



Leine & Linde  
**500-Serie Robust** Shaft Encoder  
Datasheet

**Siebert Automation**

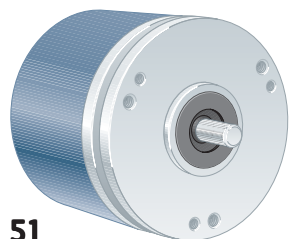
Rudolf-Diesel-Straße 5a  
D- 82205 Gilching  
Germany

Fon: +49 8105 77287 0  
Fax: +49 8105 77287 200

[info@siebert-automation.com](mailto:info@siebert-automation.com)  
[www.siebert-automation.com](http://www.siebert-automation.com)

**Siebert**  
*Automation*

# 501 Ruggedized Shaft encoder, Incremental



51

## Short description:

- >> 2 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 9...36 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Extra rugged design for harsh environments

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RSI 501  |
| Operating temperature    | -40°C .. +70°C   |
| Storage temperature      | -40°C .. +85°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Line count               | 1..5 000 ppr   |
| Dividing error           | ± 50 °el   |
| Channel separation       | 90 ± 25 °el  |
| Measuring steps          | 4 x Line count   |

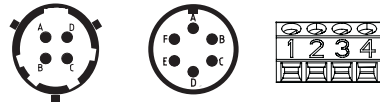
## Flange option

| Flange type       | 51, LL58        |
|-------------------|-----------------|
| Outer diameter    | ø58 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       |
| Surface treatment | Anodized        |

## Shaft option

| Shaft type              | Ø6 round                                | Ø6 with face                            | Ø10 round                               | Ø10 with face                           |
|-------------------------|---|---|---|---|
| Axial shaft load        | 100 N                                   | 100 N                                   | 100 N                                   | 100 N                                   |
| Radial shaft load       | 120 N                                   | 120 N                                   | 120 N                                   | 120 N                                   |
| Mech. permissible speed | 3000 rpm (6000)                         | 3000 rpm (6000)                         | 3000 rpm (6000)                         | 3000 rpm (6000)                         |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



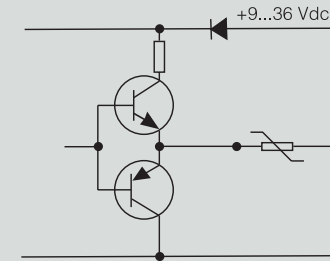
### Connection option

| Connector type       | Cable  | 4 pin PT | 6 pin MS | Terminal |
|----------------------|--------|----------|----------|----------|
| Function             | Colour | PIN      | PIN      | PIN      |
| S00                  | Yellow | B        | D        | 3        |
| S90                  | Green  | A        | A        | 4        |
| +E Volt              | Red    | C        | E        | 1        |
| 0 Volt               | Blue   | D        | F        | 2        |
| Case                 | Shield | Chassis  | Chassis  | Chassis  |
| Connecting direction |        |          |          |          |
| Axial                | Yes    | No       | Yes      | Yes      |
| Radial               | Yes    | Yes      | No       | No       |

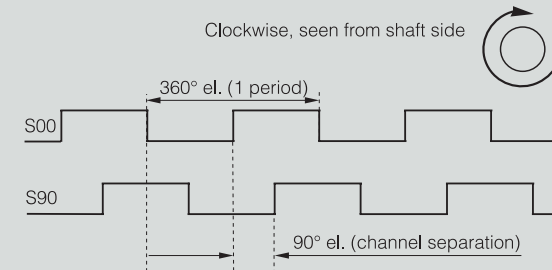
### Electrical option

|                         |                |
|-------------------------|----------------|
| <b>Power supply</b>     | <b>9-36 V</b>  |
| Polarity protected      | Yes            |
| <b>Output signals</b>   | <b>HC-HTL</b>  |
| Short circuit protected | Yes            |
| Current consumption     | 55 mA at 24Vdc |
| Max consumption         | Max 80 mA      |
| Output load (max)       | ±40 mA         |
| Output frequency (max)  | 100 kHz        |
| $U_{high}$ at 10mA load | > +EV - 4.0 V  |
| $U_{low}$ at 10mA load  | < 2.5 V        |
| Cable length (max)      | 350 m @ 100kHz |

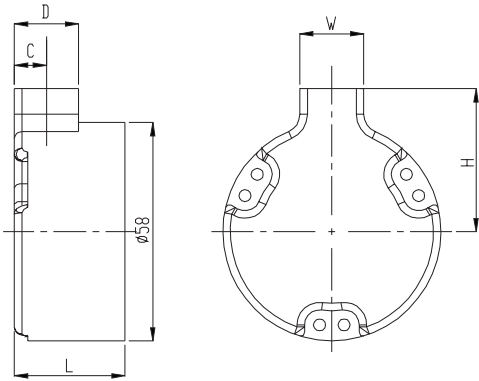
### Output circuit



### Output signals



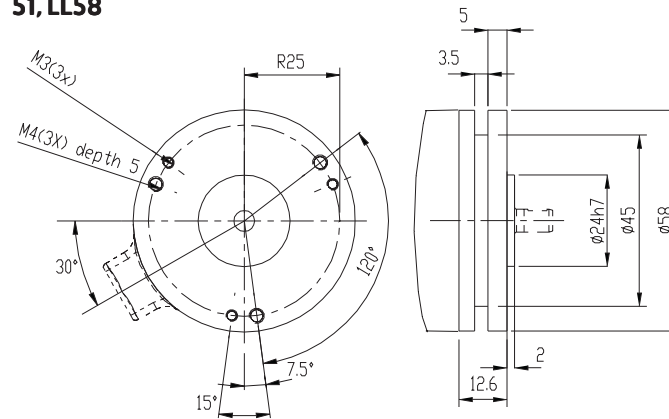
## Dimensions



| Connector | Orientation | L    | H    | W  | D  | C    |
|-----------|-------------|------|------|----|----|------|
| Cable     | Radial      | 29.4 | 34   | 17 | 17 | 8.5  |
|           | Axial       | 38.9 | -    | -  | -  | -    |
| PT 4p     | Radial      | 39.9 | 34.9 | 21 | 21 | 10.5 |
| MS 6p     | Axial       | 38.9 | -    | -  | -  | -    |
| Terminal  | Axial       | 29.4 | -    | -  | -  | -    |

## Flanges

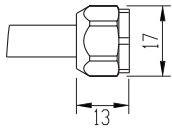
### 51, LL58



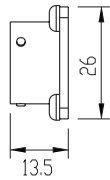


## Connectors

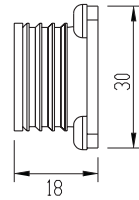
### Cable 5x2x0,25 shielded



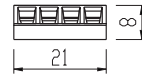
### 4pin PT



### 6pin MS

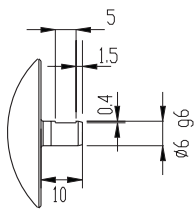


### Terminal

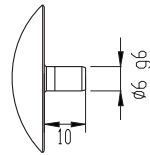


## Shafts

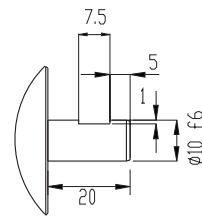
### 6 mm with face



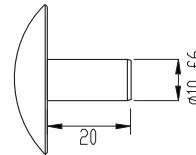
### 6 mm round



### 10 mm with face

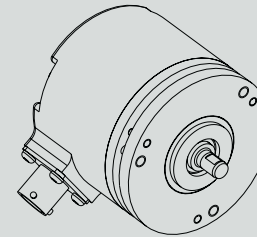


### 10 mm round



## Various combinations/example

### RSI 501 51 6 mm with face, radial PT

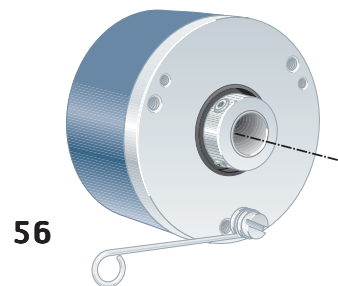


## Ordering information Tick your choice

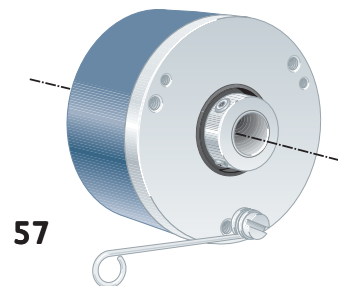
|                      |              |              |           |               |
|----------------------|--------------|--------------|-----------|---------------|
| Type                 | RSI 501      |              |           |               |
| Flange               | 51, LL58     |              |           |               |
| Shaft                | Ø6 round     | Ø6 with face | Ø10 round | Ø10 with face |
| Electronics          | Supply       | 9-36Vdc      |           |               |
|                      | Output       | HC-HTL       |           |               |
| Connection           | Cable        | 4 pin PT     | 6 pin MS  | Terminal      |
| Connecting direction | Axial/Radial | Radial       | Axial     | Axial         |
| Line count           | 1..5000      |              |           |               |

### Please, specify line count and cable length when ordering

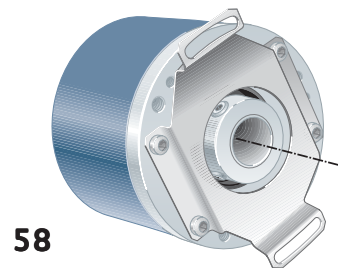
Ordering example: RSI 501 51 Ø6ro 9-36Vdc 1024ppr HC-HTL Terminal Axial



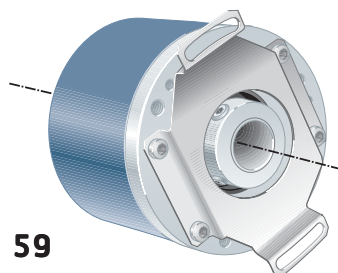
56



57



58



59

### Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

### Suitable applications:

- >> Standard to demanding industrial applications

### General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RHI 503  |                  |
| Operating temperature    | -40°C .. +70°C   |                  |
| Storage temperature      | -30°C .. +70°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6 ms)             | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

### Flange option

| Flange type       | 56, hollow-shaft | 57, hollow-shaft | 58, hollow-shaft | 59, hollow-shaft |
|-------------------|------------------|------------------|------------------|------------------|
| Type              | Standard         | Through going    | Standard         | Through going    |
| Diameter          | ø58mm            | ø58mm            | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         | Anodized         | Anodized         |
| Torque support    | Torque arm       | Torque arm       | Stator coupling  | Stator coupling  |

### Shaft option

| Hollow-shaft type       | Ø8 mm                                   | Ø10 mm                                  | Ø12 mm                                  | Ø14 mm                                  |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

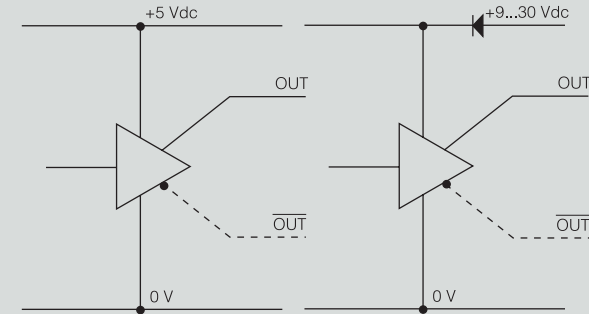
| Connector type                                       | Cable  | 8 pin M12 | 12 pin EML | 8 pin PT | 6 pin MS |
|--|--------|-----------|------------|----------|----------|
| Function   | Colour | PIN       | PIN        | PIN      | PIN      |
| S00  | Yellow | 4         | 5          | D        | D        |
| S00 inverted   | Black  | 5         | 6          | C        | C        |
| S90  | Green  | 3         | 8          | A        | A        |
| S90 inverted   | White  | 1         | 1          | B        | B        |
| Sref   | Brown  | 2         | 3          | G        | NA       |
| Sref inverted  | Violet | 6         | 4          | H        | NA       |
| +E Volt  | Red    | 8         | 12         | E        | E        |
| 0 Volt   | Blue   | 7         | 10         | F        | F        |
| STATUS   | Grey   | NA        | 7          | NA       | NA       |
| Housing  | Shield | Chassis   | Chassis    | Chassis  | Chassis  |
| <b>Connecting direction (flange option -56, -58)</b> |        |           |            |          |          |
| Axial  | Yes    | Yes       | Yes        | Yes      | Yes      |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       |
| <b>Connecting direction (flange option -57, -59)</b> |        |           |            |          |          |
| Axial  | No     | No        | No         | No       | No       |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       |

### Electrical option

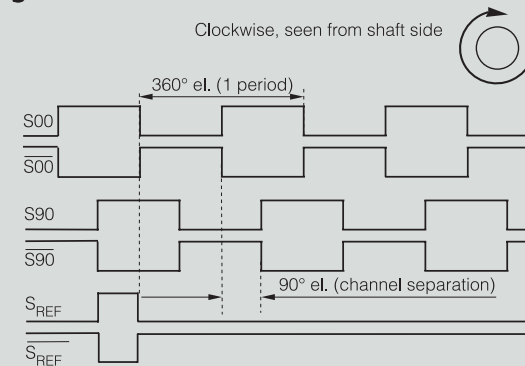
| Power supply                   | 5 V ±10%         | 9-30 V          |                      |
|--------------------------------|------------------|-----------------|----------------------|
| Polarity protected             | No               | Yes             |                      |
| Output signals                 | TTL <sup>1</sup> | HTL             | RS-422               |
| Short circuit protected        | Yes              | Yes             | Yes                  |
| Current consumption            | 45 mA            | 50 mA at 24Vdc  | 25 mA at 24Vdc       |
| Max consumption                | 75 mA            | 75 mA           | 40 mA                |
| Output load (max)              | ±20 mA           | ±40 mA          | ±20 mA               |
| Output frequency (max)         | 300 kHz          | 300 kHz         | 300 kHz              |
| U <sub>high</sub> at 10mA load | > 3.0 V          | > +EV - 2.0 V   | > 3.0 V              |
| U <sub>low</sub> at 10mA load  | < 0.4 V          | < 1.15 V        | < 0.4 V              |
| Cable length (max)             | 50 m             | 200 m @ 50 kHz  | 1 km (TIA/EIA-422-B) |
| STATUS output                  | Yes              | Yes             | Yes                  |
| High level                     | Encoder OK       | Encoder OK      | Encoder OK           |
| Low level                      | Warning/Failure  | Warning/Failure | Warning/Failure      |

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

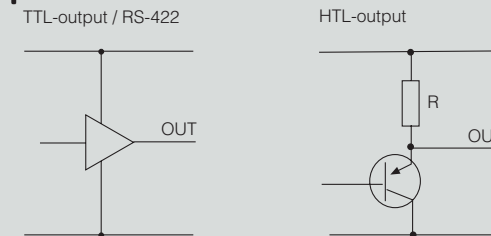
### Output circuit



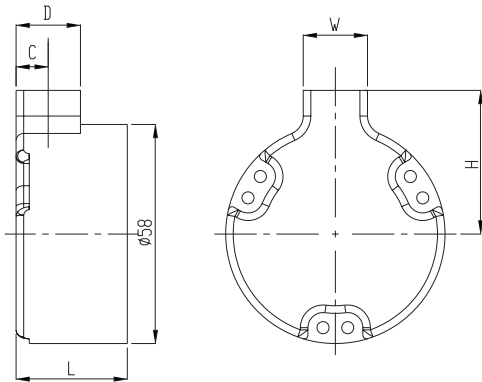
### Output signals



### Status outputs

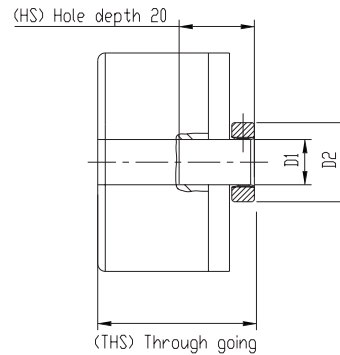


## Dimensions



| Connector | Orientation             | L    | H  | W  | D  | C    |
|-----------|-------------------------|------|----|----|----|------|
| Cable     | Radial $\varnothing 58$ | 29.4 | 34 | 17 | 17 | 8.5  |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| EML       | Radial                  | 29.4 | 32 | 27 | 27 | 13.5 |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| PT 8p     | Radial                  | 29.4 | 41 | 27 | 27 | 13.5 |
|           | Axial $\varnothing 58$  | 38.9 | -  | -  | -  | -    |
| MS 6p     | Radial                  | -    | -  | -  | -  | -    |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| M12 8p    | Radial                  | 29.4 | 38 | 27 | 27 | 9.5  |
|           | Axial                   | 38.9 | -  | -  | -  | -    |

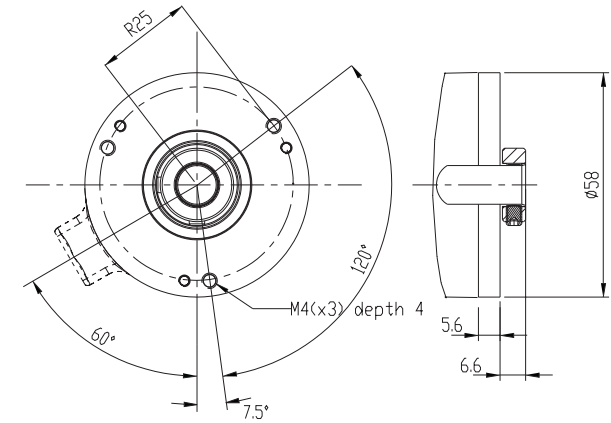
## Shafts



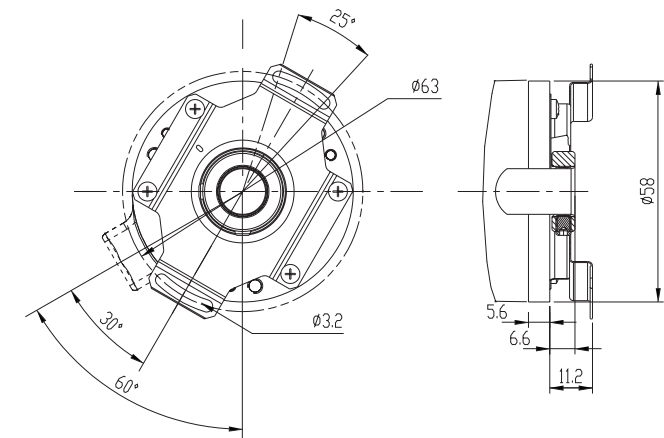
|                           | D1                  | D2               |
|---------------------------|---------------------|------------------|
| $\varnothing 8\text{mm}$  | $\varnothing 8$ G7  | $\varnothing 19$ |
| $\varnothing 10\text{mm}$ | $\varnothing 10$ G7 | $\varnothing 19$ |
| $\varnothing 12\text{mm}$ | $\varnothing 12$ G7 | $\varnothing 21$ |
| $\varnothing 14\text{mm}$ | $\varnothing 14$ G7 | $\varnothing 23$ |

## Flanges

### 56 and 57



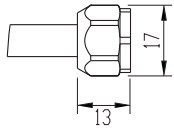
### 58 and 59



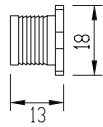


## Connectors

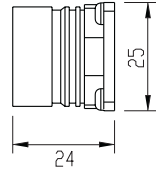
**Cable**  
5x2x0,25 shielded



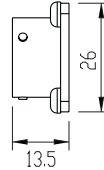
**8pin M12**



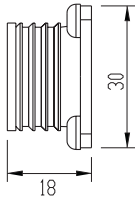
**12pin EML**



**8pin PT**

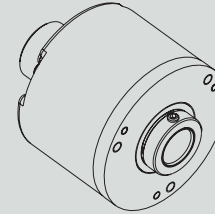


**6pin MS**

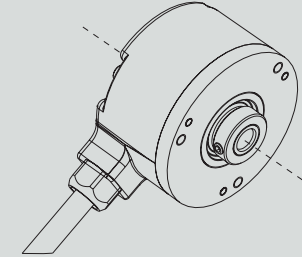


## Various combinations/examples

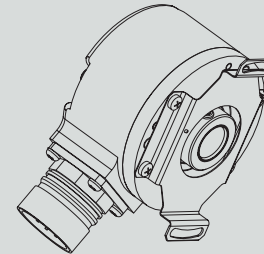
**RHI 503 56** 12 mm, axial MS



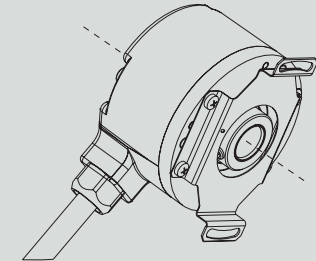
**RHI 503 57** 8 mm, radial cable



**RHI 503 58** 10 mm, radial EML



**RHI 503 59** 10 mm, radial cable



## Ordering information Tick your choice

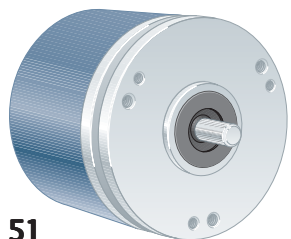
| Type                       | RHI 503 |              |              |              |          |
|----------------------------|---------|--------------|--------------|--------------|----------|
| Flange                     | 56, HS  | 57, THS      | 58, HS       | 59, THS      |          |
| Shaft                      | Ø8mm    | Ø10mm        | Ø12mm        | Ø14mm        |          |
| Electronics <sup>(1)</sup> | Supply  | 5Vdc         |              |              |          |
|                            | Output  | TTL          | HTL          | RS-422       |          |
| Connection                 | Cable   | 8 pin M12    | 12 pin EML   | 8 pin PT     | 6 pin MS |
| Connecting direction       | HS      | Axial/Radial | Axial/Radial | Axial/Radial | Axial    |
|                            | THS     | Radial       | Radial       | Radial       | Radial   |
| Line count                 | 1..5000 | 5001..10 000 |              |              |          |

<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

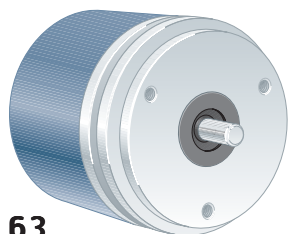
HS Hollow-shaft THS Through going hollow-shaft

**Please, specify line count and cable length when ordering**

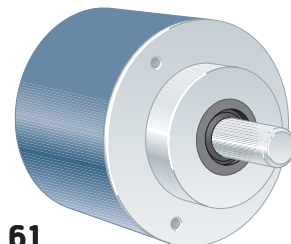
Ordering example: RHI 503 58 Ø10 5Vdc 1024ppr TTL 12 pin EML Radial



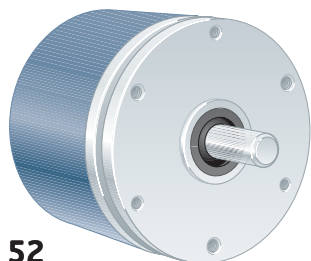
51



63



61



52

### Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

### Suitable applications:

- >> Standard to demanding industrial applications

### General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RSI 503  |                  |
| Operating temperature    | -40°C .. +70°C   |                  |
| Storage temperature      | -30°C .. +70°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

### Flange option

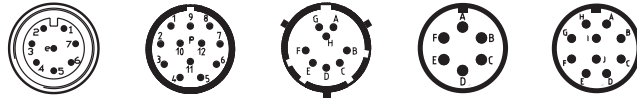
| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

### Shaft option

| Shaft type              | Ø6 round                                | Ø6 with face                            | Ø10 round                               | Ø10 with face                           |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors





