

## 技術データシート

## エンコーダ シリーズ情報

製品番号: 90000420

EI30-P 115 TS

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- 仕様書
- 製品キー



写真と異なる場合があります

|                     |                    |
|---------------------|--------------------|
| エンコーダ_シリーズ          | EI 115 TS          |
| エンコーダ_基本原理          | インクリメンタル           |
| エンコーダ_動作原理          | 光学的に補間された          |
| エンコーダ_フランジ直径        | Ø 115 mm           |
| エンコーダ_フランジタイプ       | タコフランジ (10 mm)     |
| エンコーダ_中実シャフト/中空シャフト | 中実シャフト             |
| エンコーダ_シャフト直径        | Ø 10 mm            |
|                     | Ø 12 mm            |
|                     | Ø 7 mm             |
|                     | Ø 8 mm             |
| エンコーダ_供給電圧          | 10 ... 30 V DC     |
|                     | 4.75 ... 5.5 V DC  |
|                     | 5 ... 30V DC       |
| エンコーダ_出力スイッチ        | 1 Vss Sin/Cos      |
|                     | HTL                |
|                     | HTL、inv.           |
|                     | TTL                |
| エンコーダ_インパルス数        | TTL、RS422 互換性、inv. |
|                     | 10000 I/U          |
|                     | 10240 I/U          |
|                     | 12000 I/U          |
|                     | 12500 I/U          |
|                     | 1440 I/U           |
|                     | 15000 I/U          |
|                     | 16384 I/U          |
|                     | 20000 I/U          |
|                     | 20480 I/U          |
|                     | 25000 I/U          |
|                     | 2880 I/U           |
|                     | 3000 I/U           |
|                     | 3600 I/U           |
|                     | 4000 I/U           |
|                     | 5760 I/U           |
|                     | 6000 I/U           |
|                     | 7200 I/U           |
|                     | 7500 I/U           |
|                     | 8000 I/U           |
|                     | 9182 I/U           |

## 仕様書

### Encoder EI30 P 115 TS

#### Resolution

|                           |                 |
|---------------------------|-----------------|
| Pulses per revolution PPR | up to 25000 PPR |
|---------------------------|-----------------|

#### Mechanical Data

|                  |                                  |
|------------------|----------------------------------|
| Flange           | tacho flange                     |
| Flange material  | aluminum                         |
| Housing material | die cast aluminum, powder coated |
| Flange diameter  | Ø 115 mm [Ø 4.528"]              |

#### Shaft(s)

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| Shaft material  | stainless steel                                        |
| Starting torque | approx. 1 Ncm [1.416 in-ozf]<br>at ambient temperature |

|              |                    |
|--------------|--------------------|
| <b>Shaft</b> | Ø 10 mm [Ø 0.394"] |
|--------------|--------------------|

|              |                   |
|--------------|-------------------|
| Shaft length | L: 25 mm [0.984"] |
|--------------|-------------------|

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

|                                      |                   |
|--------------------------------------|-------------------|
| Max. Permissible shaft loading axial | 120 N [12.236 kp] |
|--------------------------------------|-------------------|

|        |                                                                     |
|--------|---------------------------------------------------------------------|
| Advice | Ø 7 mm [0.2761"] / Ø 8 mm [0.315"] /<br>Ø 12 mm [0.472"] on request |
|--------|---------------------------------------------------------------------|

#### Bearings

|                      |                                                                                                                                                                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bearings type        | 2 precision ball bearings                                                                                                                                          |
| Nominal service life | 1 x 10 <sup>9</sup> revs. at 100 % rated shaft load<br>1 x 10 <sup>10</sup> revs. at 40 % rated shaft load<br>11 x 10 <sup>11</sup> revs. at 20 % rated shaft load |
| Max. operating speed | 8000 rpm                                                                                                                                                           |

#### Machinery Directive: basic data safety integrity level

|                             |                                                                     |
|-----------------------------|---------------------------------------------------------------------|
| MTTF <sub>d</sub>           | 200 a                                                               |
| Mission time (TM)           | 25 a                                                                |
| Nominal service life (L10h) | 1 x 10 <sup>11</sup> revs. at 20 % rated shaft load<br>and 8000 rpm |
| Diagnostic coverage (DC)    | 0 %                                                                 |

#### Electrical Data

|                                  |                                                                                                                                                                           |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply/Current consumption | 4,75 VDC up to 5,5 VDC: typ. 70 mA<br>(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<br>(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 ≤ 5000 ppr: max. 200 kHz<br>HTL ≤ 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 |
| 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 C4, C6, D4, 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  |

