



Absolute encoders ARS60 SSI/Parallel

ARS60-F4B32767



Model Name > [ARS60-F4B32767](#)
Part No. > [1031628](#)



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

- Freely programmable resolution (up to 15 bits)
- Simple zero adjustment directly by press of a button on the encoder or via signal line (cable version)
- Suitable for all mounting methods thanks to individual mechanical interfaces
- A basic device for flexible use thanks to simple interchangeable collets for blind hollow shaft and through hollow shaft
- Versions with cable and M23 connector outlet available in axial and radial designs



Performance

Max. number of steps per revolution:	32,767
Max. number of revolutions:	1
Resolution power:	32,767 x 1
Error limits:	0.035 ° (binary number of steps) 0.046 ° (non-binary number of steps)
Repeat accuracy:	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, Face mount flange
Shaft diameter:	10 mm
Mass:	0.3 kg
Start up torque:	0.4 Ncm
Operating torque:	0.3 Ncm

Permissible Load capacity of shaft:	20 N (radial) 10 N (axial)
Maximum operating speed:	10,000 /min (without shaft seal) 6,000 /min (with shaft seal) ¹⁾
Moment of inertia of the rotor:	54 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

Interfaces

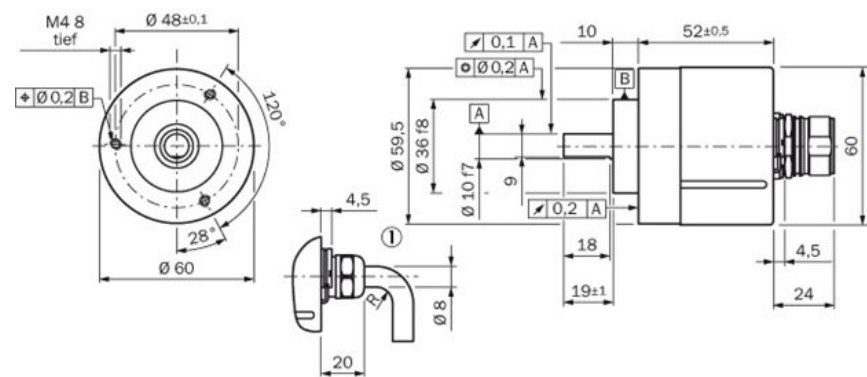
Electrical interface:	Connector M23, 21-pin, axial
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Ambient data

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⁾

Dimensional drawing

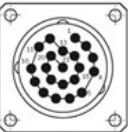


PIN assignment

• Anschlussbelegung für Ausführung mit 21-poligem Stecker Single; Parallel-Schnittstelle

PIN	Farbe der Adern bei Leitungsabgang	Binär	Gray	BCD	Erklärung
1	Violett	2 ⁰	G ₀	2 ⁰ × 10 ⁰	Datenleitungen, Ausgänge
2	Weiß/braun	2 ¹	G ₁	2 ¹ × 10 ⁰	
3	Weiß/grün	2 ²	G ₂	2 ² × 10 ⁰	
4	Weiß/gelb	2 ³	G ₃	2 ³ × 10 ⁰	
5	Weiß/grau	2 ⁴	G ₄	2 ⁴ × 10 ⁰	
6	Weiß/rosa	2 ⁵	G ₅	2 ⁵ × 10 ⁰	
7	Weiß/blau	2 ⁶	G ₆	2 ⁶ × 10 ⁰	
8	Weiß/rot	2 ⁷	G ₇	2 ⁷ × 10 ⁰	
9	Weiß/schwarz	2 ⁸	G ₈	2 ⁸ × 10 ⁰	
10	Braun/grün	2 ⁹	G ₉	2 ⁹ × 10 ⁰	
11	Braun/gelb	2 ¹⁰	G ₁₀	2 ¹⁰ × 10 ⁰	
12	Braun/grau	2 ¹¹	G ₁₁	2 ¹¹ × 10 ⁰	
13	Braun/rosa	2 ¹²	G ₁₂	2 ¹² × 10 ⁰	
14	Braun/blau	2 ¹³	G ₁₃	2 ¹³ × 10 ⁰	
15	Braun/rot	2 ¹⁴	G ₁₄	2 ¹⁴ × 10 ⁰	
16	Grün	Parity	Parity	Parity	
17	Rosa	Strobe ₊	Strobe ₊	Strobe ₊	
18	Gelb	Enable ₊	Enable ₊	Enable ₊	
19	Braun	V/R ₊	V/R ₊	V/R ₊	
20	Grau	SET	SET	SET	
21	Blau	GND	GND	GND	
21	Rot	V _L	V _L	V _L	
Gehäuse		Schirm	Schirm	Schirm	