### Connection option

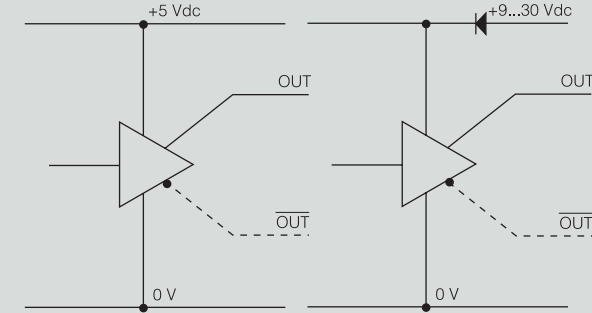
| Connector type   | Cable  | 8 pin M12 | 12 pin EML | 8 pin PT | 6 pin MS | 10 pin MS |
|--|--------|-----------|------------|----------|----------|-----------|
| Function   | Colour | PIN       | PIN        | PIN      | PIN      | PIN       |
| S00  | Yellow | 4         | 5          | D        | D        | D         |
| S00 inverted   | Black  | 5         | 6          | C        | C        | C         |
| S90  | Green  | 3         | 8          | A        | A        | A         |
| S90 inverted   | White  | 1         | 1          | B        | B        | B         |
| Sref   | Brown  | 2         | 3          | G        | NA       | G         |
| Sref inverted  | Violet | 6         | 4          | H        | NA       | H         |
| +E Volt  | Red    | 8         | 12         | E        | E        | E         |
| 0 Volt   | Blue   | 7         | 10         | F        | F        | F         |
| STATUS   | Grey   | NA        | 7          | NA       | NA       | I         |
| Case   | Shield | Chassis   | Chassis    | Chassis  | Chassis  | Chassis   |
| <b>Connecting direction (available on flange option -51, -63, -61)</b> |        |           |            |          |          |           |
| Axial  | Yes    | Yes       | Yes        | Yes      | Yes      | Yes       |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       | Yes       |
| <b>Connecting direction (available on flange option -52)</b>           |        |           |            |          |          |           |
| Axial  | No     | No        | No         | Yes      | No       | Yes       |
| Radial   | Yes    | No        | No         | No       | No       | No        |

### Electrical option

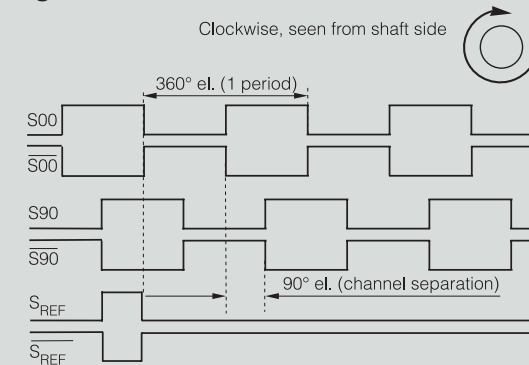
| Power supply                   | 5 V ±10%         | 9-30 V          |                      |
|--------------------------------|------------------|-----------------|----------------------|
| Polarity protected             | No               | Yes             |                      |
| Output signals                 | TTL <sup>1</sup> | HTL             | RS-422               |
| Short circuit protected        | Yes              | Yes             | Yes                  |
| Current consumption            | 45 mA            | 50 mA at 24Vdc  | 25 mA at 24Vdc       |
| Max consumption                | 75 mA            | 75 mA           | 40 mA                |
| Output load (max)              | ±20 mA           | ±40 mA          | ±20 mA               |
| Output frequency (max)         | 300 kHz          | 300 kHz         | 300 kHz              |
| U <sub>high</sub> at 10mA load | > 3.0 V          | > +EV - 2.0 V   | > 3.0 V              |
| U <sub>low</sub> at 10mA load  | < 0.4 V          | < 1.15 V        | < 0.4 V              |
| Cable length (max)             | 50 m             | 200 m @ 50 kHz  | 1 km (TIA/EIA-422-B) |
| STATUS output                  | Yes              | Yes             | Yes                  |
| High level                     | Encoder OK       | Encoder OK      | Encoder OK           |
| Low level                      | Warning/Failure  | Warning/Failure | Warning/Failure      |

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

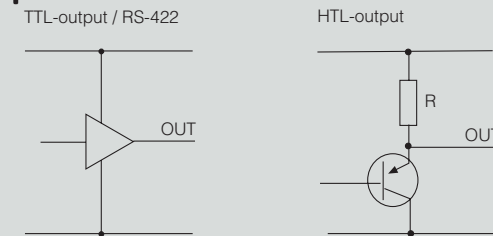
### Output circuit



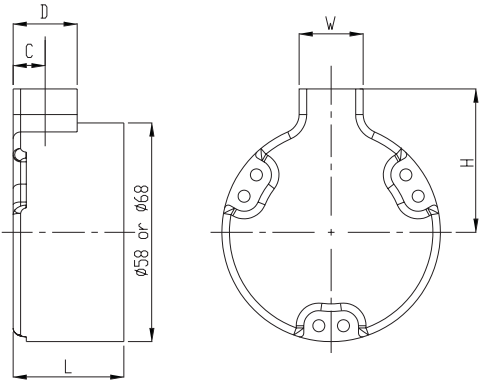
### Output signals



### Status outputs



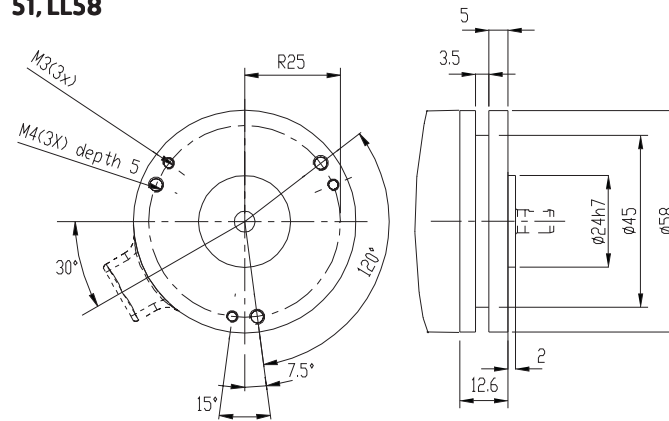
## Dimensions



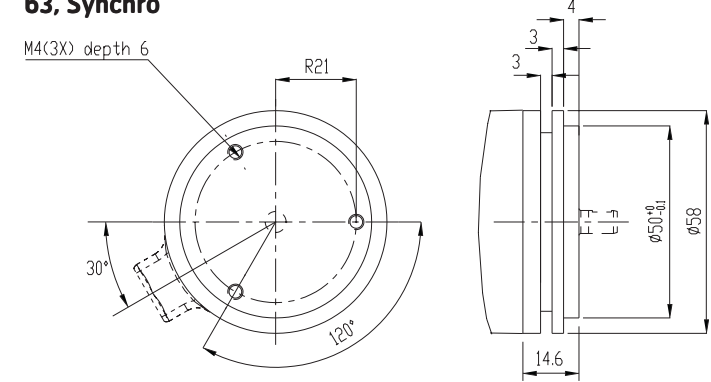
| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial Ø58  | 29.4 | 34 | 17 | 17 | 8.5  |
|           | Radial Ø68  | 44.7 | 34 | 0  | 0  | 14   |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| EML       | Radial      | 29.4 | 32 | 27 | 27 | 13.5 |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| PT 8p     | Radial      | 29.4 | 41 | 27 | 27 | 13.5 |
|           | Axial Ø58   | 38.9 | -  | -  | -  | -    |
|           | Axial Ø68   | 44.7 | -  | -  | -  | -    |
| MS 6p     | Radial      | -    | -  | -  | -  | -    |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| MS 10p    | Radial      | -    | -  | -  | -  | -    |
|           | Axial Ø58   | 43.9 | -  | -  | -  | -    |
|           | Axial Ø68   | 44.7 | -  | -  | -  | -    |
| M12 8p    | Radial      | 29.4 | 38 | 27 | 27 | 9.5  |
|           | Axial       | 38.9 | -  | -  | -  | -    |

## Flanges

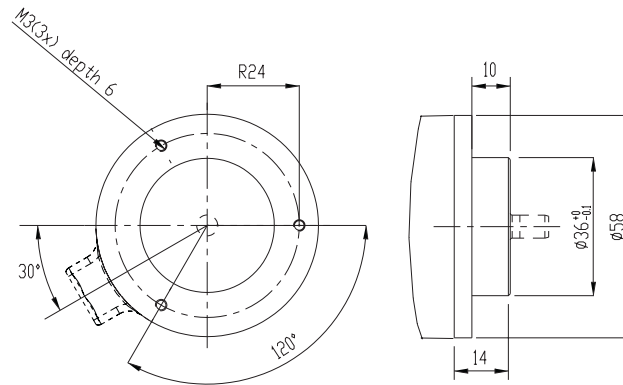
### 51, LL58



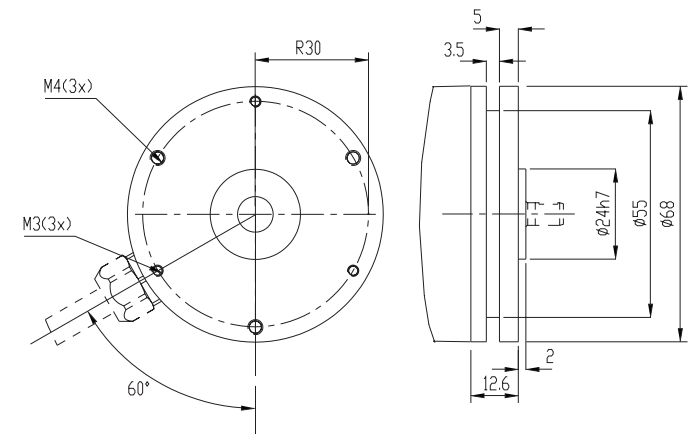
### 63, Synchro



### 61, Clamping

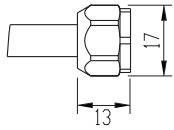


### 52, LL68

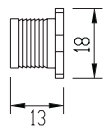


## Connectors

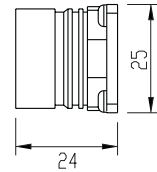
**Cable**  
5x2x0,25 shielded



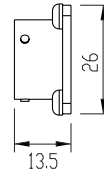
**8pin M12**



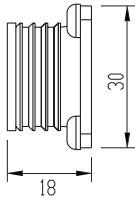
**12pin EML**



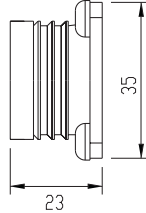
**8pin PT**



**6pin MS**

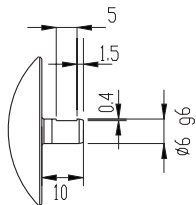


**10pin MS**

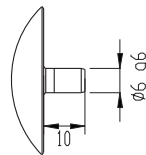


## Shafts

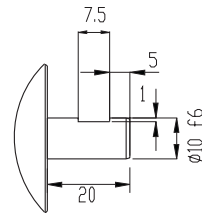
**6 mm with face**



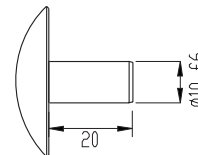
**6 mm round**



**10 mm with face**



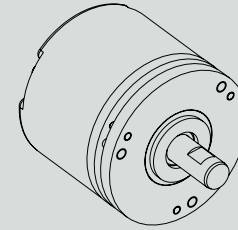
**10 mm round**



## Various combinations/examples

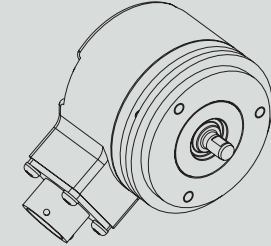
**RSI 503 51**

10 mm with face, axial cable



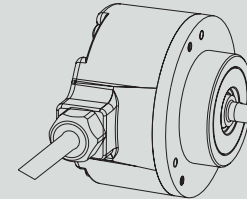
**RSI 503 63**

6 mm with face, radial PT



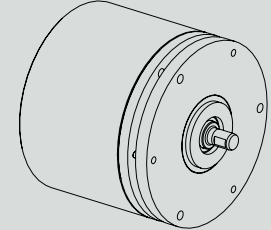
**RSI 503 61**

6 mm round, radial cable



**RSI 503 52**

6 mm with face, radial cable



## Ordering information Tick your choice

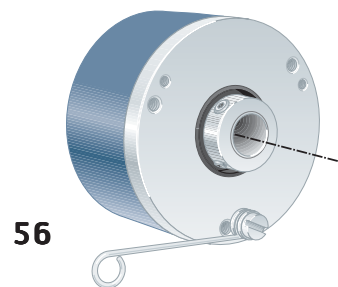
| Type                       | RSI 503                    |   |   |                            |                    |                           |
|----------------------------|----------------------------|---|---|----------------------------|--------------------|---------------------------|
| Flange                     | 51, LL58                   | 63, Synchro                             | 61, Clamping                            | 52, LL68                   |                    |                           |
| Shaft                      | $\varnothing 6$ round      | $\varnothing 6$ with face               | $\varnothing 10$ round                  | $\varnothing 10$ with face |                    |                           |
| Electronics <sup>(1)</sup> | Supply                     | 5Vdc                                    | 9-30Vdc                                 |                            |                    |                           |
|                            | Output                     | TTL                                     | HTL                                     | RS-422                     |                    |                           |
| Connection                 | Cable                      | 8 pin M12                               | 12 pin EML                              | 8 pin PT                   | 6 pin MS           | 10 pin MS                 |
| Connecting direction       | Axial <sup>2</sup> /Radial | Axial <sup>2</sup> /Radial <sup>2</sup> | Axial <sup>2</sup> /Radial <sup>2</sup> | Axial/Radial <sup>2</sup>  | Axial <sup>2</sup> | Axial/Radial <sup>2</sup> |
| Line count                 | 1..5000                    | 5001..10 000                            |   |                            |                    |                           |

<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

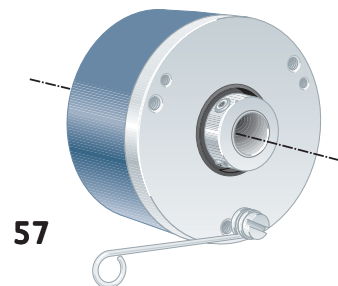
<sup>(2)</sup> Not available on flange option -52, LL68

**Please, specify line count and cable length when ordering**

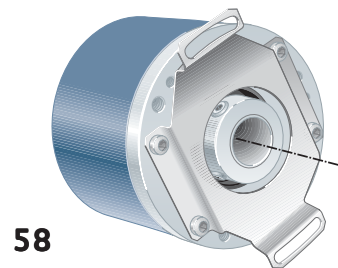
Ordering example: RSI 503 63  $\varnothing 6$ ro 5Vdc 1024ppr TTL 8 pin PT Axial



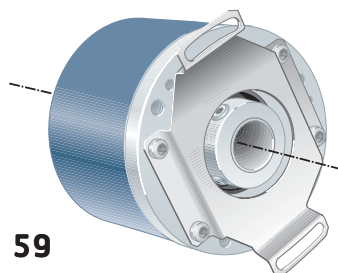
56



57



58



59

## Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> High temperature applications

## General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RHI 504  |                  |
| Operating temperature    | -20°C .. +100°C  |                  |
| Storage temperature      | -20°C .. +80°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

## Flange option

| Flange type       | 56, hollow-shaft | 57, hollow-shaft | 58, hollow-shaft | 59, hollow-shaft |
|-------------------|------------------|------------------|------------------|------------------|
| Type              | Standard         | Through going    | Standard         | Through going    |
| Diameter          | ø58mm            | ø58mm            | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         | Anodized         | Anodized         |
| Torque support    | Torque arm       | Torque arm       | Stator coupling  | Stator coupling  |

## Shaft option

| Hollow-shaft type       | Ø8 mm                                   | Ø10 mm                                  | Ø12 mm                                  | Ø14 mm                                  |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

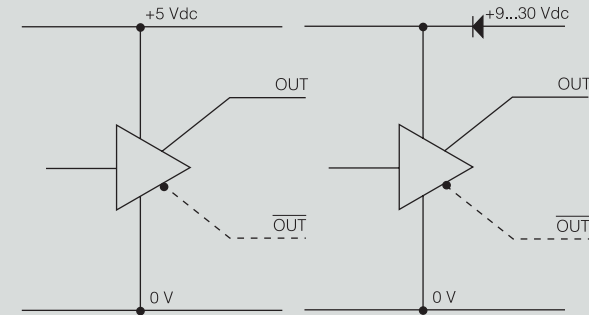
| Connector type                                       | Cable  | 8 pin M12 | 12 pin EML | 8 pin PT | 6 pin MS |
|--|--------|-----------|------------|----------|----------|
| Function   | Colour | PIN       | PIN        | PIN      | PIN      |
| S00  | Yellow | 4         | 5          | D        | D        |
| S00 inverted   | Black  | 5         | 6          | C        | C        |
| S90  | Green  | 3         | 8          | A        | A        |
| S90 inverted   | White  | 1         | 1          | B        | B        |
| Sref   | Brown  | 2         | 3          | G        | NA       |
| Sref inverted  | Violet | 6         | 4          | H        | NA       |
| +E Volt  | Red    | 8         | 12         | E        | E        |
| 0 Volt   | Blue   | 7         | 10         | F        | F        |
| STATUS   | Grey   | NA        | 7          | NA       | NA       |
| Housing  | Shield | Chassis   | Chassis    | Chassis  | Chassis  |
| <b>Connecting direction (flange option -56, -58)</b> |        |           |            |          |          |
| Axial  | Yes    | Yes       | Yes        | Yes      | Yes      |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       |
| <b>Connecting direction (flange option -57, -59)</b> |        |           |            |          |          |
| Axial  | No     | No        | No         | No       | No       |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       |

### Electrical option

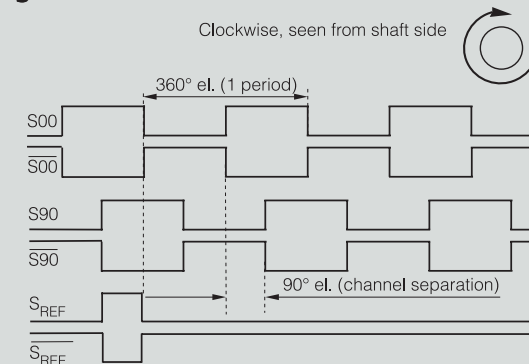
| Power supply                   | 5 V ±10%         | 9-30 V          |                      |
|--------------------------------|------------------|-----------------|----------------------|
| Polarity protected             | No               | Yes             |                      |
| Output signals                 | TTL <sup>1</sup> | HTL             | RS-422               |
| Short circuit protected        | Yes              | Yes             | Yes                  |
| Current consumption            | 45 mA            | 50 mA at 24Vdc  | 25 mA at 24Vdc       |
| Max consumption                | 75 mA            | 75 mA           | 40 mA                |
| Output load (max)              | ±20 mA           | ±40 mA          | ±20 mA               |
| Output frequency (max)         | 300 kHz          | 300 kHz         | 300 kHz              |
| U <sub>high</sub> at 10mA load | > 3.0 V          | > +EV - 2.0 V   | > 3.0 V              |
| U <sub>low</sub> at 10mA load  | < 0.4 V          | < 1.15 V        | < 0.4 V              |
| Cable length (max)             | 50 m             | 200 m @ 50 kHz  | 1 km (TIA/EIA-422-B) |
| STATUS output                  | Yes              | Yes             | Yes                  |
| High level                     | Encoder OK       | Encoder OK      | Encoder OK           |
| Low level                      | Warning/Failure  | Warning/Failure | Warning/Failure      |

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

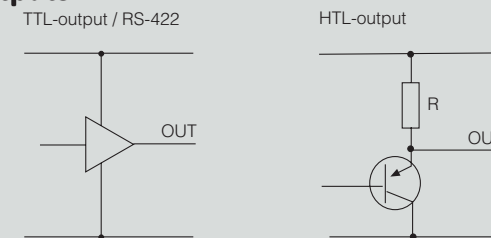
### Output circuit



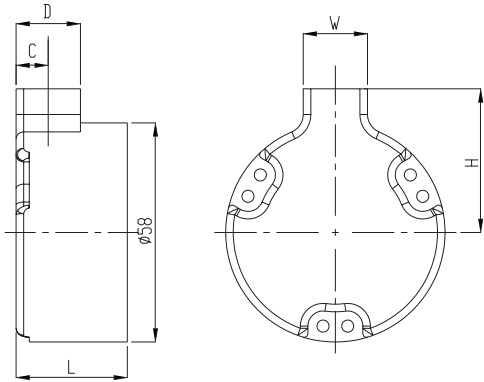
### Output signals



### Status outputs

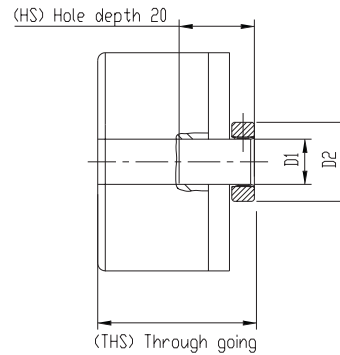


## Dimensions



| Connector | Orientation             | L    | H  | W  | D  | C    |
|-----------|-------------------------|------|----|----|----|------|
| Cable     | Radial $\varnothing 58$ | 29.4 | 34 | 17 | 17 | 8.5  |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| EML       | Radial                  | 29.4 | 32 | 27 | 27 | 13.5 |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| PT 8p     | Radial                  | 29.4 | 41 | 27 | 27 | 13.5 |
|           | Axial $\varnothing 58$  | 38.9 | -  | -  | -  | -    |
| MS 6p     | Radial                  | -    | -  | -  | -  | -    |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| M12 8p    | Radial                  | 29.4 | 38 | 27 | 27 | 9.5  |
|           | Axial                   | 38.9 | -  | -  | -  | -    |

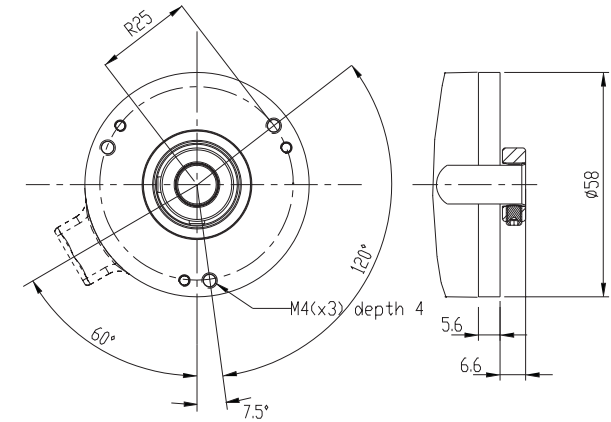
## Shafts



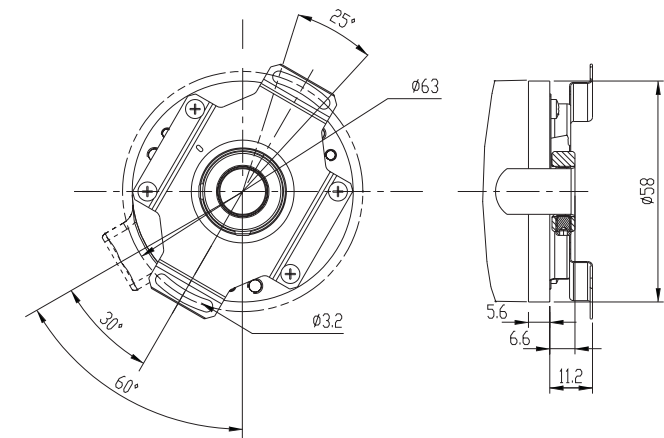
|                           | D1                  | D2               |
|---------------------------|---------------------|------------------|
| $\varnothing 8\text{mm}$  | $\varnothing 8$ G7  | $\varnothing 19$ |
| $\varnothing 10\text{mm}$ | $\varnothing 10$ G7 | $\varnothing 19$ |
| $\varnothing 12\text{mm}$ | $\varnothing 12$ G7 | $\varnothing 21$ |
| $\varnothing 14\text{mm}$ | $\varnothing 14$ G7 | $\varnothing 23$ |