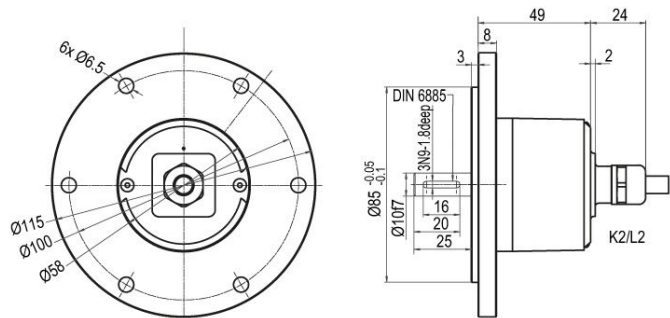
#### General Data

|                                 |                                                                                                                                                                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                          | approx. 520 g [18.342 oz]                                                                                                                                                                                                                                        |
| Connections                     | cable or connector outlet                                                                                                                                                                                                                                        |
| Protection rating<br>(EN 60529) | Housing: IP65, IP67;<br>shaft sealed: IP65                                                                                                                                                                                                                       |
| Operating temperature           | Connector: -40 °C up to +85 °C,<br>Cable: -20 °C up to +80 °C<br>(Option LT: -40 °C up to +85 °C).<br>Connector: -40 °F up to +185 °F,<br>Cable: -4 °F up to +176 °F,<br>Option LT: -40 °F up to +185 °F<br>1 Vpp: -10 °C up to +70 °C<br>[+14 °F up to +158 °F] |
| Storage temperature             | Connector: -40 °C up to +85 °C,<br>Cable: -30 °C up to +80 °C<br>(Option LT: -40 °C up to +85 °C)<br>Connector: -40 °F up to +185 °F,<br>cable: -22 °F up to +176 °F,<br>(Option LT: -40 °F up to +185 °F)                                                       |

仕様書

Encoder EI30 P 115 TS

Cable connection A-N, A-C, axial, with 2 m cable



All dimensions in mm

Description

N inv. poss.

|     |                                            |   |
|-----|--------------------------------------------|---|
| A-N | axial, shield not connected                | • |
| A-C | axial, shield connected to encoder housing | • |

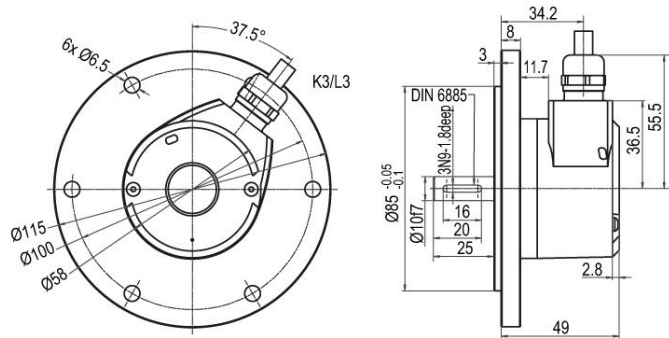
Assignments

|         | A-N, A-C           | A-N, A-C                   | A-C  |
|---------|--------------------|----------------------------|------|
| Circuit | C3, C4, C5, C6, C7 | D3, D4, D5, D6, C1, C2, D7 | D8   |
| GND     | WH                 | WH                         | WH   |
| (+) Vcc | BN                 | BN                         | BN   |
| A       | GN                 | GN                         | GN   |
| B       | YE                 | YE                         | GY   |
| N       | GY                 | GY                         | –    |
| –       | –                  | –                          | –    |
| A inv.  | –                  | RD                         | YE   |
| B inv.  | –                  | BK, (BU at LT)             | PK   |
| N inv.  | –                  | VT                         | –    |
| Shield  | flex               | flex                       | flex |

仕様書

Encoder EI30 P 115 TS

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



All dimensions in mm

Description

N inv. poss.

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

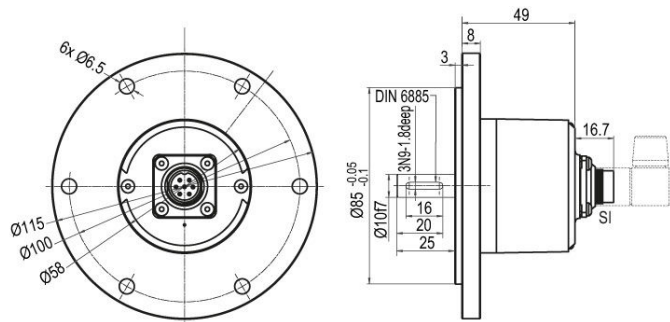
Assignments

|         | R-N, R-C           | R-N, R-C                   | R-C  |
|---------|--------------------|----------------------------|------|
| Circuit | C3, C4, C5, C6, C7 | D3, D4, D5, D6, C1, C2, D7 | D8   |
| GND     | WH                 | WH                         | WH   |
| (+) Vcc | BN                 | BN                         | BN   |
| A       | GN                 | GN                         | GN   |
| B       | YE                 | YE                         | GY   |
| N       | GY                 | GY                         | –    |
| –       | –                  | –                          | –    |
| A inv.  | –                  | RD                         | YE   |
| B inv.  | –                  | BK, (BU at LT)             | PK   |
| N inv.  | –                  | VT                         | –    |
| Shield  | flex               | flex                       | flex |

