

# 8CE012.12-1

## 1 General information

- Can be used in cable drag chains
- Assembled specifically for use with ACOPOS servo drives and B&R servo motors

## 2 Order data

| Model number | Short description                                                                                                                                                                               | Figure                                                                              |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|              | <b>EnDat 2.1 cables</b>                                                                                                                                                                         |                                                                                     |
| 8CE012.12-1  | EnDat 2.1 cable, length 12 m, 10x 0.14 mm <sup>2</sup> + 2x 0.5 mm <sup>2</sup> , 17-pin female Intercontec EnDat connector, 15-pin male DSUB servo connector, can be used in cable drag chains |  |

Table 1: 8CE012.12-1 - Order data

## 3 Technical data

| Model number                                    | 8CE012.12-1                                                                                                                         |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>General information</b>                      |                                                                                                                                     |
| Cable cross section                             | 5x 2x 0.14 mm <sup>2</sup> + 1x 2x 0.50 mm <sup>2</sup>                                                                             |
| Durability                                      | Oil resistance per VDE 0472 Part 803 as well as standard hydraulic oils <sup>1)</sup>                                               |
| Certification                                   | UL AWM Style 20963, 80°C, 30 V, E63216 and CSA AWM I/II A/B, 90°C, 30 V, FT1 LL46064 <sup>1)</sup>                                  |
| Certifications                                  |                                                                                                                                     |
| CE                                              | Yes                                                                                                                                 |
| UL                                              | cULus E225616<br>Power conversion equipment                                                                                         |
| <b>Cable construction</b>                       |                                                                                                                                     |
| Supply lines                                    |                                                                                                                                     |
| Quantity                                        | 2                                                                                                                                   |
| Wire insulation                                 | Special thermoplastic material                                                                                                      |
| Wire colors                                     | White/Green, white/red                                                                                                              |
| Design                                          | Tinned copper stranded wire                                                                                                         |
| Cross section                                   | 0.5 mm <sup>2</sup>                                                                                                                 |
| Shield                                          | No                                                                                                                                  |
| Stranding                                       | White/Red with white/green and filler elements                                                                                      |
| Signal lines                                    |                                                                                                                                     |
| Quantity                                        | 10                                                                                                                                  |
| Wire insulation                                 | Special thermoplastic material                                                                                                      |
| Wire colors                                     | Blue, brown, yellow, gray, green, pink, red, black, violet, white                                                                   |
| Design                                          | Tinned copper stranded wire                                                                                                         |
| Cross section                                   | 0.14 mm <sup>2</sup>                                                                                                                |
| Shield                                          | No                                                                                                                                  |
| Stranding                                       | Green with brown, gray with yellow, white with violet, black with red, pink with blue                                               |
| Cable stranding                                 | With terminating foil shield                                                                                                        |
| Complete shielding                              | Copper braiding, optical coverage > 85% and foil shield                                                                             |
| Outer jacket                                    |                                                                                                                                     |
| Material                                        | PUR                                                                                                                                 |
| Color                                           | Green, similar to RAL 6018 flat                                                                                                     |
| Labeling                                        | BERNECKER + RAINER 5x2x0,14+2x0,50 FLEX UL AWM STYLE<br>20963 80°C 30 V E63216 CSA AWM I/II A/B 90°C 30 V FT1 LL46064 <sup>1)</sup> |
| <b>Connector</b>                                |                                                                                                                                     |
| Type                                            | 17-pin female Intercontec EnDat connector                                                                                           |
| Connection cycles                               | <500                                                                                                                                |
| Contacts                                        | 17                                                                                                                                  |
| Additional connectors                           | 15-pin male DSUB servo connector<br>Mating cycles: <200<br>Contacts: 15<br>Degree of protection per EN 60529: IP20 when connected   |
| Degree of protection per EN 60529               | IP66/67 when connected                                                                                                              |
| <b>Electrical characteristics <sup>1)</sup></b> |                                                                                                                                     |
| Operating voltage                               | ≤30 V <sub>eff</sub>                                                                                                                |
| Test voltage                                    |                                                                                                                                     |
| Wire/Wire                                       | 1 kV                                                                                                                                |
| Wire/Shield                                     | 0.8 kV                                                                                                                              |