## Flanges

### 56 and 57



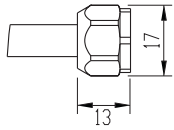
### 58 and 59



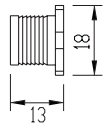


## Connectors

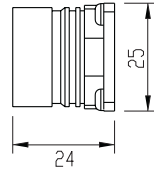
### Cable 5x2x0,25 shielded



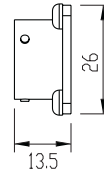
### 8pin M12



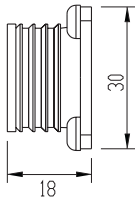
### 12pin EML



### 8pin PT

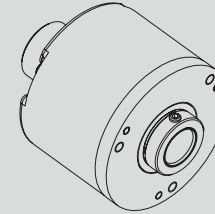


### 6pin MS

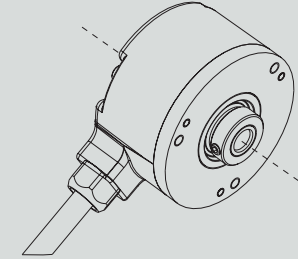


## Various combinations/examples

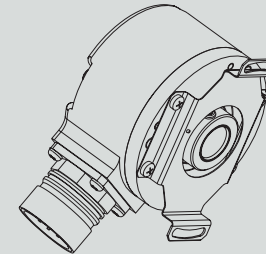
RHI 503 56 12 mm, axial MS



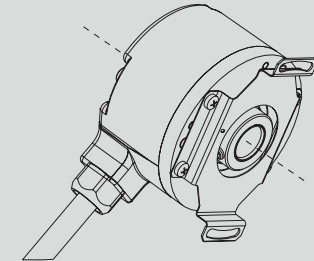
RHI 503 57 8 mm, radial cable



RHI 503 58 10 mm, radial EML



RHI 503 59 10 mm, radial cable



## Ordering information Tick your choice

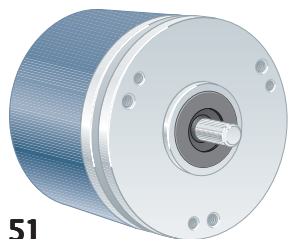
| Type                       | RHI 504 |              |              |              |          |
|----------------------------|---------|--------------|--------------|--------------|----------|
| Flange                     | 56, HS  | 57, THS      | 58, HS       | 59, THS      |          |
| Shaft                      | Ø8mm    | Ø10mm        | Ø12mm        | Ø14mm        |          |
| Electronics <sup>(1)</sup> | Supply  | 5Vdc         |              |              |          |
|                            | Output  | TTL          | HTL          | RS-422       |          |
| Connection                 | Cable   | 8 pin M12    | 12 pin EML   | 8 pin PT     | 6 pin MS |
| Connecting direction       | HS      | Axial/Radial | Axial/Radial | Axial/Radial | Axial    |
|                            | THS     | Radial       | Radial       | Radial       | Radial   |
| Line count                 | 1..5000 | 5001..10 000 |              |              |          |

<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

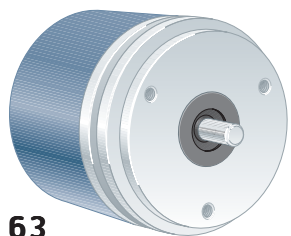
HS Hollow-shaft THS Through going hollow-shaft

**Please, specify line count and cable length when ordering**

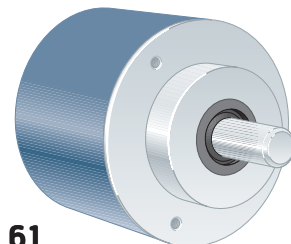
Ordering example: RHI 504 58 Ø10 5Vdc 1024ppr TTL 12 pin EML Radial



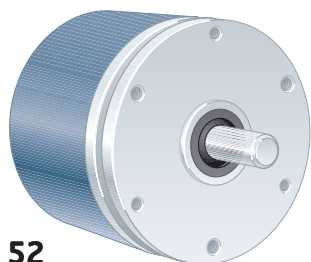
51



63



61



52

## Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> High temperature applications

## General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RSI 504  |                  |
| Operating temperature    | -20°C .. +100°C  |                  |
| Storage temperature      | -20°C .. +80°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

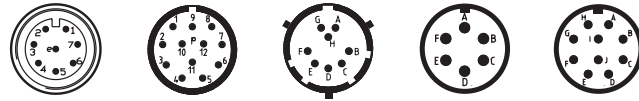
## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø6 round                                | Ø6 with face                            | Ø10 round                               | Ø10 with face                           |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

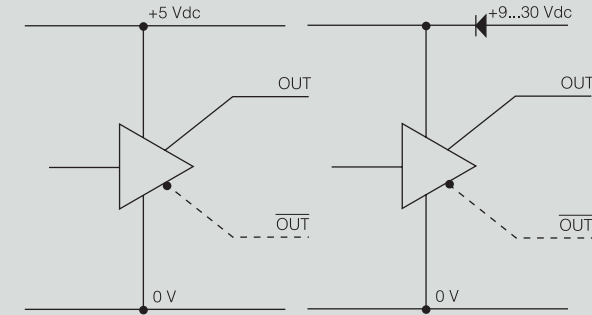
| Connector type   | Cable  | 8 pin M12 | 12 pin EML | 8 pin PT | 6 pin MS | 10 pin MS |
|--|--------|-----------|------------|----------|----------|-----------|
| Function   | Colour | PIN       | PIN        | PIN      | PIN      | PIN       |
| S00  | Yellow | 4         | 5          | D        | D        | D         |
| S00 inverted   | Black  | 5         | 6          | C        | C        | C         |
| S90  | Green  | 3         | 8          | A        | A        | A         |
| S90 inverted   | White  | 1         | 1          | B        | B        | B         |
| Sref   | Brown  | 2         | 3          | G        | NA       | G         |
| Sref inverted  | Violet | 6         | 4          | H        | NA       | H         |
| +E Volt  | Red    | 8         | 12         | E        | E        | E         |
| 0 Volt   | Blue   | 7         | 10         | F        | F        | F         |
| STATUS   | Grey   | NA        | 7          | NA       | NA       | I         |
| Case   | Shield | Chassis   | Chassis    | Chassis  | Chassis  | Chassis   |
| <b>Connecting direction (available on flange option -51, -63, -61)</b> |        |           |            |          |          |           |
| Axial  | Yes    | Yes       | Yes        | Yes      | Yes      | Yes       |
| Radial   | Yes    | Yes       | Yes        | Yes      | No       | Yes       |
| <b>Connecting direction (available on flange option -52)</b>           |        |           |            |          |          |           |
| Axial  | No     | No        | No         | Yes      | No       | Yes       |
| Radial   | Yes    | No        | No         | No       | No       | No        |

### Electrical option

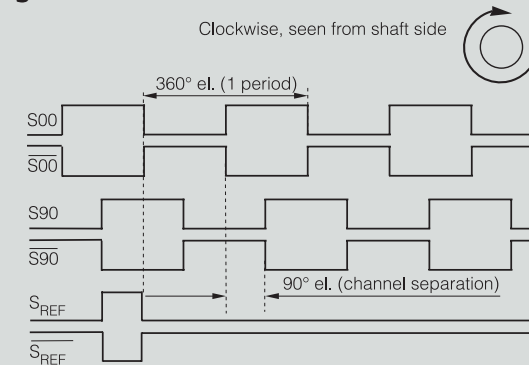
| Power supply                   | 5 V ±10%         | 9-30 V          |                      |
|--------------------------------|------------------|-----------------|----------------------|
| Polarity protected             | No               | Yes             |                      |
| Output signals                 | TTL <sup>1</sup> | HTL             | RS-422               |
| Short circuit protected        | Yes              | Yes             | Yes                  |
| Current consumption            | 45 mA            | 50 mA at 24Vdc  | 25 mA at 24Vdc       |
| Max consumption                | 75 mA            | 75 mA           | 40 mA                |
| Output load (max)              | ±20 mA           | ±40 mA          | ±20 mA               |
| Output frequency (max)         | 300 kHz          | 300 kHz         | 300 kHz              |
| U <sub>high</sub> at 10mA load | > 3.0 V          | > +EV - 2.0 V   | > 3.0 V              |
| U <sub>low</sub> at 10mA load  | < 0.4 V          | < 1.15 V        | < 0.4 V              |
| Cable length (max)             | 50 m             | 200 m @ 50 kHz  | 1 km (TIA/EIA-422-B) |
| STATUS output                  | Yes              | Yes             | Yes                  |
| High level                     | Encoder OK       | Encoder OK      | Encoder OK           |
| Low level                      | Warning/Failure  | Warning/Failure | Warning/Failure      |

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

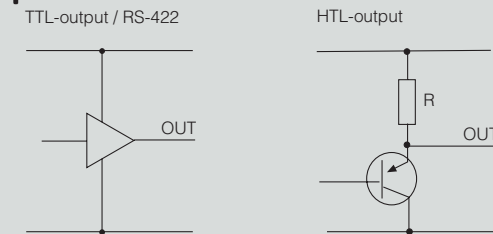
### Output circuit



### Output signals

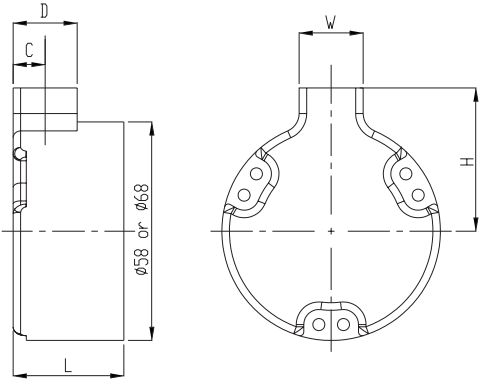


### Status outputs





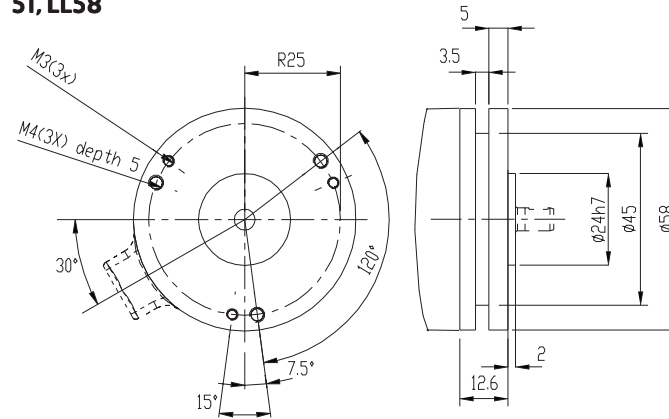
## Dimensions



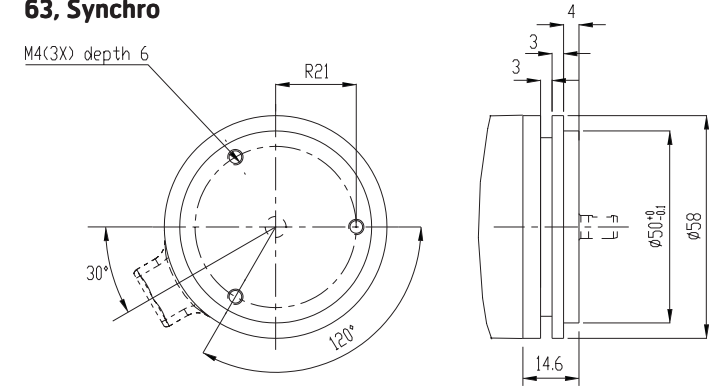
| Connector | Orientation             | L    | H  | W  | D  | C    |
|-----------|-------------------------|------|----|----|----|------|
| Cable     | Radial $\varnothing 58$ | 29.4 | 34 | 17 | 17 | 8.5  |
|           | Radial $\varnothing 68$ | 44.7 | 34 | 0  | 0  | 14   |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| EML       | Radial                  | 29.4 | 32 | 27 | 27 | 13.5 |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| PT 8p     | Radial                  | 29.4 | 41 | 27 | 27 | 13.5 |
|           | Axial $\varnothing 58$  | 38.9 | -  | -  | -  | -    |
|           | Axial $\varnothing 68$  | 44.7 | -  | -  | -  | -    |
| MS 6p     | Radial                  | -    | -  | -  | -  | -    |
|           | Axial                   | 38.9 | -  | -  | -  | -    |
| MS 10p    | Radial                  | -    | -  | -  | -  | -    |
|           | Axial $\varnothing 58$  | 43.9 | -  | -  | -  | -    |
|           | Axial $\varnothing 68$  | 44.7 | -  | -  | -  | -    |
| M12 8p    | Radial                  | 29.4 | 38 | 27 | 27 | 9.5  |
|           | Axial                   | 38.9 | -  | -  | -  | -    |

## Flanges

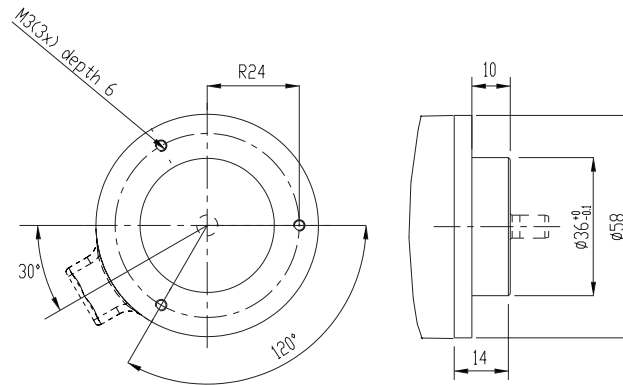
### 51, LL58



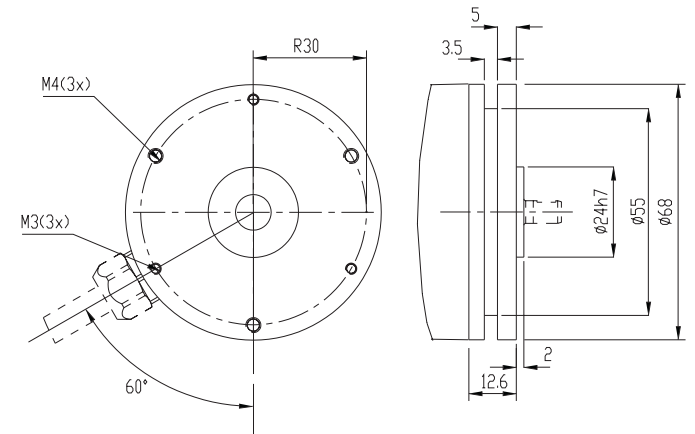
### 63, Synchro



### 61, Clamping



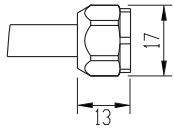
### 52, LL68



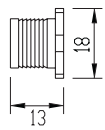


## Connectors

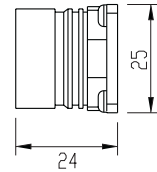
**Cable**  
5x2x0,25 shielded



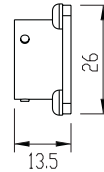
**8pin M12**



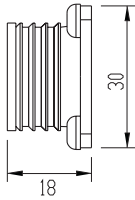
**12pin EML**



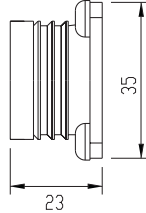
**8pin PT**



**6pin MS**

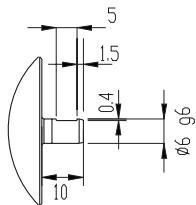


**10pin MS**

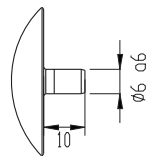


## Shafts

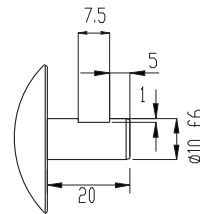
**6 mm with face**



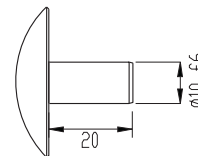
**6 mm round**



**10 mm with face**



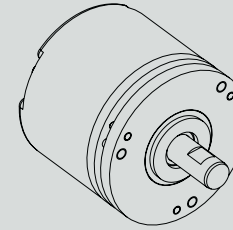
**10 mm round**



## Various combinations/examples

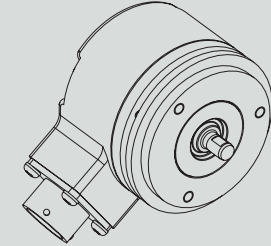
**RSI 504 51**

10 mm with face, axial cable



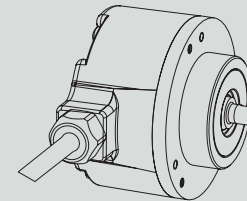
**RSI 504 63**

6 mm with face, radial PT



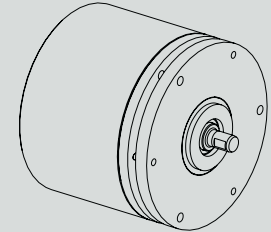
**RSI 504 61**

6 mm round, radial cable



**RSI 504 52**

6 mm with face, radial cable



## Ordering information Tick your choice

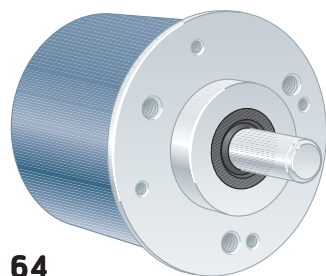
| Type                       | RSI 504                    |   |   |                           |                    |                           |
|----------------------------|----------------------------|---|---|---------------------------|--------------------|---------------------------|
| Flange                     | 51, LL58                   | 63, Synchro                             | 61, Clamping                            | 52, LL68                  |                    |                           |
| Shaft                      | Ø6 round                   | Ø6 with face                            | Ø10 round                               | Ø10 with face             |                    |                           |
| Electronics <sup>(1)</sup> | Supply                     | 5Vdc                                    | 9-30Vdc                                 |                           |                    |                           |
|                            | Output                     | TTL                                     | HTL                                     | RS-422                    |                    |                           |
| Connection                 | Cable                      | 8 pin M12                               | 12 pin EML                              | 8 pin PT                  | 6 pin MS           | 10 pin MS                 |
| Connecting direction       | Axial <sup>2</sup> /Radial | Axial <sup>2</sup> /Radial <sup>2</sup> | Axial <sup>2</sup> /Radial <sup>2</sup> | Axial/Radial <sup>2</sup> | Axial <sup>2</sup> | Axial/Radial <sup>2</sup> |
| Line count                 | 1..5000                    | 5001..10 000                            |   |                           |                    |                           |

<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

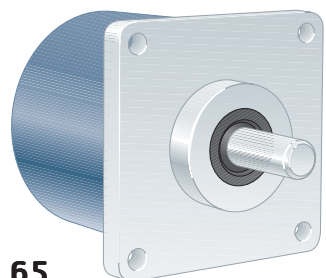
<sup>(2)</sup> Not available on flange option -52, LL68

**Please, specify line count and cable length when ordering**

Ordering example: RSI 504 63 Ø6ro 5Vdc 1024ppr TTL 8 pin PT Axial



64



65

## Short description:

- >> 6 short-circuit protected outputs
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 5 Vdc or 9...30 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected
- >> Imperial measurements 2,5" flanges and 3/8" shaft

## Suitable applications:

- >> Standard to demanding industrial applications

## General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RSI 505  |                  |
| Operating temperature    | -40°C .. +70°C   |                  |
| Storage temperature      | -30°C .. +70°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

## Flange option

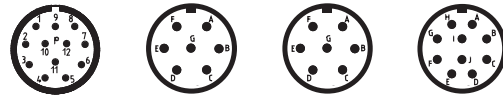
| Flange type       | 64, Round                     | 65, Square     |
|-------------------|-------------------------------|----------------|
| Outer geometry    | ∅2,5" (63.5mm)                | □2,5" (63.5mm) |
| Mounting holes    | 3 x UNF 10x32<br>4 x UNC 4x40 | 4 x 5.2mm      |
| Flange material   | Aluminium                     | Aluminium      |
| Surface treatment | Anodized                      | Anodized       |

## Shaft option

| Shaft type              | ∅8 round                                | ∅3/8" (9.52) round                      | ∅10 with face                           |
|-------------------------|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors





### Connection option

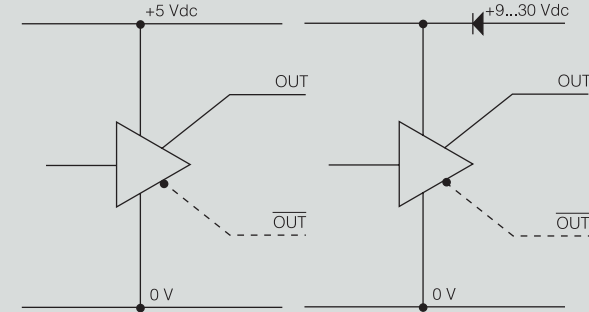
| Connector type | Cable  | 12 pin EML | 7 pin MS | 7 pin MS sp | 10 pin MS |
|----------------|--------|------------|----------|-------------|-----------|
| Function       | Colour | PIN        | PIN      | PIN         | PIN       |
| S00            | Green  | 5          | A        | A           | A         |
| S00 inverted   | Blue   | 6          | NA       | C           | G         |
| S90            | Yellow | 8          | B        | B           | B         |
| S90 inverted   | Black  | 1          | NA       | E           | H         |
| Sref           | Red    | 3          | C        | NA          | C         |
| Sref inverted  | Brown  | 4          | NA       | NA          | I         |
| +E Volt        | Violet | 12         | D        | D           | D         |
| 0 Volt         | White  | 10         | F        | F           | F         |
| STATUS         | Gray   | 7          | NA       | NA          | NA        |
| Sensor +E Volt | NA     | NA         | NA       | NA          | E         |
| Case           | Shield | Chassis    | Chassis  | Chassis     | Chassis   |

### Electrical option

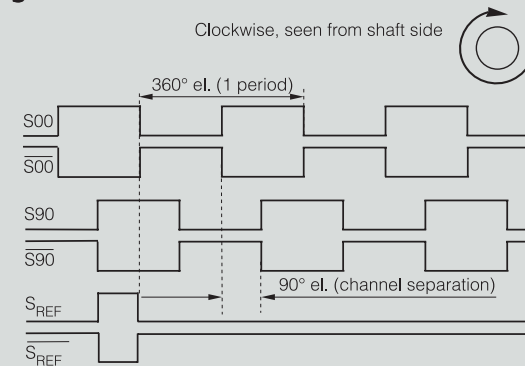
| Power supply                   | 5 V ±10%         | 9-30 V          |                      |
|--------------------------------|------------------|-----------------|----------------------|
| Polarity protected             | No               | Yes             |                      |
| Output signals                 | TTL <sup>1</sup> | HTL             | RS-422               |
| Short circuit protected        | Yes              | Yes             | Yes                  |
| Current consumption            | 45 mA            | 50 mA at 24Vdc  | 25 mA at 24Vdc       |
| Max consumption                | 75 mA            | 75 mA           | 40 mA                |
| Output load (max)              | ±20 mA           | ±40 mA          | ±20 mA               |
| Output frequency (max)         | 300 kHz          | 300 kHz         | 300 kHz              |
| U <sub>high</sub> at 10mA load | > 3.0 V          | > +EV - 2.0 V   | > 3.0 V              |
| U <sub>low</sub> at 10mA load  | < 0.4 V          | < 1.15 V        | < 0.4 V              |
| Cable length (max)             | 50 m             | 200 m @ 50 kHz  | 1 km (TIA/EIA-422-B) |
| STATUS output                  | Yes              | Yes             | Yes                  |
| High level                     | Encoder OK       | Encoder OK      | Encoder OK           |
| Low level                      | Warning/Failure  | Warning/Failure | Warning/Failure      |

<sup>1</sup>TTL output comply to the RS-422 standard when differential transmission is used NA=Not Available

### Output circuit

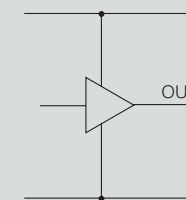


### Output signals

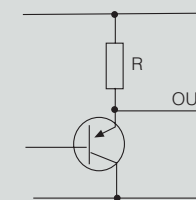


### Status outputs

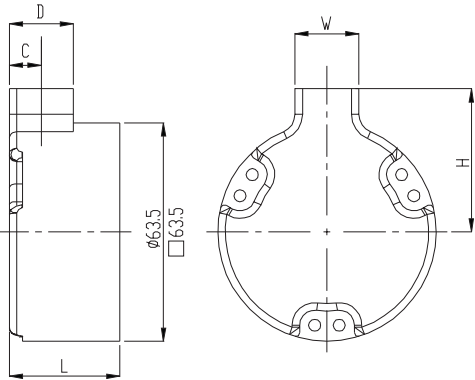
TTL-output / RS-422



HTL-output



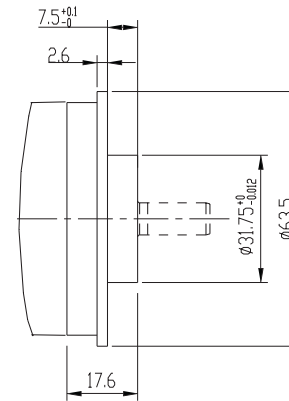
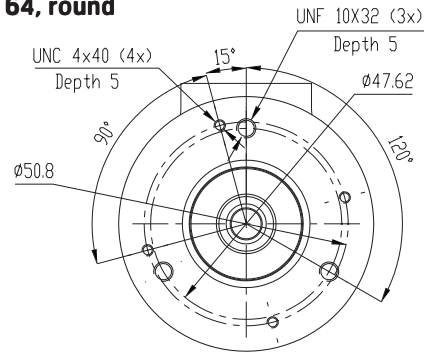
## Dimensions



