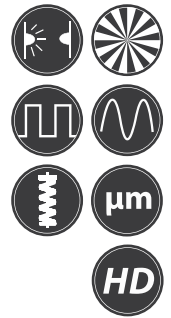


# A58HE

## PHOTOELECTRIC ROTARY ENCODER



The encoder A58HE is used to measure angular position of the key machine components, industrial robots, comparators, rotary tables, servo drives and to establish an informational link with DCC, NC or Digital Readout Units.

The encoder has integrated stator coupling so it can be fixed directly on the object shaft. Mounting adapter - similar to adapter of encoder A58H - is available on request.

The encoder is used in automatic control, on-line gauging, process monitoring systems, etc.

The case of encoder is mounted via four screws M3 through adapter. The encoder is coupled via shaft collar.

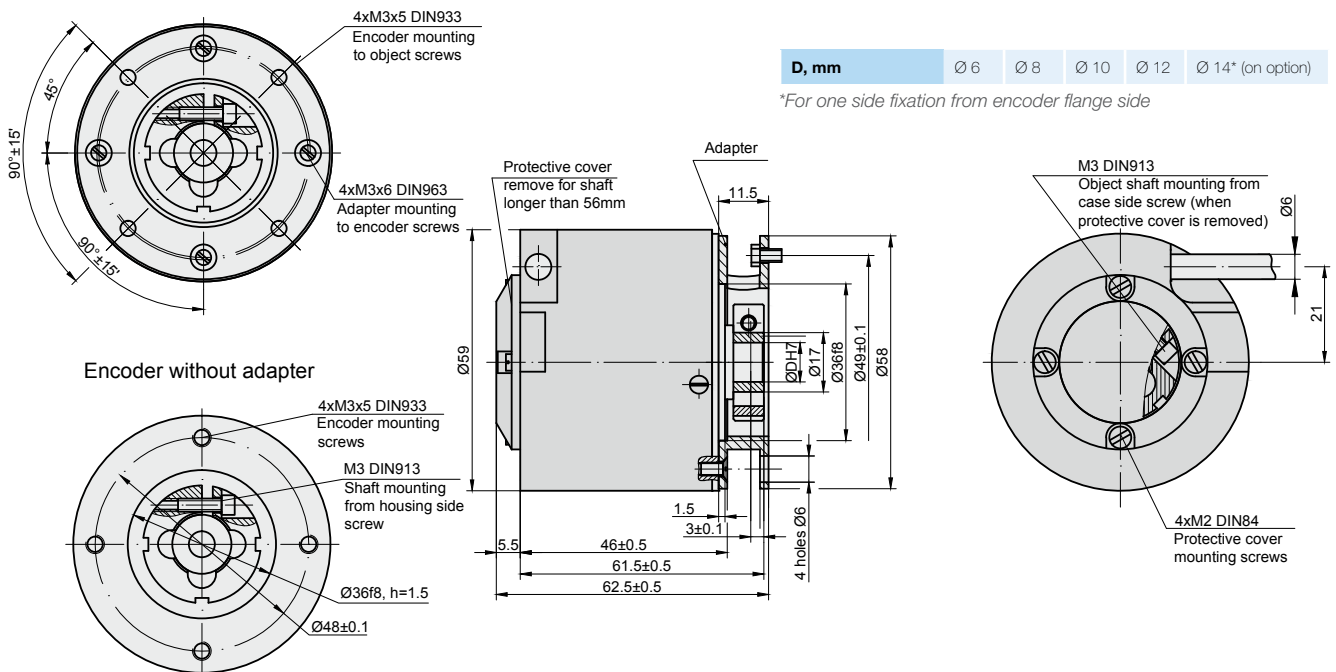
Three versions of output signals are available:

- A58H-A - sinusoidal signals, with amplitude approx. 11  $\mu$ App;
- A58H-AV - sinusoidal signals, with amplitude approx. 1 Vpp;
- A58H-F - square-wave signals (TTL or HTL) with integrated subdividing electronics for interpolation x1, x2, x3, x4, x5, x8, x10.

### 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 |
| Pulse number per shaft revolution for A58-F                    | Z x k, where<br>k=1,2,3,4,5,8,10<br>(k - interpolation factor)  |
| Maximum shaft speed  | 10000 rpm   |
| Permissible motion of shaft:                                   | $\pm 0.03$ mm   |
| - axial  | 0.05 mm   |
| - radial (at shaft end)  |   |
| Accuracy (T <sub>1</sub> -period of lines on disc in arc. sec) | $\pm 0.1T_1$ arc. sec   |
| - on option for z < 5000                                       | $\pm 0.05T_1$ arc. sec  |
| - on option for z > 5000                                       | $\pm 12.0$ arc. sec   |

|                                       |   |
|---------------------------------------|---|
| Starting torque at 20°C               | $\leq 0.025$ Nm                         |
| Rotor moment of inertia               | $< 1.5 \times 10^{-4}$ kgm <sup>2</sup> |
| Protection (housing) ( IEC 529)       | IP64                                    |
| Protection (shaft side) ( IEC 529)    | IP64                                    |
| Maximum weight without cable          | 0.35 kg                                 |
| Operating temperature                 | 0...+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)             | $\leq 300$ m/s <sup>2</sup>             |



