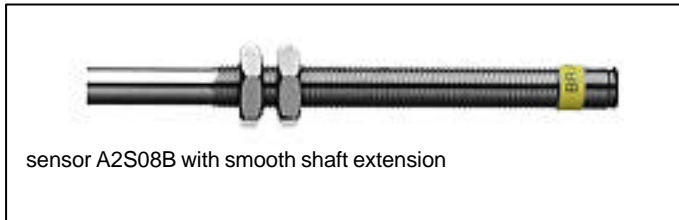


Magnetic Pick-up Sensor Series A2S



Application Characteristics

- Speed detection of ferromagnetic steel profiles, such as a turbine shaft, or a turboblower, for instance. Also, within the magnetic AC-field around a transformer or ignition coil.
- Special versions available, for use at high ambient temperature (up to 200 °C) or under nuclear irradiation.
- A local pre-amplifier is available to upgrade the output signal for longer transmission distances to its point of evaluation.
- Active type sensors, not requiring any auxiliary power supply.

Function Principle

The sensor includes a reluctance coil with ferrous core, in front of a permanent magnet. The ferrous profile rotating in front of it, periodically varies the magnetic flux through the coil. According to the law of induction, the coil then generates a voltage, determined by the grade of flux variation. From this reason, the output signal is dependent on speed, the profile size, and the gap in front of the sensor.

For this reason, sensor is preferably suited to high circumferential speed.

Design and Connection

Stainless steel shaft, with mounting thread of different dimensions (see table). A specific thread is available to fit turbochargers. Versions for permanent installation use the tight B-type connector, or a firmly attached cable (protection grade IP67), allowing for use when immersed into water or oil.

Such for use with portable instruments have P-type connector, fitting the standard SAK connecting cable.

Operation Temperature

Standard -40 °C... + 140 °C at sensor tip. At connector end + 85 °C, up to +140 °C with attached PTFE (Teflon) cable. Specific high temperature version accepts up to + 200 °C at its tip.

Output Signal

A gear wheel as target generates an output which is with approximately a sinus waveform. A discrete slot, hole, or cam however results in positive or negatively directed peaks. The output amplitude greatly depends on the profile size and the clearance to the target. It increases with the circumferential speed of the target, and with a reduced gap between sensor tip and target.

Peak-to-peak signal voltage, as typical for a standard gear wheel, with 1 mm clearance.

v m/min	500	1000	1500	2000	2500	3000	3500	4000
= m 1	0,4	0,8	1,2	1,5	1,7	2,0	2,1	2,3
= m 2	1,9	3,3	4,3	5,1	5,9	6,2	6,6	6,9
= m 3	3,2	4,8	6,2	7,0	7,9	8,5	8,3	9,2

m1 .. m3 = gear size = wheel diameter (mm) ÷ number of teeth.
v = circumferential speed (m/min) = RPM x circumference of target by meters.

Half clearance approximately doubles the v oltag.

All values shown refer to scanning in radial direction. Sensor position parallel to the axis of rotation requires a larger profile, and more attention must be paid to a clearance variation.

Low end of Range

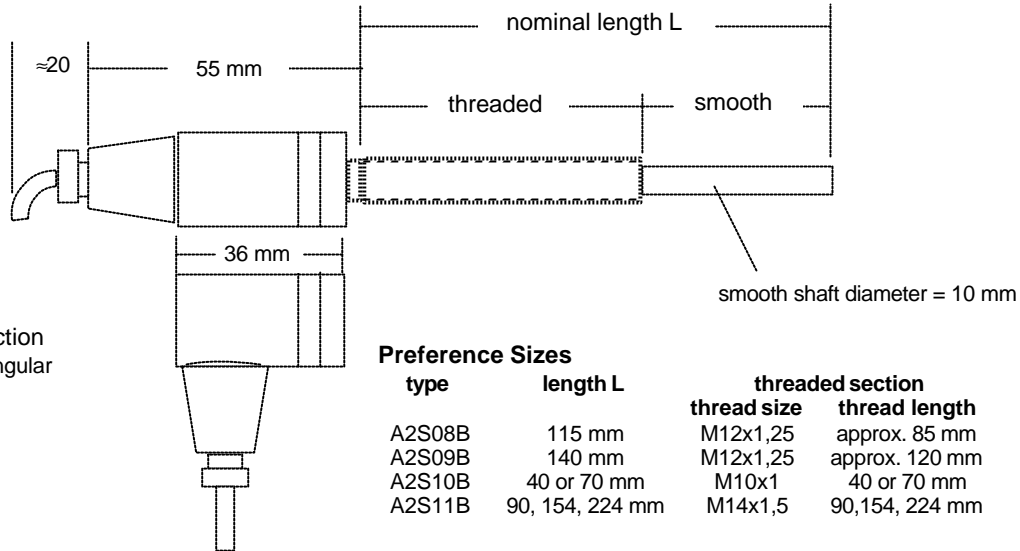
The response level of 150 millivolts_{pp} as provided by the high sensitivity path of our measuring units and by the pre-amplifier, corresponds to the circumferential target speed values shown below.

These should therefore be regarded as the low end of range:

clearance	0,5 mm	1 mm	2 mm
m 1	95 m/min	190 m/min	570 m/min
m 2	20 m/min	40 m/min	120 m/min
m 3	12 m/min	23 m/min	70 m/min

Versions and Dimensions

B type connection
shown with straight cable plug

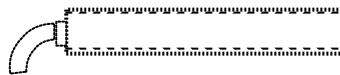


B type connection
shown with angular
cable plug

Preference Sizes

type	length L	threaded section		smooth length
		thread size	thread length	
A2S08B	115 mm	M12x1,25	approx. 85 mm	30 mm
A2S09B	140 mm	M12x1,25	approx. 120 mm	20 mm
A2S10B	40 or 70 mm	M10x1	40 or 70 mm	none
A2S11B	90, 154, 224 mm	M14x1,5	90,154, 224 mm	none

version with firmly attached
PTFE (Teflon) cable

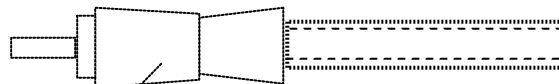


Preference Sizes

*) These dimensions also apply
to the hi-temperature version

type	length L	thread size	thread length
A2S04T	40 or 70 mm	M10x1	40 or 70 mm
A2S11T	90	M14x1,5	90 mm *)

P type connection
(straight only))



cable type SAK fits

type	thread size	thread length L
A2S04P ...	M10x1	40, 70 mm

The P-type sensor fits the portable instruments MOVIPORT C118/C156 by cable type SAK.

Ordering Key

