

## Technical data sheet

### Rotary encoder Series Information

Part no.: 90000470

EI30-P 100 HI

#### Contents

- Technical data
- Part number code



For illustration purposes only

|                                  |                             |
|----------------------------------|-----------------------------|
| Encoder series                   | EI 100 HI                   |
| Encoder_Basic principle          | incremental                 |
| Encoder_Operating principle      | optically interpolated      |
| Encoder_Flange diameter          | Ø 100 mm                    |
| Encoder_Flange type              | Insulated hollow shaft      |
| Encoder_Solid shaft/Hollow shaft | Hollow shaft                |
| Encoder_Shaft diameter           | Ø 25 mm                     |
|                                  | Ø 30 mm                     |
|                                  | Ø 32 mm                     |
|                                  | Ø 38 mm                     |
|                                  | Ø 40 mm                     |
|                                  | Ø 42 mm                     |
| Encoder_Supply voltage           | 10 ... 30V DC               |
|                                  | 4.75 ... 5.5 V DC           |
|                                  | 5 – 30V DC                  |
| Encoder_Output circuit           | 1 Vss Sin/Cos               |
|                                  | HTL                         |
|                                  | HTL, inv.                   |
|                                  | TTL                         |
|                                  | TTL, RS422 compatible, inv. |
| Encoder_Pulse count              | 10240 I/U                   |
|                                  | 16384 I/U                   |
|                                  | 20480 I/U                   |
|                                  | 4096 I/U                    |
|                                  | 8192 I/U                    |

## Technical data

## Encoder EI30 P 100 HI

## Resolution

|                           |                 |
|---------------------------|-----------------|
| Pulses per revolution PPR | up to 20480 PPR |
|---------------------------|-----------------|

## Mechanical Data

|                                |                                                                  |
|--------------------------------|------------------------------------------------------------------|
| Flange                         | hollow shaft (through-bored)                                     |
| Flange material                | aluminum                                                         |
| Housing material               | aluminum, powder coated                                          |
| Torque supports                | incl. 1 torque support                                           |
| - 1. Spring plate compensation | axial: $\pm 0.8$ mm [0.0315"],<br>radial: $\pm 0.2$ mm [0.0079"] |
| Flange diameter                | $\varnothing$ 100 mm [ $\varnothing$ 3.543"]                     |

## Shaft(s)

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| Shaft material  | stainless steel                                          |
| Starting torque | approx. 1.5 Ncm [2.124 in-ozf]<br>at ambient temperature |
| Fixing          | 2 x M4, DIN 913;<br>Starting torque: 2,5 Nm              |

|                                       |                                             |
|---------------------------------------|---------------------------------------------|
| <b>Shaft</b>                          | $\varnothing$ 25 mm [ $\varnothing$ 0.984"] |
| Shaft length                          | L: 42 mm [1.654"]                           |
| Insertion depth min.                  | 52 mm [2.047"]                              |
| Max. Permissible shaft loading radial | 200 N [20.394 kp]                           |
| Max. Permissible shaft loading axial  | 100 N [10.197 kp]                           |

|                                       |                                             |
|---------------------------------------|---------------------------------------------|
| <b>Shaft</b>                          | $\varnothing$ 28 mm [ $\varnothing$ 1.102"] |
| Shaft length                          | L: 42 mm [1.654"]                           |
| Insertion depth min.                  | 52 mm [2.047"]                              |
| Max. Permissible shaft loading radial | 200 N [20.394 kp]                           |
| Max. Permissible shaft loading axial  | 100 N [10.197 kp]                           |

|                                       |                                             |
|---------------------------------------|---------------------------------------------|
| <b>Shaft</b>                          | $\varnothing$ 30 mm [ $\varnothing$ 1.181"] |
| Shaft length                          | L: 42 mm [1.654"]                           |
| Insertion depth min.                  | 52 mm [2.047"]                              |
| Max. Permissible shaft loading radial | 200 N [20.394 kp]                           |
| Max. Permissible shaft loading axial  | 100 N [10.197 kp]                           |

|                                       |                                            |
|---------------------------------------|--------------------------------------------|
| <b>Shaft</b>                          | $\varnothing$ 32 mm [ $\varnothing$ 1.26"] |
| Shaft length                          | L: 42 mm [1.654"]                          |
| Insertion depth min.                  | 52 mm [2.047"]                             |
| Max. Permissible shaft loading radial | 200 N [20.394 kp]                          |
| Max. Permissible shaft loading axial  | 100 N [10.197 kp]                          |