仕様書

Encoder EI30 P 115 TS

Connector (M16x0.75) A, axial, 5-, 6-, 8-, 12-pin



All dimensions in mm

| Description |                                                       | N inv. poss. |
|-------------|-------------------------------------------------------|--------------|
| A5          | axial, 5-pin, Connector connected to encoder housing  | —            |
| A6          | axial, 6-pin, Connector connected to encoder housing  | —            |
| A8          | axial, 8-pin, Connector connected to encoder housing  | •            |
| A12         | axial, 12-pin, Connector connected to encoder housing | •            |

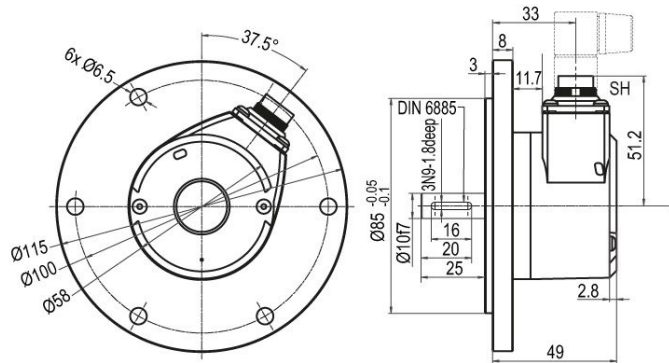
Assignments

|         | A5                 | A6                 | A8                         | A8    | A12                        | A12     |
|---------|--------------------|--------------------|----------------------------|-------|----------------------------|---------|
|         | 5-pin              | 6-pin              | 8-pin                      | 8-pin | 12-pin                     | 12-pin  |
|         |                    |                    |                            |       |                            |         |
| Circuit | 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      |
| GND     | 1                  | 6                  | 1                          | 1     | K, L                       | K, L    |
| (+) Vcc | 2                  | 1                  | 2                          | 2     | M, B                       | M, B    |
| A       | 3                  | 2                  | 3                          | 3     | E                          | E       |
| B       | 4                  | 4                  | 4                          | 4     | H                          | H       |
| N       | 5                  | 3                  | 5                          | —     | C                          | —       |
| —       | —                  | —                  | —                          | —     | —                          | —       |
| A inv.  | —                  | —                  | 6                          | 6     | F                          | F       |
| B inv.  | —                  | —                  | 7                          | 7     | A                          | A       |
| N inv.  | —                  | —                  | 8                          | —     | D                          | —       |
| n. c.   | —                  | 5                  | —                          | 5, 8  | G, J                       | D, G, J |
| Shield  | —                  | —                  | —                          | —     | —                          | —       |

仕様書

Encoder EI30 P 115 TS

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



All dimensions in mm

| Description |                                                        | N inv. poss. |
|-------------|--------------------------------------------------------|--------------|
| R5          | radial, 5-pin, Connector connected to encoder housing  | —            |
| R6          | radial, 6-pin, Connector connected to encoder housing  | —            |
| R8          | radial, 8-pin, Connector connected to encoder housing  | •            |
| R12         | radial, 12-pin, Connector connected to encoder housing | •            |

