

## MAIN FEATURES

Hollow shaft encoder series for industrial applications with high mechanical resistance requirements. These encoders are designed to withstand high radial and axial shaft loads.

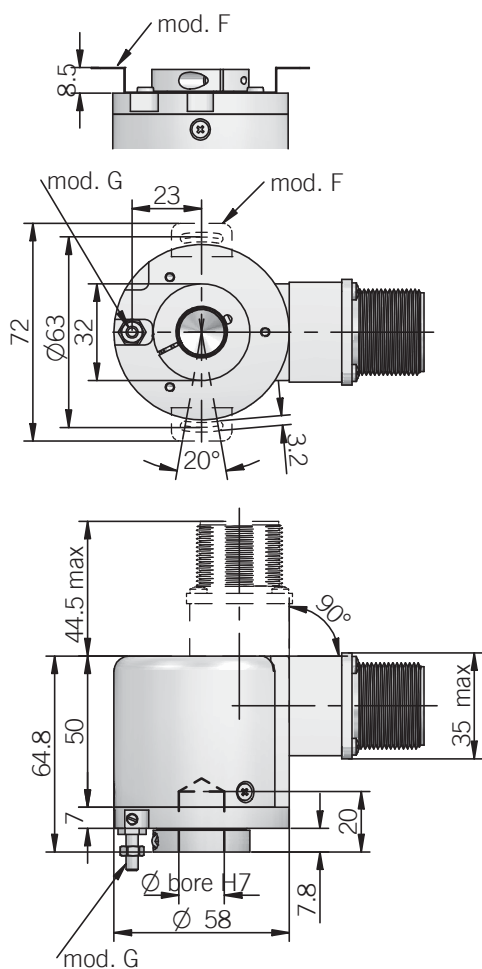
- Up to 25000 ppr with zero signal
- Several output types available
- Up to 28 V DC power supply
- Up to 300 kHz output frequency
- Cable or connector output