|                                       |                                             |
|---------------------------------------|---------------------------------------------|
| <b>Shaft</b>                          | $\varnothing$ 38 mm [ $\varnothing$ 1.496"] |
| Shaft length                          | L: 42 mm [1.654"]                           |
| Insertion depth min.                  | 52 mm [2.047"]                              |
| Max. Permissible shaft loading radial | 200 N [20.394 kp]                           |

|                                      |                   |
|--------------------------------------|-------------------|
| Max. Permissible shaft loading axial | 100 N [10.197 kp] |
|--------------------------------------|-------------------|

|              |                                             |
|--------------|---------------------------------------------|
| <b>Shaft</b> | $\varnothing$ 40 mm [ $\varnothing$ 1.575"] |
|--------------|---------------------------------------------|

|              |                   |
|--------------|-------------------|
| Shaft length | L: 42 mm [1.654"] |
|--------------|-------------------|

|                      |                |
|----------------------|----------------|
| Insertion depth min. | 52 mm [2.047"] |
|----------------------|----------------|

|                                       |                   |
|---------------------------------------|-------------------|
| Max. Permissible shaft loading radial | 200 N [20.394 kp] |
|---------------------------------------|-------------------|

|                                      |                   |
|--------------------------------------|-------------------|
| Max. Permissible shaft loading axial | 100 N [10.197 kp] |
|--------------------------------------|-------------------|

|              |                                             |
|--------------|---------------------------------------------|
| <b>Shaft</b> | $\varnothing$ 42 mm [ $\varnothing$ 1.654"] |
|--------------|---------------------------------------------|

|              |                   |
|--------------|-------------------|
| Shaft length | L: 42 mm [1.654"] |
|--------------|-------------------|

|                      |                |
|----------------------|----------------|
| Insertion depth min. | 52 mm [2.047"] |
|----------------------|----------------|

|                                       |                   |
|---------------------------------------|-------------------|
| Max. Permissible shaft loading radial | 200 N [20.394 kp] |
|---------------------------------------|-------------------|

|                                      |                   |
|--------------------------------------|-------------------|
| Max. Permissible shaft loading axial | 100 N [10.197 kp] |
|--------------------------------------|-------------------|

|              |                                             |
|--------------|---------------------------------------------|
| <b>Shaft</b> | $\varnothing$ 45 mm [ $\varnothing$ 1.772"] |
|--------------|---------------------------------------------|

|              |                   |
|--------------|-------------------|
| Shaft length | L: 42 mm [1.654"] |
|--------------|-------------------|

|                      |                |
|----------------------|----------------|
| Insertion depth min. | 52 mm [2.047"] |
|----------------------|----------------|

|                                       |                   |
|---------------------------------------|-------------------|
| Max. Permissible shaft loading radial | 200 N [20.394 kp] |
|---------------------------------------|-------------------|

|                                      |                   |
|--------------------------------------|-------------------|
| Max. Permissible shaft loading axial | 100 N [10.197 kp] |
|--------------------------------------|-------------------|

## Bearings

|                       |                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bearings type         | 2 precision ball bearings                                                                                                                                          |
| Nominale service life | 3 x 10 <sup>10</sup> revs. at 100 % rated shaft load<br>1 x 10 <sup>11</sup> revs. at 40 % rated shaft load<br>1 x 10 <sup>12</sup> revs. at 20 % rated shaft load |
| Max. operating speed  | 3500 rpm                                                                                                                                                           |

## Machinery Directive: basic data safety integrity level

|                              |                                                                  |
|------------------------------|------------------------------------------------------------------|
| MTTF <sub>d</sub>            | 200 a                                                            |
| Mission time (TM)            | 25 a                                                             |
| Nominale service life (L10h) | 1 x 10 <sup>12</sup> revs. at 20 % rated shaft load and 3500 rpm |
| Diagnostic coverage (DC)     | 0 %                                                              |

## Electrical Data

|                                  |                                                                                                                                                                                     |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply/Current consumption | 4.75 VDC up to 30 VDC: typ. 70 mA (100 mA only C3, D3)                                                                                                                              |
| Power supply/Current consumption | 5 VDC up to 30 VDC: typ. 70 mA                                                                                                                                                      |
| Power supply/Current consumption | 10 VDC up to 30 VDC: typ. 70 mA (100 mA only C2, C4, D4)                                                                                                                            |
| Operating principle              | optical                                                                                                                                                                             |
| Output circuit                   | TTL<br>TTL, RS422 compatible, inv.<br>HTL<br>HTL, inv.<br>1 Vpp sin/cos                                                                                                             |
| Pulse frequency                  | TTL $\leq$ 5000 ppr: max. 200 kHz<br>HTL $\leq$ 5000 ppr: max. 200 kHz<br>TTL more than 1200 ppr: max. 2 MHz<br>HTL more than 1200 ppr: max. 600 kHz<br>1 Vpp sin/cos: max. 100 kHz |