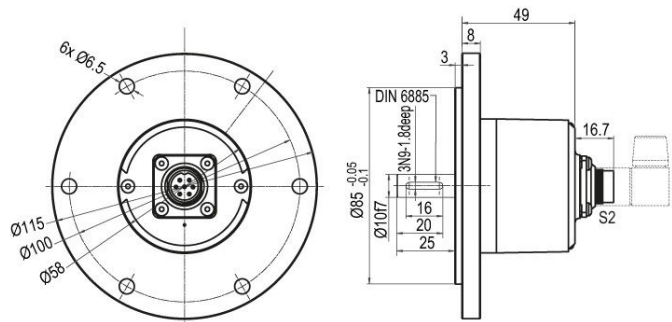
Assignments

|         | R5<br>5-pin        | R6<br>6-pin        | R8<br>8-pin                | R8<br>8-pin | R12<br>12-pin              | R12<br>12-pin |
|---------|--------------------|--------------------|----------------------------|-------------|----------------------------|---------------|
|         |                    |                    |                            |             |                            |               |
| Circuit | 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            |
| GND     | 1                  | 6                  | 1                          | 1           | K, L                       | K, L          |
| (+) Vcc | 2                  | 1                  | 2                          | 2           | M, B                       | M, B          |
| A       | 3                  | 2                  | 3                          | 3           | E                          | E             |
| B       | 4                  | 4                  | 4                          | 4           | H                          | H             |
| N       | 5                  | 3                  | 5                          | —           | C                          | —             |
| —       | —                  | —                  | —                          | —           | —                          | —             |
| A inv.  | —                  | —                  | 6                          | 6           | F                          | F             |
| B inv.  | —                  | —                  | 7                          | 7           | A                          | A             |
| N inv.  | —                  | —                  | 8                          | —           | D                          | —             |
| n. c.   | —                  | 5                  | —                          | 5, 8        | G, J                       | D, G, J       |
| Shield  | —                  | —                  | —                          | —           | —                          | —             |

仕様書

Encoder EI30 P 115 TS

Connector (M16x0.75) A7, axial, 7-pin



All dimensions in mm

Description

N inv. poss.

A7 axial, 7-pin, Connector connected to encoder housing

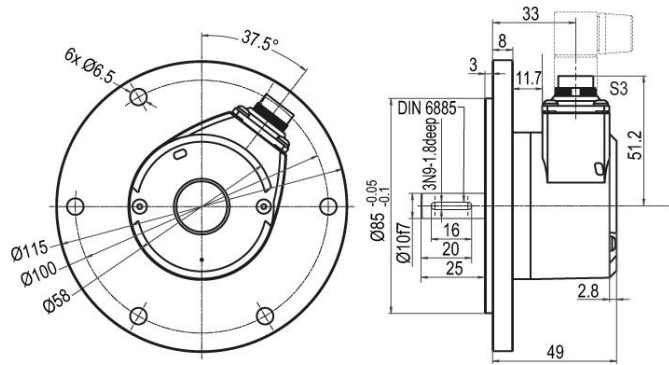
Assignments

| A7      |                    |
|---------|--------------------|
| 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  | —                  |

仕様書

Encoder EI30 P 115 TS

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



All dimensions in mm

| Description |                                                       | N inv. poss. |
|-------------|-------------------------------------------------------|--------------|
| R7          | radial, 7-pin, Connector connected to encoder housing | —            |

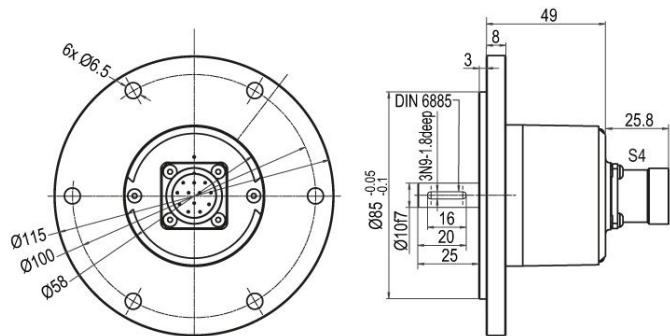
Assignments

| 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  | —                  |

仕様書

Encoder EI30 P 115 TS

Connector (M23) A12M, axial, 12-pin



All dimensions in mm

Description

N inv. poss.

A12M axial, 12-pin, Connector connected to encoder housing

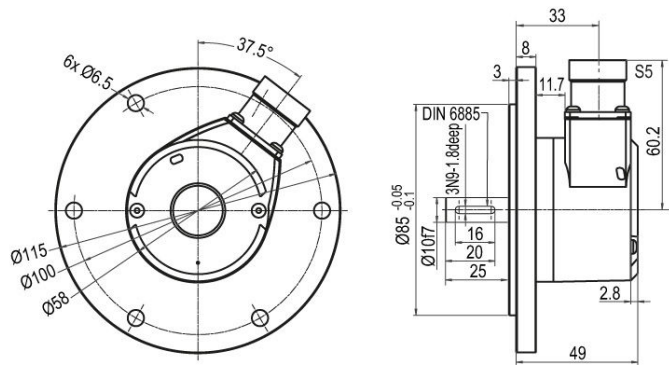
Assignments

|         | A12M                 | A12M                       | A12M              |
|---------|----------------------|----------------------------|-------------------|
|         | 12-pin               | 12-pin                     | 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                          | –                 |
| –       | –                    | –                          | –                 |
| A inv.  | –                    | 6                          | 6                 |
| B inv.  | –                    | 1                          | 1                 |
| N inv.  | –                    | 4                          | –                 |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 3, 4, 7, 9, 11 |
| Shield  | –                    | –                          | –                 |

仕様書

Encoder EI30 P 115 TS

Connector (M23) R12M, radial, 12-pin



All dimensions in mm

Description

N inv. poss.