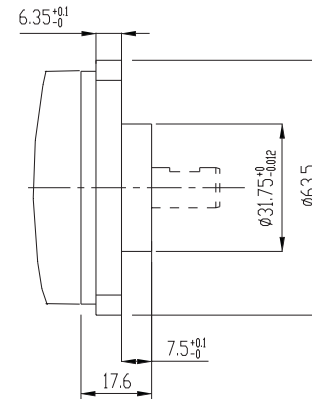
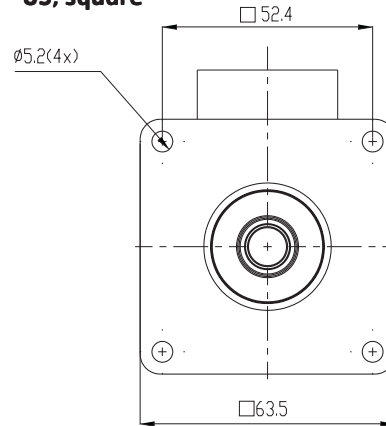
| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial      | 29.4 | 34 | 17 | 17 | 8.5  |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| EML       | Radial      | 29.4 | 32 | 27 | 27 | 13.5 |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| MS 7p     | Radial      | -    | -  | -  | -  | -    |
|           | Axial       | 38.9 | -  | -  | -  | -    |
| MS 10p    | Radial      | -    | -  | -  | -  | -    |
|           | Axial       | 43.9 | -  | -  | -  | -    |

## Flanges

### 64, round

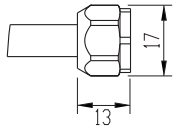


### 65, square

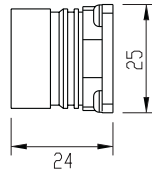


## Connectors

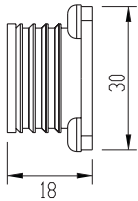
**Cable**  
5x2x0,25 shielded



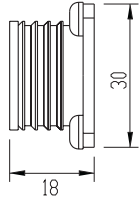
**12pin EML**



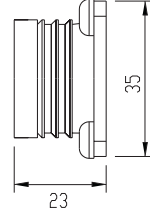
**7pin MS**



**7pin MS sp**

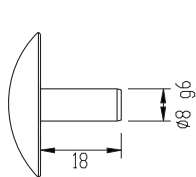


**10pin MS**

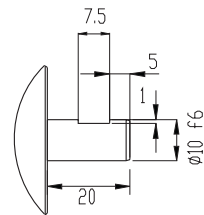
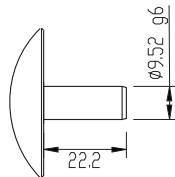


## Shafts

**8 mm round**



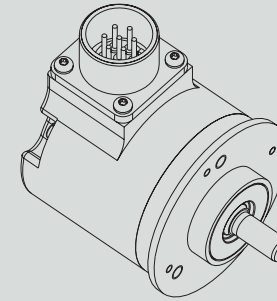
**3/8" (9.52 mm) round 10 mm with face**



## Various combinations/examples

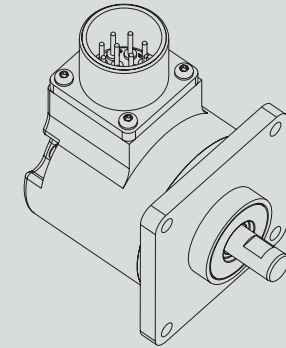
**RSI 505 64**

8 mm round, radial MS



**RSI 505 65**

10 mm with face, radial MS



## Ordering information Tick your choice

|                            |              |              |               |              |              |
|----------------------------|--------------|--------------|---------------|--------------|--------------|
| Type                       | RSI 505      |              |               |              |              |
| Flange                     | 64, Round    | 65, Square   |               |              |              |
| Shaft                      | Ø8 round     | Ø9.52 round  | Ø10 with face |              |              |
| Electronics <sup>(1)</sup> | Supply       | 5Vdc         |               | 9-30Vdc      |              |
|                            | Output       | TTL          | HTL           | RS-422       |              |
| Connection                 | Cable        | 12 pin EML   | 7 pin MS      | 7 pin MS sp  | 10 pin MS    |
| Connecting direction       | Axial/Radial | Axial/Radial | Axial/Radial  | Axial/Radial | Axial/Radial |
| Line count                 | 1..5000      | 5001..10 000 |               |              |              |

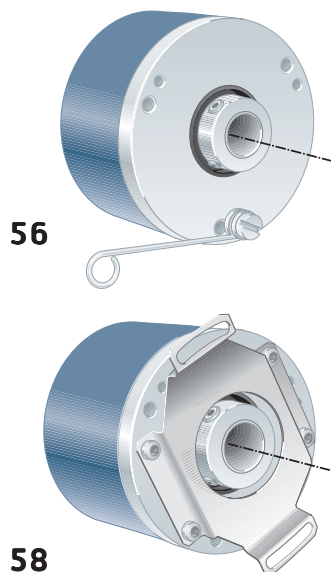
<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9-30Vdc/HTL or 9-30Vdc/RS-422

**Please, specify line count and cable length when ordering**

Ordering example: RSI 505 65 Ø8ro 5Vdc 1024ppr TTL 12 pin EML Axial

# 507 — Ruggedized Hollow shaft encoder, Absolute

BiLL



## Short description:

- >> 13 bit BiLL output
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 9...36 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RHA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution                            |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 56, hollow-shaft | 58, hollow-shaft |
|-------------------|------------------|------------------|
| Type              | Standard         | Standard         |
| Diameter          | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         |
| Torque support    | Torque arm       | Stator coupling  |

## Shaft option

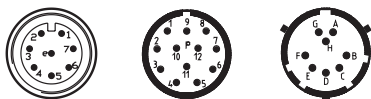
| Hollow-shaft type       | Ø 8 mm                                  | Ø 10 mm                                 | Ø 12 mm                                 | Ø 14 mm                                 |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



# 507 — Ruggedized Hollow shaft encoder, Absolute

BiLL



## Connection option

| Connector type       | Cable    | 8 pin M12 | 12 pin EML | 8 pin PT |
|----------------------|----------|-----------|------------|----------|
| Function             | Colour   | PIN       | PIN        | PIN      |
| Address Bit 0        | White    | 1         | 1          | A        |
| Address Bit 1        | Brown    | 2         | 2          | B        |
| Address Bit 2        | Grey     | 3         | 3          | C        |
| Address Bit 3        | Pink     | 4         | 4          | D        |
| Address 0V           | Blue/Red | NA        | 11         | NA       |
| RS485-B              | Green    | 5         | 8          | G        |
| RS485-A              | Yellow   | 6         | 9          | H        |
| 0V                   | Blue     | 7         | 10         | F        |
| +EV                  | Red      | 8         | 12         | E        |
| Housing              | Shield   | Chassis   | Chassis    | Chassis  |
| Connecting direction |          |           |            |          |
| Axial                | Yes      | Yes       | Yes        | Yes      |
| Radial               | Yes      | Yes       | Yes        | Yes      |

NA=Not available

## Electrical option

|                          |   |
|--------------------------|---|
| <b>Power supply</b>      | <b>9-36Vdc</b>                                  |
| Polarity protected       | Yes   |
| <b>Output interface</b>  | <b>RS-485 , BiLL</b>                            |
| Short circuit protected  | Yes   |
| Current consumption      | 100mA @ 24Vdc                                   |
| Max current consumpt.    | 150mA   |
| Physical interface       | RS-485  |
| Baud rate <sup>(1)</sup> | 4,8-38,4 kBit/s                                 |
| Node adress              | Hardware adjustable                             |
| Code type                | Binary  |
| Programmable parameters  | Direction, Offset, Preset<br>Scaling parameters |
| Position update freq.    | 1kHz  |
| Start up delay           | 1s  |

<sup>(1)</sup> Default baud rate 19,2 kBit/s

## Accessories

| Accessories                | Part number             |
|----------------------------|-------------------------|
| Mating connector 8 pin M12 | 00201081 <sup>(1)</sup> |
| 8 pin PT                   | 00201009 <sup>(1)</sup> |
| 12 pin EML                 | 01209090 <sup>(1)</sup> |
| Torque support M6          | 01209143 <sup>(2)</sup> |
| Torque arm M6              | 01208014 <sup>(3)</sup> |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Only for 56 flange.

<sup>(3)</sup> Length 70-1000mm available, specify when ordering.

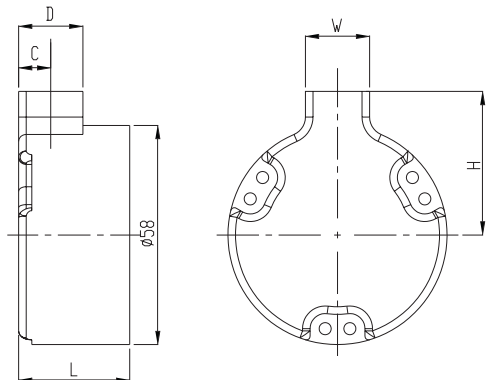
For additional accessories like assembled cables and torque arms please advise separate datasheets for accessories.

# 507 — Ruggedized Hollow shaft encoder, Absolute

BiLL



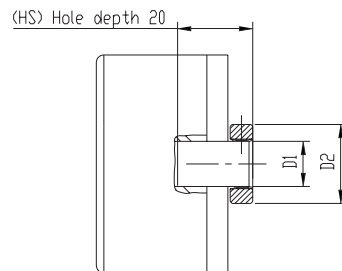
## Dimensions



| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial      | 29,4 | 34 | 17 | 17 | 8,5  |
|           | Axial       | 38,9 |    |    |    |      |
| EML       | Radial      | 29,4 | 32 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |
| 8p M12    | Radial      | 29,4 | 38 | 27 | 27 | 9,5  |
|           | Axial       | 38,9 |    |    |    |      |
| 8p PT     | Radial      | 29,4 | 41 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |

Note: For complete encoder dimension please add connector and flange dimensions.

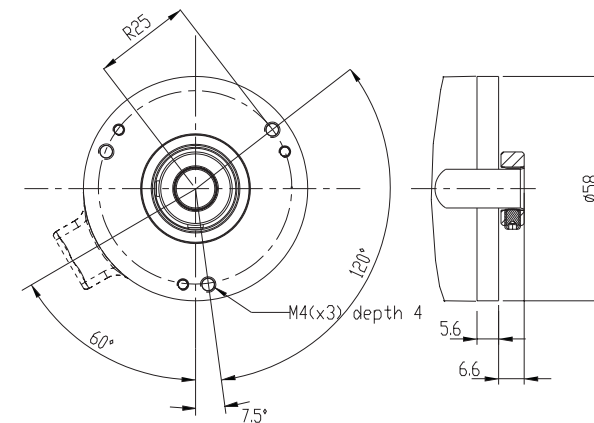
## Shafts



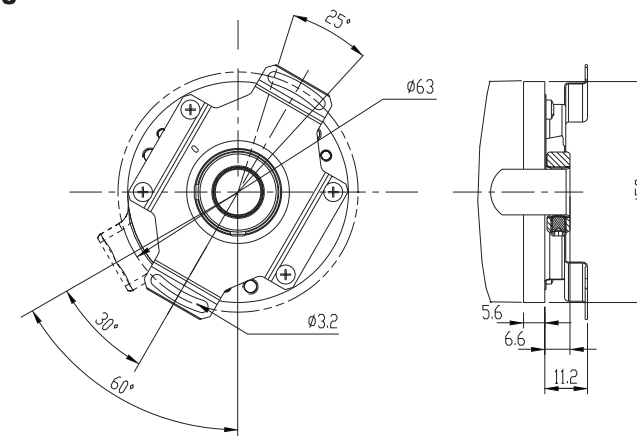
|       | D1     | D2  |
|-------|--------|-----|
| ø8mm  | ø8 G7  | ø19 |
| ø10mm | ø10 G7 | ø19 |
| ø12mm | ø12 G7 | ø21 |
| ø14mm | ø14 G7 | ø23 |

## Flanges

56



58

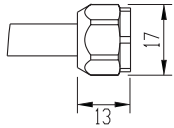




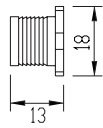


## Connectors

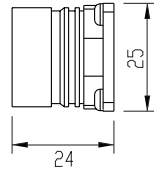
**Cable**  
16x0,25 shielded



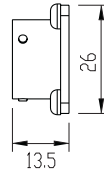
**8pin M12**



**12pin EML**

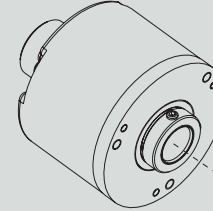


**8pin PT**

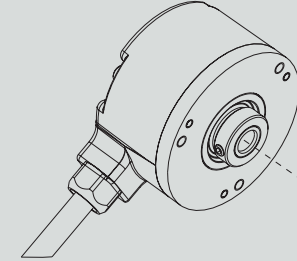


## Various combinations/examples

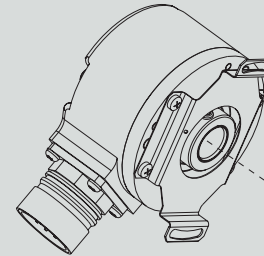
**RHA 507 56 12 mm , axial EML**



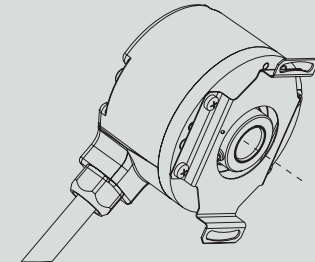
**RHA 507 56 8 mm , radial cable**



**RHA 507 58 10 mm , radial EML**



**RHA 507 58 10 mm , radial cable**

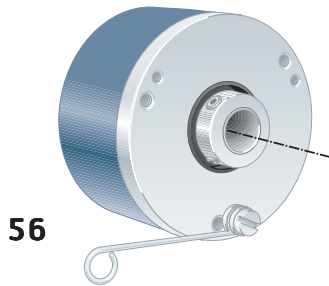


## Ordering information Tick your choice

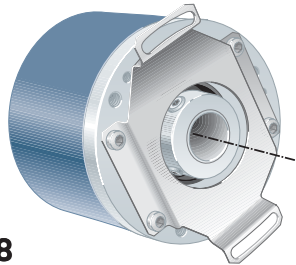
|                      |                      |              |              |              |
|----------------------|----------------------|--------------|--------------|--------------|
| Type                 | RHA 507              |              |              |              |
| Flange               | 56, HS               | 58, HS       |              |              |
| Shaft                | Ø8mm                 | Ø10mm        | Ø12mm        | Ø14mm        |
| Electronics          | Supply 9-36Vdc       |              |              |              |
|                      | Output SBB, BiLL     |              |              |              |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12    | 12 pin EML   | 8 pin PT     |
| Connecting direction | Axial/Radial         | Axial/Radial | Axial/Radial | Axial/Radial |
| Resolution           | 13 bit               |              |              |              |

<sup>(1)</sup> Note: Please specify cable length when ordering

Ordering example: RHA 507 56 ø10 9-36Vdc SBB 12 pin EML Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



56



58

## Short description:

- >> 13 bit CANopen output
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 9...36 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RHA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution                            |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 56, hollow-shaft | 58, hollow-shaft |
|-------------------|------------------|------------------|
| Type              | Standard         | Standard         |
| Diameter          | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         |
| Torque support    | Torque arm       | Stator coupling  |

## Shaft option

| Hollow-shaft type       | Ø 8 mm                                  | Ø 10 mm                                 | Ø 12 mm                                 | Ø 14 mm                                 |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



## Connection option

| Connector type       | Cable    | 8 pin M12 | 12 pin EML | 8 pin PT |
|----------------------|----------|-----------|------------|----------|
| Function             | Colour   | PIN       | PIN        | PIN      |
| Address Bit 0        | White    | 1         | 1          | A        |
| Address Bit 1        | Brown    | 2         | 2          | B        |
| Address Bit 2        | Grey     | 3         | 3          | C        |
| Address Bit 3        | Pink     | 4         | 4          | D        |
| Address 0V           | Blue/Red | NA        | 11         | NA       |
| CAN_H                | Green    | 5         | 8          | G        |
| CAN_L                | Yellow   | 6         | 9          | H        |
| 0V                   | Blue     | 7         | 10         | F        |
| +EV                  | Red      | 8         | 12         | E        |
| Housing              | Shield   | Chassis   | Chassis    | Chassis  |
| Connecting direction |          |           |            |          |
| Axial                | Yes      | Yes       | Yes        | Yes      |
| Radial               | Yes      | Yes       | Yes        | Yes      |

NA=Not available

## Electrical option

|                          |   |
|--------------------------|---|
| <b>Power supply</b>      | <b>9-36Vdc</b>                                      |
| Polarity protected       | Yes   |
| <b>Output interface</b>  | <b>CANopen</b>                                      |
| Short circuit protected  | Yes   |
| Current consumption      | 100mA @ 24Vdc                                       |
| Max current consumpt.    | 150mA   |
| Physical interface       | CAN according to ISO-11898                          |
| Supported profile        | Device profile for encoders<br>DS406 v2.0           |
| Baud rate <sup>(1)</sup> | Max. 1Mbit/s software adjustable                    |
| Node adress              | Hardware or software adjustable                     |
| Code type                | Binary  |
| Supported functions      | Code sequence, Preset, Scaling<br>and Node Guarding |
| Position update freq.    | 1kHz  |
| Start up delay           | 700ms   |

<sup>(1)</sup> Default baudrate 125 kBit/s

## Accessories

| Accessories                 | Part number             |
|-----------------------------|-------------------------|
| Configuration file EDS file | 619208-01               |
| Mating connector 8 pin M12  | 00201081 <sup>(1)</sup> |
| 8 pin PT                    | 00201009 <sup>(1)</sup> |
| 12 pin EML                  | 01209090 <sup>(1)</sup> |
| Torque support M6           | 01209143 <sup>(2)</sup> |
| Torque arm M6               | 01208014 <sup>(3)</sup> |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Only for 56 flange.

<sup>(3)</sup> Length 70-1000mm available, specify when ordering.

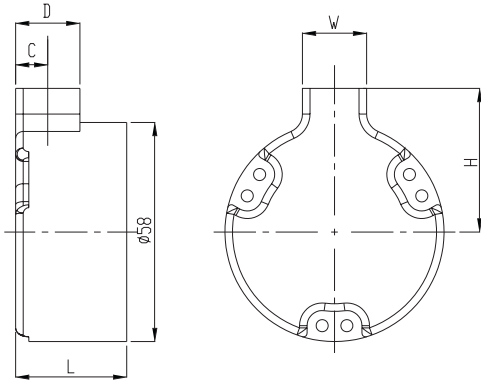
For additional accessories like assembled cables and torque arms please advise separate datasheets for accessories.

# 507 Ruggedized Hollow shaft encoder, Absolute

CANopen



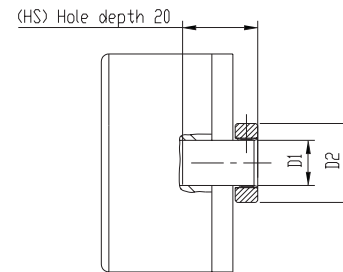
## Dimensions



| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial      | 29,4 | 34 | 17 | 17 | 8,5  |
|           | Axial       | 38,9 |    |    |    |      |
| EML       | Radial      | 29,4 | 32 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |
| 8p M12    | Radial      | 29,4 | 38 | 27 | 27 | 9,5  |
|           | Axial       | 38,9 |    |    |    |      |
| 8p PT     | Radial      | 29,4 | 41 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |

Note: For complete encoder dimension please add connector and flange dimensions.

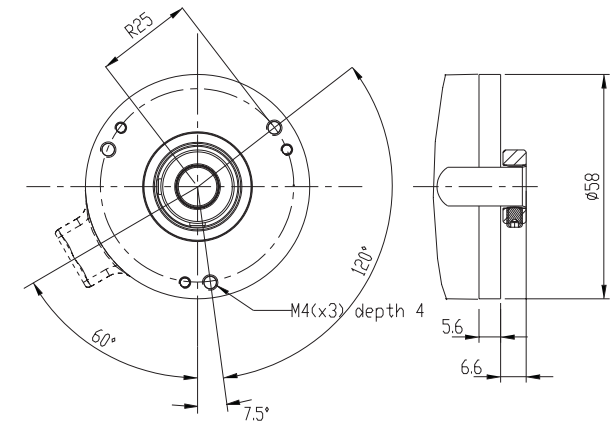
## Shafts



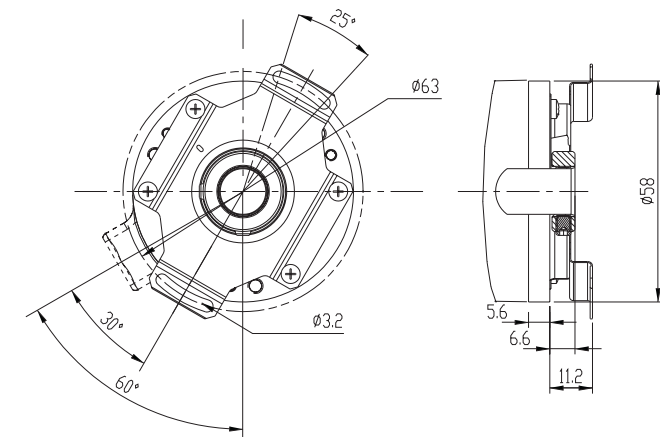
|       | D1     | D2  |
|-------|--------|-----|
| ø8mm  | ø8 G7  | ø19 |
| ø10mm | ø10 G7 | ø19 |
| ø12mm | ø12 G7 | ø21 |
| ø14mm | ø14 G7 | ø23 |

## Flanges

56



58

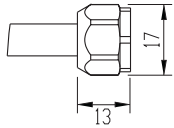


CANopen

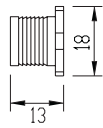


## Connectors

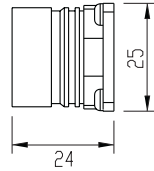
**Cable**  
12x0,25 shielded



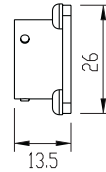
**8pin M12**



**12pin EML**

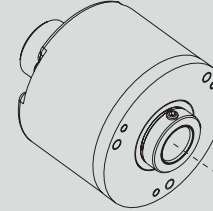


**8pin PT**

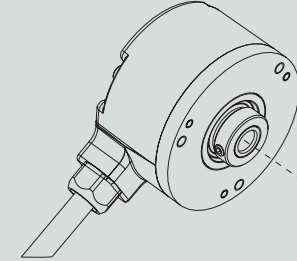


## Various combinations/examples

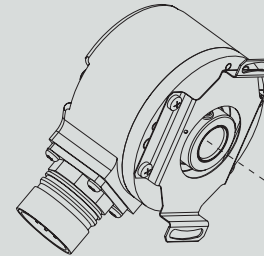
**RHA 507 56 12 mm , axial EML**



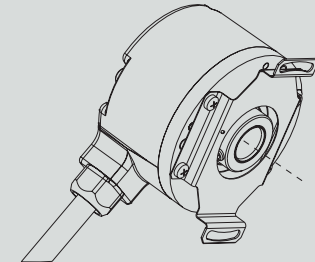
**RHA 507 56 8 mm , radial cable**



**RHA 507 58 10 mm , radial EML**



**RHA 507 58 10 mm , radial cable**

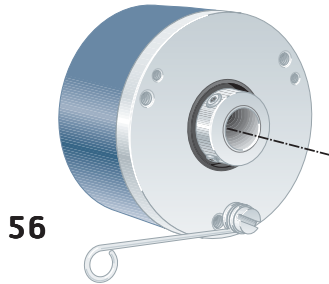


## Ordering information Tick your choice

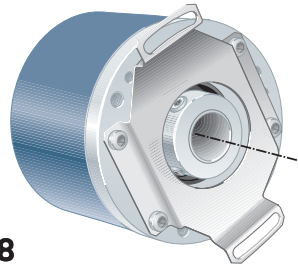
|                      |                      |              |              |              |
|----------------------|----------------------|--------------|--------------|--------------|
| Type                 | RHA 507              |              |              |              |
| Flange               | 56, HS               | 58, HS       |              |              |
| Shaft                | Ø8mm                 | Ø10mm        | Ø12mm        | Ø14mm        |
| Electronics          | Supply               | 9-36Vdc      |              |              |
|                      | Output               | SCO, CANopen |              |              |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12    | 12 pin EML   | 8 pin PT     |
| Connecting direction | Axial/Radial         | Axial/Radial | Axial/Radial | Axial/Radial |
| Resolution           | 13 bit               |              |              |              |