¹ Set Leitung nur bei Leitungsabgang möglich.
V_L Versorgungsspannung des Encoders (vor Inbetriebnahme ist unbedingt das Typenschild des Encoders zu beachten).
GND Masseanschluss des Encoders. Gekennzeichnet mittels vom Gehäuse. Der zu GND benötigte Spannung ist V_L.
V/R₊ Vor/Rück: Dieser Eingang programmiert die Zählrichtung des Encoders. Unbeschaltet liegt dieser Eingang auf „High“. Wird der Encoderwelle, auf die Antriebswelle gesehen, im Uhrzeigersinn gedreht (Rechtslauf), zählt er in aufsteigender Reihenfolge. Soll er bei Drehung der Welle im Gegenuhrzeigersinn (Linkslauf) aufsteigend zählen, dann muss dieser Anschluss stattdessen auf „Low“ (gegen GND) gelegt werden.
Enable₊ Dieser Eingang aktiviert die Datenausgabefunktion, wenn ein „Low“-Pegel angelegt wird. Unbeschaltet liegt dieser Eingang auf „Low“. Bei „High“-Pegel sind die Ausgänge im „Inhibit“-Modus.
Strobe₊ Dieser Eingang synchronisiert zwei Leitungen eines „Low“-Pegels die Encoderdaten im Gray-Code. Dadurch wird ein Lesefehler verhindert, falls die Ausgangsdaten im Binär-Code gefordert werden. Ist dieser Eingang auf „Low“, sind die Daten am Encoderausgang stabil, unabhängig davon, ob sich die Eingangsweite dreht. Unbeschaltet liegt dieser Eingang auf „High“.
Parity Dieser Ausgang liefert einen „High“-Pegel, wenn die Quersumme der Datenbits gerade ist.
SET Dieser Eingang dient dem elektronischen Nullsetzen. Wenn die SET-Leitung für mehr als 100 ms an V_L gelegt wird, entspricht die mechanische Position dem Wert 0.



Ansicht Gerüststecker M23, 21-polig am Encoder, Parallel

The diagram illustrates the timing and data structure for the 12C code disc. The top part shows a clock signal (Clock +) and a data format singleturn. The data format singleturn is a sequence of 13 bits, numbered 1 to 13. The bottom part shows a table of data for 12C code disc, with columns for A-1 to A-12, tm-T/2, 2ⁿ, and A. The table contains 4 rows of data, with the first row being the header and the subsequent three rows being data. The data is organized into 12 groups, each corresponding to a value of A (1 to 12). The first group (A=1) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The second group (A=2) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The third group (A=3) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The fourth group (A=4) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The fifth group (A=5) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The sixth group (A=6) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The seventh group (A=7) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The eighth group (A=8) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The ninth group (A=9) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The tenth group (A=10) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The eleventh group (A=11) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The twelfth group (A=12) has 12 data points (A-1 to A-12) and a tm-T/2 value of 0. The table also includes a column for 2ⁿ and a column for A. The 2ⁿ column contains values 1, 1, 1, 1. The A column contains values 13, 12, 11, 10. The bottom part of the diagram shows a code disc for 1 revolution, with a resolution of 1 per revolution.

A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	tm-T/2	2 ⁿ	A
x	x	x	x	x	x	x	x	x	x	x	x	0	1	8192 13
x	x	x	x	x	x	x	x	x	x	x	x	0	0	4096 12
x	x	x	x	x	x	x	x	x	x	x	x	0	0	2048 11
x	x	x	x	x	x	x	x	x	x	0	0	0	1	1024 10

Code disc for 1 revolution

resolution 1 per revolution

A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	A-13	tm-T/2		2 ^A	A
X	X	X	X	X	X	X	X	X	X	X	X	X	0	1	8192	13
X	X	X	X	X	X	X	X	X	X	X	X	0	0	1	4096	12
X	X	X	X	X	X	X	X	X	X	X	0	0	0	1	2048	11
X	X	X	X	X	X	X	X	X	X	0	0	0	0	1	1024	10

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