

MAIN EXPORT COUNTRIES:



The company under the name **JSC "Precizika Metrology"** began work after the change of name of the Lithuanian - American Joint Venture "Brown & Sharpe - Precizika". The company has a proud history of old traditions in the leadership of design and production of metrological equipment. Its workforce has been involved for over fifty years in the supply of measuring technology and systems to automate factories as well as in the development of optical scale manufacturing technology.

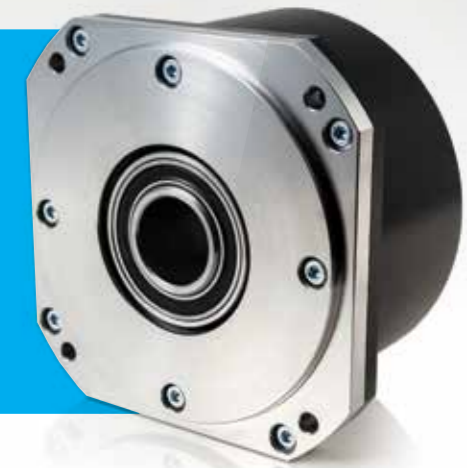
In 2000, the production process was certified to fully meeting the requirements of EN ISO 9002:1994, in 2003 – EN ISO 9001:2000.

The company's goal is to consistently supply high quality products and services to meet customer demands on a timely basis. The company's main products are linear and angular glass scale gratings, and the linear and rotary displacement measuring systems.

**JSC "Precizika Metrology"** represents worldwide known companies and suppliers of measuring equipment, CNC centers, executes installation and services of them, trains the users, and executes upgrading of used CMM and manual cutting machine-tools.

# A110

PHOTOELECTRIC ANGLE ENCODER



The semi-precision photoelectric rotary encoder A110 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 motion. The encoder is used in automatic control, on-line gauging, process monitoring systems, etc. Three versions of output signals are available:

- A110-A - sinusoidal signals, with amplitude approx. 11  $\mu$ App;
- A110-AV - sinusoidal signals, with amplitude approx. 1 Vpp;
- A110-F - square-wave signals (TTL), with integrated subdividing electronics for interpolation x1, x2, x5, x10, x20, x25, x50 and x100.

The modification with distance-coded reference marks is available.



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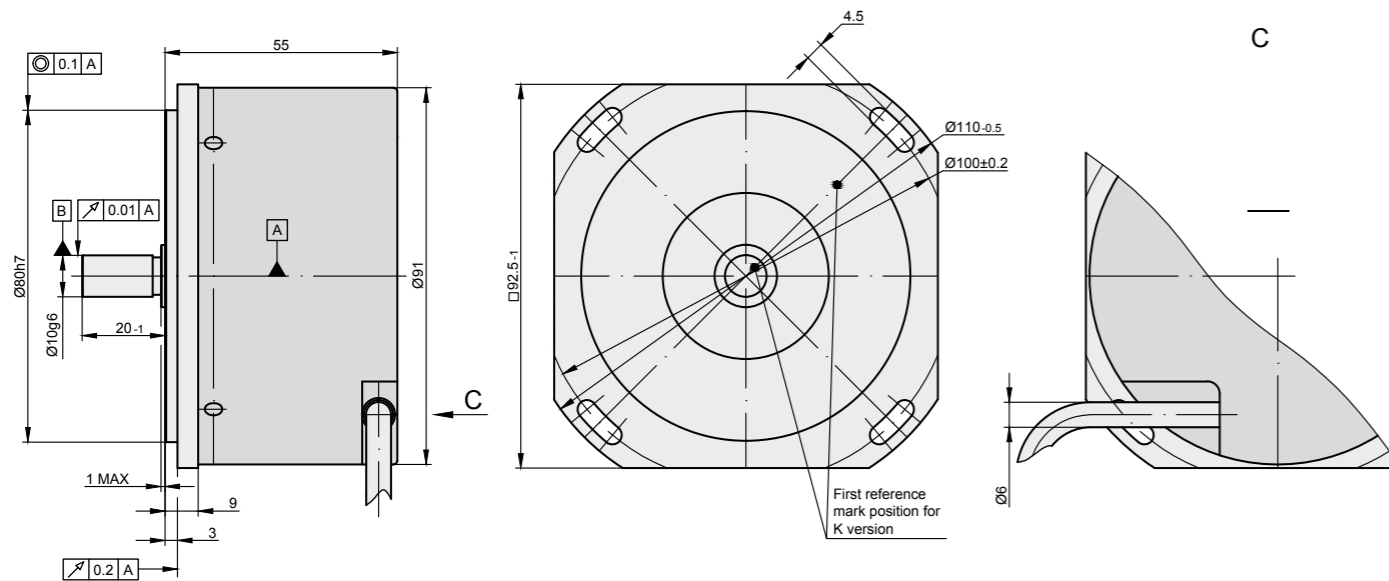
# A110