<sup>(1)</sup> Note: Please specify cable length when ordering

Ordering example: RHA 507 56 ø10 9-36Vdc SCO 8 pin M12 Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



56



58

## Short description:

- >> 13 bit Parallel output
- >> Binary or Gray coded
- >> 5 Vdc or 9...36 Vdc
- >> IP 67 at housing,  
IP 66 at shaft inlet
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RHA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | ≤ 13 Bit, 8192 positions per revolution                          |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 56, hollow-shaft | 58, hollow-shaft |
|-------------------|------------------|------------------|
| Type              | Standard         | Standard         |
| Diameter          | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         |
| Torque support    | Torque arm       | Stator coupling  |

## Shaft option

| Hollow-shaft type       | Ø 8 mm                                  | Ø 10 mm                                 | Ø 12 mm                                 | Ø 14 mm                                 |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors

# 507 — Ruggedized Hollow shaft encoder, Absolute

PARALLEL



## Connection option

| Connector type       | Cable        | 19 pin PT |
|----------------------|--------------|-----------|
| Function             | Colour       | PIN       |
| Bit 1 (LSB)          | Brown/Yellow | R         |
| Bit 2                | Brown/Green  | P         |
| Bit 3                | White/Green  | N         |
| Bit 4                | Blue/Red     | M         |
| Bit 5                | Grey/Pink    | L         |
| Bit 6                | Violet       | K         |
| Bit 7                | Black        | J         |
| Bit 8                | Pink         | H         |
| Bit 9                | Grey         | G         |
| Bit 10               | Yellow       | D         |
| Bit 11               | Green        | C         |
| Bit 12               | Brown        | B         |
| Bit 13 (MSB)         | White        | A         |
| Code sequence        | White/Yellow | V         |
| 0V                   | Blue         | F         |
| +EV                  | Red          | E         |
| Housing              | Shield       | Chassis   |
| Connecting direction |              |           |
| Axial                | Yes          | Yes       |
| Radial               | Yes          | No        |

Note: If 12 bit resolution is required the LSB shall not be connected

## Electrical option

| Power supply                   | 5Vdc ± 10%  | 9-36Vdc     |
|--------------------------------|---|-------------|
| Polarity protected             | No  | Yes         |
| Output interface               | Parallel  |             |
| Short circuit protected        | Yes   |             |
| Current consumption            | 100mA   | 50mA @24Vdc |
| Max current consumpt.          | 150mA   | 110mA       |
| Output load                    | ±20mA   | ±20mA       |
| Output frequency               | 0...200 kHz   |             |
| U <sub>high</sub> at 10mA load | > 3.0V  | > EV-3.0V   |
| U <sub>low</sub> at 10mA load  | < 0.4V  | < 0.5V      |
| Cable length (max)             | 10m   | 100m        |
| Code type                      | Binary or Gray  |             |
| Position update freq.          | 16MHz   |             |
| Start up delay                 | 25ms  |             |
| Input                          |   |             |
| Code sequence                  | If not connected or connected to 0V the position will increase when the shaft is turned clockwise.<br>If connected to a high logic level the position will increase while turned counter clockwise. |             |
| U <sub>high</sub>              | > 2V  | > EV x 0.6  |
| U <sub>low</sub>               | < 0.8V  | < EV x 0.25 |
| Delay                          | 75µs  |             |

## Accessories

| Accessories      |           | Part number             |
|------------------|-----------|-------------------------|
| Mating connector | 19 pin PT | 00201010 <sup>(1)</sup> |
| Torque support   | M6        | 01209143 <sup>(2)</sup> |
| Torque arm       | M6        | 01208014 <sup>(3)</sup> |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Only for 56 flange.

<sup>(3)</sup> Length 70-1000mm available, specify when ordering.

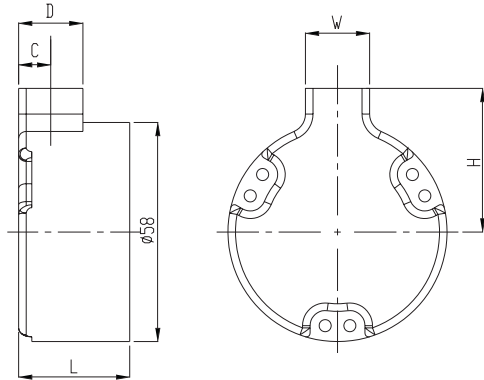
For additional accessories like assembled cables and torque arms please advise separate datasheets for accessories.

# 507 — Ruggedized Hollow shaft encoder, Absolute

PARALLEL



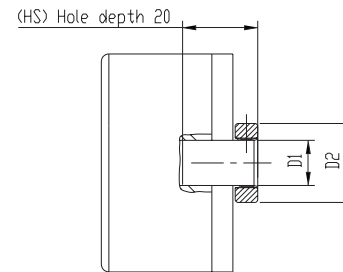
## Dimensions



| Connector | Orientation | L    | H    | W  | D  | C   |
|-----------|-------------|------|------|----|----|-----|
| Cable     | Radial      | 29,4 | 34   | 17 | 17 | 8,5 |
|           | Axial       | 38,9 |      |    |    |     |
| 19p PT    | Radial      | 48,4 | 31,5 | 30 | 30 | 15  |
|           | Axial       | 38,9 |      |    |    |     |

Note: For complete encoder dimension please add connector and flange dimensions.

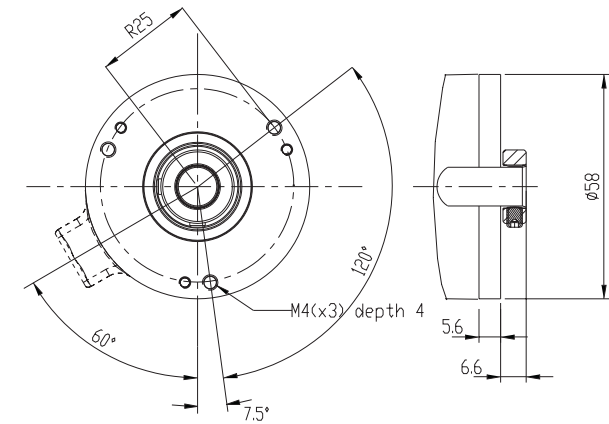
## Shafts



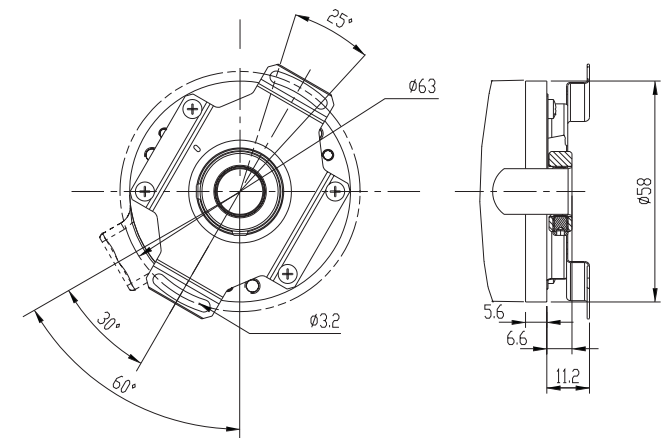
|       | D1     | D2  |
|-------|--------|-----|
| ø8mm  | ø8 G7  | ø19 |
| ø10mm | ø10 G7 | ø19 |
| ø12mm | ø12 G7 | ø21 |
| ø14mm | ø14 G7 | ø23 |

## Flanges

56



58





# 507

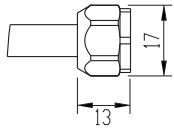
## Ruggedized Hollow shaft encoder, Absolute

PARALLEL

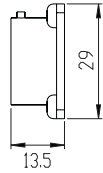


### Connectors

**Cable**  
16x0,25 shielded

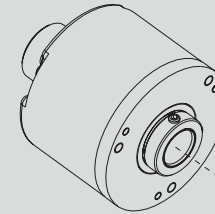


**19pin PT**

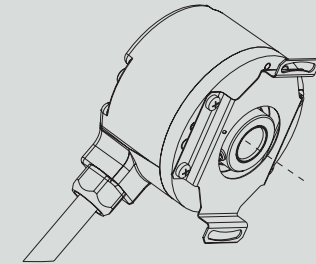


### Various combinations/examples

**RHA 507 56**  
12 mm , axial PT



**RHA 507 58**  
10 mm , radial cable



### Ordering information Tick your choice

|                      |                              |           |                          |       |
|----------------------|------------------------------|-----------|--------------------------|-------|
| Type                 | RHA 507                      |           |                          |       |
| Flange               | 56, HS                       | 58, HS    |                          |       |
| Shaft                | Ø8mm                         | Ø10mm     | Ø12mm                    | Ø14mm |
| Electronics          | Supply                       | 5 Vdc     | 9-36Vdc                  |       |
|                      | Output                       | PLG, Gray | PLB, Binary              |       |
| Connection           | Cable <sup>(1)</sup>         |           | 19 pin PT <sup>(2)</sup> |       |
| Connecting direction | Axial <sup>(2)</sup> /Radial |           | Axial                    |       |
| Resolution           | 13 bit                       |           |                          |       |

<sup>(1)</sup> Note: Please specify cable length when ordering

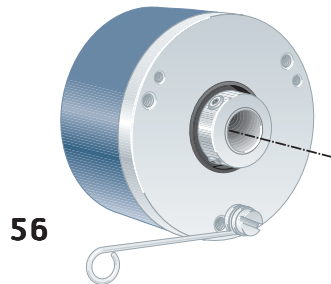
<sup>(2)</sup> Note: Not available on flange 52, LL68

Ordering example: RHA 507 56 ø10 9-36Vdc PLB Cable Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB

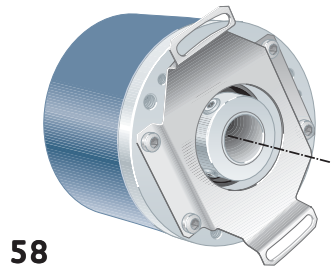
**LEINE LINDE** ISO 9001/ISO 14001 certified

Olivehällsvägen 8, SE-64542 Strängnäs, Sweden. Phone: +46 (0)152 26500. Fax: +46 (0)152 26505. E-mail: info@leinelinde.se

www.leinelinde.com



56



58

## Short description:

- >> 13 bit SSI output
- >> Binary or Gray coded
- >> 5 Vdc or 9...36 Vdc
- >> IP 67 at housing, IP 66 at shaft inlet
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RHA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution                            |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 56, hollow-shaft | 58, hollow-shaft |
|-------------------|------------------|------------------|
| Type              | Standard         | Standard         |
| Diameter          | ø58mm            | ø58mm            |
| Flange material   | Aluminium        | Aluminium        |
| Surface treatment | Anodized         | Anodized         |
| Torque support    | Torque arm       | Stator coupling  |

## Shaft option

| Hollow-shaft type       | Ø 8 mm                                  | Ø 10 mm                                 | Ø 12 mm                                 | Ø 14 mm                                 |
|-------------------------|---|---|---|---|
| Axial shaft load        | 10 N                                    | 10 N                                    | 10 N                                    | 10 N                                    |
| Radial shaft load       | 20 N                                    | 20 N                                    | 20 N                                    | 20 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type       | Cable  | 8pM12   | 17 pin EML | 8 pin PT |
|----------------------|--------|---------|------------|----------|
| Function             | Colour | PIN     | PIN        | PIN      |
| Clock +              | Yellow | 3       | 8          | A        |
| Clock -              | Green  | 4       | 9          | B        |
| Data +               | White  | 5       | 14         | C        |
| Data -               | Black  | 6       | 17         | D        |
| Code Sequence        | Violet | 8       | 2          | H        |
| Hold                 | Brown  | NA      | NA         | G        |
| 0V                   | Blue   | 1       | 10         | F        |
| +EV                  | Red    | 2       | 7          | E        |
| Housing              | Shield | Chassis | Chassis    | Chassis  |
| Connecting direction |        |         |            |          |
| Axial                | Yes    | Yes     | Yes        | Yes      |
| Radial               | Yes    | Yes     | Yes        | Yes      |

### Electrical option

| Power supply            | 5Vdc ±10%  | 9-36Vdc      |
|-------------------------|--|--------------|
| Polarity protected      | No   | Yes          |
| Output interface        | SSI  |              |
| Short circuit protected | Yes  |              |
| Current consumption     | 100mA  | 50mA @ 24Vdc |
| Max current consumpt.   | 150mA  | 110mA        |
| Output circuitry        | RS-422   |              |
| Output frequency        | 100kHz...1MHz  |              |
| Cable length (max)      | Frequency dependent  |              |
| Code type               | Binary or Gray   |              |
| Position update freq.   | 16MHz  |              |
| Start up delay          | 25ms   |              |
| Input 1 (Code sequence) |  |              |
| Code sequence           | If not connected or connected to 0V the position will increase when the shaft is turned clockwise.     |              |
| U <sub>high</sub>       | > 2V   | > EV x 0.6   |
| U <sub>low</sub>        | < 0.7V   | < EV x 0.25  |
| Delay                   | 75µs   |              |
| Input 2 (Hold)          |  |              |
| Hold                    | When connected to +EV or a logic high level will the position not be changed when the shaft is turned. |              |
| U <sub>high</sub>       | > 2V   | > EV x 0.6   |
| U <sub>low</sub>        | < 0.7V   | < EV x 0.25  |
| Delay                   | 75µs   |              |

### Accessories

| Accessories                | Part number             |
|----------------------------|-------------------------|
| Mating connector 8 pin M12 | 00201081 <sup>(1)</sup> |
| 8 pin PT                   | 00201009 <sup>(1)</sup> |
| 17 pin EML                 | 01209085 <sup>(1)</sup> |
| Torque support M6          | 01209143 <sup>(2)</sup> |
| Torque arm M6              | 01208014 <sup>(3)</sup> |

<sup>(1)</sup> Also available with assembled cable.

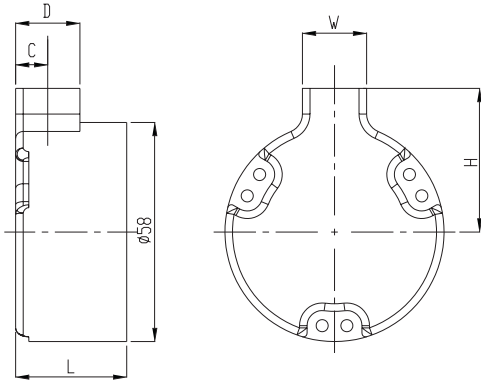
<sup>(2)</sup> Only for 56 flange.

<sup>(3)</sup> Length 70-1000mm available, specify when ordering.

For additional accessories like assembled cables and torque arms please advise separate datasheets for accessories.



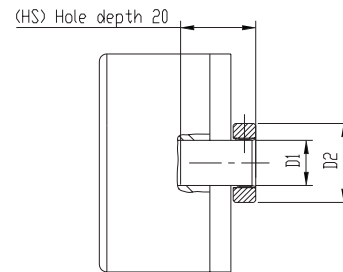
## Dimensions



| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial      | 29,4 | 34 | 17 | 17 | 8,5  |
|           | Axial       | 38,9 |    |    |    |      |
| EML       | Radial      | 29,4 | 32 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |
| 8p M12    | Radial      | 29,4 | 38 | 27 | 27 | 9,5  |
|           | Axial       | 38,9 |    |    |    |      |
| 8p PT     | Radial      | 29,4 | 41 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |

Note: For complete encoder dimension please add connector and flange dimensions.

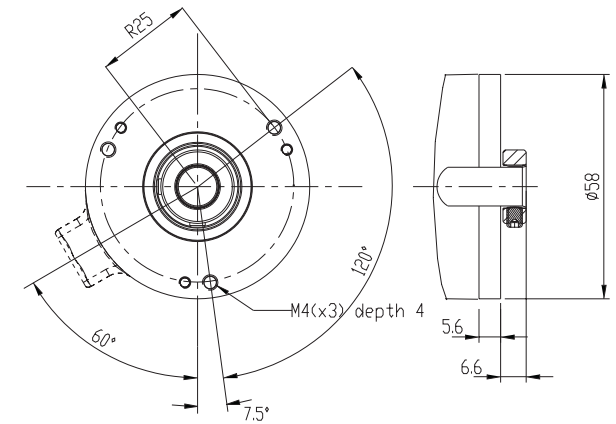
## Shafts



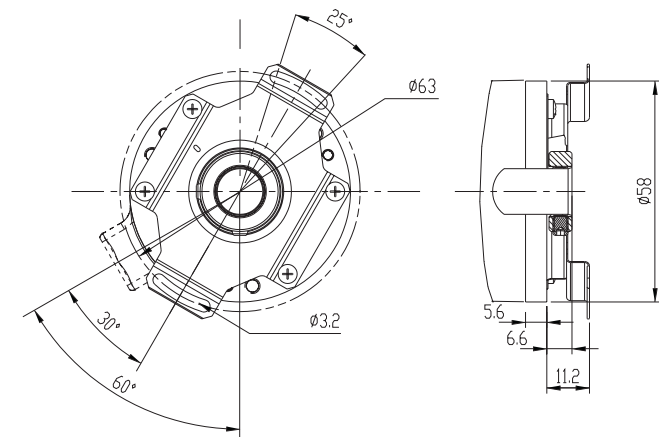
|       | D1     | D2  |
|-------|--------|-----|
| ø8mm  | ø8 G7  | ø19 |
| ø10mm | ø10 G7 | ø19 |
| ø12mm | ø12 G7 | ø21 |
| ø14mm | ø14 G7 | ø23 |

## Flanges

56



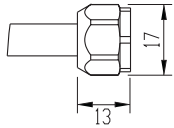
58



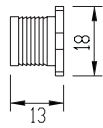


## Connectors

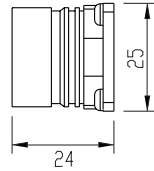
**Cable**  
16x0,25 shielded



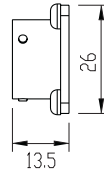
**8pin M12**



**17pin EML**

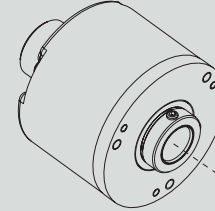


**8pin PT**

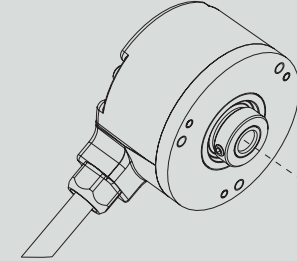


## Various combinations/examples

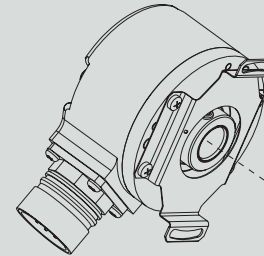
**RHA 507 56 12 mm , axial EML**



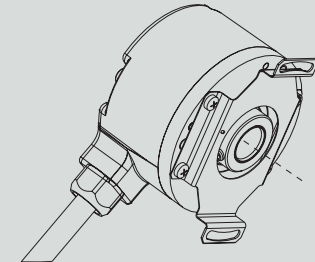
**RHA 507 56 8 mm , radial cable**



**RHA 507 58 10 mm , radial EML**



**RHA 507 58 10 mm , radial cable**

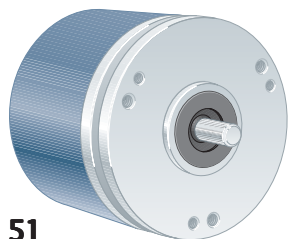


## Ordering information Tick your choice

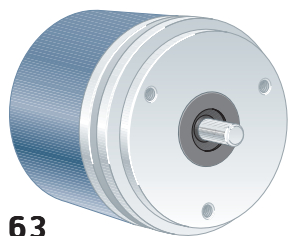
|                      |                      |              |              |              |
|----------------------|----------------------|--------------|--------------|--------------|
| Type                 | RHA 507              |              |              |              |
| Flange               | 56, HS               | 58, HS       |              |              |
| Shaft                | Ø8mm                 | Ø10mm        | Ø12mm        | Ø14mm        |
| Electronics          | Supply               | 5Vdc         | 9-36Vdc      |              |
|                      | Output               | SSG, Gray    | SSB, Binary  |              |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12    | 17 pin EML   | 8 pin PT     |
| Connecting direction | Axial/Radial         | Radial/Axial | Radial/Axial | Radial/Axial |
| Resolution           | 13 bit               |              |              |              |

<sup>(1)</sup> Note: Please specify cable length when ordering

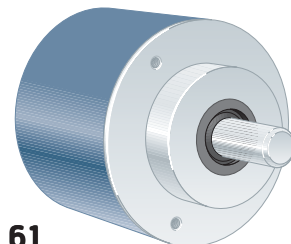
Ordering example: RHA 507 56 Ø10 9-36Vdc SSG Cable Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



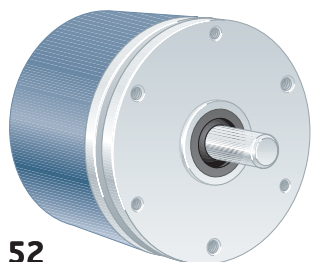
51



63



61



52

## Short description:

- >> 13 bit BiLL output
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 9...36 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RSA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution (Scaleable)                |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø 6 round                               | Ø 6 with face                           | Ø 10 round                              | Ø 10 with face                          |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type   | Cable    | 8 pin M12 | 12 pin EML | 8 pin PT |
|--|----------|-----------|------------|----------|
| Function   | Colour   | PIN       | PIN        | PIN      |
| Adress Bit 0   | White    | 1         | 1          | A        |
| Adress Bit 1   | Brown    | 2         | 2          | B        |
| Adress Bit 2   | Grey     | 3         | 3          | C        |
| Adress Bit 3   | Pink     | 4         | 4          | D        |
| Adress 0V  | Blue/Red | NA        | 11         | NA       |
| RS485-B  | Green    | 5         | 8          | G        |
| RS485-A  | Yellow   | 6         | 9          | H        |
| 0V   | Blue     | 7         | 10         | F        |
| +EV  | Red      | 8         | 12         | E        |
| Housing  | Shield   | Chassis   | Chassis    | Chassis  |
| <b>Connecting direction (available on flange option -51, -63, -61)</b> |          |           |            |          |
| Axial  | Yes      | Yes       | Yes        | Yes      |
| Radial   | Yes      | Yes       | Yes        | Yes      |
| <b>Connecting direction (available on flange option -52)</b>           |          |           |            |          |
| Axial  | No       | No        | No         | Yes      |
| Radial   | Yes      | No        | No         | No       |

NA=Not available

### Electrical option

|                          |   |
|--------------------------|---|
| Power supply             | 9-36Vdc   |
| Polarity protected       | Yes   |
| Output interface         | RS-485 , BiLL                                   |
| Short circuit protected  | Yes   |
| Current consumption      | 100mA @ 24Vdc                                   |
| Max current consumpt.    | 150mA   |
| Physical interface       | RS-485  |
| Baud rate <sup>(1)</sup> | 4,8-38,4 kBit/s                                 |
| Node adress              | Hardware adjustable                             |
| Code type                | Binary  |
| Programmable parameters  | Direction, Offset, Preset<br>Scaling parameters |
| Position update freq.    | 1kHz  |
| Start up delay           | 1s  |

<sup>(1)</sup> Default baud rate 19,2 kBit/s

### Accessories

| Accessories                | Part number              |
|----------------------------|--------------------------|
| Mating connector 8 pin M12 | 00201081 <sup>(1)</sup>  |
| 8 pin PT                   | 00201009 <sup>(1)</sup>  |
| 12 pin EML                 | 01209090 <sup>(1)</sup>  |
| Coupling 6-6 mm            | 464192222 <sup>(2)</sup> |
| 10-10 mm                   | 464333232 <sup>(2)</sup> |
| Mounting bracket           | 00208011 <sup>(3)</sup>  |
| Bearing box                | 01209010 <sup>(4)</sup>  |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Other couplings are also available.

