

ONLINE DATA SHEET
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Absolute encoders
ATM90 SSI

ATM90-AXA12X12



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Model Name > ATM90-AXA12X12
Part No. > 1030038





Illustration may differ

At a glance

- Extremely rugged, tried-and-tested absolute multiturn encoder with a resolution of up to 26 bits
- Mechanical interface: through hollow shaft with shallow installation depth
- 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
- Magnetic scanning

Your benefits

- Fewer variants are required since one freely programmable encoder offers all singleturn and multiturn resolutions
- Easy setup due to various electrical connection adapters (cable, M23)
- 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:	Through hollow shaft
Shaft diameter:	16 mm
Mass:	0.8 kg
Start up torque:	0.5 Ncm

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Operating torque:	0.4 Ncm
Moment of inertia of the rotor:	153.77 gcm²
Bearing lifetime:	3.6 x 10^9 revolutions
Max. angular acceleration:	600,000 rad/s²
Shaft material:	Stainless steel
Flange material:	Aluminum
Housing material:	Die-cast aluminum

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]

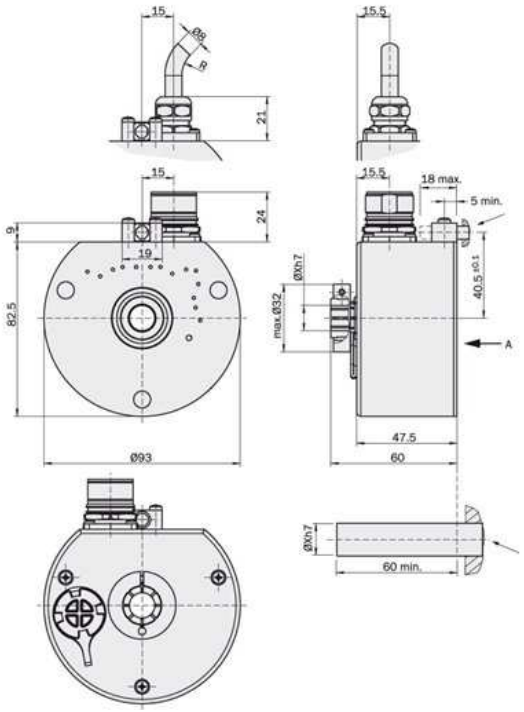
Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3)
Enclosure rating:	IP 65 (according to IEC 60529), with shaft seal [1]
Permissible relative humidity:	98 %
Working temperature range:	-20 °C ... +70 °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] With mating connector fitted

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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 Us for more than 100 ms, the current mechanical position is assigned the value 0 or the pre-programmed SET-value.

[2] CW/CCW = Foreward/reverse: This input programs the counting direction ot 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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