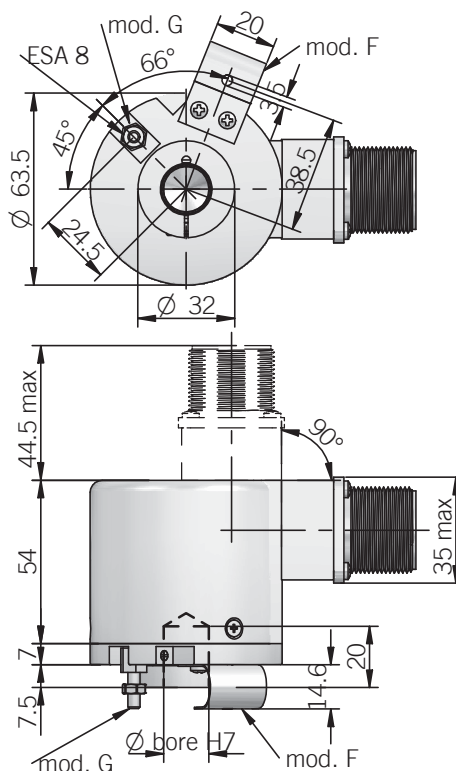
## ORDERING CODE

| ER 63 G M* 1000 Z 5/28 N 8 X 3 M R . XXX |  |  |  |  |  |  |  |  |  |  |  |                                                                           |  |
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------------------------------------|--|
| <b>SERIES</b>                            |  |  |  |  |  |  |  |  |  |  |  | <b>VARIANT</b>                                                            |  |
| incremental encoder series <b>EL</b>     |  |  |  |  |  |  |  |  |  |  |  | <b>XXX</b> custom version                                                 |  |
| incremental encoder series <b>ER</b>     |  |  |  |  |  |  |  |  |  |  |  | <b>DIRECTION TYPE</b>                                                     |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>A</b> axial (58 F / G, 63 F / G)                                       |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>R</b> radial                                                           |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>OUTPUT TYPE</b>                                                        |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>P</b> cable output (standard length 1.5 m)                             |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>M</b> M connector output (58 F / G, 63 F / G)                          |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>J</b> J connector output (58 F / G, 63 F / G)                          |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>MAX ROTATION SPEED</b>                                                 |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>3</b> 3000 rpm                                                         |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>ENCLOSURE RATING</b>                                                   |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>X</b> IP 54                                                            |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>S</b> IP 66 (available for 58 F / G, 63 F / G)                         |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>BORE DIAMETER</b>                                                      |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>8</b> mm                                                               |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>10</b> mm                                                              |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>12</b> mm                                                              |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>14</b> mm                                                              |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>15</b> mm                                                              |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>ELECTRONIC INTERFACE</b>                                               |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>N</b> NPN                                                              |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>C</b> NPN open collector                                               |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>P</b> push-pull                                                        |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>PC</b> protected push-pull (AEIC-7272)                                 |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>L</b> line driver                                                      |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>ZERO PULSE</b>                                                         |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | without zero pulse <b>S</b>                                               |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | with zero pulse <b>Z</b>                                                  |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | <b>POWER SUPPLY</b>                                                       |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | (available only with L electronic output) 5 V DC <b>5</b>                 |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | (available only with L or PC electronic output) 8 ... 24 V DC <b>8/24</b> |  |
|                                          |  |  |  |  |  |  |  |  |  |  |  | 5 ... 28 V DC <b>5/28</b>                                                 |  |

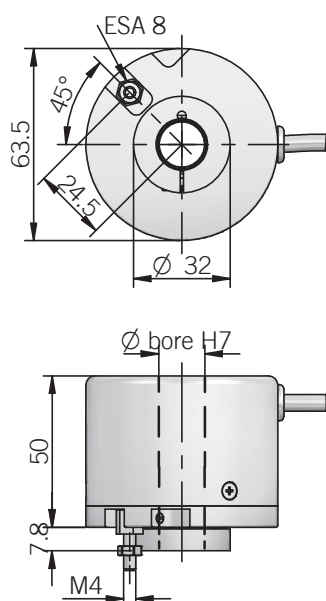
## EL - ER 58 F / G



## EL - ER 63 F / G



## EL 63 P



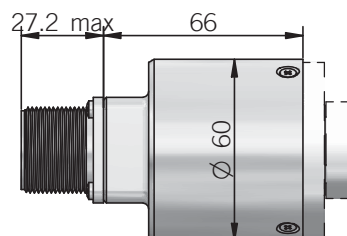
## EL 58 F, EL 63 F mounting instructions

1. Couple encoder shaft with motor shaft
2. Fix spring to motor flange without tightening it
3. Fix encoder shaft on motor shaft
4. Turn encoder for electrical adjustment (phasing)
5. Fix spring

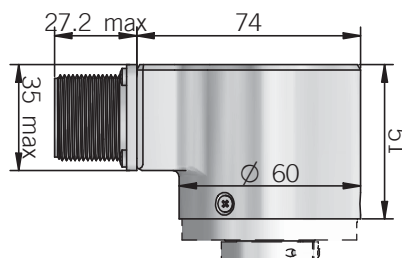
## EL 58 G, EL 63 G, EL 63 P mounting instructions

1. Fix anti-rotation pin on motor flange
2. Couple encoder shaft with motor shaft, making sure pin is inserted in the hole on the front part of the encoder (maintaining a minimum distance of 0.5 mm).
3. Fix encoder shaft on motor shaft

Dimensions with metal cover axial output



Dimensions with metal cover radial output



## Electrical specifications

|                                      |                                                                                                    |
|--------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Resolution</b>                    | from 1 to 2500 ppr (EL 58 G, EL 63 P)<br>from 1 to 24000 ppr (EL 58 F, EL 63 F / G)                |
| <b>Power supply</b>                  | 5 V DC $\pm$ 10%<br>5 ... 28 V DC $\pm$ 5%<br>8 ... 24 V DC $\pm$ 5% (reverse polarity protection) |
| <b>Power draw without load</b>       | 800 mW                                                                                             |
| <b>Max load current</b>              | 50 mA for channel<br>20 mA for channel (line driver)                                               |
| <b>Output type</b>                   | NPN / NPN open collector /<br>push-pull / line driver                                              |
| <b>Max output frequency</b>          | 300 kHz                                                                                            |
| <b>Counting direction</b>            | A leads B clockwise (shaft view)                                                                   |
| <b>Electromagnetic compatibility</b> | IEC 61000-6-2<br>IEC 61000-6-4                                                                     |