Technical data

Encoder EI30 P 100 HI

Electrical Data

|                    |                                                       |
|--------------------|-------------------------------------------------------|
| Channels           | B<br>N<br>and inverted signals                        |
| Load               | max. 40 mA / channel<br>@ 1 Vpp sin/cos: min. 120 Ohm |
| Circuit protection | circuit type C6 and D6 only                           |

Accuracy

|                    |                                                                                       |
|--------------------|---------------------------------------------------------------------------------------|
| Phase offset       | 90° ± max. 7.5 % of the period duration                                               |
| pulse-/pause-ratio | ≤5000 ppr: 50 % ± max. 7 %<br>Output circuits C2, C3, C4, D3, D4:<br>50 % ± max. 10 % |

Environmental data

|                                  |                                           |
|----------------------------------|-------------------------------------------|
| ESD (DIN EN 61000-4-2):          | 8 kV                                      |
| Burst (DIN EN 61000-4-4):        | 2 kV                                      |
| includes EMC:                    | DIN EN 61000-6-2<br>DIN EN 61000-6-3      |
| Vibration:<br>(DIN EN 60068-2-6) | 50 m/s <sup>2</sup> (10 Hz up to 2000 Hz) |
| Shock:<br>(DIN EN 60068-2-27)    | 1000 m/s <sup>2</sup> (6 ms)              |
| Electrical Safety:               | according DIN VDE 0160                    |

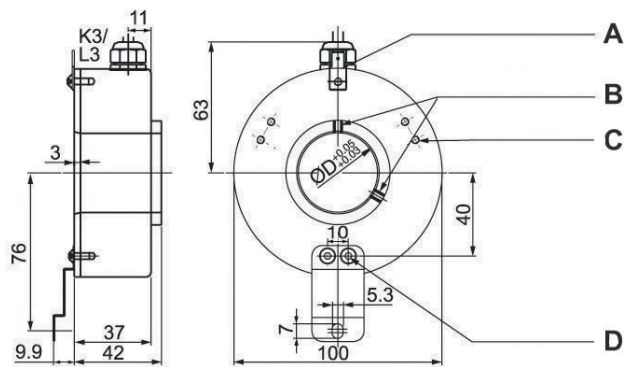
Duty information

|                        |          |
|------------------------|----------|
| Customs tariff number: | 90318020 |
| Country of origin:     | Germany  |

General Data

|                                 |                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------|
| Weight                          | approx. 720 g [25.397 oz]                                                                             |
| Connections                     | cable or connector, radial                                                                            |
| Protection rating<br>(EN 60529) | IP54                                                                                                  |
| Operating temperature           | -20 °C up to +80 °C<br>[ -4 °F up to +176 °F]<br>1 Vpp: -10 °C up to +70 °C<br>[+14 °F up to +158 °F] |
| Storage temperature             | -30 °C up to +80 °C<br>[-22 °F up to 176 °F]                                                          |

Cable connection R-N, R-C radial with 2 m cable



All dimensions in mm

- A Plug-in connexctor for functional ground connection  
(flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

Description

N inv. poss.

|     |                                             |   |
|-----|---------------------------------------------|---|
| R-N | radial, shield not connected                | • |
| R-C | radial, shield connected to encoder housing | • |

Assignments

|         | R-N, R-C              | R-N, R-C                         | R-C |
|---------|-----------------------|----------------------------------|-----|
| Circuit | C3, C4, C5,<br>C6, C7 | C1, C2, D3,<br>D4, D5, D6,<br>D7 | D8  |
| GND     | WH                    | WH                               | WH  |
| (+) Vcc | BN                    | BN                               | BN  |
| A       | GN                    | GN                               | GN  |

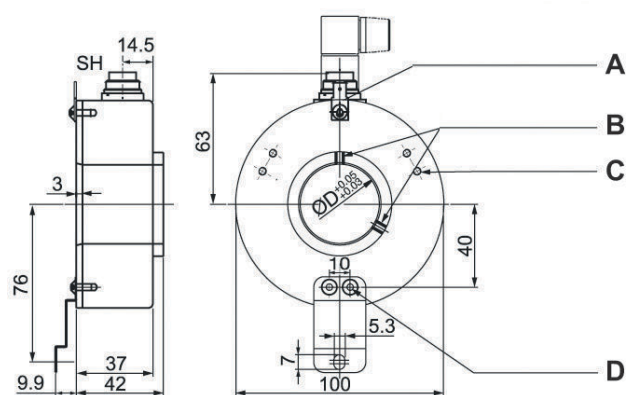
## Technical data

## Encoder EI30 P 100 HI

## Assignments

|               |      |                   |      |
|---------------|------|-------------------|------|
| <b>B</b>      | YE   | YE                | GY   |
| <b>N</b>      | GY   | GY                | BK   |
|               | –    | –                 | –    |
| <b>A inv.</b> | –    | RD                | YE   |
| <b>B inv.</b> | –    | BK,<br>(BU at LT) | PK   |
| <b>N inv.</b> | –    | VT                | –    |
| <b>Shield</b> | flex | flex              | flex |

