | 7.8 ± 0.3    | 50             | 800/1450                        |
| 26300304                  | HITRONIC® HRM-FD1000 | 4G 50/125 OM3  | 4             | 7.8 ± 0.3    | 50             | 1000/1800                       |
| 26300308                  | HITRONIC® HRM-FD1400 | 8G 50/125 OM3  | 8             | 10.4 ± 0.5   | 93             | 1400/2500                       |
| 26300312                  | HITRONIC® HRM-FD1800 | 12G 50/125 OM3 | 12            | 13.0 ± 0.5   | 98             | 1800/3250                       |
| Multimode 50/125 µm OM2   |                      |                |               |              |                |                                 |
| 26300202                  | HITRONIC® HRM-FD800  | 2G 50/125 OM2  | 2             | 7.8 ± 0.3    | 50             | 800/1450                        |
| 26300204                  | HITRONIC® HRM-FD1000 | 4G 50/125 OM2  | 4             | 7.8 ± 0.3    | 50             | 1000/1800                       |
| 26300208                  | HITRONIC® HRM-FD1400 | 8G 50/125 OM2  | 8             | 10.4 ± 0.5   | 93             | 1400/2500                       |
| 26300212                  | HITRONIC® HRM-FD1800 | 12G 50/125 OM2 | 12            | 13.0 ± 0.5   | 98             | 1800/3250                       |
| Multimode 62.5/125 µm OM1 |                      |                |               |              |                |                                 |
| 26300102                  | HITRONIC® HRM-FD800  | 2G 62.5/125    | 2             | 7.8 ± 0.3    | 50             | 800/1450                        |
| 26300104                  | HITRONIC® HRM-FD1000 | 4G 62.5/125    | 4             | 7.8 ± 0.3    | 50             | 1000/1800                       |
| 26300108                  | HITRONIC® HRM-FD1400 | 8G 62.5/125    | 8             | 10.4 ± 0.5   | 93             | 1400/2500                       |
| 26300112                  | HITRONIC® HRM-FD1800 | 12G 62.5/125   | 12            | 13.0 ± 0.5   | 98             | 1800/3250                       |
| Single-mode 9/125 µm OS2  |                      |                |               |              |                |                                 |
| 26300902                  | HITRONIC® HRM-FD800  | 2E 9/125 OS2   | 2             | 7.8 ± 0.3    | 50             | 800/1450                        |
| 26300904                  | HITRONIC® HRM-FD1000 | 4E 9/125 OS2   | 4             | 7.8 ± 0.3    | 50             | 1000/1800                       |
| 26300908                  | HITRONIC® HRM-FD1400 | 8E 9/125 OS2   | 8             | 10.4 ± 0.5   | 93             | 1400/2500                       |
| 26300912                  | HITRONIC® HRM-FD1800 | 12E 9/125 OS2  | 12            | 13.0 ± 0.5   | 98             | 1800/3250                       |