

## OFFICIAL DISTRIBUTOR

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ENCODER ROD 426 1024 ROD4261024 TTL 1024 PPR +5V REPLACEMENT  
ID23563



**PRECIZIKA**  
METROLOGY



# A58

A58M, A58B,  
A58C, A58C2,  
A58C3, A58D

## PHOTOELECTRIC ROTARY ENCODER



The photoelectric rotary encoder A58 is used to establish an informational link between the key machine components, industrial robots, comparators and DCC, NC or Digital Readout Units. It provides information about the value and direction of the motion. The encoder is used in automatic control, on-line gauging, process monitoring systems, etc.

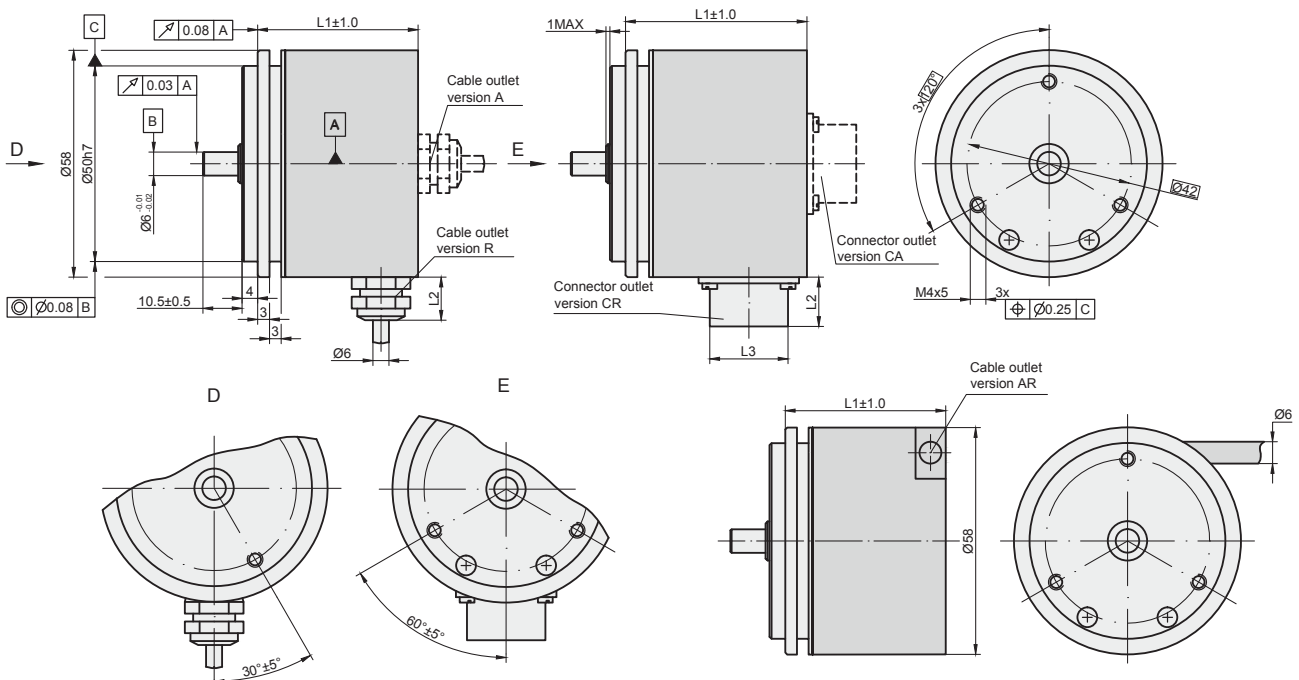
Three versions of output signals are available:

- A - sinusoidal signals, with amplitude approx. 1  $\mu$ App;
- AV - sinusoidal signals, with amplitude approx. 1 Vpp;
- F - square-wave signals TTL or HTL.

