



# SKF Motor Encoder Unit

*Suited for most AC induction motors, the SKF Motor Encoder Unit is available in a range of sizes for shaft diameters from 15 to 45 mm, with a free cable end or connector that best fits your application.*

## The SKF solution

Encoders are required where the speed and/or direction of rotation of AC induction motors is to be continuously monitored.

Conventional encoders are typically mounted external to the motor, exposed to the environmental conditions, which often has a significant impact on encoder service life.

The SKF Motor Encoder Unit, however, combines encoder and bearing functions. These units, which can be installed at either bearing position in an AC induction motor, are only 6,2 mm wider than the corresponding standard deep groove ball bearing. A SKF Motor Encoder Unit produces 2 signals, at 90 degree phase shift each with resolution ranging from 32 to 80 digital pulses per revolution, depending on the unit size.

## Designs and variants

The SKF Motor Encoder Unit is a compact, integrated unit consisting of:

- A pre-lubricated SKF Explorer deep groove ball bearing in the 62 series with a snap ring groove in the outer ring and an RS1 contact seal
- An impulse ring
- A sensor body
- A cable outlet and connecting cable

The impulse ring, which attaches to the inner ring of the bearing, is a composite magnetized ring that contains between 32 and 80 north and south poles. The sensor body, which is attached to the outer ring, protects the patented SKF Hall effect cells. The multiwire connecting cable extends in the radial direction.

The bearing is protected by a contact seal on one side. On the opposite side of the bearing, the impulse ring and sensor body create an effective labyrinth seal to keep lubricant in and solid contaminants out of the bearing.

## Features

- Bearing and sensors integrated into a single unit
- Enables monitoring of speed and direction of the shaft
- Accurately detects speeds from 0 to 13 000 r/min depending on limiting speed of bearing
- Wide range of cable length and connectors available

## Benefits

- Compact and ready-to-mount
- Reduced number of components
- Designed to be robust and reliable



## High-performance filtering

All standard SKF Motor Encoder Units are protected with high-performance filtering, so they can adapt to the electric environment typically found in industrial and automotive applications.

## Sensor technology

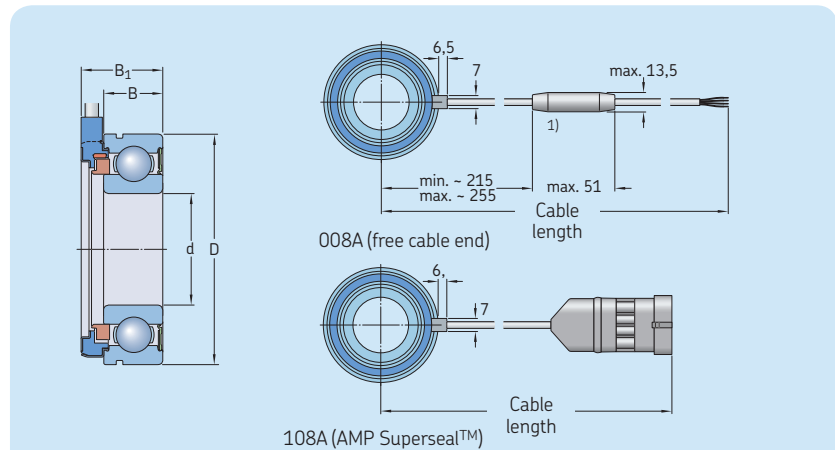
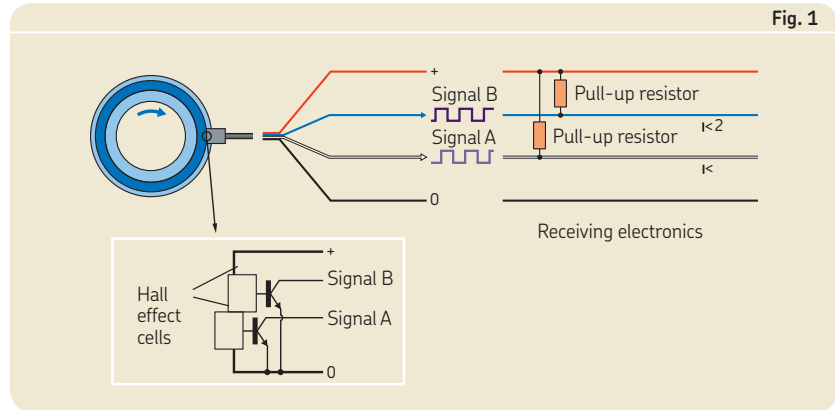
The SKF Motor Encoder Unit uses compact and robust sensors that produce an incremental encoder signal. The sensors are accurate down to zero r/min. An integrated active circuit (requiring an external voltage supply) in the sensor body contains two Hall effect cells that produce an output signal consisting of two square waves.