## RECOMMENDED APPLICATIONS



## MECHANICAL DATA

|   |  |                                   |  |
|---|--|-----------------------------------|--|
| Line number on disc (z)                                     | 18000  | Accuracy                          | $\pm 7.5; \pm 5.0$ arc. sec            |
| Number of output pulses per revolution for A90H-F           | 18000; 36000; 90000;<br>180000; 360000; 450000;<br>900000; 1800000 | Starting torque at 20°C           | $\leq 0.01$ Nm                         |
| Reference signal:<br>- standard (S)<br>- distance-coded (K) | one per shaft<br>36 per shaft revolution                           | Rotor moment of inertia           | $< 20 \times 10^{-6}$ kgm <sup>2</sup> |
| Maximum shaft speed   | 5000 rpm   | Protection (IEC 529)              | IP64                                   |
| Maximum shaft load:<br>- axial<br>- radial (at shaft end)   | 10 N<br>10 N   | Maximum weight without cable      | 0.7 kg                                 |
|   |  | Operating temperature             | 0...+50 °C                             |
|   |  | Storage temperature               | -30...+80°C                            |
|   |  | Maximum humidity (non condensing) | 98 %                                   |
|   |  | Permissible vibration             | $\leq 100$ m/s <sup>2</sup>            |
|   |  | Permissible shock (6 ms)          | $\leq 300$ m/s <sup>2</sup>            |



## ELECTRICAL DATA

| VERSION                            | A110-A $\sim 11 \mu\text{App}$  | A110-AV $\sim 1 \text{ Vpp}$  | A110-F $\square$ TTL  |
|------------------------------------|---|---|---|
| Supply voltage (U <sub>s</sub> )   | +5 V $\pm 5\%$  | +5 V $\pm 5\%$  | +5 V $\pm 5\%$  |
| 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/ $\bar{U}1$ and U2/ $\bar{U}2$ .<br>Signal levels at 20 mA load current:<br>- low (logic "0") $\leq 0.5$ V<br>- high (logic "1") $\geq 2.4$ 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 = 2-8 V (usable component) | One differential square-wave U0/ $\bar{U}0$ per revolution. Signal levels at 20 mA load current:<br>- low (logic "0") $< 0.5$ V<br>- high (logic "1") $> 2.4$ 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 <sub>2</sub> lags I <sub>1</sub> 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         | -   | -   | $< 0.5$ $\mu\text{s}$   |
| 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>.

## 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>DIGITAL READOUT DEVICES</b> | CS3000                        |                              |                               |                            | CS5500                       |                                |                               |
| <b>COUPLING</b>                | SC70                          |                              |                               |                            |                              |                                |                               |
| <b>EXTERNAL INTERPOLATOR</b>   | NK                            |                              |                               |                            |                              |                                |                               |

## ORDER FORM

| OUTPUT SIGNAL VERSION: | PULSE NUMBER PER REVOLUTION: | REFERENCE SIGNAL:   | ACCURACY GRADE:                                    | CABLE LENGTH:                              | CONNECTOR TYPE:  | COUPLING:                                 |
|------------------------|------------------------------|---|--|--|--|---|
| A<br>AV<br>F           | 18000<br>...<br>1800000      | S - one per revolution,<br>K - 36 per revolution,<br>distance coded | 50 - $\pm 5.0$ arc.sec.<br>75 - $\pm 7.5$ arc.sec. | 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 | 0 - without coupling<br>1 - with coupling |

ORDER EXAMPLE:

1) A110-F-18000-K-50-AR02/C12-0