### MECHANICAL DATA

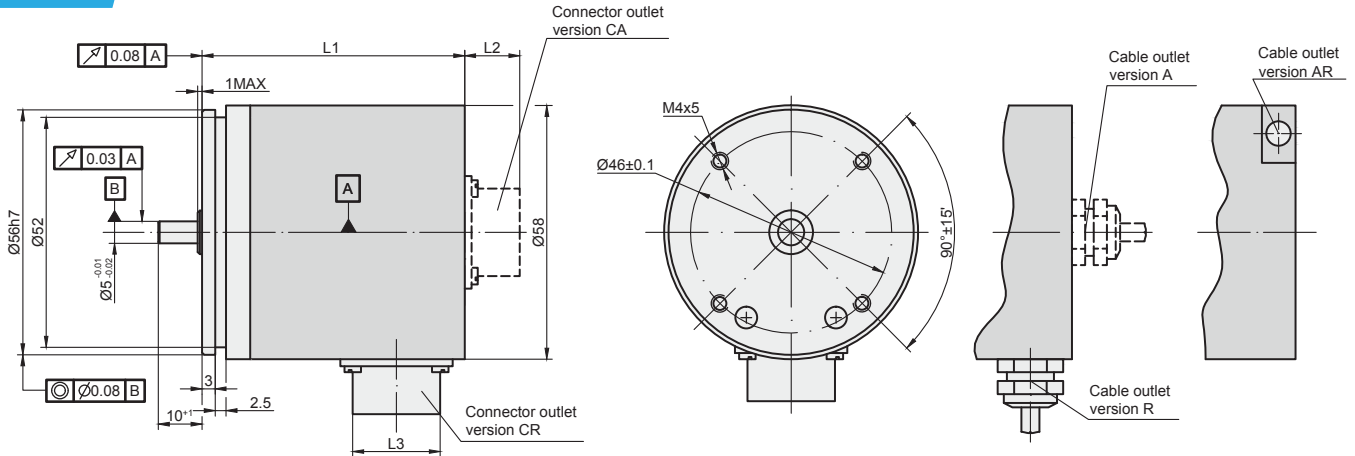
|   |   |  |                              |
|---|---|--|------------------------------|
| Line number on disc (z)                     | 100; 250; 500; 600;<br>800; 1000; 1024;<br>1125; 1250; 1500;<br>2000; 2048; 2500;<br>3000; 3600; 4000;<br>5000; 9000; 10800 | Accuracy (T <sub>1</sub> -period of lines on disc in arc. sec) | $\pm 0.1T_1$ , arc. sec      |
| Pulse number per shaft revolution for A58-F | Z x k, where<br>k=1,2,3,4,5,8,10  | Starting torque at 20°C  | $\leq 0.01$ Nm               |
| Maximum shaft speed                         | 12000 rpm   | Rotor moment of inertia  | $< 15$ gcm <sup>2</sup>      |
| Maximum shaft load:<br>- axial              | 10 N  | Protection (IEC 529)   | IP64                         |
| - radial (at shaft end)                     | 20 N  | Maximum weight without cable                                   | 0.25 kg                      |
|   |   | Operating temperature  | -10...+70 °C                 |
|   |   | Storage temperature  | -30...+80 °C                 |
|   |   | Maximum humidity (non-condensing)                              | 98 %                         |
|   |   | Permissible vibration (55 to 2000 Hz)                          | $\leq 100$ m/s <sup>2</sup>  |
|   |   | Permissible shock (11 ms)                                      | $\leq 1000$ m/s <sup>2</sup> |