### Connector (M16x0.75) R, radial, 5-, 6-, 8-, 12-pin



All dimensions in mm

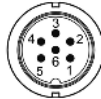
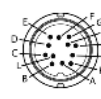
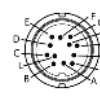
- A Plug-in connector for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

### Description

**N inv. poss.**

|            |                                                        |   |
|------------|--------------------------------------------------------|---|
| <b>R5</b>  | radial, 5-pin, Connector connected to encoder housing  | — |
| <b>R6</b>  | radial, 6-pin, Connector connected to encoder housing  | — |
| <b>R8</b>  | radial, 8-pin, Connector connected to encoder housing  | ● |
| <b>R12</b> | radial, 12-pin, Connector connected to encoder housing | ● |

## Assignments

|                | R5                                                                                  | R6                                                                                  | R8                                                                                  | R8                                                                                  | R12                                                                                  | R12                                                                                   |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                | 5-pin                                                                               | 6-pin                                                                               | 8-pin                                                                               | 8-pin                                                                               | 12-pin                                                                               | 12-pin                                                                                |
|                |  |  |  |  |  |  |
| <b>Circuit</b> | C3, C4, C5, C6, C7                                                                  | C3, C4, C5, C6, C7                                                                  | C1, C2, D3, D4, D5, D6, D7                                                          | D8                                                                                  | C1, C2, D3, D4, D5, D6, D7                                                           | D8                                                                                    |
| <b>GND</b>     | 1                                                                                   | 6                                                                                   | 1                                                                                   | 1                                                                                   | K, L                                                                                 | K, L                                                                                  |
| <b>(+) Vcc</b> | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | M, B                                                                                 | M, B                                                                                  |
| <b>A</b>       | 3                                                                                   | 2                                                                                   | 3                                                                                   | 3                                                                                   | E                                                                                    | E                                                                                     |
| <b>B</b>       | 4                                                                                   | 4                                                                                   | 4                                                                                   | 4                                                                                   | H                                                                                    | H                                                                                     |
| <b>N</b>       | 5                                                                                   | 3                                                                                   | 5                                                                                   | 5                                                                                   | C                                                                                    | C                                                                                     |
| <b>—</b>       | —                                                                                   | —                                                                                   | —                                                                                   | —                                                                                   | —                                                                                    | —                                                                                     |
| <b>A inv.</b>  | —                                                                                   | —                                                                                   | 6                                                                                   | 6                                                                                   | F                                                                                    | F                                                                                     |
| <b>B inv.</b>  | —                                                                                   | —                                                                                   | 7                                                                                   | 7                                                                                   | A                                                                                    | A                                                                                     |

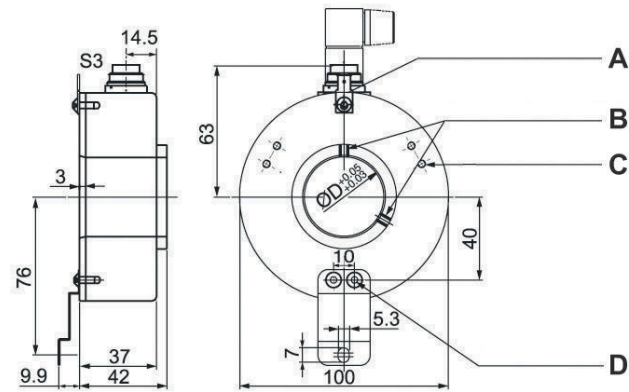
Technical data

Encoder EI30 P 100 HI

Assignments

|        |   |   |   |   |      |      |
|--------|---|---|---|---|------|------|
| N inv. | – | – | 8 | 8 | D    | D    |
| n. c.  | – | 5 | – | – | G, J | G, J |
| Shield | – | – | – | – | –    | –    |

Connector (M16x0.75) R7, radial, 7-pin



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

Description

N inv. poss.

