

ONLINE DATA SHEET
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Incremental encoders
DBS50 Core

DBS50E-S5AJ02500



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DBS50 Core

Model Name > DBS50E-S5AJ02500
Part No. > 1061086





Illustration may differ

At a glance

- Connection with universal cable outlet
- Face mount flange with 8 mm solid shaft
- Face mount flange with 2 mounting hole patterns and servo groove
- "Compact housing diameter of 37 mm,
- flange diameter: 50 mm"
- Various electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR from 10 up to 2,500
- Working temperature range: -20 °C ... +85 °C
- Enclosure rating: IP 65

Your benefits

- The universal cable outlet allows use in tight spaces and makes flexible cable routing possible
- Face mount flange with various mounting hole patters for easy device replacement without changing the application
- Face mount flange with servo groove makes mounting with servo clamps possible
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- The compact housing diameter saves valuable space

CE

Performance

Error limits:	± 54 ° (/pulses per revolution)
Measuring step deviation:	± 18 °/impulses per relovution
Measuring step:	90 °/electronically/pulses
Initialization time:	< 3 ms
Pulses per revolution:	2,500
Duty cycle:	≤ 0.5 ± 5 %

Mechanical data

Mechanical interface:	Solid shaft, Face mount flange
Shaft diameter:	8 mm x 15.5 m
Mass:	180 g
Start up torque:	0.9 Ncm (+20 °C)
Operating torque:	0.6 Ncm (+20 °C)
Maximum operating speed:	8,000 U/min [1)]
Moment of inertia of the rotor:	0.65 gcm²
Bearing lifetime:	2 x 10^9 revolutions

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Max. angular acceleration:	500,000 rad/s²
Permissible shaft loading radial/axial:	30 N (axial), 50 N (radial)
Shaft material:	Stainless steel
Operating speed:	6,000 /min [2]
Flange material:	Aluminum
Housing material:	Aluminum
Material, cable:	PVC

[1] No permanent operation. Decreasing signal quality. [2] Self warming of 3.3 K per 1000 revolutions/min when applying note working temperature range

Electrical data

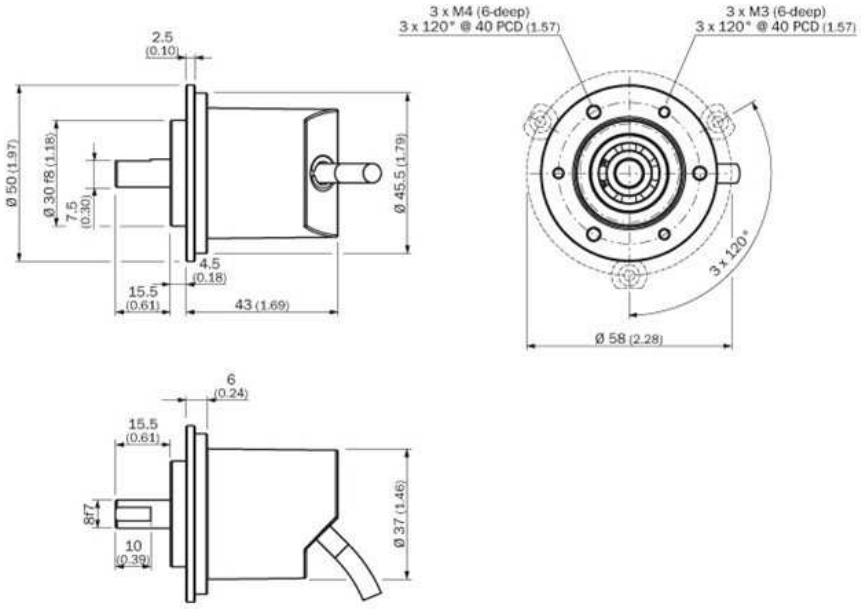
Electrical interface:	4.5 V ... 5.5 V, TTL/RS422
Connection type:	Cable, 8-wire, universal, 0.5 m
Operating power consumption (no load):	50 mA
Maximum output frequency:	300 kHz
Reference signal, number:	1
Reference signal, position:	90 °, electronically, gated with A and B
Operating voltage range:	4.5 V ... 5.5 V
Load current max.:	30 mA
MTTFd: mean time to dangerous failure:	600 a (EN ISO 13849-1) [1]
Power consumption max. without load:	Without load
Short-circuit protection of the outputs:	1 [2]
Reverse polarity protection:	0

[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. [2] The short-circuit rating is only given if Us and GND are connected correctly.

Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-4 (class A))
Working temperature range:	-20 °C ... +85 °C
Storage temperature range:	-40 °C ... +100 °C, without package
Resistance to shocks:	100 g (EN 60068-2-27)
Resistance to vibration:	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)
Enclosure rating:	IP 65
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)

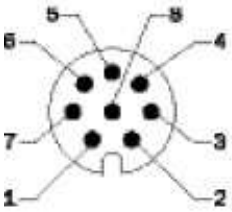
Dimensional drawing



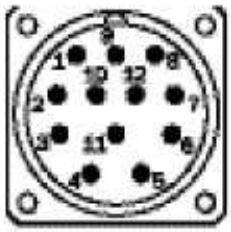
PIN assignment

8-core cable

View of M12 device connector on cable



View of M23 device connector on cable



PIN, 8-pole in M12	PIN, 12-pole in M23	Color of wires	Signal OC	Signal TTL, HTL	Explanation
1	6	Brown	Not connected	$\overline{A}$	Signal line
2	5	White	A	A	Signal line
3	1	Black	Not connected	$\overline{B}$	Signal line
4	8	Pink	B	B	Signal line
5	4	Yellow	Not connected	$\overline{Z}$	Signal line
6	3	Lilac	Z	Z	Signal line
7	10	Blue	GND	GND	Ground connection of the encoder
8	12	Red	$+U_V$	$+U_S$	Supply voltage
–	9	–	Not connected	Not connected	Not connected
–	2	–	Not connected	Not connected	Not connected
–	11	–	Not connected	Not connected	Not connected
–	7	–	Not connected	Not connected	Not connected
Screen	Screen	Screen	Screen	Screen	Screen connected to encoder housing

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