### A58M



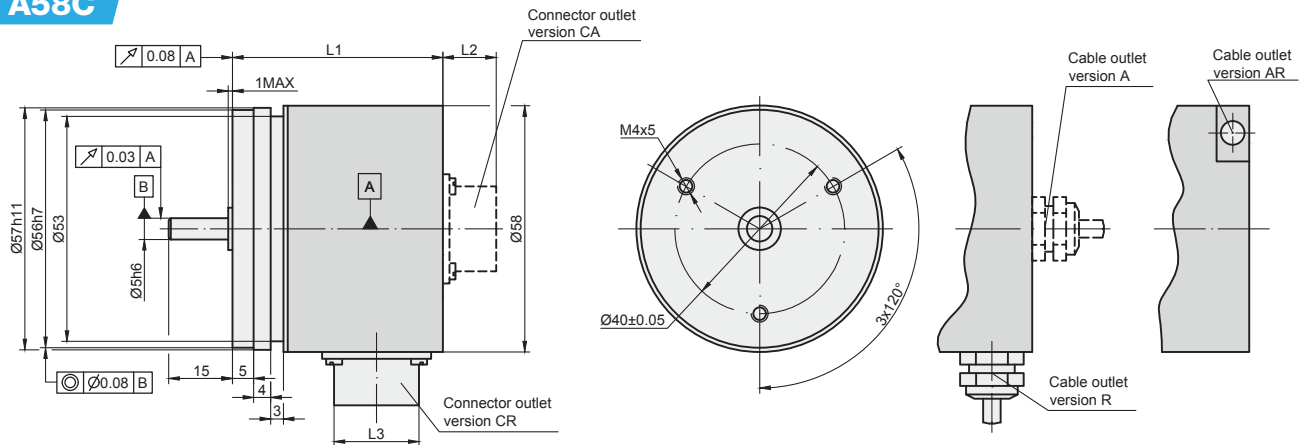
| Connector type / cable outlet | ONC axial | RS10 axial | C12, C9 axial | ONC radial | RS10 radial | C12, C9 radial | Cable axial (ver. A) | Cable radial (ver. R) | Cable axial-radial (ver. AR) |
|-------------------------------|-----------|------------|---------------|------------|-------------|----------------|----------------------|-----------------------|------------------------------|
| L1                            | 41 mm     | 41 mm      | 41 mm         | 54 mm      | 53 mm       | 53 mm          | 41 mm                | 41 mm                 | 43 mm                        |
| L2                            | 16 mm     | 9 mm       | 22 mm         | 16 mm      | 9 mm        | 22 mm          | 12 mm                | 12 mm                 | -                            |
| L3                            | M24       | M14        | M23           | M24        | M14         | M23            | -                    | -                     | -                            |

## A58B



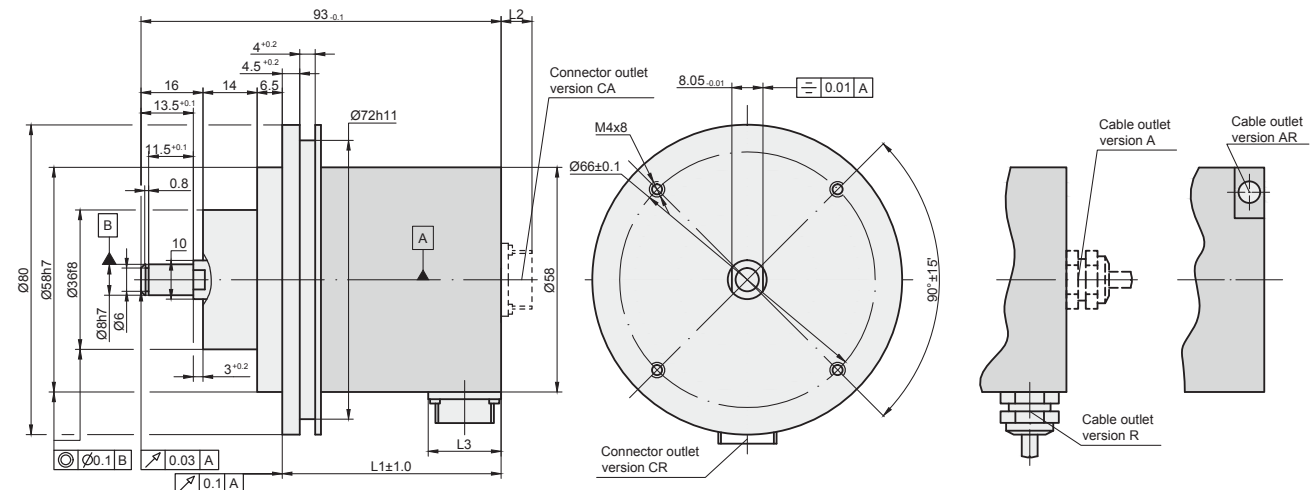
| Connector type / cable outlet | ONC axial | RS10 axial | C12, C9 axial | ONC radial | RS10 radial | C12, C9 radial | Cable axial (ver. A) | Cable radial (ver. R) | Cable axial-radial (ver. AR) |
|-------------------------------|-----------|------------|---------------|------------|-------------|----------------|----------------------|-----------------------|------------------------------|
| L1                            | 44.5 mm   | 44.5 mm    | 44.5 mm       | 57.5 mm    | 56.5 mm     | 56.5 mm        | 44.5 mm              | 44.5 mm               | 46.6 mm                      |
| L2                            | 16 mm     | 9 mm       | 22 mm         | 16 mm      | 9 mm        | 22 mm          | 12 mm                | 12 mm                 | -                            |
| L3                            | M24       | M14        | M23           | M24        | M14         | M23            | -                    | -                     | -                            |