**R12M** radial, 12-pin, Connector connected to encoder housing

•

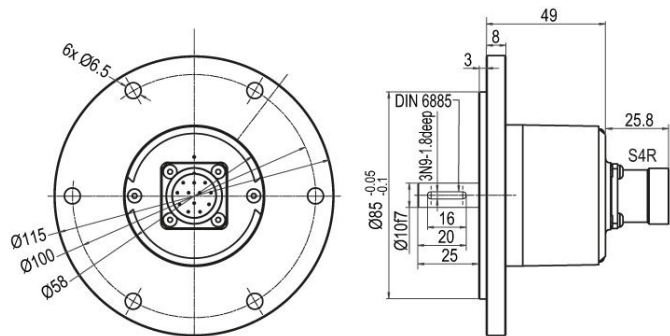
Assignments

|         | R12M                 | R12M                       | R12M              |
|---------|----------------------|----------------------------|-------------------|
|         | 12-pin               | 12-pin                     | 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                          | –                 |
| –       | –                    | –                          | –                 |
| A inv.  | –                    | 6                          | 6                 |
| B inv.  | –                    | 1                          | 1                 |
| N inv.  | –                    | 4                          | –                 |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 3, 4, 7, 9, 11 |
| Shield  | –                    | –                          | –                 |

仕様書

Encoder EI30 P 115 TS

Connector (M23) AC, axial, 12-pin (clockwise)



All dimensions in mm

Description

N inv. poss.

AC12 axial, 12-pin, Connector connected to encoder housing

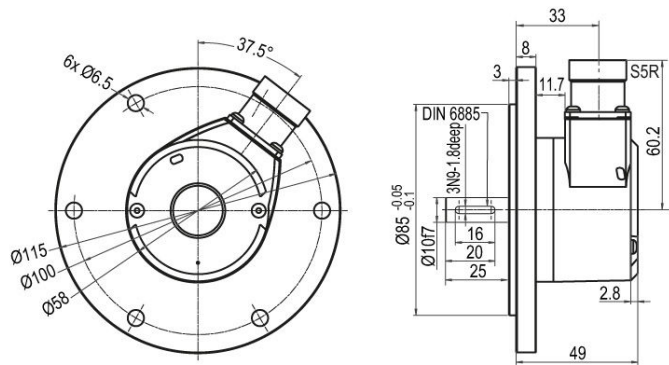
Assignments

|         | AC12                 | AC12                       | AC12              |
|---------|----------------------|----------------------------|-------------------|
|         | 12-pin               | 12-pin                     | 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                          | —                 |
| —       | —                    | —                          | —                 |
| A inv.  | —                    | 6                          | 6                 |
| B inv.  | —                    | 1                          | 1                 |
| N inv.  | —                    | 4                          | —                 |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 3, 4, 7, 9, 11 |
| Shield  | —                    | —                          | —                 |

仕様書

Encoder EI30 P 115 TS

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



All dimensions in mm

Description

N inv. poss.

RC12 radial, 12-pin, Connector connected to encoder housing

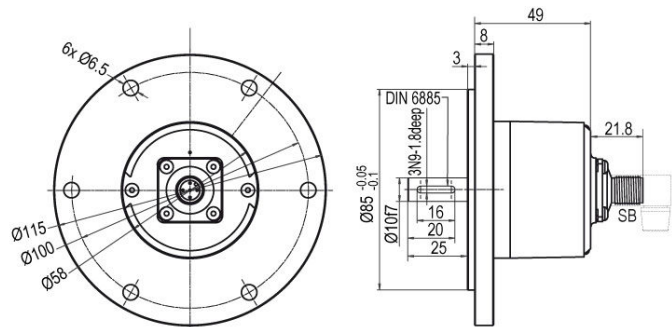
Assignments

|         | RC12                 | RC12                       | RC12              |
|---------|----------------------|----------------------------|-------------------|
|         | 12-pin               | 12-pin                     | 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                          | —                 |
| —       | —                    | —                          | —                 |
| A inv.  | —                    | 6                          | 6                 |
| B inv.  | —                    | 1                          | 1                 |
| N inv.  | —                    | 4                          | —                 |
| n. c.   | 1, 2, 4, 6, 7, 9, 11 | 2, 7, 9, 11                | 2, 3, 4, 7, 9, 11 |
| Shield  | —                    | —                          | —                 |