<sup>(3)</sup> Only for 63 Synchro and 61 Clamping flanges.

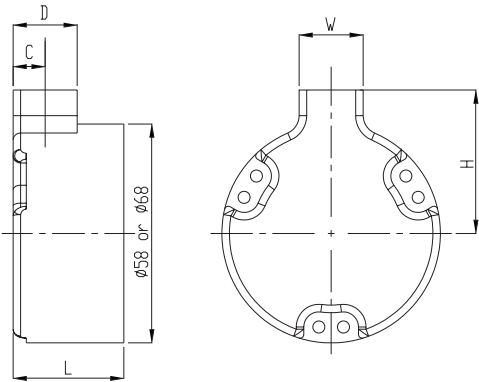
<sup>(4)</sup> Only for 63 Synchro flange.

For additional accessories like assembled cables, mounting clamps, measuring wheels, draw wire box etc.

Please, advise separate datasheets for accessories.



## Dimensions

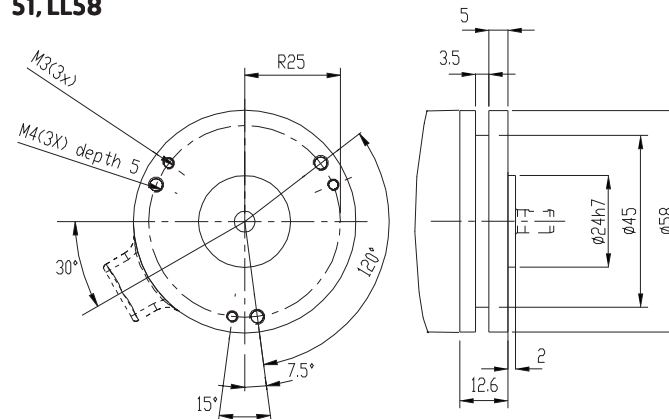


| Connector | Orientation | L      | H    | W  | D  | C    |
|-----------|-------------|--------|------|----|----|------|
| Cable     | Radial Ø58  | 29,4   | 34   | 17 | 17 | 8,5  |
|           | Radial Ø68  | 44,7   | 34   | 0  | 0  | 14   |
|           | Axial       | 38,9   |      |    |    |      |
|           | EML         | Radial | 29,4 | 32 | 27 | 27   |
| 8p M12    | Radial      | 29,4   | 38   | 27 | 27 | 9,5  |
|           | Axial       | 38,9   |      |    |    |      |
| 8p PT     | Radial      | 29,4   | 41   | 27 | 27 | 13,5 |
|           | Axial Ø58   | 38,9   |      |    |    |      |
|           | Axial Ø68   | 44,7   |      |    |    |      |

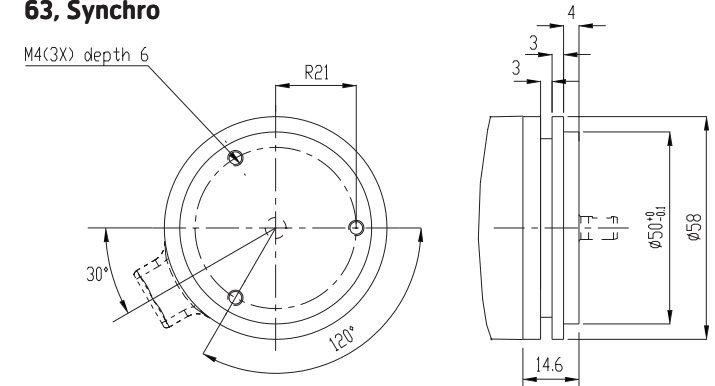
Note: For complete encoder dimension please add connector and flange dimensions.

## Flanges

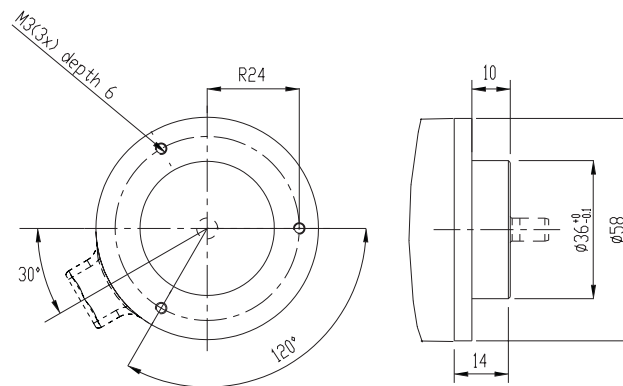
### 51, LL58



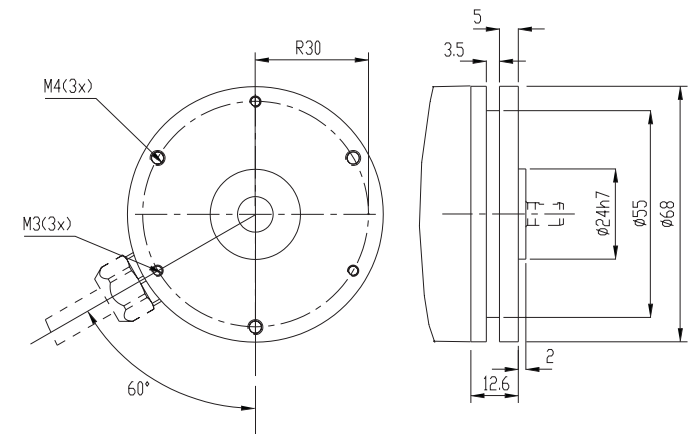
### 63, Synchro



### 61, Clamping



### 52, LL68

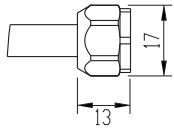




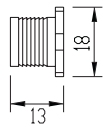


## Connectors

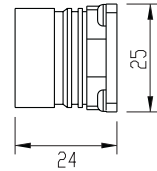
**Cable**  
16x0,25 shielded



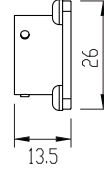
**8pin M12**



**12pin EML**

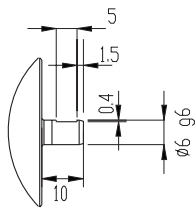


**8pin PT**

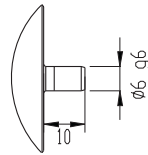


## Shafts

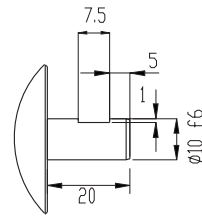
**6 mm with face**



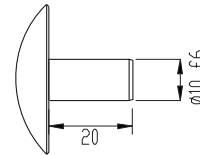
**6 mm round**



**10 mm with face**



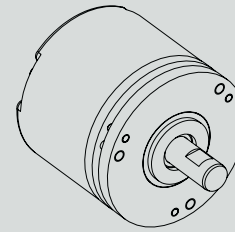
**10 mm round**



## Various combinations/examples

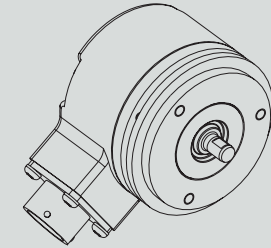
**RSA 507 51**

10 mm with face, axial M12



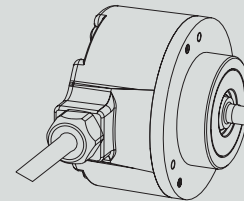
**RSA 507 63**

6 mm with face, radial PT



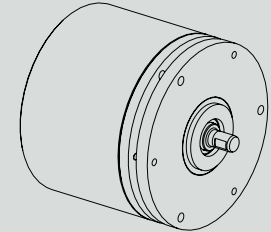
**RSA 507 61**

6 mm round, radial cable



**RSA 507 52**

6 mm with face, axial M12

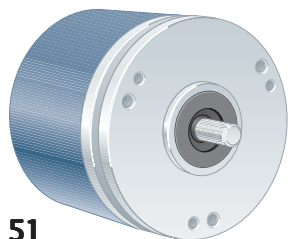


## Ordering information Tick your choice

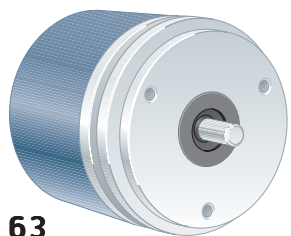
| Type                 | RSA 507              |                |              |                 |
|----------------------|----------------------|----------------|--------------|-----------------|
| Flange               | 51, LL58             | 63, Synchro    | 61, Clamping | 52, LL68        |
| Shaft                | Ø6mm round           | Ø6mm with face | Ø10mm round  | Ø10mm with face |
| Electronics          | Supply 9-36Vdc       |                |              |                 |
|                      | Output SBB, BiLL     |                |              |                 |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12      | 12 pin EML   | 8 pin PT        |
| Connecting direction | Axial/Radial         | Axial/Radial   | Axial/Radial | Axial/Radial    |
| Resolution           | 13 bit               |                |              |                 |

<sup>(1)</sup> Note: Please specify cable length when ordering

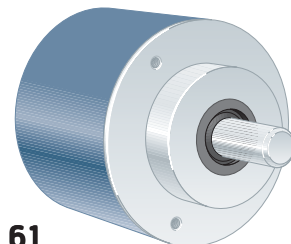
Ordering example: RSA 507 63 Ø10ro 9-36Vdc SBB 12 pin EML Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



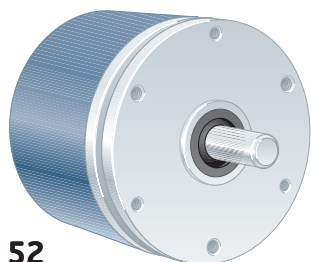
51



63



61



52

## Short description:

- >> 13 bit CANopen output
- >> IP 67 at housing, IP 66 at shaft inlet
- >> 9...36 Vdc
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RSA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution (Scaleable)                |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø 6 round                               | Ø 6 with face                           | Ø 10 round                              | Ø 10 with face                          |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type   | Cable    | 8 pin M12 | 12 pin EML | 8 pin PT |
|--|----------|-----------|------------|----------|
| Function   | Colour   | PIN       | PIN        | PIN      |
| Adress Bit 0   | White    | 1         | 1          | A        |
| Adress Bit 1   | Brown    | 2         | 2          | B        |
| Adress Bit 2   | Grey     | 3         | 3          | C        |
| Adress Bit 3   | Pink     | 4         | 4          | D        |
| Adress 0V  | Blue/Red | NA        | 11         | NA       |
| CAN_H  | Green    | 5         | 8          | G        |
| CAN_L  | Yellow   | 6         | 9          | H        |
| 0V   | Blue     | 7         | 10         | F        |
| +EV  | Red      | 8         | 12         | E        |
| Housing  | Shield   | Chassis   | Chassis    | Chassis  |
| <b>Connecting direction (available on flange option -51, -63, -61)</b> |          |           |            |          |
| Axial  | Yes      | Yes       | Yes        | Yes      |
| Radial   | Yes      | Yes       | Yes        | Yes      |
| <b>Connecting direction (available on flange option -52)</b>           |          |           |            |          |
| Axial  | No       | No        | No         | Yes      |
| Radial   | Yes      | No        | No         | No       |

NA=Not available

### Electrical option

|                          |   |
|--------------------------|---|
| <b>Power supply</b>      | <b>9-36Vdc</b>                                      |
| Polarity protected       | Yes   |
| <b>Output interface</b>  | <b>CANopen</b>                                      |
| Short circuit protected  | Yes   |
| Current consumption      | 100mA @ 24Vdc                                       |
| Max current consumpt.    | 150mA   |
| Physical interface       | CAN according to ISO-11898                          |
| Supported profile        | Device profile for encoders<br>DS406 v2.0           |
| Baud rate <sup>(1)</sup> | Max. 1Mbit/s software adjustable                    |
| Node adress              | Hardware or software adjustable                     |
| Code type                | Binary  |
| Supported functions      | Code sequence, Preset, Scaling<br>and Node Guarding |
| Position update freq.    | 1kHz  |
| Start up delay           | 700ms   |

<sup>(1)</sup> Default baud rate 125 kBit/s

### Accessories

| Accessories  | Part number              |
|--|--------------------------|
| Configuration file EDS file                          | 619208-01                |
| Mating connector 8 pin M12<br>8 pin PT<br>12 pin EML | 00201081 <sup>(1)</sup>  |
|  | 00201009 <sup>(1)</sup>  |
|  | 01209090 <sup>(1)</sup>  |
| Coupling 6-6 mm<br>10-10 mm                          | 464192222 <sup>(2)</sup> |
|  | 464333232 <sup>(2)</sup> |
| Mounting bracket                                     | 00208011 <sup>(3)</sup>  |
| Bearing box  | 01209010 <sup>(4)</sup>  |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Other couplings are also available.

<sup>(3)</sup> Only for 63 Synchro and 61 Clamping flanges.

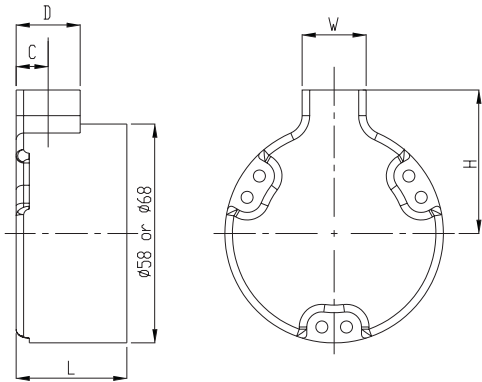
<sup>(4)</sup> Only for 63 Synchro flange.

For additional accessories like assembled cables, mounting clamps, measuring wheels, draw wire box etc.

Please advise separate datasheets for accessories.



## Dimensions

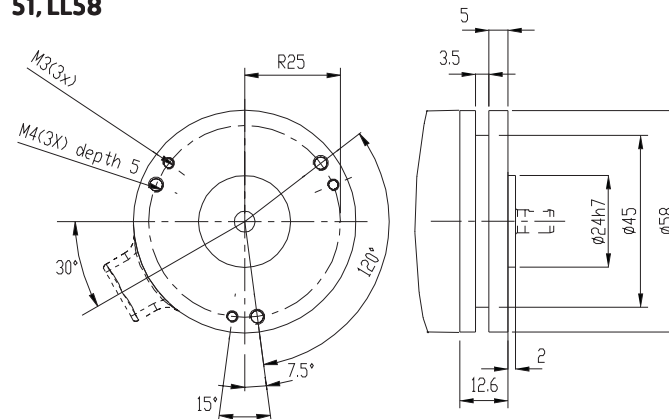


| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial Ø58  | 29,4 | 34 | 17 | 17 | 8,5  |
|           | Radial Ø68  | 44,7 | 34 | 0  | 0  | 14   |
|           | Axial       | 38,9 |    |    |    |      |
| EML       | Radial      | 29,4 | 32 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |
| 8p M12    | Radial      | 29,4 | 38 | 27 | 27 | 9,5  |
|           | Axial       | 38,9 |    |    |    |      |
| 8p PT     | Radial      | 29,4 | 41 | 27 | 27 | 13,5 |
|           | Axial Ø58   | 38,9 |    |    |    |      |
|           | Axial Ø68   | 44,7 |    |    |    |      |

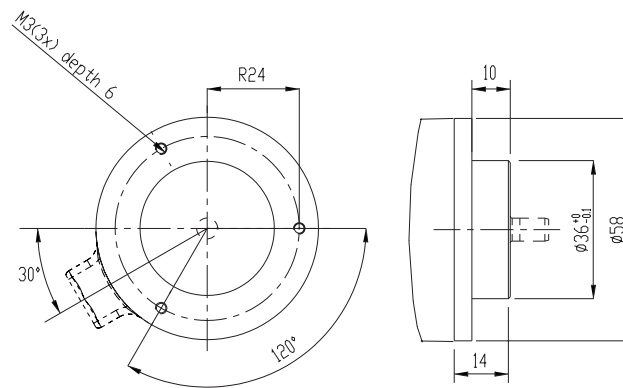
Note: For complete encoder dimension please add connector and flange dimensions.

## Flanges

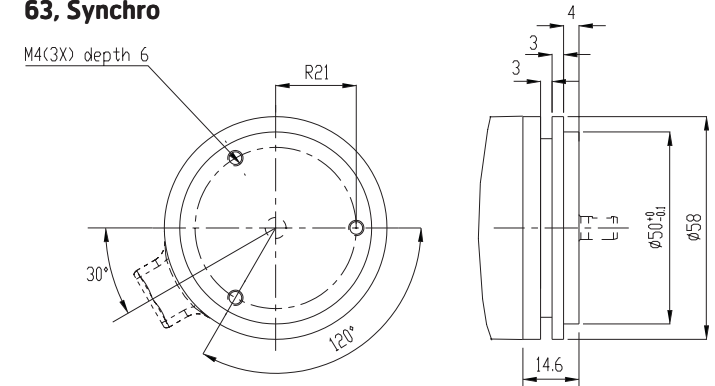
### 51, LL58



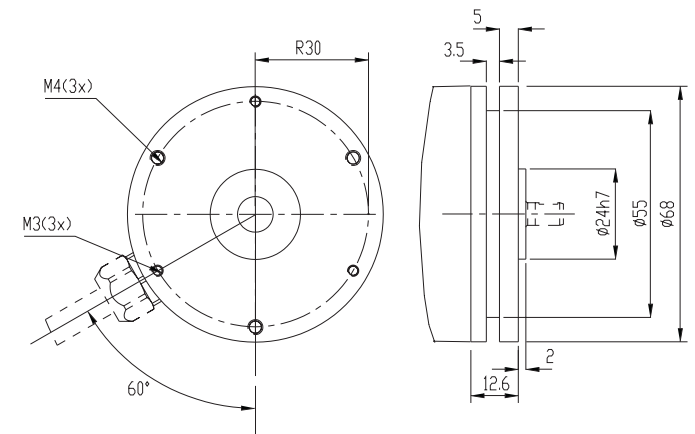
### 61, Clamping



### 63, Synchro



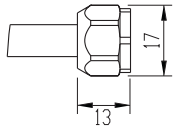
### 52, LL68



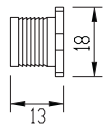


## Connectors

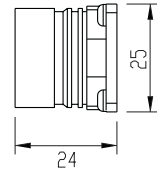
**Cable**  
12x0,25 shielded



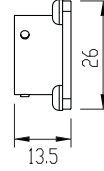
**8pin M12**



**12pin EML**

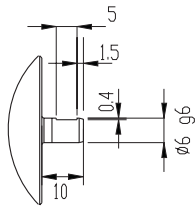


**8pin PT**

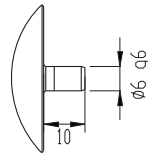


## Shafts

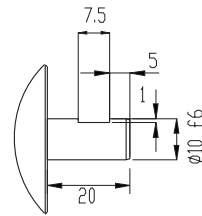
**6 mm with face**



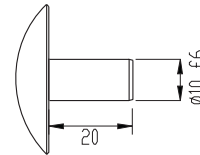
**6 mm round**



**10 mm with face**



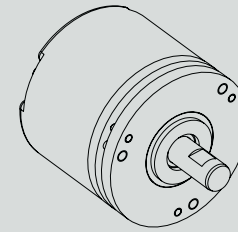
**10 mm round**



## Various combinations/examples

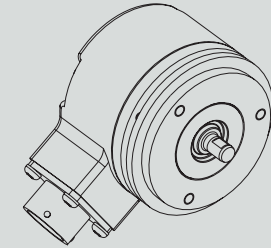
**RSA 507 51**

10 mm with face, axial M12



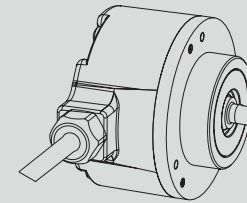
**RSA 507 63**

6 mm with face, radial PT



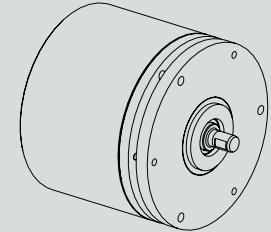
**RSA 507 61**

6 mm round, radial cable



**RSA 507 52**

6 mm with face, axial M12

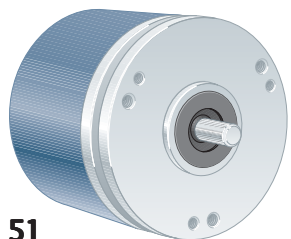


## Ordering information Tick your choice

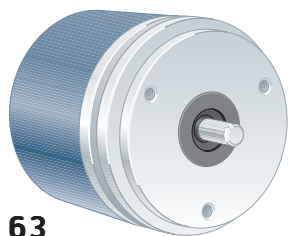
| Type                 | RSA 507              |                |              |                 |
|----------------------|----------------------|----------------|--------------|-----------------|
| Flange               | 51, LL58             | 63, Synchro    | 61, Clamping | 52, LL68        |
| Shaft                | Ø6mm round           | Ø6mm with face | Ø10mm round  | Ø10mm with face |
| Electronics          | Supply 9-36Vdc       |                |              |                 |
|                      | Output SCO, CANopen  |                |              |                 |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12      | 12 pin EML   | 8 pin PT        |
| Connecting direction | Axial/Radial         | Axial/Radial   | Axial/Radial | Axial/Radial    |
| Resolution           | 13 bit               |                |              |                 |

<sup>(1)</sup> Note: Please specify cable length when ordering

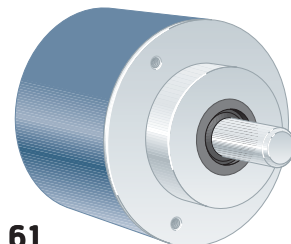
Ordering example: RSA 507 63 Ø10r0 9-36Vdc SCO 12 pin EML Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



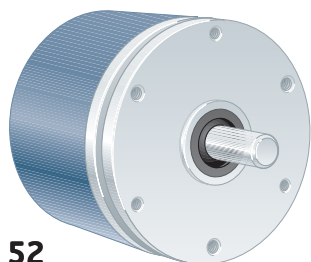
51



63



61



52

## Short description:

- >> 13 bit Parallel output
- >> Binary or Gray coded
- >> 5 Vdc or 9...36 Vdc
- >> IP 67 at housing, IP 66 at shaft inlet
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RSA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | ≤ 13 Bit, 8192 positions per revolution                          |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø 6 round                               | Ø 6 with face                           | Ø 10 round                              | Ø 10 with face                          |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type  | Cable        | 19 pin PT |
|---|--------------|-----------|
| Function  | Colour       | PIN       |
| Bit 1 (LSB)   | Brown/Yellow | R         |
| Bit 2   | Brown/Green  | P         |
| Bit 3   | White/Green  | N         |
| Bit 4   | Blue/Red     | M         |
| Bit 5   | Grey/Pink    | L         |
| Bit 6   | Violet       | K         |
| Bit 7   | Black        | J         |
| Bit 8   | Pink         | H         |
| Bit 9   | Grey         | G         |
| Bit 10  | Yellow       | D         |
| Bit 11  | Green        | C         |
| Bit 12  | Brown        | B         |
| Bit 13 (MSB)  | White        | A         |
| Code sequence   | White/Yellow | V         |
| 0V  | Blue         | F         |
| +EV   | Red          | E         |
| Housing   | Shield       | Chassis   |
| <b>Connecting direction (flange option -51, -61, -63)</b> |              |           |
| Axial   | Yes          | Yes       |
| Radial  | Yes          | No        |
| <b>Connecting direction (flange option -52)</b>           |              |           |
| Axial   | No           | No        |
| Radial  | Yes          | No        |

Note: If 12 bit resolution is required the LSB shall not be connected

### Electrical option

| Power supply                     | 5Vdc ± 10%  | 9-36Vdc     |
|----------------------------------|---|-------------|
| Polarity protected               | No  | Yes         |
| <b>Output interface Parallel</b> |   |             |
| Short circuit protected          | Yes   |             |
| Current consumption              | 100mA   | 50mA @24Vdc |
| Max current consumpt.            | 150mA   | 110mA       |
| Output load                      | ±20mA   | ±20mA       |
| Output frequency                 | 0...200 kHz   |             |
| U <sub>high</sub> at 10mA load   | > 3.0V  | > EV-3.0V   |
| U <sub>low</sub> at 10mA load    | < 0.4V  | < 0.5V      |
| Cable length (max)               | 10m   | 100m        |
| Code type                        | Binary or Gray  |             |
| Position update freq.            | 16MHz   |             |
| Start up delay                   | 25ms  |             |
| <b>Input</b>                     |   |             |
| Code sequence                    | If not connected or connected to 0V the position will increase when the shaft is turned clockwise.<br>If connected to a high logic level the position will increase while turned counter clockwise. |             |
| U <sub>high</sub>                | > 2V  | > EV x 0.6  |
| U <sub>low</sub>                 | < 0.8V  | < EV x 0.25 |
| Delay                            | 75µs  |             |

### Accessories

| Accessories      |           | Part number              |
|------------------|-----------|--------------------------|
| Mating connector | 19 pin PT | 00201010 <sup>(1)</sup>  |
| Coupling         | 6-6 mm    | 464192222 <sup>(2)</sup> |
|                  | 10-10 mm  | 464333232 <sup>(2)</sup> |
| Mounting bracket |           | 00208011 <sup>(3)</sup>  |
| Bearing box      |           | 01209010 <sup>(4)</sup>  |

<sup>(1)</sup> Also available with assembled cable.