## A58C



| Connector type / cable outlet | ONC axial | RS10 axial | C12, C9 axial | ONC radial | RS10 radial | C12, C9 radial | Cable axial (ver. A) | Cable radial (ver. R) | Cable axial-radial (ver. AR) |
|-------------------------------|-----------|------------|---------------|------------|-------------|----------------|----------------------|-----------------------|------------------------------|
| L1                            | 47 mm     | 47 mm      | 47 mm         | 60 mm      | 59 mm       | 59 mm          | 47 mm                | 47 mm                 | 49 mm                        |
| L2                            | 16 mm     | 9 mm       | 22 mm         | 16 mm      | 9 mm        | 22 mm          | 12 mm                | 12 mm                 | -                            |
| L3                            | M24       | M14        | M23           | M24        | M14         | M23            | -                    | -                     | -                            |

## A58C2



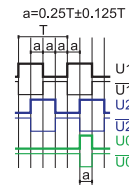
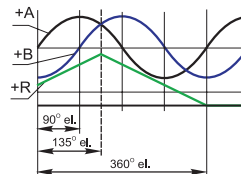
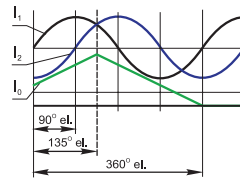
| Connector type / cable outlet | ONC axial | RS10 axial | C12, C9 axial | ONC radial | RS10 radial | C12, C9 radial | Cable axial (ver. A) | Cable radial (ver. R) | Cable axial-radial (ver. AR) |
|-------------------------------|-----------|------------|---------------|------------|-------------|----------------|----------------------|-----------------------|------------------------------|
| L1                            | 44.5 mm   | 44.5 mm    | 44.5 mm       | -          | 56.5 mm     | 56.5 mm        | 44.5 mm              | 44.5 mm               | 46.5 mm                      |
| L2                            | 16 mm     | 9 mm       | 22 mm         | 16 mm      | 9 mm        | 22 mm          | 12 mm                | 12 mm                 | -                            |
| L3                            | M24       | M14        | M23           | M24        | M14         | M23            | -                    | -                     | -                            |



## ELECTRICAL DATA

| VERSION                            | A58-A $\sim$ 11 $\mu$ App  | A58-AV $\sim$ 1 Vpp   | A58-F $\square$ TTL; $\square$ HTL   |
|------------------------------------|--|---|--|
| Supply voltage ( $U_p$ )           | +5 V $\pm$ 5%  | +5 V $\pm$ 5%   | +5 V $\pm$ 5%; +(10 to 30) V   |
| Max. supply current (without load) | 80 mA  | 120 mA  | 120 mA   |
| Light source                       | LED  | LED   | LED  |
| Incremental signals                | Two sinusoidal $I_1$ and $I_2$<br>Amplitude at 1 k $\Omega$ load:<br>- $I_1$ = 7-16 $\mu$ A<br>- $I_2$ = 7-16 $\mu$ A              | Differential sine +A/-A and +B/-B<br>Amplitude at 120 $\Omega$ load:<br>- A = 0.6-1.2 V<br>- B = 0.6-1.2 V                                    | Differential square-wave $U1/\overline{U1}$ and $U2/\overline{U2}$ .<br>Signal levels at 20 mA load current:<br>- low (logic "0") $\leq$ 0.5 V at $U_p=+5$ V<br>- low (logic "0") $\leq$ 1.5 V at $U_p=10$ to 30 V<br>- high (logic "1") $\geq$ 2.4 V at $U_p=+5$ V<br>- high (logic "1") $\geq$ ( $U_p-2$ ) V at $U_p=10$ to 30 V |
| Reference signal                   | One quasi-triangular $I_0$ peak per revolution. Signal magnitude at 1 k $\Omega$ load:<br>- $I_0$ = 2-8 $\mu$ A (usable component) | One quasi-triangular +R and its complementary -R per revolution. Signals magnitude at 120 $\Omega$ load<br>- R = 0.2-0.8 V (usable component) | One differential square-wave $U0/\overline{U0}$ per revolution. Signal levels at 20 mA load current:<br>- low (logic "0") < 0.5 V at $U_p=+5$ V<br>- low (logic "0") < 1.5 V at $U_p=10$ to 30 V<br>- high (logic "1") > 2.4 V at $U_p=+5$ V<br>- high (logic "1") > ( $U_p-2$ ) V at $U_p=10$ to 30 V                             |
| Maximum operating frequency        | (-3 dB) $\geq$ 160 kHz   | (-3 dB) $\geq$ 180 kHz  | (160 x k) kHz, k-interpolation factor  |
| Direction of signals               | $I_2$ lags $I_1$ for clockwise rotation (viewed from shaft side)   | +B lags +A for clockwise rotation (viewed from shaft side)  | $U2$ lags $U1$ with clockwise rotation (viewed from shaft side)  |
| Maximum rise and fall time         | -  | -   | < 0,5 $\mu$ s  |
| Standard cable length              | 1 m, without connector   | 1 m, without connector  | 1 m, without connector   |
| Maximum cable length               | 5 m  | 25 m  | 25 m   |