仕様書

Encoder EI30 P 115 TS

Sensor-connector (M12x1) AS, axial, 4-, 5-, 8-, 12-pin



All dimensions in mm

| Description |                                                       | N inv. poss. |
|-------------|-------------------------------------------------------|--------------|
| AS4         | axial, 4-pin, Connector connected to encoder housing  | —            |
| AS5         | axial, 5-pin, Connector connected to encoder housing  | —            |
| AS8         | axial, 8-pin, Connector connected to encoder housing  | •            |
| AS12        | axial, 12-pin, Connector connected to encoder housing | •            |

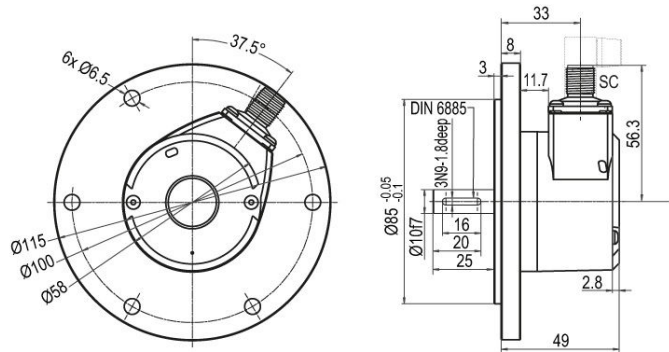
Assignments

|         | AS4                | AS5                | AS8                        | AS8   | AS12                       |
|---------|--------------------|--------------------|----------------------------|-------|----------------------------|
|         | 4-pin              | 5-pin              | 8-pin                      | 8-pin | 12-pin                     |
|         |                    |                    |                            |       |                            |
| Circuit | C3, C4, C5, C6, C7 | C3, C4, C5, C6, C7 | D3, D4, D5, D6, D7, C1, C2 | D8    | D3, D4, D5, D6, D7, C1, C2 |
| GND     | 3                  | 3                  | 1                          | 1     | 3                          |
| (+) Vcc | 1                  | 1                  | 2                          | 2     | 1                          |
| A       | 2                  | 4                  | 3                          | 3     | 4                          |
| B       | 4                  | 2                  | 4                          | 5     | 6                          |
| N       | —                  | 5                  | 5                          | —     | 8                          |
| —       | —                  | —                  | —                          | —     | —                          |
| A inv.  | —                  | —                  | 6                          | 4     | 9                          |
| B inv.  | —                  | —                  | 7                          | 6     | 7                          |
| N inv.  | —                  | —                  | 8                          | —     | 10                         |
| n. c.   | —                  | —                  | —                          | 7, 8  | 2, 5, 11, 12               |
| Shield  | —                  | —                  | —                          | —     | —                          |

仕様書

Encoder EI30 P 115 TS

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



All dimensions in mm

| Description |                                                        | N inv. poss. |
|-------------|--------------------------------------------------------|--------------|
| RS4         | radial, 4-pin, Connector connected to encoder housing  | —            |
| RS5         | radial, 5-pin, Connector connected to encoder housing  | —            |
| RS8         | radial, 8-pin, Connector connected to encoder housing  | •            |
| RS12        | radial, 12-pin, Connector connected to encoder housing | •            |

|         | RS4                | RS5                | RS8                        | RS8   | RS12                       |
|---------|--------------------|--------------------|----------------------------|-------|----------------------------|
|         | 4-pin              | 5-pin              | 8-pin                      | 8-pin | 12-pin                     |
|         |                    |                    |                            |       |                            |
| Circuit | 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 |
| GND     | 3                  | 3                  | 1                          | 1     | 3                          |
| (+) Vcc | 1                  | 1                  | 2                          | 2     | 1                          |
| A       | 2                  | 4                  | 3                          | 3     | 4                          |
| B       | 4                  | 2                  | 4                          | 5     | 6                          |
| N       | —                  | 5                  | 5                          | —     | 8                          |
| —       | —                  | —                  | —                          | —     | —                          |
| A inv.  | —                  | —                  | 6                          | 4     | 9                          |
| B inv.  | —                  | —                  | 7                          | 6     | 7                          |
| N inv.  | —                  | —                  | 8                          | —     | 10                         |
| n. c.   | —                  | —                  | —                          | 7, 8  | 2, 5, 11, 12               |
| Shield  | —                  | —                  | —                          | —     | —                          |

# 仕様書

## Encoder EI30 P 115 TS

### Options

#### Low-friction bearings

#### Order key

The encoder EI30 P 115 TS is also available as a particularly smooth- running low-friction encoder. The starting torque is thereby changed to  $\leq 0.5 \text{ Ncm}$  [0.708 in-ozf] and the protection class at the shaft input to IP50.

LB

#### IP67 Shafts sealed to IP67 (not for 1 Vpp Sin/Cos)

The encoder EI30 P 115 TS can be supplied in a full IP67 version.

