



Absolute encoders ARS60 SSI/Parallel

ARS60-H1A08192



Model Name > [ARS60-H1A08192](#)
Part No. > [1034751](#)



Illustration may differ

At a glance

- Absolute singleturn encoder
- Resolution: up to 15 bits (32,768 increments)
- Electrical interface: SSI with gray code type or gray capped
- Electrical interface: Parallel with gray, gray capped, binary, BCD code type
- Zero-set function
- Mechanical interfaces: face mount flange, servo flange, blind and through hollow shaft
- Enclosure rating: Up to IP66

Your benefits

- Optical and magnetic variants for the widest range of requirements
- Reduced maintenance costs thanks to magnetic, wearless scanning in single and multiturn design
- High level of productivity due to optical encoders with a high level of precision and fast calculation of positions
- Robust design for maximum system availability, even in extreme environmental conditions
- Absolutely compact - specially suited in cases where installation space is tight
- Flexible integration in all common networks



Performance

Max. number of steps per revolution:	8,192
Max. number of revolutions:	1
Resolution power:	8,192 x 1
Error limits:	0.035 ° (binary number of steps) 0.046 ° (non-binary number of steps)
Repeatability (Ta not constant):	0.005 °
Measuring step deviation:	0.005 °, 0.016 °
Measuring step:	360 ° /number of lines
Initialization time:	80 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:	0.3 kg

Start up torque:	0.25 Ncm
Operating torque:	0.2 Ncm
Permissible Load capacity of shaft:	10 N (axial), 20 N (radial)
Maximum operating speed:	10,000 /min (without shaft seal), 6,000 /min (with shaft seal) ¹⁾
Moment of inertia of the rotor:	48 gcm ²
Bearing lifetime:	3.6 x 10 ⁹ revolutions
Max. angular acceleration:	500,000 rad/s ²
Operation of zero-set:	≥ 100 ms ²⁾

¹⁾ If the shaft seal has been removed by the customer ²⁾ Only with shaft stationary (note initialisation time)

Electrical data

Operating voltage range:	10 V DC ... 32 V DC
Operating power consumption (no load):	90 mA
MTTFd: mean time to dangerous failure:	300 a (EN ISO 13849-1) ¹⁾

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:	Connector M23, 21-pin, radial
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Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3) ¹⁾
Enclosure rating:	IP 65 (according to IEC 60529), with mating connector fitted
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)
Working temperature range:	-20 °C ... 85 °C
Storage temperature range:	-40 °C ... 100 °C
Resistance to shocks:	50 g (according to EN 60068-2-27)
Resistance to vibration:	20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

¹⁾

Technical drawing of a 1/2" NPT x 1" NPT Tee with a 90° Elbow. The drawing includes three views: a front view, a side view, and a detail view of the elbow. Dimensions are given in millimeters (mm) and inches (in). Key features include an M4 8 deep hole, a 120° angle, a 25° angle, and various diameters and lengths.

Front View Dimensions:

- M4 8 deep (0.31)
- $\varnothing 42 \pm 0.1$ (1.65)
- $\varnothing 60$ (2.36)
- 66 (2.60)
- 24 (0.94)
- 25°
- 120°
- $\varnothing 0.2$ B

Side View Dimensions:

- 10 (0.39)
- 20 (0.79)
- $\varnothing 8$ (0.31)
- 10 (0.39)
- 4 (0.16)
- 3 (0.12)
- 3 (0.12)
- 10 ± 1 (0.39)
- $\varnothing 59.5 \pm 0.1$ (2.34)
- $\varnothing 58$ (2.28)
- $\varnothing 51.5 \pm 0.1$ (2.03)
- $\varnothing 50$ f8 (1.97)
- $\varnothing 6$ f6 (0.24)
- $\varnothing 0.2$ A
- 0.1 A
- 0.2 A
- 54 ± 0.5 (2.13)
- 4.5 (0.18)
- 66 (2.60)
- 90 (3.54)
- 24 (0.94)
- 13.5 (0.53)

Detail View Dimensions:

- 10 (0.39)
- 20 (0.79)
- $\varnothing 8$ (0.31)

- Allocation for encoder with 25-pin connector Single, Parallel Interface

PIN	Wire color/cable outlet	Binary	Gray	BCD	Description
1	Blue	2 ⁰	G ₀	2 ⁰ × 10 ⁰	Data lines, outputs
2	White/brown	2 ¹	G ₁	2 ¹ × 10 ⁰	
3	White/green	2 ²	G ₂	2 ² × 10 ⁰	
4	White/yellow	2 ³	G ₃	2 ³ × 10 ⁰	
5	White/gray	2 ⁴	G ₄	2 ⁴ × 10 ⁰	
6	White/pink	2 ⁵	G ₅	2 ⁵ × 10 ⁰	
7	White/blue	2 ⁶	G ₆	2 ⁶ × 10 ⁰	
8	White/red	2 ⁷	G ₇	2 ⁷ × 10 ⁰	
9	White/black	2 ⁸	G ₈	2 ⁸ × 10 ⁰	
10	Brown/green	2 ⁹	G ₉	2 ⁹ × 10 ⁰	
11	Brown/yellow	2 ¹⁰	G ₁₀	2 ¹⁰ × 10 ⁰	
12	Brown/gray	2 ¹¹	G ₁₁	2 ¹¹ × 10 ⁰	
13	Brown/pink	2 ¹²	G ₁₂	2 ¹² × 10 ⁰	
14	Brown/blue	2 ¹³	G ₁₃	2 ¹³ × 10 ⁰	
15	Brown/red	2 ¹⁴	G ₁₄	2 ¹⁴ × 10 ⁰	
16	Green	Parity	Parity	Parity	
17	Pink	Store ₀	Store ₀	Store ₀	
18	Yellow	Enable ₀	Enable ₀	Enable ₀	
19	Brown	V/R ₀	V/R ₀	V/R ₀	
21	Gray	SET	SET	SET	
20	Blue	GND	GND	GND	
21	Red	V _{CC}	V _{CC}	V _{CC}	
Module		Screen	Screen	Screen	

² Not true only possible with a latex cufflet.

- U₁ Supply voltage to the encoder (before commissioning, note must be taken of the type label of the encoder).

GND Zero volt connection to the encoder electrically isolated from the housing. The voltage referred to GND is U_{e} .

Forward/reverse: the 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 speeds when the shaft rotates in the anti-clockwise direction, this connection must be connected permanently to **low-level (zero volt)**.

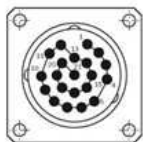
Enable_ This input activates the drive output driver when a drive-level is applied. If not connected, this input is drive-, in the case of a -high- level, the outputs are in

Warning: This signal activates the automatic camera when a night vision is applied. It not connected, this signal is active, in the case of a night vision, and outputs are in the standby mode.

Slave₀ This input stores the encoder data in Gray code when a slave level is applied. This avoids a read error if the output data is requested in binary code. If this input is driven, the data at the encoder input is stable, independent of whether the input shaft rotates. Most manufacturers use input in Gray.

Strobe: This output assumes a *strobe* level when the binary checksum of the data bits is even.

Parity	This output supplies a <i>high</i> level when the binary checksum of the data bits is even.
SET	This input serves to set the zero electronically. If the SET line is connected to <i>low</i> for more than 100 ms, the mathematical operation reverts to the value 0.



View of the connector M23 fitted to the encoder body Single, Parallel

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