## Requirements for the receiving interface

The receiving interface must be able to process the signals, which are provided via open collector circuits. A typical schematic drawing is shown in **fig. 1**.

## Resistors

Pull-up resistors should be placed between the voltage supply and the conductors for the output signals to limit the output current to 20 mA. Recommended pull-up resistors for typical voltage supply values are listed in **table 1**.



Bearing Principal dimensions	Basic load ratings		Fatigue load limit $P_u$	Limiting speed	Sensor unit			Cable length $\pm 10^2$	Mass	Designation			
	dynamic	static			No. of pulses	Period accur- acy	Phase shift						
d	D	B	$B_1$	C	$C_0$	$P_u$	r/min	-	%	°	mm	kg	-
15	35	11	17,2	7,8	3,75	0,16	13 000	32	$\pm 3$	$90 \pm 30$	525	0,07	BMB-6202/032S2/UB008A
	35	11	17,2	7,8	3,75	0,16	13 000	32	$\pm 3$	$90 \pm 30$	550	0,08	BMB-6202/032S2/UB108A
20	47	14	20,2	12,7	6,55	0,28	10 000	48	$\pm 4$	$90 \pm 20$	535	0,13	BMD-6204/048S2/UA008A
	47	14	20,2	12,7	6,55	0,28	10 000	48	$\pm 4$	$90 \pm 20$	560	0,15	BMD-6204/048S2/UA108A
25	52	15	21,2	14	7,8	0,335	8 500	48	$\pm 3$	$90 \pm 30$	535	0,16	BMD-6205/048S2/UA008A
	52	15	21,2	14	7,8	0,335	8 500	48	$\pm 3$	$90 \pm 30$	560	0,17	BMD-6205/048S2/UA108A
30	62	16	22,2	19,5	11,2	0,475	7 500	64	$\pm 4$	$90 \pm 20$	540	0,24	BMD-6206/064S2/UA008A <sup>3)</sup>
	62	16	22,2	19,5	11,2	0,475	7 500	64	$\pm 4$	$90 \pm 20$	565	0,25	BMD-6206/064S2/UA108A
40	80	18	24,2	30,7	19	0,8	5 600	80	$\pm 5$	$90 \pm 30$	546	0,46	BMB-6208/080S2/UB008A
	80	18	24,2	30,7	19	0,8	5 600	80	$\pm 5$	$90 \pm 30$	570	0,46	BMB-6208/080S2/UB108A
45	85	19	25,2	33,2	21,6	0,915	5 000	80	$\pm 5$	$90 \pm 30$	545	0,53	BMB-6209/080S2/UB008A
	85	19	25,2	33,2	21,6	0,915	5 000	80	$\pm 5$	$90 \pm 30$	570	0,54	BMB-6209/080S2/UB108A

<sup>1)</sup> The indicated values in this illustration are not valid for the new BMD as this product is only available without a dongle  
<sup>2)</sup> Other cable lengths and connectors available on request  
<sup>3)</sup> This product is delivered without a dongle on the cable

**Table 1**

**Recommended pull-up resistors**

Voltage supply	Resistance min.	Power
VDC	$\Omega$	W
5	270	0,25
9	470	0,25
12	680	0,25
18	1 000	0,25

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