<sup>(2)</sup> Other couplings are also available.

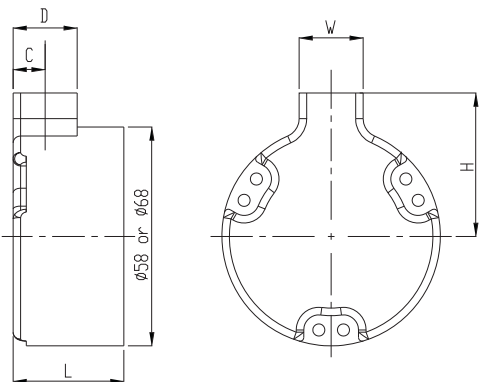
<sup>(3)</sup> Only for 63 Synchro and 61 Clamping flanges.

<sup>(4)</sup> Only for 63 Synchro flange.

For additional accessories like assembled cables, mounting clamps, measuring wheels, draw wire box etc. Please, advise separate datasheets for accessories.



### Dimensions

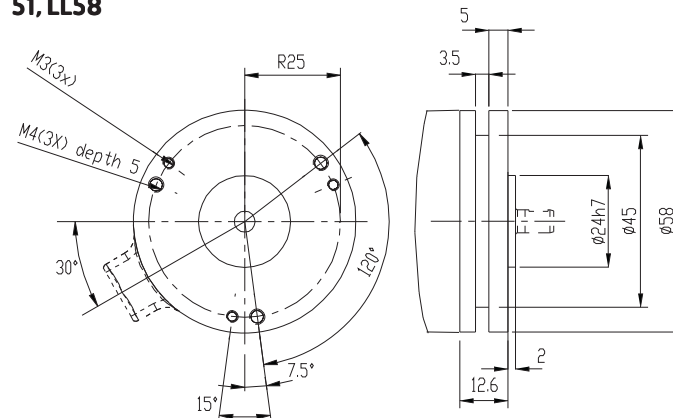


| Connector | Orientation | L    | H    | W  | D  | C   |
|-----------|-------------|------|------|----|----|-----|
| Cable     | Radial Ø58  | 29,4 | 34   | 17 | 17 | 8,5 |
|           | Radial Ø68  | 44,7 | 34   | 0  | 0  | 14  |
|           | Axial       | 38,9 |      |    |    |     |
| 19p PT    | Radial      | 48,4 | 31,5 | 30 | 30 | 15  |
|           | Axial       | 38,9 |      |    |    |     |

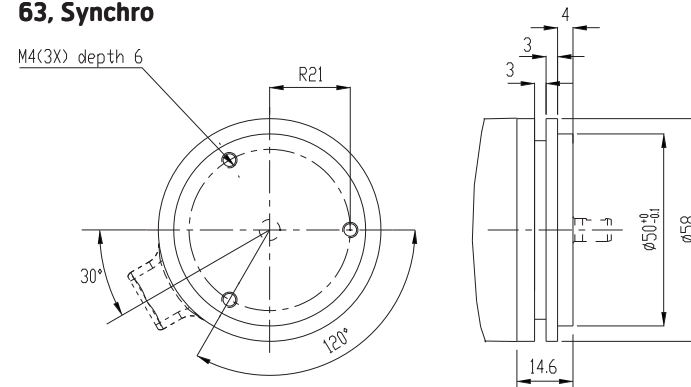
Note: For complete encoder dimension please add connector and flange dimensions.

### Flanges

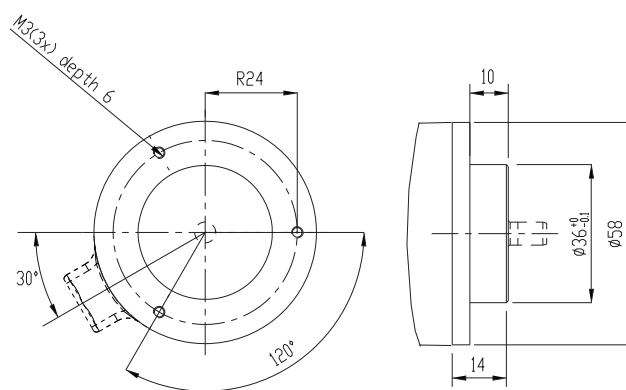
#### 51, LL58



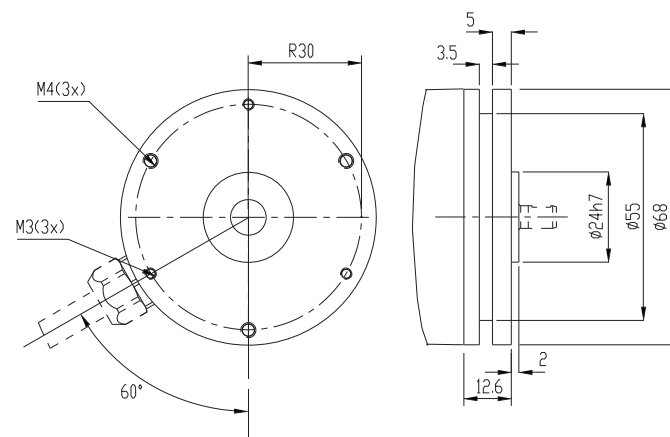
#### 63, Synchro



#### 61, Clamping



#### 52, LL68

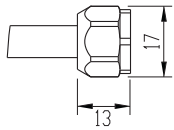




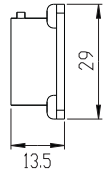


## Connectors

**Cable**  
16x0,25 shielded

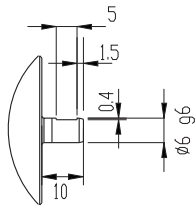


**19pin PT**

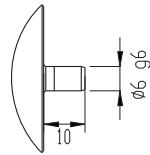


## Shafts

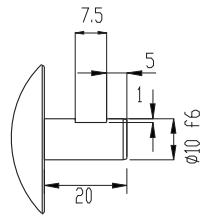
**6 mm with face**



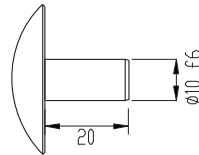
**6 mm round**



**10 mm with face**



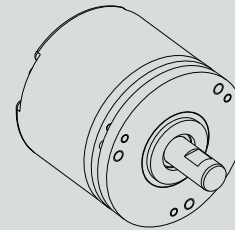
**10 mm round**



## Various combinations/examples

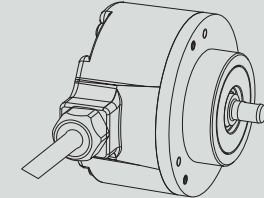
**RSA 507 51**

10 mm with face, axial PT



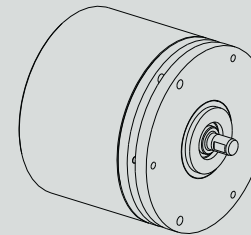
**RSA 507 61**

6 mm round, radial cable



**RSA 507 52**

6 mm with face, axial PT



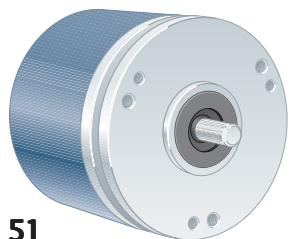
## Ordering information Tick your choice

| Type                 | RSA 507                      |                          |              |                 |
|----------------------|------------------------------|--------------------------|--------------|-----------------|
| Flange               | 51, LL58                     | 63, Synchro              | 61, Clamping | 52, LL68        |
| Shaft                | Ø6mm round                   | Ø6mm with face           | Ø10mm round  | Ø10mm with face |
| Electronics          | Supply                       | 5 Vdc                    | 9-36Vdc      |                 |
|                      | Output                       | PLG, Gray                | PLB, Binary  |                 |
| Connection           | Cable <sup>(1)</sup>         | 19 pin PT <sup>(2)</sup> |              |                 |
| Connecting direction | Axial <sup>(2)</sup> /Radial | Axial                    |              |                 |
| Resolution           | 13 bit                       |                          |              |                 |

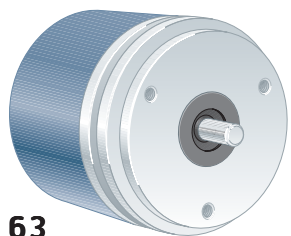
<sup>(1)</sup> Note: Please specify cable length when ordering

<sup>(2)</sup> Note: Not available on flange 52, LL68

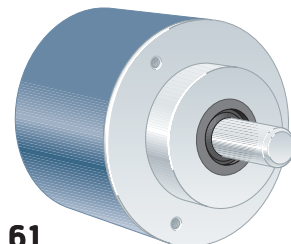
Ordering example: RSA 507 63 Ø10ro 9-36Vdc PLB Cable Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



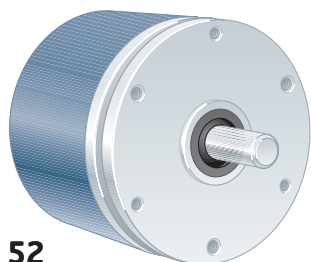
51



63



61



52

## Short description:

- >> 13 bit SSI output
- >> Binary or Gray coded
- >> 5 Vdc or 9...36 Vdc
- >> IP 67 at housing, IP 66 at shaft inlet
- >> Robust housing for harsh environment
- >> Shock and vibration protected

## Suitable applications:

- >> Standard to demanding industrial applications
- >> Positioning applications
- >> Printing machines
- >> Packaging machines

## General information

| Encoder data             |  |
|--------------------------|--|
| Type                     | RSA 507  |
| Operating temperature    | -40°C .. +80°C   |
| Storage temperature      | -30°C .. +80°C   |
| Ingress protection class | IP-67 according to IEC 60529                                     |
| At shaft inlet           | IP-66 according to IEC 60529                                     |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |
| Cover material           | Aluminium  |
| Cover surface treatment  | Coated and cromated or anodized                                  |
| Weight                   | Approx. 300g   |
| Accuracy and resolution  |  |
| Resolution               | 13 Bit, 8192 positions per revolution                            |
| Accuracy                 | ± 1 LSB  |

## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | ø58 mm          | ø58 mm      | ø58 mm       | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø 6 round                               | Ø 6 with face                           | Ø 10 round                              | Ø 10 with face                          |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type   | Cable  | 8pM12   | 17 pin EML | 8 pin PT |
|--|--------|---------|------------|----------|
| Function   | Colour | PIN     | PIN        | PIN      |
| Clock +  | Yellow | 3       | 8          | A        |
| Clock -  | Green  | 4       | 9          | B        |
| Data +   | White  | 5       | 14         | C        |
| Data -   | Black  | 6       | 17         | D        |
| Code Sequence  | Violet | 8       | 2          | H        |
| Hold   | Brown  | NA      | NA         | G        |
| 0V   | Blue   | 1       | 10         | F        |
| +EV  | Red    | 2       | 7          | E        |
| Housing  | Shield | Chassis | Chassis    | Chassis  |
| <b>Connecting direction (available on flange option -51, -63, -61)</b> |        |         |            |          |
| Axial  | Yes    | Yes     | Yes        | Yes      |
| Radial   | Yes    | Yes     | Yes        | Yes      |
| <b>Connecting direction (available on flange option -52)</b>           |        |         |            |          |
| Axial  | No     | No      | No         | Yes      |
| Radial   | Yes    | No      | No         | No       |

### Electrical option

| Power supply                   | 5Vdc ±10%  | 9-36Vdc      |
|--------------------------------|--|--------------|
| Polarity protected             | No   | Yes          |
| <b>Output interface SSI</b>    |  |              |
| Short circuit protected        | Yes  |              |
| Current consumption            | 100mA  | 50mA @ 24Vdc |
| Max current consumpt.          | 150mA  | 110mA        |
| Output circuitry               | RS-422   |              |
| Output frequency               | 100kHz...1MHz  |              |
| Cable length (max)             | Frequency dependent  |              |
| Code type                      | Binary or Gray   |              |
| Position update freq.          | 16MHz  |              |
| Start up delay                 | 25ms   |              |
| <b>Input 1 (Code sequence)</b> |  |              |
| Code sequence                  | If not connected or connected to 0V the position will increase when the shaft is turned clockwise.     |              |
| U <sub>high</sub>              | > 2V   | > EV x 0.6   |
| U <sub>low</sub>               | < 0.7V   | < EV x 0.25  |
| Delay                          | 75µs   |              |
| <b>Input 2 (Hold)</b>          |  |              |
| Hold                           | When connected to +EV or a logic high level will the position not be changed when the shaft is turned. |              |
| U <sub>high</sub>              | > 2V   | > EV x 0.6   |
| U <sub>low</sub>               | < 0.7V   | < EV x 0.25  |
| Delay                          | 75µs   |              |

### Accessories

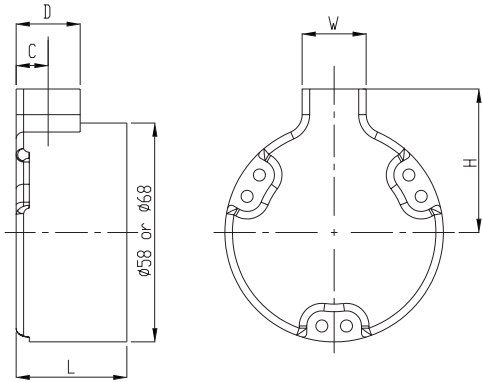
| Accessories                | Part number              |
|----------------------------|--------------------------|
| Mating connector 8 pin M12 | 00201081 <sup>(1)</sup>  |
| 8 pin PT                   | 00201009 <sup>(1)</sup>  |
| 17 pin EML                 | 01209085 <sup>(1)</sup>  |
| Coupling 6-6 mm            | 464192222 <sup>(2)</sup> |
| 10-10 mm                   | 464333232 <sup>(2)</sup> |
| Mounting bracket           | 00208011 <sup>(3)</sup>  |
| Bearing box                | 01209010 <sup>(4)</sup>  |

- (1) Also available with assembled cable.  
 (2) Other couplings are also available.  
 (3) Only for 63 Synchro and 61 Clamping flanges.  
 (4) Only for 63 Synchro flange.

For additional accessories like assembled cables, mounting clamps, measuring wheels, draw wire box etc. Please advise separate datasheets for accessories.



## Dimensions

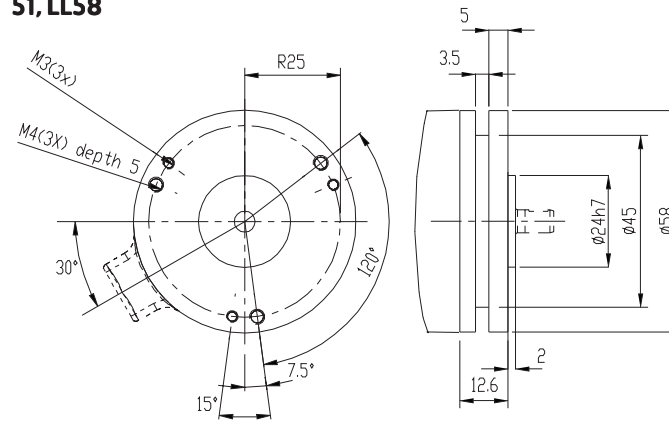


| Connector | Orientation | L    | H  | W  | D  | C    |
|-----------|-------------|------|----|----|----|------|
| Cable     | Radial Ø58  | 29,4 | 34 | 17 | 17 | 8,5  |
|           | Radial Ø68  | 44,7 | 34 | 0  | 0  | 14   |
|           | Axial       | 38,9 |    |    |    |      |
| EML       | Radial      | 29,4 | 32 | 27 | 27 | 13,5 |
|           | Axial       | 38,9 |    |    |    |      |
| 8p M12    | Radial      | 29,4 | 38 | 27 | 27 | 9,5  |
|           | Axial       | 38,9 |    |    |    |      |
| 8p PT     | Radial      | 29,4 | 41 | 27 | 27 | 13,5 |
|           | Axial Ø58   | 38,9 |    |    |    |      |
|           | Axial Ø68   | 44,7 |    |    |    |      |

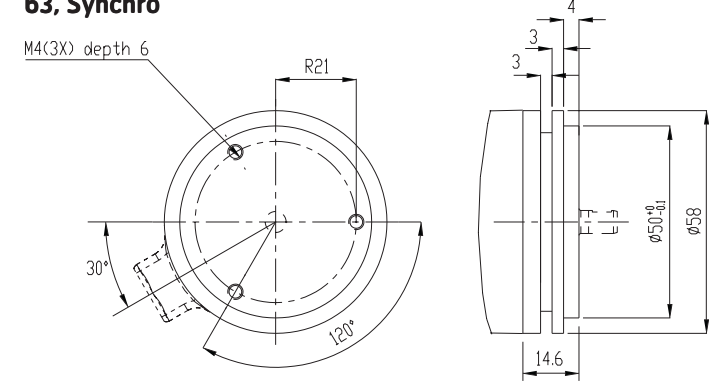
Note: For complete encoder dimension please add connector and flange dimensions.

## Flanges

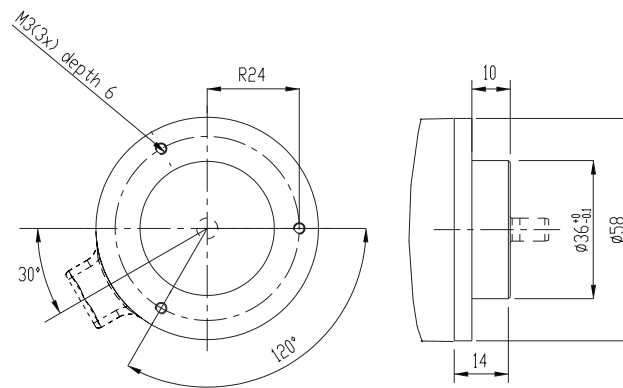
### 51, LL58



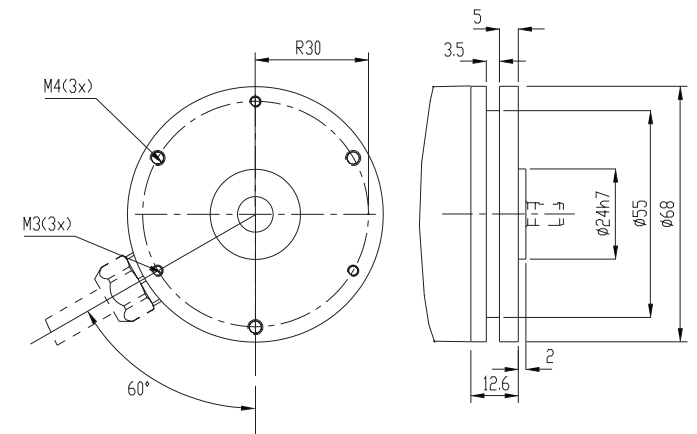
### 63, Synchro



### 61, Clamping



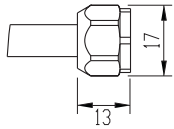
### 52, LL68



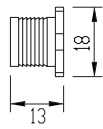


## Connectors

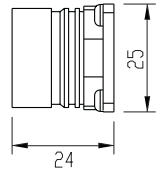
**Cable**  
16x0,25 shielded



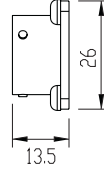
**8pin M12**



**17pin EML**

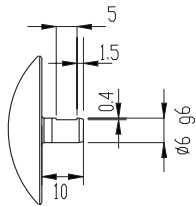


**8pin PT**

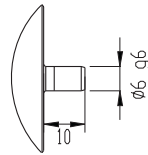


## Shafts

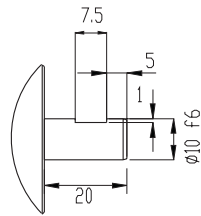
**6 mm with face**



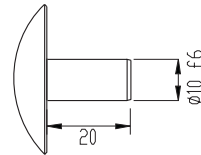
**6 mm round**



**10 mm with face**



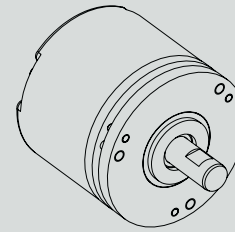
**10 mm round**



## Various combinations/examples

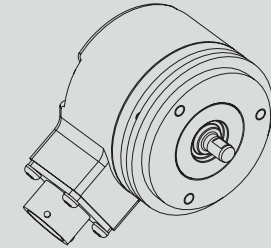
**RSA 507 51**

10 mm with face, axial M12



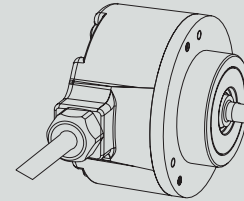
**RSA 507 63**

6 mm with face, radial PT



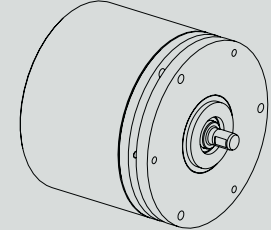
**RSA 507 61**

6 mm round, radial cable



**RSA 507 52**

6 mm with face, axial M12

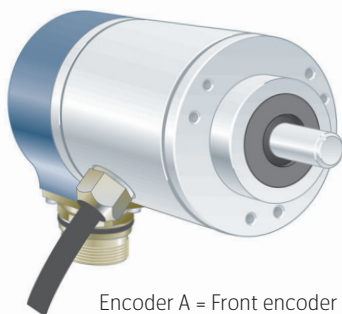


## Ordering information Tick your choice

| Type                 | RSA 507              |                |              |                 |
|----------------------|----------------------|----------------|--------------|-----------------|
| Flange               | 51, LL58             | 63, Synchro    | 61, Clamping | 52, LL68        |
| Shaft                | Ø6mm round           | Ø6mm with face | Ø10mm round  | Ø10mm with face |
| Electronics          | Supply               | 5Vdc           | 9-36Vdc      |                 |
|                      | Output               | SSG, Gray      | SSB, Binary  |                 |
| Connection           | Cable <sup>(1)</sup> | 8 pin M12      | 17 pin EML   | 8 pin PT        |
| Connecting direction | Axial/Radial         | Radial/Axial   | Radial/Axial | Radial/Axial    |
| Resolution           | 13 bit               |                |              |                 |

<sup>(1)</sup> Note: Please specify cable length when ordering

Ordering example: RSA 507 63 Ø10ro 9-36Vdc SSG Cable Radial 13bit  
Assembly drawing is available upon request from Leine & Linde AB



Encoder A = Front encoder  
Encoder B = Rear encoder

## Ruggedized dual shaft encoder

- 6 short-circuit protected outputs
- IP 67 at housing, IP 66 at shaft inlet
- 5 Vdc or 9 .. 30 Vdc
- Robust housing for harsh environment
- Shock and vibration protected
- Possible combinations; incremental – incremental or incremental – absolute

Encoder A is specified by this datasheet. Encoder B can be any 58 mm encoder, incremental or absolute, with 61 clamping flange and Ø10 mm shaft. Specify encoder B from RSI 500 series or RSA 500/600 series and observe that the selected encoder type may determine the overall technical specification of the RSD 525.