IP

Max. RPM: 3500 rpm

Permitted Shaft-Loading, axial: 80 N [8.157 kp]

Permitted Shaft-Loading, radial: 110 N [11.216 kp]

Max. PPR: 25000 ppr

Starting-torque: approx. 4 Ncm [5.664 in-ozf] at ambient temperature

#### Low temperature

#### Order key

The encoder EI30 P 115 TS with the output circuit types C1, C2, C3, C4, C5, C6, D3, D4, D5, D6 is also available with the extended temperature range  $-40 \text{ }^{\circ}\text{C}$  up to  $+85 \text{ }^{\circ}\text{C}$  [ $-40 \text{ }^{\circ}\text{F}$  up to  $+185 \text{ }^{\circ}\text{F}$ ] (measured at the flange).

LT

#### Pressure equalising membrane

#### Order key

The EI30 P 115 TS 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.

PE

The IP67 protection level, temperature range and salt spray resistance are maintained. Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.

#### Cable length

#### Order key

The encoder EI30 P 115 TS can be supplied with more than 2 m cable.

XXX = Decimeter

The maximum cable length depends on the supply voltage and the frequency.

Please extend the standard order code with a three figure number, specifying the cable length in decimetres.

Example: 5 m cable = 050

仕様書

Encoder EI30 P 115 TS

| Example Order No.          | Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                  |                                      |   |           |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------|---|-----------|
| EI30 P 115 TS              | EI30 P 115 TS                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EI30 P 115 TS    |                                      |   |           |
| Shaft                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                                      |   |           |
| 10                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                                      |   |           |
| Pulses per revolution PPR: |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                                      |   |           |
| 5000                       | 2, 5, 10, 15, 20, 25, 30, 36, 40, 48, 50, 60, 64, 72, 90, 100, 120, 125, 128, 150, 160, 180, 200, 216, 240, 250, 254, 256, 300, 314, 320, 360, 400, 500, 512, 571, 600, 720, 750, 768, 800, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 2880, 3000, 3600, 4000, 4096, 4685, 5000, 5760, 6000, 7200, 7500, 8000, 8192, 10000, 10240, 12000, 12500, 15000, 16384, 20000, 20480, 25000<br>1 Vpp Sin/Cos only 1024, 2048<br>Other PPRs on request |                  |                                      |   |           |
| Channels:                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                                      |   |           |
| N                          | B, N (SIN: B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                                      |   |           |
| 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        |

## 仕様書

## Encoder EI30 P 115 TS

## Electrical connections

|     | Description                                             | N inv. poss. | Order key |
|-----|---------------------------------------------------------|--------------|-----------|
| A-N | <b>Cable: length (2 m standard)</b>                     |              |           |
|     | axial, shield not connected                             | •            | A-N       |
|     | axial, shield connected to encoder housing              | •            | A-C       |
|     | radial, shield not connected                            | •            | R-N       |
|     | radial, shield connected to encoder housing             | •            | R-C       |
|     | <b>Connector: (shield connected to encoder housing)</b> |              |           |
|     | connector, M16x0.75, 5-pin, axial                       | –            | A5        |
|     | connector, M16x0.75, 5-pin, radial                      | –            | R5        |
|     | connector, M16x0.75, 6-pin, axial                       | –            | A6        |
|     | connector, M16x0.75, 6-pin, radial                      | –            | R6        |
|     | connector, M16x0.75, 8-pin, axial                       | •            | A8        |
|     | connector, M16x0.75, 8-pin, radial                      | •            | R8        |
|     | connector, M16x0.75, 12-pin, axial                      | •            | A12       |
|     | connector, M16x0.75, 12-pin, radial                     | •            | R12       |
|     | connector, M16x0.75, 7-pin, axial                       | –            | A7        |
|     | connector, M16x0.75, 7-pin, radial                      | –            | R7        |
|     | connector, M23, 12-pin, axial                           | •            | A12M      |
|     | connector, clockwise pin count, M23, 12-pin, axial      | •            | AC12      |
|     | connector, M23, 12-pin, radial                          | •            | R12M      |
|     | connector, clockwise pin count, M23, 12-pin, radial     | •            | RC12      |
|     | sensor-connector, M12x1, 4-pin, axial                   | –            | AS4       |
|     | sensor-connector, M12x1, 4-pin, radial                  | –            | RS4       |
|     | sensor-connector, M12x1, 5-pin, axial                   | –            | AS5       |
|     | sensor-connector, M12x1, 5-pin, radial                  | –            | RS5       |
|     | sensor-connector, M12x1, 8-pin, axial                   | •            | AS8       |
|     | sensor-connector, M12x1, 8-pin, radial                  | •            | RS8       |
|     | sensor-connector, M12x1, 12-pin, axial                  | •            | AS12      |
|     | sensor-connector, M12x1, 12-pin, radial                 | •            | RS12      |