## ER series resolutions

100 - 120 - 128 - 150 - 200 - 240 - 250 - 256 - 300 - 360 - 400 - 480 - 500 - 512 - 600 - 625 - 720 - 750 - 800 - 900 - 1000 - 1024 - 1200 - 1250 - 1440 - 1500 - 1600 - 1800 - 2000 - 2048 - 2500

## EL series resolutions

1 - 2 - 4 - 5 - 10 - 15 - 16 - 20 - 25 - 30 - 32 - 40 - 50 - 60 - 70 - 80 - 90 - 160 - 180 - 350 - 450 - 660 - 700 - 3000 - 3600 - 4000 - 4096 - 5000 - 6000 - 7200 - 8000 - 8192 - 9000 - 10000 - 10240 - 12000 - 14400 - 16000 - 16384 - 18000 - 20000 - 20480 - 24000

## Mechanical specifications

|                              |                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------|
| <b>Shaft diameter</b>        | $\varnothing$ 8 / 10 / 12 / 14 / 15 mm                                                    |
| <b>Enclosure rating</b>      | IP 54 (IEC 60529)<br>IP 66 (available for 58 F / G, 63 F / G) (IEC 60529)                 |
| <b>Max rotation speed</b>    | 3000 rpm                                                                                  |
| <b>Max shaft load</b>        | 200 N (20 kp)                                                                             |
| <b>Shock</b>                 | 50 G, 11 ms up to 2500 ppr (IEC 60068-2-27)<br>20 G, 11 ms from 3000 ppr (IEC 60068-2-27) |
| <b>Vibration</b>             | 10 G, 10 ... 2000 Hz (IEC 60068-2-6)                                                      |
| <b>Body material</b>         | EN-AW 2011 aluminum                                                                       |
| <b>Shaft material</b>        | 1.4305 / AISI 303 stainless steel                                                         |
| <b>Housing material</b>      | PA 66 glass fiber reinforced / painted aluminum                                           |
| <b>Bearings</b>              | 2 ball bearings                                                                           |
| <b>Bearings life</b>         | 10 <sup>9</sup> revolutions                                                               |
| <b>Operating temperature</b> | -10° ... +60°C EL series<br>-20° ... +70°C ER series                                      |
| <b>Storage temperature</b>   | -25° ... +70°C                                                                            |
| <b>Weight</b>                | 350 g                                                                                     |

## Connections

| Function | N / C / P<br>cable output | Line driver<br>cable output | Output J7<br>N / C / P | Output J7<br>Line Driver<br>without Zero | Output M7<br>N / C / P | Output M7<br>Line Driver<br>without Zero | Output J10<br>Line Driver<br>with Zero | Output M10<br>Line Driver<br>with Zero |
|----------|---------------------------|-----------------------------|------------------------|------------------------------------------|------------------------|------------------------------------------|----------------------------------------|----------------------------------------|
| +V DC    | red                       | red                         | 6                      | 4                                        | F                      | D                                        | 4 - 5                                  | D - E                                  |
| 0 V      | black                     | black                       | 1                      | 6                                        | A                      | F                                        | 6                                      | F                                      |
| Ch. A    | green                     | green                       | 3                      | 1                                        | C                      | A                                        | 1                                      | A                                      |
| Ch. A-   | /                         | brown                       | /                      | 3                                        | /                      | C                                        | 7                                      | G                                      |
| Ch. B    | yellow                    | yellow                      | 5                      | 2                                        | E                      | B                                        | 2                                      | B                                      |
| Ch. B-   | /                         | orange                      | /                      | 5                                        | /                      | E                                        | 8                                      | H                                      |
| Ch. Z    | blue                      | blue                        | 4                      | /                                        | D                      | /                                        | 3                                      | C                                      |
| Ch. Z-   | /                         | white                       | /                      | /                                        | /                      | /                                        | 9                                      | I                                      |
| ⏏        | shield                    | shield                      | 7                      | 7                                        | G                      | G                                        | 10                                     | J                                      |