## General information

| Encoder data              |  |
|---------------------------|--|
| Type                      | RSD 525  |
| Operating temperature     | -40 °C .. +70 °C   |
| Storage temperature       | -30 °C .. +70 °C   |
| Ingress protection class  | IP-67 according to IEC 60529, At shaft inlet: IP-66 according to IEC 60529                           |
| Vibration (55 to 2000 Hz) | <300 m/s <sup>2</sup> according to IEC 60068-2-6 (<150 m/s <sup>2</sup> on encoders with connectors) |
| Shock (6 ms)              | <2000 m/s <sup>2</sup> according to IEC 60068-2-27   |
| Cover material            | Aluminium  |
| Cover surface treatment   | Coated and cromated or anodized  |
| Weight                    | Approx. 600 g  |
| Accuracy and resolution   |  |
| Line count                | 1 .. 5000 ppr <span style="float: right;">5001 .. 10 000 ppr</span>                                  |
| Dividing error            | ±50 °el <span style="float: right;">±90 °el</span>   |
| Channel separation        | 90 ±25 °el <span style="float: right;">90 ±45 °el</span>   |
| Measuring steps           | 4 x line count   |
| Requirements of Encoder B |  |
| Shaft                     | Ø10 ro   |
| Flange                    | 61 Clamping flange   |

## Flange option

| Flange type       | 51, LL58        | 63, Synchro | 61, Clamping | 52, LL68        |
|-------------------|-----------------|-------------|--------------|-----------------|
| Outer diameter    | Ø58 mm          | Ø58 mm      | Ø58 mm       | Ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 | 3 x M4      | 3 x M3       | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       | Aluminium   | Aluminium    | Aluminium       |
| Surface treatment | Anodized        | Anodized    | Anodized     | Anodized        |

## Shaft option

| Shaft type              | Ø6 round                                | Ø6 with face                            | Ø10 round                               | Ø10 with face                           |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 4,6 x 10 <sup>-6</sup> kgm <sup>2</sup> | 4,6 x 10 <sup>-6</sup> kgm <sup>2</sup> | 4,6 x 10 <sup>-6</sup> kgm <sup>2</sup> | 4,6 x 10 <sup>-6</sup> kgm <sup>2</sup> |



## Connection option

| Connection type      | Cable  | 8 pin M12 |
|----------------------|--------|-----------|
| Function             | Colour | Pin       |
| S00                  | Yellow | 4         |
| S00 inverted         | Black  | 5         |
| S90                  | Green  | 3         |
| S90 inverted         | White  | 1         |
| Sref                 | Brown  | 2         |
| Sref inverted        | Violet | 6         |
| +E Volt              | Red    | 8         |
| 0 Volt               | Blue   | 7         |
| STATUS               | Grey   | NA        |
| Housing              | Shield | Chassis   |
| Connecting direction |        |           |
| Radial               | Yes    | Yes       |

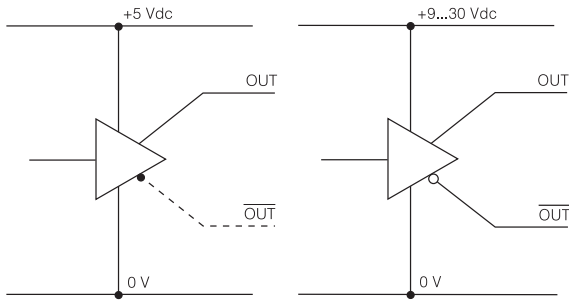
NA = Not Available

## Electrical option

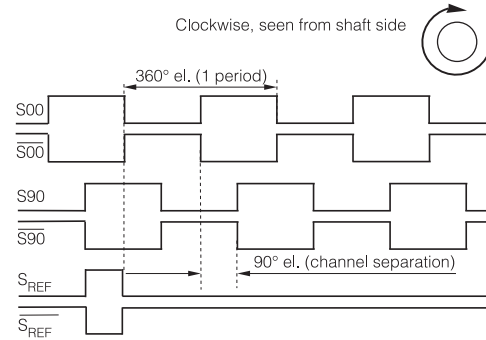
| Power supply                    | 5 V $\pm$ 10%  | 9 .. 30 V  |  |
|---------------------------------|--|--|--|
| Polarity protected              | No   | Yes  |  |
| Output signals                  | TTL <sup>(1)</sup>   | HTL  | RS-422   |
| Short circuit protected         | Yes  | Yes  | Yes  |
| Current consumption             | 45 mA  | 50 mA @ 24 V   | 25 mA @ 24 V   |
| Max consumption                 | 75 mA  | 75 mA  | 40 mA  |
| Output load (max)               | $\pm$ 20 mA  | $\pm$ 40 mA  | $\pm$ 20 mA  |
| Output frequency (max)          | 300 kHz  | 300 kHz  | 300 kHz  |
| U <sub>high</sub> at 10 mA load | > 3.0 V  | > +E V - 2.0 V   | > 3.0 V  |
| U <sub>low</sub> at 10 mA load  | < 0.4 V  | < 1.15 V   | < 0.4 V  |
| Cable length (max)              | 50 m   | 200 m @ 50 kHz   | 1 km (TIA/EIA-422-B)   |
| STATUS output                   | Yes<br>High level: Encoder OK,<br>Low level: Warning/Failure | Yes<br>High level: Encoder OK,<br>Low level: Warning/Failure | Yes<br>High level: Encoder OK,<br>Low level: Warning/Failure |

<sup>(1)</sup> TTL output comply to the RS-422 standard when differential transmission is used.

## Output circuit

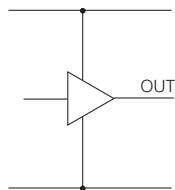


## Output signals

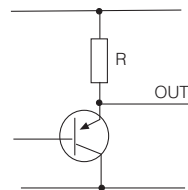


## Status outputs

TTL-output / RS-422

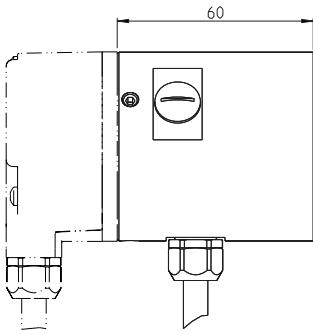


HTL-output

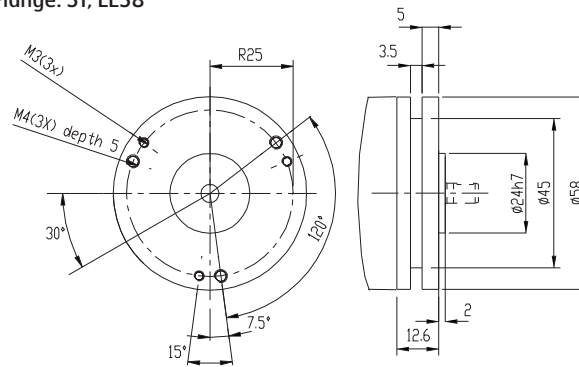
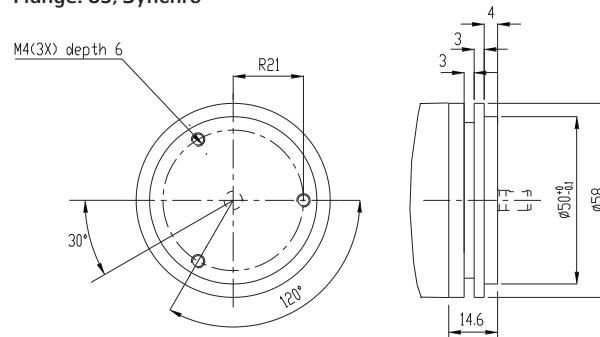
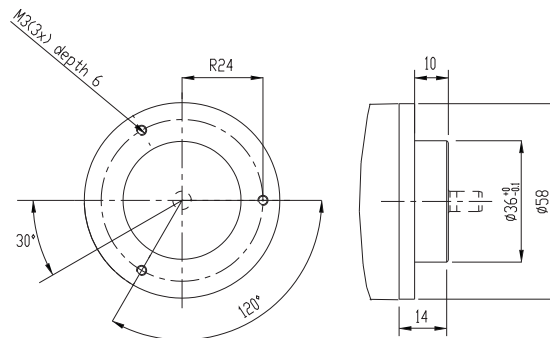
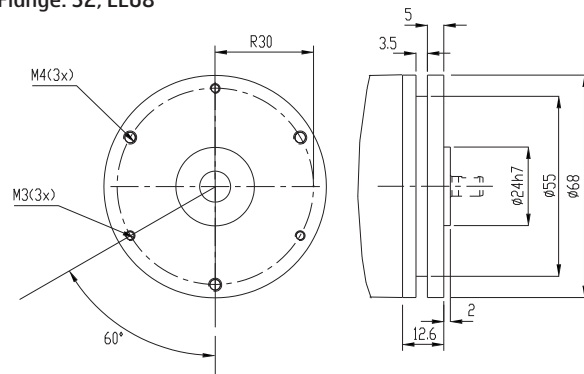




## Dimensions



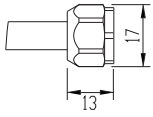
Total length of the RSD 525 encoder is determined by encoder B. Please advice appropriate datasheet for additional dimensions of encoder B.

**Flange: 51, LL58****Flange: 63, Synchro****Flange: 61, Clamping****Flange: 52, LL68**

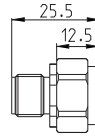
# RSD 525

## Dimensions

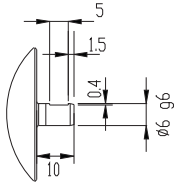
Connector: Cable, 5x2x0,25 shielded



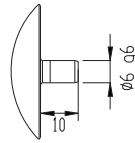
Connector: 8 pin M12



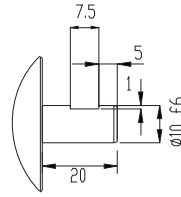
Shaft: 6 mm with face



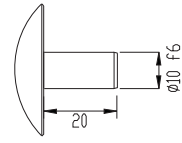
Shaft: 6 mm round



Shaft: 10 mm with face

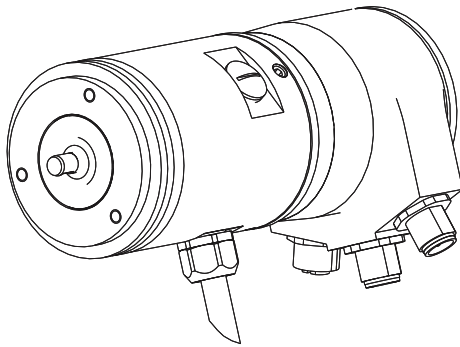


Shaft: 10 mm round

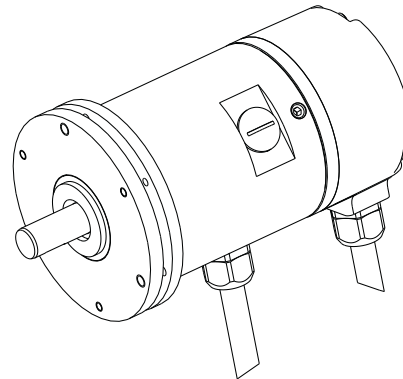


## Various combinations / examples

RDS 525 63, 6 mm, radial cable with 25 bit PROFIBUS



RSD 525 52, 10 mm, radial cable with incremental encoder



## Ordering information

|                            |  |                     |                     |               |
|----------------------------|--|---------------------|---------------------|---------------|
| Type                       | RSD 525  |                     |                     |               |
| Flange                     | 51, LL58   | 63, Synchro         | 61, Clamping        | 52, LL68      |
| Shaft                      | Ø6 round   | Ø6 with face        | Ø10 round           | Ø10 with face |
| Electronics <sup>(1)</sup> | Supply: 5 Vdc  | Supply: 9 .. 30 Vdc | Supply: 9 .. 30 Vdc |               |
|                            | Output: TTL  | Output: HTL         | Output: RS-422      |               |
| Connection                 | Cable  | 8 pin M12           |                     |               |
| Connecting direction       | Radial   |                     | Radial              |               |
| Line count                 | 1 .. 5000  | 5001 .. 10 000      |                     |               |
| Encoder B                  | Provide part number or product designation when ordering |                     |                     |               |

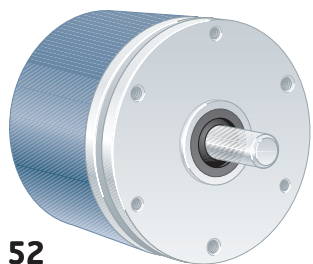
<sup>(1)</sup> Possible combinations: 5Vdc/TTL, 9..30Vdc/HTL or 9..30Vdc/RS-422

### Please, specify line count and cable length when ordering.

Ordering example:

Encoder A: RSD 525 63 Ø6wf 5Vdc 1024ppr TTL 8pinM12 Radial

Encoder B: By specifying the required encoder unique part number or designation as:  
456123-01 or RSI 503 61 Ø10ro 9..30Vdc 512ppr HTL Cable Radial



52

CLS replaces 521

PPS replaces 522

## Short description:

- >> Electrical interfaces:  
Current Limited Source  
PTC Protected Source
- >> IP 67 at housing,  
IP 66 at shaft inlet
- >> 9...30 Vdc
- >> Robust housing for harsh  
environment
- >> Shock and vibration  
protected

## Suitable applications:

- >> Standard to demanding  
industrial applications

## General information

| Encoder data             |  |                  |
|--------------------------|--|------------------|
| Type                     | RSI 593  |                  |
| Operating temperature    | -40°C .. +70°C   |                  |
| Storage temperature      | -30°C .. +70°C   |                  |
| Ingress protection class | IP-67 according to IEC 60529                                     |                  |
| At shaft inlet           | IP-66 according to IEC 60529                                     |                  |
| Vibration (55 to 2000Hz) | < 300 m/s <sup>2</sup> according to IEC 60068-2-6 <sup>(1)</sup> |                  |
| Shock (6ms)              | < 2000 m/s <sup>2</sup> according to IEC 60068-2-27              |                  |
| Cover material           | Aluminium  |                  |
| Cover surface treatment  | Coated and cromated or anodized                                  |                  |
| Weight                   | Approx. 300g   |                  |
| Accuracy and resolution  |  |                  |
| Line count               | 1..5000 ppr  | 5001..10 000 ppr |
| Dividing error           | ± 50 °el   | ± 90 °el         |
| Channel separation       | 90 ± 25 °el  | 90 ± 45 °el      |
| Measuring steps          | 4 x Line count   |                  |

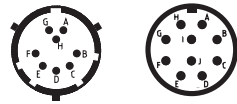
## Flange option

| Flange type       | 52, LL68        |
|-------------------|-----------------|
| Outer diameter    | ø68 mm          |
| Mounting holes    | 3 x M3 & 3 x M4 |
| Flange material   | Aluminium       |
| Surface treatment | Anodized        |

## Shaft option

| Shaft type              | Ø6 round                                | Ø6 with face                            | Ø10 round                               | Ø10 with face                           |
|-------------------------|---|---|---|---|
| Axial shaft load        | 50 N                                    | 50 N                                    | 50 N                                    | 50 N                                    |
| Radial shaft load       | 60 N                                    | 60 N                                    | 60 N                                    | 60 N                                    |
| Mech. permissible speed | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       | 6000 rpm (12 000)                       |
| Shaft material          | Stainless steel                         | Stainless steel                         | Stainless steel                         | Stainless steel                         |
| Moment of inertia       | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 1,9 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> | 2,0 x 10 <sup>-6</sup> kgm <sup>2</sup> |

<sup>(1)</sup><150m/s<sup>2</sup> on encoders with connectors



### Connection option

| Connector type  | Cable  | 8 pin PT | 10 pin MS |
|---|--------|----------|-----------|
| Function  | Colour | PIN      | PIN       |
| S00   | Yellow | D        | D         |
| S00 inverted <sup>1</sup>                             | Black  | C        | C         |
| S90   | Green  | A        | A         |
| S90 inverted <sup>1</sup>                             | White  | B        | B         |
| Sref  | Brown  | G        | G         |
| Sref inverted <sup>1</sup>                            | Violet | H        | H         |
| +E Volt   | Red    | E        | E         |
| 0 Volt  | Blue   | F        | F         |
| STATUS  | Grey   | NA       | I         |
| Case  | Shield | Chassis  | Chassis   |
| Connecting direction (available on flange option -52) |        |          |           |
| Axial   | No     | Yes      | Yes       |
| Radial  | Yes    | No       | No        |

<sup>1</sup> On encoders with PPS electronics the inverted signals are not available. NA=Not Available

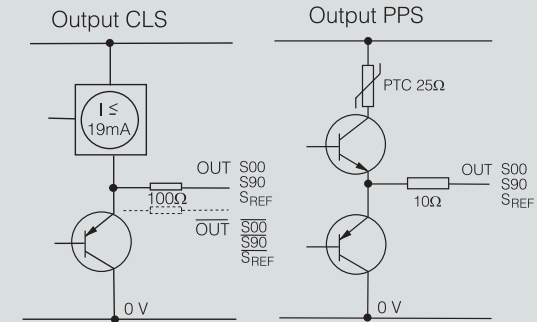
### Electrical option

| Power supply                   | 9-30 Vdc                |                        |
|--------------------------------|-------------------------|------------------------|
| Polarity protected             | Yes                     |                        |
| Output signals                 | Current Limited Source* | PTC Protected Source** |
| Short circuit protected        | Yes, in source          | Yes, in source         |
| Current consumption            | 60 mA at 24Vdc          | 60 mA at 24Vdc         |
| Max consumption                | 90 mA                   | 90 mA                  |
| Output load (max)              | +19 mA / - 40 mA        | ±40 mA                 |
| Output frequency (max)         | 200 kHz                 | 200 kHz                |
| U <sub>high</sub> at 10mA load | ---                     | > +EV - 4.0 V          |
| U <sub>low</sub> at 10mA load  | < 6 V                   | < 1.3 V                |
| Cable length (max)             | ---                     | 200 m @ 100 kHz        |
| STATUS output                  | Yes                     | Yes                    |
| High level                     | Encoder OK              | Encoder OK             |
| Low level                      | Warning/Failure         | Warning/Failure        |

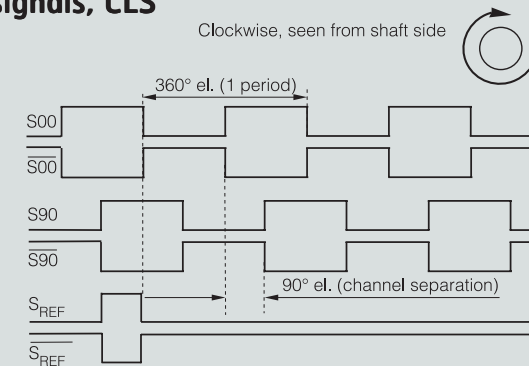
\* CLS = Current Limited Source (replaces model 521)

\*\* PPS = PTC Protected Source (replaces model 522)

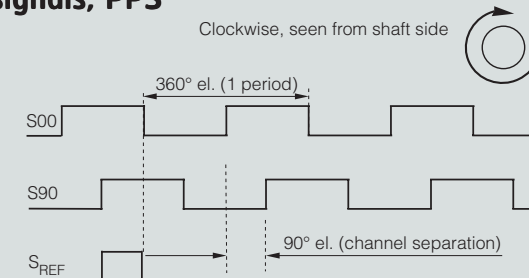
### Output circuit



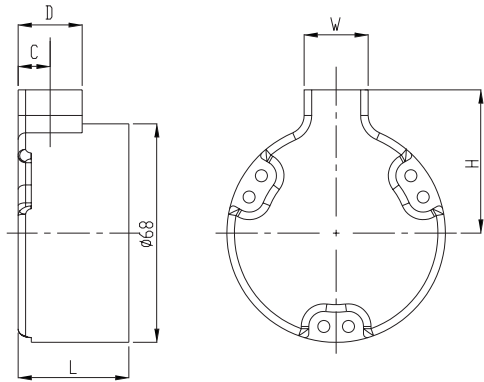
### Output signals, CLS



### Output signals, PPS



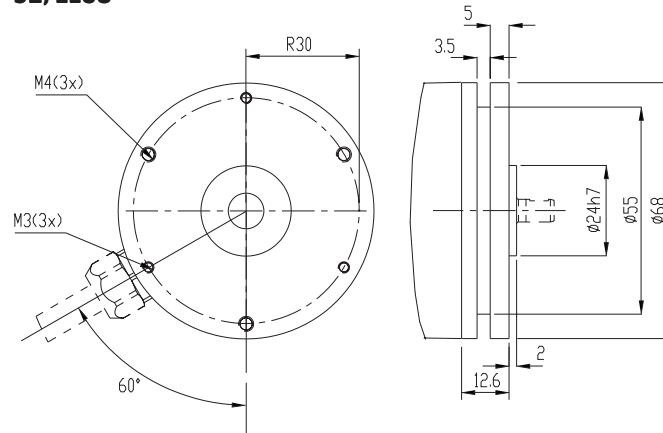
## Dimensions



| Connector | Orientation             | L    | H  | W | D | C  |
|-----------|-------------------------|------|----|---|---|----|
| Cable     | Radial $\varnothing 68$ | 44.7 | 34 | 0 | 0 | 14 |
| PT 8p     | Axial $\varnothing 68$  | 44.7 | -  | - | - | -  |
| MS 10p    | Axial $\varnothing 68$  | 44.7 | -  | - | - | -  |

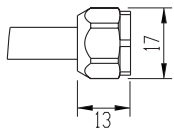
## Flanges

### 52, LL68

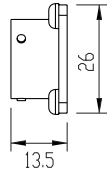


## Connectors

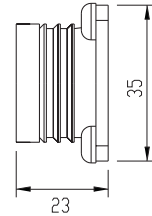
**Cable**  
5x2x0,25 shielded



**8pin PT**

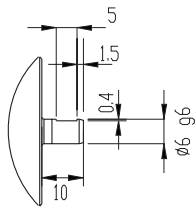


**10pin MS**

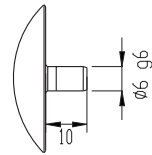


## Shafts

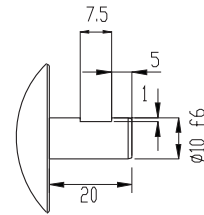
**6 mm with face**



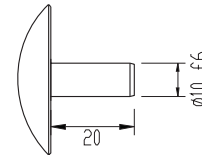
**6 mm round**



**10 mm with face**

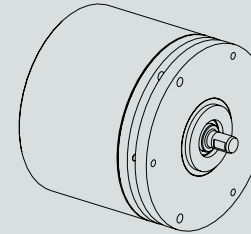


**10 mm round**



## Various combinations/example

**RSI 593 52**  
6 mm with face, radial cable



## Ordering information Tick your choice

|                      |          |              |           |               |
|----------------------|----------|--------------|-----------|---------------|
| Type                 | RSI 593  |              |           |               |
| Flange               | 52, LL68 |              |           |               |
| Shaft                | Ø6 round | Ø6 with face | Ø10 round | Ø10 with face |
| Electronics          | Supply   | 9-30Vdc      |           |               |
|                      | Output   | CLS PPS      |           |               |
| Connection           | Cable    | 8 pin PT     | 10 pin MS |               |
| Connecting direction | Radial   | Axial        | Axial     |               |
| Line count           | 1..5000  | 5001..10 000 |           |               |

**Please, specify line count and cable length when ordering**

Ordering example: RSI 593 52 Ø6ro 9-30Vdc 1024ppr CLS 8 pin PT Axial