Table 2: 8CE012.12-1 - Technical data

| Model number                             | 8CE012.12-1      |
|------------------------------------------|------------------|
| Conductor resistance                     |                  |
| Supply lines                             | ≤40 Ω/km         |
| Signal lines                             | ≤140 Ω/km        |
| Insulation resistance                    | >200 MΩ*km       |
| Environmental conditions <sup>1)</sup>   |                  |
| Temperature                              |                  |
| Moving                                   | -20°C to +80°C   |
| Static                                   | -20°C to +90°C   |
| Mechanical characteristics <sup>1)</sup> |                  |
| Dimensions                               |                  |
| Length                                   | 12 m             |
| Diameter                                 | 7.85 mm ± 0.2 mm |
| Bend radius                              |                  |
| Single bend                              | ≥24 mm           |
| Moving                                   | ≥60 mm           |
| Drag chain data                          |                  |
| Acceleration                             | ≤6 g             |
| Flex cycles <sup>2)</sup>                | >3,000,000       |
| Speed                                    | ≤4 m/s           |
| Weight                                   | 0.96 kg          |

Table 2: 8CE012.12-1 - Technical data

- 1) Values refer to the raw cable being used.  
2) At an ambient temperature of 20°C and bend radius of 65 mm.

## 4 Wiring

### 4.1 construction

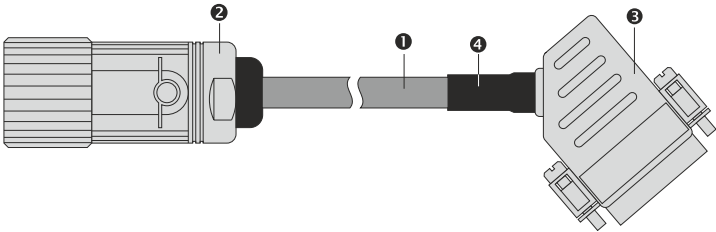
|  |                                                       |                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------|
| Pos.                                                                                | Description                                           | Note                                                |
| 1                                                                                   | Encoder line                                          | 5x 2x 0.14 mm <sup>2</sup> + 2x 0.5 mm <sup>2</sup> |
| 2                                                                                   | 17-pin female circular connector                      |                                                     |
| 3                                                                                   | DSUB housing 45°, metal-plated, 15-pin male connector |                                                     |
| 4                                                                                   | Heat shrink tubing                                    |                                                     |

Table 3: EnDat 2.1 cables - Construction

### 4.2 Pinout

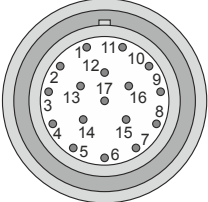
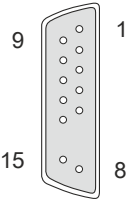
| Circular connector                                                                  | Pin | Description                 | Function                  | Pin | DSUB connector                                                                        |
|-------------------------------------------------------------------------------------|-----|-----------------------------|---------------------------|-----|---------------------------------------------------------------------------------------|
|  | 15  | A                           | Channel A                 | 1   |  |
|                                                                                     | 10  | COM (1, 3 - 9, 11, 13 - 15) | Encoder power supply 0 V  | 2   |                                                                                       |
|                                                                                     | 12  | B                           | Channel B                 | 3   |                                                                                       |
|                                                                                     | 7   | +5 V out / 0.25 A           | Encoder power supply +5 V | 4   |                                                                                       |
|                                                                                     | 14  | B                           | Data input                | 5   |                                                                                       |
|                                                                                     | 8   | T                           | Clock output              | 8   |                                                                                       |
|                                                                                     | 16  | A\                          | Channel A inverted        | 9   |                                                                                       |
|                                                                                     | 4   | Sense COM                   | Sense input 0 V           | 10  |                                                                                       |
|                                                                                     | 13  | B\                          | Channel B inverted        | 11  |                                                                                       |
|                                                                                     | 1   | Sense +5 V                  | Sense input +5 V          | 12  |                                                                                       |
|                                                                                     | 17  | D\                          | Data inverted             | 13  |                                                                                       |
|                                                                                     | 9   | T\                          | Clock output inverted     | 15  |                                                                                       |