**D, mm**    Ø 6    Ø 8    Ø 10    Ø 12    Ø 14\* (on option)

\*For one side fixation from encoder flange side

## ELECTRICAL DATA

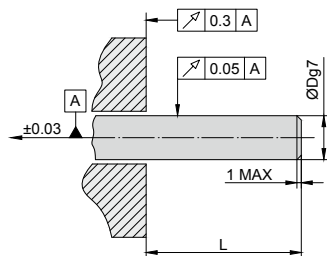
| VERSION                            | A58HE-A $\sim 11 \mu\text{App}$   | A58HE-AV $\sim 1 \text{Vpp}$   | A58HE-F $\square$ TTL; $\square$ HTL  |
|------------------------------------|---|--|---|
| Supply voltage (U <sub>p</sub> )   | +5 V ± 5%   | +5 V ± 5%  | +5 V ± 5%; +(10 to 30) V  |
| Max. supply current (without load) | 80 mA   | 120 mA   | 120 mA  |
| Light source                       | LED   | LED  | LED   |
| Incremental signals                | Two sinusoidal I <sub>1</sub> and I <sub>2</sub><br>Amplitude at 1 k $\Omega$ load:<br>- I <sub>1</sub> = 7-16 $\mu\text{A}$<br>- I <sub>2</sub> = 7-16 $\mu\text{A}$ | 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/ $\overline{\text{U1}}$ and U2/ $\overline{\text{U2}}$ . Signal levels at 20 mA load current:<br>- low (logic "0") $\leq 0.5 \text{ V}$ at U <sub>p</sub> =+5 V<br>- low (logic "0") $\leq 1.5 \text{ V}$ at U <sub>p</sub> =10 to 30 V<br>- high (logic "1") $\geq 2.4 \text{ V}$ at U <sub>p</sub> =+5 V<br>- high (logic "1") $\geq (U_p - 2) \text{ V}$ at U <sub>p</sub> =10 to 30 V |
| Reference signal                   | One quasi-triangular I <sub>0</sub> peak per revolution. Signal magnitude at 1 k $\Omega$ load:<br>- I <sub>0</sub> = 2-8 $\mu\text{A}$ (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/ $\overline{\text{U0}}$ per revolution. Signal levels at 20 mA load current:<br>- low (logic "0") < 0.5 V at U <sub>p</sub> =+5 V<br>- low (logic "0") < 1.5 V at U <sub>p</sub> =10 to 30 V<br>- high (logic "1") > 2.4 V at U <sub>p</sub> =+5 V<br>- high (logic "1") > (U <sub>p</sub> -2) V at U <sub>p</sub> =10 to 30 V  |
| Maximum operating frequency        | (-3 dB) $\geq 160 \text{ kHz}$  | (-3 dB) $\geq 180 \text{ kHz}$   | (160 x k) kHz, k-interpolation factor   |
| Direction of signals               | I <sub>2</sub> lags I <sub>1</sub> for clockwise rotation   | +B lags +A for clockwise rotation  | U2 lags U1 with clockwise rotation  |
| Maximum rise and fall time         | -   | -  | < 0.5 $\mu\text{s}$   |
| 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:

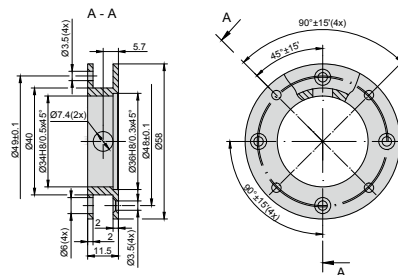
- Maximum working rotation speed (with proper encoder counting) is limited by maximum operating frequency and maximum mechanical rotation speed.
- If cable extension is used, power supply conductor cross-section should not be smaller than 0.5 mm<sup>2</sup>.

## MOUNTING REQUIREMENTS

|       |   |
|-------|---|
| L, mm | 11 min for one side fixation                |
|       | 56 min for both side fixation               |
|       | 56 max for version with protective cover    |
|       | 11 min for version without protective cover |



## ADAPTER



## ACCESSORIES

|                                |                               |                             |                               |                            |                              |                                |                               |
|--------------------------------|-------------------------------|-----------------------------|-------------------------------|----------------------------|------------------------------|--------------------------------|-------------------------------|
| <b>CONNECTORS FOR CABLE</b>    | B12<br>12-pin round connector | C9<br>9-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>DIGITAL READOUT DEVICES</b> | CS3000                        |                             |                               | CS5000                     |                              |                                |                               |
| <b>EXTERNAL INTERPOLATOR</b>   | NK                            |                             |                               |                            |                              |                                |                               |

## ORDER FORM

| A58HE                         | - XX -                              | XXXX/XXXX   | - XX -  | XX   | - XX/X -                                   | X  |   |
|-------------------------------|-------------------------------------|---|---|--|--|--|---|
| <b>OUTPUT SIGNAL VERSION:</b> | <b>PULSE NUMBER PER REVOLUTION:</b> | <b>OPTIONAL LINE NUMBER ON DISC (Z):</b>  | <b>SHAFT HOLE DIAMETER:</b>   | <b>SUPPLY VOLTAGE:</b>   | <b>CABLE LENGTH:</b>                       | <b>CONNECTOR TYPE:</b>   | <b>ADAPTER:</b>                         |
| A<br>AV<br>F                  | 1...100<br>...<br>1...108000        | 100<br>...<br>10800<br><br>*only for A58HE-F  | 6, 8, 10, 12, 14* mm<br><br>*with additional hub for shaft mounting, for one side fixation from flange side | 05V - +5V<br>30V - +(10 to 30) V*<br><br>*only for A58HE-F with HTL output | AR01 - 1m<br>AR02 - 2m<br>AR03 - 3m<br>... | 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 | W - without adapter<br>S - with adapter |
| ORDER EXAMPLES:               |                                     | 1) A58HE-AV-1024-6-05V-AR01/W-W<br>2) A58HE-F-4000-8-30V-AR06/C12-S<br>3) A58HE-F-4000/500-8-30V-AR06/C12-S |   |  |  |  |   |