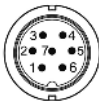
R7 radial, 7-pin, Connector connected to encoder housing

–

Assignments

R7

7-pin

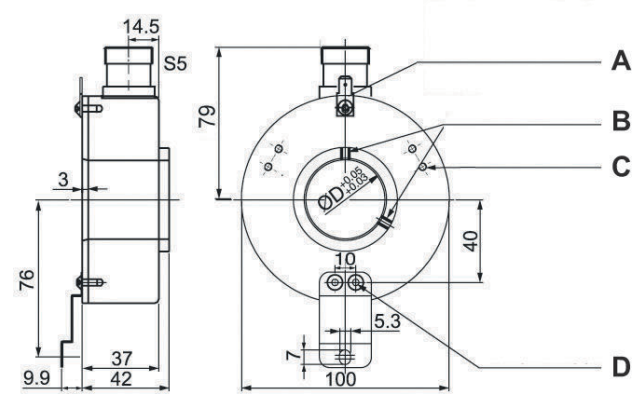


|         |                    |
|---------|--------------------|
| Circuit | C3, C4, C5, C6, C7 |
| GND     | 1                  |
| (+) Vcc | 2                  |
| A       | 3                  |
| B       | 4                  |
| N       | 5                  |
| –       | –                  |
| A inv.  | –                  |
| B inv.  | –                  |
| N inv.  | –                  |
| n. c.   | 6, 7               |
| Shield  | –                  |

Technical data

Encoder EI30 P 100 HI

Connector (M23) R12M, radial, 12-pin



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

| Description |                                                        | N inv. poss. |
|-------------|--------------------------------------------------------|--------------|
| R12M        | radial, 12-pin, Connector connected to encoder housing | •            |

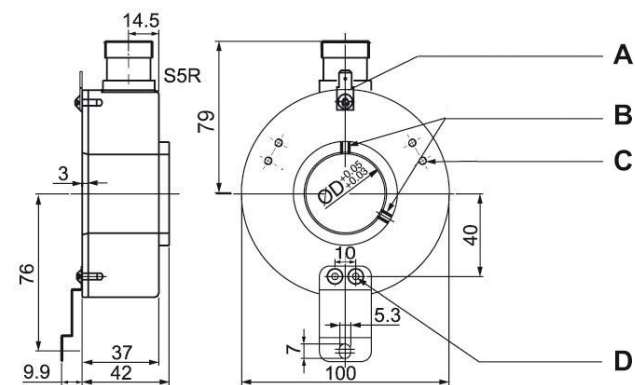
Assignments

|         | R12M<br>12-pin       | R12M<br>12-pin             | R12M<br>12-pin |
|---------|----------------------|----------------------------|----------------|
|         |                      |                            |                |
| Circuit | C3, C4, C5, C6, C7   | C1, C2, D3, D4, D5, D6, D7 | D8             |
| GND     | 10                   | 10                         | 10             |
| (+) Vcc | 12                   | 12                         | 12             |
| A       | 5                    | 5                          | 5              |
| B       | 8                    | 8                          | 8              |
| N       | 3                    | 3                          | 3              |
| –       | –                    | –                          | –              |
| A inv.  | –                    | 6                          | 6              |
| B inv.  | –                    | 1                          | 1              |
| N inv.  | –                    | 4                          | 4              |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 7, 9, 11    |
| Shield  | –                    | –                          | –              |

Technical data

Encoder EI30 P 100 HI

Connector (M23) RC12, radial, 12-pin (clockwise)



All dimensions in mm

- A Plug-in connexctor for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

| Description                                                 | N inv. poss. |
|-------------------------------------------------------------|--------------|
| RC12 radial, 12-pin, Connector connected to encoder housing | •            |

Assignments

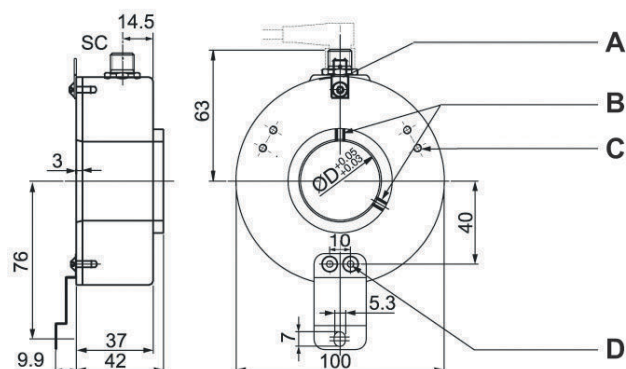
|         | RC12<br>12-pin       | RC12<br>12-pin             | RC12<br>12-pin |
|---------|----------------------|----------------------------|----------------|
|         |                      |                            |                |
| Circuit | C3, C4, C5, C6, C7   | C1, C2, D3, D4, D5, D6, D7 | D8             |
| GND     | 10                   | 10                         | 10             |
| (+) Vcc | 12                   | 12                         | 12             |
| A       | 5                    | 5                          | 5              |
| B       | 8                    | 8                          | 8              |
| N       | 3                    | 3                          | 3              |
| —       | —                    | —                          | —              |
| A inv.  | —                    | 6                          | 6              |
| B inv.  | —                    | 1                          | 1              |
| N inv.  | —                    | 4                          | 4              |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 7, 9, 11    |
| Shield  | —                    | —                          | —              |