Table 4: EnDat 2.1 cables - Pinout

### 4.3 Cable diagram

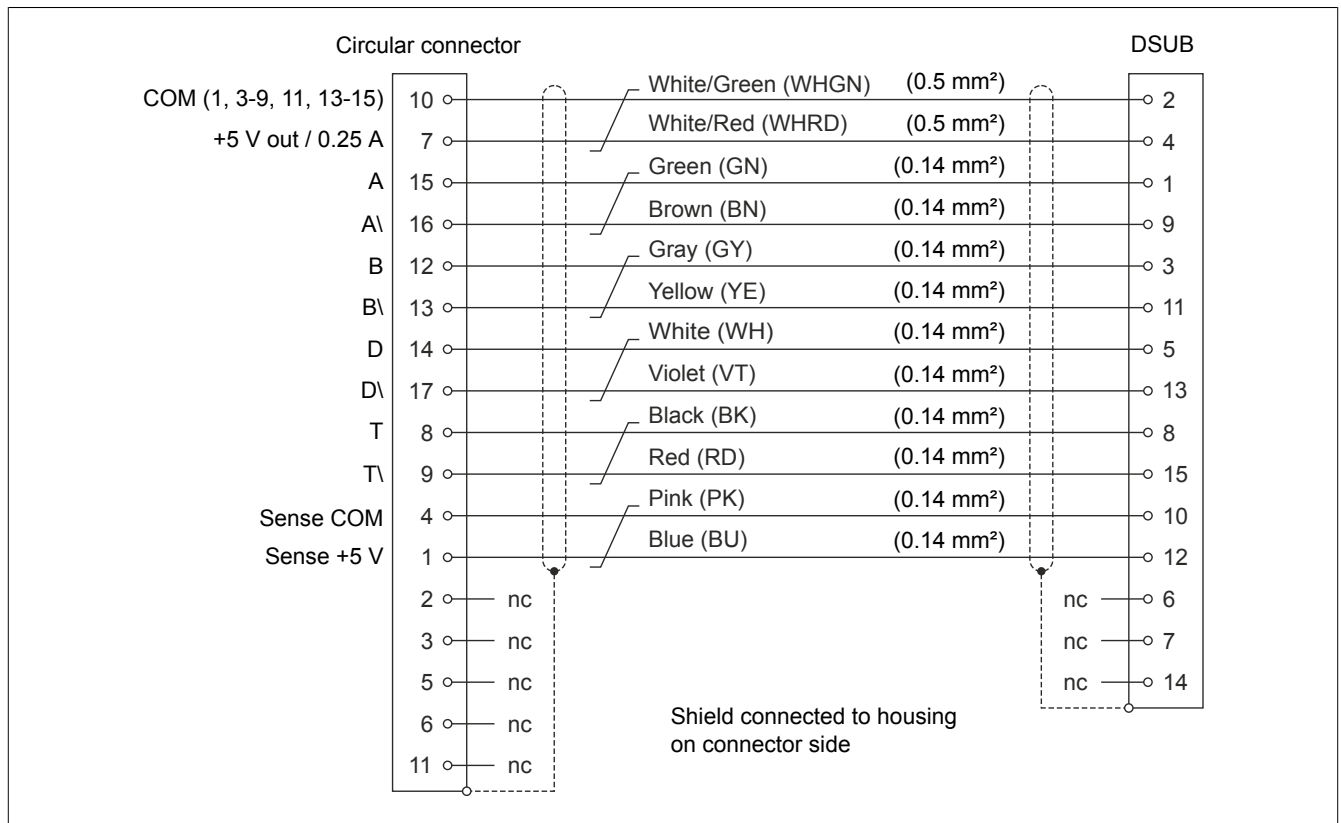


Figure 1: EnDat 2.1 cables - Cable diagram