## Options

| Description                  | Order key       |
|------------------------------|-----------------|
| Low-friction bearings        | LB              |
| IP67                         | IP              |
| Low temperature              | LT              |
| Pressure equalising membrane | PE              |
| Without option               | Empty           |
| Cable length                 | XXX = Decimeter |

|                               |               |    |      |   |    |     |               |                           |
|-------------------------------|---------------|----|------|---|----|-----|---------------|---------------------------|
| <b>Example<br/>Order No.:</b> | EI30 P 115 TS | 10 | 5000 | N | C6 | A-N | EI30 P 115 TS | <b>Your enco-<br/>der</b> |
|-------------------------------|---------------|----|------|---|----|-----|---------------|---------------------------|

製品キー

製品名：EABB CCCDDEE FFFFFFF GHJJKK LLMNNOPPP RR

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A      | 回転エンコーダのタイプ<br>I：インクリメンタル<br>S：絶対的、シングルターン<br>M：絶対、マルチターン                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BB     | シリーズ<br>10：入力<br>30：ベーシック<br>50：拡張済み<br>70：先進的                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CCC    | フランジ直径<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                                                                                                                                                                                                                                                                                                                                                                              |
| DD     | フランジタイプ<br>BB：ブラインドホール付きの中空シャフト<br>CC：(コンパクトな形態)<br>CF：クランプフランジ (食品と飲料)<br>CH：クランプフランジ (重荷重仕様)<br>CL：クランプフランジ<br>HI：中空シャフト (絶縁された)<br>HO：中空シャフト<br>HT：中空シャフト (特別なトルク支持)<br>RC：丸形フランジ (36/40 クランプフランジ、58 6-mm-シャフト付き)<br>RE：丸形フランジ (拡張穴)<br>RN：丸形フランジ<br>SC：ステータカップリング<br>SF：ネジフランジ (53 クランプフランジ、58 食品と飲料水)<br>SI：サーボフランジ (拡張シャフト負荷とIP保護)<br>SQ：スクエアフランジ<br>SR：ネジフランジ (36/40 クランプフランジ、58 耐食性)<br>SY：シンクロ (インクリメンタル)、サーボ (36)、シンクロ (58) (絶対的)<br>TM：タコ (115 1-mm-シャフト付き、58 モーターフィードバック)<br>TS：タコ (10-mm-シャフト) |
| EE     | シャフト-/穴の直径<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：中空-/ブラインドホール (6 ... 72 mm)                                                                                                                                                                                                                                                                                                                                                     |
| FFFFFF | 信号/分解能<br>Axxxxx：A<br>Bxxxxx：AB<br>Nxxxxx：ABN<br>P16384：プログラム可能<br>xx：シングルターン、1 ... 16 Bit<br>xx：マルチターン、0 ... 43 Bit (00 シングルターンの場合)                                                                                                                                                                                                                                                                                                                                                                        |
| G      | 直流電流切断 (絶対のみ)<br>0：なし<br>1：と一緒に                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| HH     | 電力供給 (絶対のみ)<br>0：10 ... 32 V DC/ 直流電流分離付き<br>1：4.75 ... 5.5 V DC<br>2：18 ... 30 V DC                                                                                                                                                                                                                                                                                                                                                                                                                        |
| J      | 動作原理<br>M：磁力の<br>O：光学的<br>P：光学的に補間された                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

製品キー

|     |                                                                                                                                |
|-----|--------------------------------------------------------------------------------------------------------------------------------|
| KK  | インターフェース<br>01 : RS485<br>07 : SSI バイナリ<br>08 : SSI Gray<br>35 : CANopen<br>38 : EtherCAT<br>48 : PROFINET<br>58 : EtherNet/IP |
| LL  | 電氣的接続<br>M08 : 丸形プラグ M8<br>M12 : 丸形プラグ M12<br>M16 : 丸形プラグ M16<br>M23 : 丸形プラグ M23<br>M12BC : バスキャッププラグ                          |
| M   | ケーブルアウトレット<br>A : 軸方向<br>R : 半径方向<br>T : 正接の                                                                                   |
| NN  | 極数<br>xx : 極数                                                                                                                  |
| O   | シールド接続 (2-m-ケーブル) (オプション)<br>C : 接続済み<br>N : 不接続                                                                               |
| PPP | ケーブル長さ<br>xxx : ケーブル長 (dm)                                                                                                     |

注意

|                                                                                   |                                                                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|  | 利用可能なすべてのデバイスタイプのリストは、Leuzeのウェブサイト <a href="http://www.leuze.com">www.leuze.com</a> にあります。 |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|

