



Absolute encoders ATM60 SSI

ATM60-A1A12X12



Model Name > ATM60-A1A12X12
Part No. > 1030005



Illustration may differ

At a glance

- Extremely rugged, tried-and-tested absolute multiturn encoder with a resolution of up to 26 bits
- Mechanical interface: face mount flange, servo flange, blind hollow shaft and extensive adapter accessories
- Zero-set and preset functions via hardware or software
- No battery required
- Electrical interface: SSI with gray or binary code type
- Electronically adjustable, configurable resolution
- Rotary axis function (optional) also for non-binary resolutions (per revolution) and decimal numbers (number of revolutions)
- Magnetic scanning

Your benefits

- Fewer variants are required since one freely programmable encoder offers all singleturn and multiturn resolutions
- Easy setup due to various connectivity options (cable, M23)
- Less maintenance and a long service life reduce overall costs
- Application flexibility due to easily interchangeable collets for the blind hollow shaft
- Quick commissioning using the zero set/preset function either at the press of the button on the device or via software
- Increased productivity due to highly reliable shock and vibration resistance
- Worldwide availability and service ensure quick and reliable customer service



Performance

| | |
|--------------------------------------|------------------------|
| Max. number of steps per revolution: | 4,096 |
| Max. number of revolutions: | 4,096 |
| Resolution power: | 4,096 x 4,096 |
| Resolution: | 12 bit x 12 bit |
| Error limits: | ± 0.25 ° |
| Repeatability (Ta not constant): | 0.1 ° |
| Measuring step: | 0.043 ° |
| Initialization time: | 1,050 ms ¹⁾ |

¹⁾ Valid positional data can be read once this time has elapsed

Mechanical data

| | |
|--------------------------------------|-----------------------------------|
| Mechanical interface: | Solid shaft, Servo flange |
| Shaft diameter: | 6 mm |
| Mass: | 0.5 kg |
| Permissible Load capacity of shaft: | 300 N (radial), 50 N (axial) |
| Moment of inertia of the rotor: | 35 gcm ² |
| Bearing lifetime: | 3.6 x 10 ⁹ revolutions |
| Max. angular acceleration: | 500,000 rad/s ² |
| Shaft material: | Stainless steel |
| Flange material: | Aluminum |
| Housing material: | Die-cast aluminum |
| Start up torque with shaft seal: | 2.5 Ncm |
| Start up torque without shaft seal: | 0.5 Ncm |
| Operating torque with shaft seal: | 1.8 Ncm |
| Operating torque without shaft seal: | 0.3 Ncm ¹⁾ |
| Shaft length: | 10 mm |

¹⁾ If the shaft seal has been removed by the customer

Electrical data

| | |
|--|--------------------------------------|
| Operating voltage range: | 10 V ... 32 V |
| MTTFd: mean time to dangerous failure: | 150 a (EN ISO 13849-1) ¹⁾ |
| Connection type: | Connector M23, 12-pin, radial |
| Code type: | Binary, Gray |
| Code sequence: | CW/CCW |
| Power consumption max. without load: | 0.8 W |

¹⁾ This product is a standard product and does not constitute a safety component as defined in the Machinery Directive.

Calculation based on nominal load of components, average ambient

temperature 40°C, frequency of use 8760 h/a. All

electronic failures are considered hazardous. For more information, see document no. 8015532.

Interfaces

| | |
|--|---|
| Electrical interface: | SSI |
| Interface signals: | Clock +, Clock -, Data +, Data-, Programming interface: RS-422 ¹⁾ |
| Clock frequency: | 1 MHz ²⁾ |
| SET (electronic adjustment): | H-active (L ≡ 0 - 4,7 V, H ≡ 10 - Us V) |
| CW/CCW (counting sequence when turning): | L-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V) |
| Parameterising data: | Number of revolutions, Code type, Electronic adjustment, Number of steps per revolution |

¹⁾ For higher clock frequencies, choose synchronous SSI ²⁾

Ambient data

| | |
|------|--|
| EMC: | (according to EN 61000-6-2 and EN 61000-6-3) |
|------|--|

Enclosure rating::

IP 43 (according to IEC 60529), without shaft seal, on encoder flange not sealed, IP 65 (according to IEC 60529), without shaft seal, on encoder flange sealed, IP 67 (according to IEC 60529), with shaft seal

Permissible relative humidity:

98 %

Working temperature range:

-20 °C ... +85 °C

Storage temperature range:

-40 °C ... +100 °C, without package

Resistance to shocks:

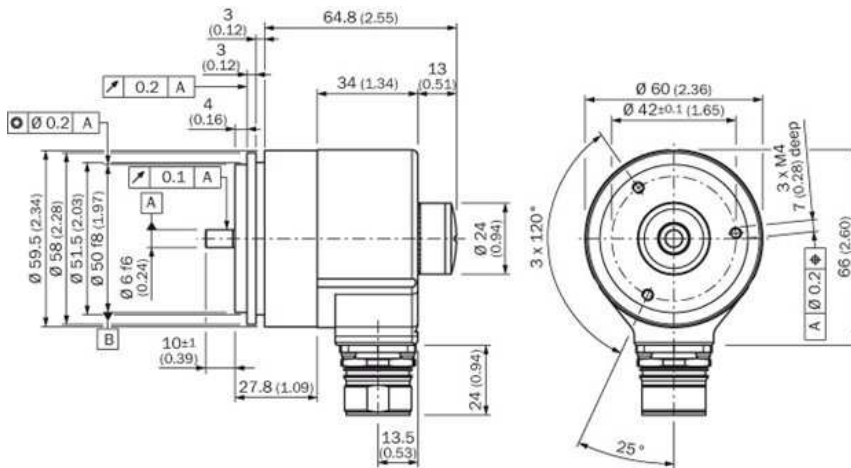
100 g, 6 ms (according to EN 60068-2-27)

Resistance to vibration:

20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

1) 2) 3)
With mating connector fitted

Dimensional drawing

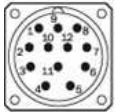


PIN assignment

| PIN | Signal | Color of wires (cable outlet) | Description |
|-----|----------------------|-------------------------------|--------------------------------|
| 1 | GND | Blue | Earth connection |
| 2 | Data + | White | Signal line |
| 3 | Clock + | Yellow | Signal line |
| 4 | R x D + | Gray | RS 422 programming line |
| 5 | R x D - | Green | RS 422 programming line |
| 6 | T x D + | Pink | RS 422 programming line |
| 7 | T x D - | Black | RS 422 programming line |
| 8 | U _s | Red | Supply voltage |
| 9 | SET ¹⁾ | Orange | Electronical adjustment |
| 10 | Data - | Brown | Signal line |
| 11 | Clock - | Lilac | Signal line |
| 12 | CW/CCW ²⁾ | Orange/black | Counting sequence when turning |
| - | Screen | - | Housing potential |

¹⁾ SET = This input activates the electronic zero set. When the SET line is connected to U_s for more than 100 ms, the current mechanical position is assigned the value 0 or the pre-programmed SET value.

²⁾ CW/CCW = Forward/reverse: This input programs the counting direction of the encoder. If not connected, this input is "HIGH". If the encoder shaft, as viewed on the drive shaft, rotates in the clockwise direction, it counts in an increasing sequence. If it should count upwards when the shaft rotates in the anti-clockwise direction, this connection must be connected permanently to "LOW" level (zero volts).



View of the connector M23 fitted to the encoder body

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