Output signals



Note:

- Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
- If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm<sup>2</sup>.

## ACCESSORIES

|                                |                               |                              |                               |                            |                                |                                |                               |
|--------------------------------|-------------------------------|------------------------------|-------------------------------|----------------------------|--------------------------------|--------------------------------|-------------------------------|
| <b>CONNECTORS FOR CABLE</b>    | B12<br>12-pin round connector | C9<br>12-pin round connector | C12<br>12-pin round connector | D9<br>9-pin flat connector | D15<br>15-pin flat connector   | RS10<br>10-pin round connector | ONC<br>10-pin round connector |
| <b>CONNECTORS ON HOUSING</b>   | C9<br>12-pin round connector  |                              | C12<br>12-pin round connector |                            | RS10<br>10-pin round connector |                                | ONC<br>10-pin round connector |
| <b>DIGITAL READOUT DEVICES</b> | CS3000                        |                              |                               | CS5500                     |                                |                                |                               |
| <b>COUPLING</b>                | SC30                          |                              |                               |                            |                                |                                |                               |
| <b>EXTERNAL INTERPOLATOR</b>   | NK                            |                              |                               |                            |                                |                                |                               |

## ORDER FORM

| TYPE:  | OUTPUT SIGNALS VERSION:  | PULSE NUMBER PER REVOLUTION: | OPTIONAL LINE NUMBER ON DISC (Z):               | SUPPLY VOLTAGE:   | CABLE LENGTH AND OUTLET OR FLANGE SOCKET ON CASE OUTLET:   | CONNECTOR OR FLANGE SOCKET TYPE:  | COUPLING:                        |
|--|--|------------------------------|---|---|--|---|----------------------------------|
| M - A58M<br>B - A58B<br>C - A58C<br>C2 - A58C2<br>C3 - A58C3<br>D - A58D | A<br>AV<br>F   | 100<br>...<br>108000         | 100<br>...<br>10800<br><br>* only for F-signals | 05V - +5V<br>30V - +(10 to 30)V*<br><br>*only for A58-F with HTL output signals | A01 - 1m (A-axial cable)<br>...<br>R01 - 1m (R-radial cable)<br>...<br>AR01 - 1m (AR-universal cable outlet)<br>...<br>CA - flange socket axial<br>CR - flange socket radial | W* - without connector<br>B12* - round, 12 pins<br>C9 - round, 9 pins<br>C12 - round, 12 pins<br>D9* - flat, 9 pins<br>D15* - flat, 15 pins<br>RS10 - round, 10 pins<br>ONC - round, 10 pins<br><br>*only for cable | 0 - without<br>1 - with coupling |
| ORDER EXAMPLES:  | 1) A58M-A-1024-05V-A01/W-0<br>2) A58B-F-2500-05V-AR01/W-1<br>3) A58B-F-2500/500-05V-AR01/W-1 |                              |   |   |  |   |                                  |