Hier waren die falschen Bilder drin: es fehlte unten rechts das R

## Technical data

### Encoder EI30 P 100 HI

#### Sensor-connector (M12x1) RS, radial, 4-, 5-, 8-, 12-pin



All dimensions in mm

- A Plug-in connector for functional ground connection (flat pin 6.3 x 0.8 according to DIN 46244)
- B 2x threaded pin M4
- C 6x M4x0.7-6H - 6 deep
- D Spring plate as torque support

#### Description

N inv. poss.

|             |                                                        |   |
|-------------|--------------------------------------------------------|---|
| <b>RS4</b>  | radial, 4-pin, Connector connected to encoder housing  | — |
| <b>RS5</b>  | radial, 5-pin, Connector connected to encoder housing  | — |
| <b>RS8</b>  | radial, 8-pin, Connector connected to encoder housing  | • |
| <b>RS12</b> | radial, 12-pin, Connector connected to encoder housing | • |

#### Assignments

|                | <b>RS4</b><br>4-pin | <b>RS5</b><br>5-pin | <b>RS8</b><br>8-pin        | <b>RS8</b><br>8-pin | <b>RS12</b><br>12-pin      |
|----------------|---------------------|---------------------|----------------------------|---------------------|----------------------------|
|                |                     |                     |                            |                     |                            |
| <b>Circuit</b> | C3, C4, C5, C6, C7  | C3, C4, C5, C6, C7  | C1, C2, D3, D4, D5, D6, D7 | D8                  | C1, C2, D3, D4, D5, D6, D7 |
| <b>GND</b>     | 3                   | 3                   | 1                          | 1                   | 3                          |
| <b>(+) Vcc</b> | 1                   | 1                   | 2                          | 2                   | 1                          |
| <b>A</b>       | 2                   | 4                   | 3                          | 3                   | 4                          |
| <b>B</b>       | 4                   | 2                   | 4                          | 5                   | 6                          |
| <b>N</b>       | —                   | 5                   | 5                          | —                   | 8                          |
| <b>—</b>       | —                   | —                   | —                          | —                   | —                          |
| <b>A inv.</b>  | —                   | —                   | 6                          | 4                   | 9                          |
| <b>B inv.</b>  | —                   | —                   | 7                          | 6                   | 7                          |
| <b>N inv.</b>  | —                   | —                   | 8                          | —                   | 10                         |
| <b>n. c.</b>   | —                   | —                   | —                          | 7, 8                | 2, 5, 11, 12               |
| <b>Shield</b>  | —                   | —                   | —                          | —                   | —                          |

Technical data

Encoder EI30 P 100 HI

Options

| Low temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Order key                                           |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------|---------------------------------|-------------------|----------------------------------|-------------------|-----------|-----------|------------------|-----------------------------------------------------|----|
| The encoder EI30 P 100 HI with the output circuit types C4, C6, D4, D6, C3, C5, D3, D5, C1, C2 is also available with the extended temperature range -40 °C up to +85 °C [-40 °F up to +185 °F] (measured at the flange).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LT                                                  |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Pressure equalising membrane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Order key                                           |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| <p>The EI30 P 100 HI shaft encoder is also optionally available with a pressure equalising membrane. This prevents water from penetrating into the encoder housing in the case of high air humidity.</p> <p>The IP67 protection level, temperature range and salt spray resistance are maintained.</p> <p>Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.</p> <table><tr><td>Max. RPM:</td><td>1500 rpm</td></tr><tr><td>Permitted Shaft-Loading, axial:</td><td>100 N [10.197 kp]</td></tr><tr><td>Permitted Shaft-Loading, radial:</td><td>120 N [12.236 kp]</td></tr><tr><td>Max. PPR:</td><td>20480 ppr</td></tr><tr><td>Starting-torque:</td><td>approx. 5 Ncm [7.081 in-ozf] at ambient temperature</td></tr></table> | Max. RPM:                                           | 1500 rpm | Permitted Shaft-Loading, axial: | 100 N [10.197 kp] | Permitted Shaft-Loading, radial: | 120 N [12.236 kp] | Max. PPR: | 20480 ppr | Starting-torque: | approx. 5 Ncm [7.081 in-ozf] at ambient temperature | PE |
| Max. RPM:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1500 rpm                                            |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Permitted Shaft-Loading, axial:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 100 N [10.197 kp]                                   |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Permitted Shaft-Loading, radial:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 120 N [12.236 kp]                                   |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Max. PPR:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20480 ppr                                           |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Starting-torque:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | approx. 5 Ncm [7.081 in-ozf] at ambient temperature |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| Cable length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Order key                                           |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |
| <p>The encoder EI30 P 100 HI can be supplied with more than 2 m cable.</p> <p>The maximum cable length depends on the supply voltage and the frequency.</p> <p>Please extend the standard order code with a three figure number, specifying the cable length in decimetres.</p> <p>Example: 5 m cable = 050</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       | XXX = Decimeter                                     |          |                                 |                   |                                  |                   |           |           |                  |                                                     |    |

Technical data

Encoder EI30 P 100 HI

| Example Order No.          | Type                                                                                                                            |                  |                                      |   |           |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------|---|-----------|
| EI30 P 100 HI              | EI30 P 100 HI                                                                                                                   | EI30 P 100 HI    |                                      |   |           |
| Shaft                      |                                                                                                                                 |                  |                                      |   |           |
| 25                         | 25; 28; 30; 32; 38; 40; 42; 45                                                                                                  |                  |                                      |   |           |
| Pulses per revolution PPR: |                                                                                                                                 |                  |                                      |   |           |
| 1024                       | 512, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vpp Sin/Cos only<br>1024, 2048 Other PPRs on request |                  |                                      |   |           |
| Channels:                  |                                                                                                                                 |                  |                                      |   |           |
| N                          | B, N                                                                                                                            |                  |                                      |   |           |
| Output circuit             |                                                                                                                                 |                  |                                      |   |           |
| C6                         | Resolution PPR                                                                                                                  | Power supply VDC | Output circuit                       | – | Order key |
|                            | up to 2500                                                                                                                      | 5 - 30           | HTL (TTL at 5 VDC)                   | – | C7        |
|                            |                                                                                                                                 | 5 - 30           | HTL, inv. (TTL/RS422 comp. at 5 VDC) | – | D7        |
|                            | up to 5000                                                                                                                      | 4.75 - 5.5       | TTL                                  | – | C5        |
|                            |                                                                                                                                 | 4.75 - 5.5       | TTL, RS422 comp., inverted           | – | D5        |
|                            |                                                                                                                                 | 10 - 30          | HTL                                  | – | C6        |
|                            |                                                                                                                                 | 10 - 30          | HTL inverted                         | – | D6        |
|                            | (higher frequency) 1200 up to 25000                                                                                             | 10 - 30          | TTL, RS422 comp., inverted           | – | C1        |
|                            |                                                                                                                                 | 4.75 - 5.5       | TTL                                  | – | C3        |
|                            |                                                                                                                                 | 4.75 - 5.5       | TTL, RS422 comp., inverted           | – | D3        |
|                            |                                                                                                                                 | 10 - 30          | HTL                                  | – | C4        |
|                            |                                                                                                                                 | 10 - 30          | HTL inverted                         | – | D4        |
|                            |                                                                                                                                 | 10 - 30          | TTL, RS422 comp., inverted           | – | C2        |
|                            | 1024, 2048                                                                                                                      | 4.75 - 5.5       | 1 Vpp sin/cos                        | – | D8        |

Technical data

Encoder EI30 P 100 HI

Electrical connections

| Description                  |                                                     | N inv. poss. | Order key |
|------------------------------|-----------------------------------------------------|--------------|-----------|
| Cable: length (2 m standard) |                                                     |              |           |
| R-N                          | radial, shield not connected                        | •            | R-N       |
|                              | radial, shield connected to encoder housing         | •            | R-C       |
|                              | Connector: (shield connected to encoder housing)    |              |           |
|                              | connector, M16x0.75, 5-pin, radial                  | –            | R5        |
|                              | connector, M16x0.75, 6-pin, radial                  | –            | R6        |
|                              | connector, M16x0.75, 8-pin, radial                  | •            | R8        |
|                              | connector, M16x0.75, 12-pin, radial                 | •            | R12       |
|                              | connector, M16x0.75, 7-pin, radial                  | –            | R7        |
|                              | connector, M23, 12-pin, radial                      | •            | R12M      |
|                              | connector, clockwise pin count, M23, 12-pin, radial | •            | RC12      |
|                              | sensor-connector, M12x1, 4-pin, radial              | –            | RS4       |
|                              | sensor-connector, M12x1, 5-pin, radial              | –            | RS5       |
|                              | sensor-connector, M12x1, 8-pin, radial              | •            | RS8       |
|                              | sensor-connector, M12x1, 12-pin, radial             | •            | RS12      |

Options

| Description     |  | Order key       |
|-----------------|--|-----------------|
| Low temperature |  | LT              |
| IP55            |  | PE              |
| Without option  |  | Empty           |
| Cable length    |  | XXX = Decimeter |

|                       |               |    |      |   |    |     |               |                   |
|-----------------------|---------------|----|------|---|----|-----|---------------|-------------------|
| Example<br>Order No.: | EI30 P 100 HI | 25 | 1024 | N | C6 | R-N | EI30 P 100 HI | Your enco-<br>der |
|-----------------------|---------------|----|------|---|----|-----|---------------|-------------------|

## Part number code

Part designation: **EABB CCCDDEE FFFFFFF GHJJKK LLMNOPPP RR**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A</b>      | <b>Rotary encoder type</b><br>I: Incremental<br>S: Absolute, singleturn<br>M: Absolute, multiturn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>BB</b>     | <b>Series</b><br>10: Entry<br>30: Basic<br>50: Extended<br>70: Advanced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>CCC</b>    | <b>Flange diameter</b><br>024: 24 mm<br>036: 36 mm<br>058: 58 mm<br>063: 63 mm<br>067: 67 mm<br>070: 70 mm<br>080: 80 mm<br>100: 100 mm<br>115: 115 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DD</b>     | <b>Flange type</b><br>BB: Hollow shaft with blind hole<br>CC: Clamping flange (compact design)<br>CF: Clamping flange (food and beverages)<br>CH: Clamping flange (heavy-duty version)<br>CL: Clamping flange<br>HI: Hollow shaft (insulated)<br>HO: Hollow shaft<br>HT: Hollow shaft (special torque support)<br>RC: Round flange (36/40 clamping flange, 58 with 6 mm shaft)<br>RE: Round flange (expanded boreholes)<br>RN: Round flange<br>SC: Stator coupling<br>SF: Screw flange (53 clamping flange, 58 food and beverages)<br>SI: Servo flange (increased shaft load and IP protection)<br>SQ: Square flange<br>SR: Screw flange (36/40 clamping flange, 58 corrosion-resistant)<br>SY: Synchro (incremental), Servo (36), Synchro (58) (absolute)<br>TM: Speedometer (115 with 1 mm shaft, 58 motor feedback)<br>TS: Speedometer (10 mm shaft) |
| <b>EE</b>     | <b>Shaft / bore hole diameter</b><br>06: 6 mm<br>07: 7 mm<br>08: 8 mm<br>08: 8 mm<br>10: 10 mm<br>11: 11 mm<br>12: 12 mm<br>14: 14 mm<br>15: 15 mm<br>06-72: Hollow bore / blind holes (6 – 72 mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>FFFFFF</b> | <b>Signal / resolution</b><br>Axxxx: A<br>Bxxxx: AB<br>Nxxxx: ABN<br>P16384: Programmable<br>xx: Singleturn, 1 – 16 bit<br>xx: Multiturn, 0 – 43 bit (00 for singleturn)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>G</b>      | <b>Galvanic isolation (absolute only)</b><br>0: without<br>1: with                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>HH</b>     | <b>Voltage supply (absolute only)</b><br>0: 10 – 32 V DC/with galvanic isolation<br>1: 4.75 – 5.5 V DC<br>2: 18 – 30 V DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>J</b>      | <b>Operating principle</b><br>M: magnetic<br>O: optical<br>P: optically interpolated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

Part number code

|     |                                                                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------|
| KK  | <b>Interface</b><br>01: RS485<br>07: SSI binary<br>08: SSI Gray<br>35: CANopen<br>38: EtherCAT<br>48: PROFINET<br>58: EtherNet/IP                 |
| LL  | <b>Electrical connection</b><br>M08: M8 connector<br>M12: M12 connector<br>M16: M16 connector<br>M23: M23 connector<br>M12BC: Bus cover connector |
| M   | <b>Cable outlet</b><br>A: Axial<br>R: Radial<br>T: Tangential                                                                                     |
| NN  | <b>No. of pins</b><br>xx: Number of pins                                                                                                          |
| O   | <b>Shield connection (2 cable) (optional)</b><br>C: connected<br>N: not connected                                                                 |
| PPP | <b>Cable length</b><br>xxx: Cable length (in dm)                                                                                                  |

Note

|                                                                                   |                                                                                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a>.</p> |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|

