

Speed sensor for Sunfab hydraulic motors SCM

Sunfab speed sensor is available on ISO/SAE/DIN motors (not M2), displacement 0.59-7.93 cu in/rev. The sensor is a two channel hall effect sensor and has two frequency outputs both giving square wave signals, phase shifted ~90 °. It's available in both PNP and NPN versions.

The frequency is determined by:

$$f = \frac{30 \cdot n}{60} = \frac{n}{2}, n \text{ (rpm)}$$

- It can operate at high temperatures.
- The speed is detected from the gears on the cylinder block. Since the sensor is working with two channels the rotation direction can be detected.
- The number of gears is 30 for all motor displacements.
- Motors manufactured prepared for speed sensor can also have a sensor fitted afterwards.



Technical data

Power supply	8 - 32 V DC
Current consumption	< 33 mA at 24 V both outputs low < 23 mA at 24 V both outputs high
Frequency range	1 - 6000 Hz
Number of pulses/rev.	30
Maximum output current	500 mA at 24 V, +77 °F / 50 % duty cycle 50 mA at 24 V, +257 °F / 50 % duty cycle
Output	NPN with 5k pull-up resistor PNP with 5k pull-down resistance
Output signal level	Low: ≤ 2 V; High: ≥ 5 V
Load impedance	≥ 10 kOhm
Load capacitance	$\leq 2,2$ nF
Short circuit immunity	Yes
Reverse polarity protection	Yes
Cable conductor assignment	Brown: 8 - 32 V DC Blue: ground Black: frequency signal 1 White: frequency signal 2
Cable	4-core, 0,75 mm ² , core end sleeve
Cable length	~15,7 in of which 3,15 in core
Bending radius of cable	$\geq 1,5$ in
Measuring distance	~0,07 in (sensor top to gear of cylinder block)
Weight	~ 0,22 lb

Environmental conditions

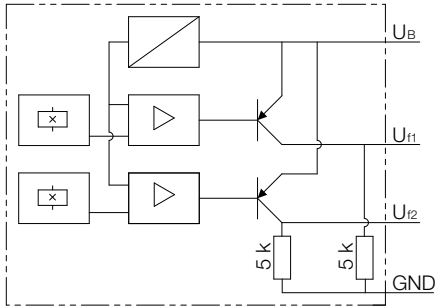
Operating temperature range	-40 - +257 °F
Environmental resistance of housing	Brine and various hydraulic oils
Storage	Storage in a dry place
Max pressure on sensing surface	10 bar
Max. tensile load on cable	75 N
Degree of protection (IEC 529)	IP67, IP69K
Vibration resistance (IEC 68-2-6, IEC 68-2-36)	f = 5 - 57 Hz (1,5 mm p-p) f = 57 - 2000 Hz (10g)
Shock resistance (DIN 40046, IEC 68-2-27)	3x: a = 15g, 11 ms, in every direction 3x: a = 25g, 6 ms, in every direction
Insulation strength	500 V DC
EMC	Radiated interference (ISO 11452): 300 mV Level A Load dump (ISO 7637-2): 200 V, Performance level C
Temperature change test	1000 cycles: -40 °F - +257°F in air
Drop test (IEC 68-2-32)	1 m
Low temperature test (IEC 68-2-1)	-67 °F / 16h
Dry heat test (IEC 68-2-2)	+257 °F / 16h
Temperature shock	20 cycles, water immersion test: +248 °F air to +74 °F water

Mounting

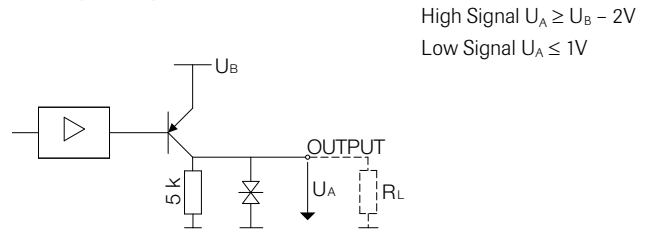
Mounting principle	Asymmetric flange for directional dependence
Tightening torque	Tighten the screws 88,5 lbf-in torque First tighten both screws gently and then 88.5 lbf-in O-ring shall always be mounted
Mounting and safety precautions	Do not mount electrical connections with an open current Only install when machinery is out of operation
Housing material	Brass / plastic (PA6 GF30)

Diagram

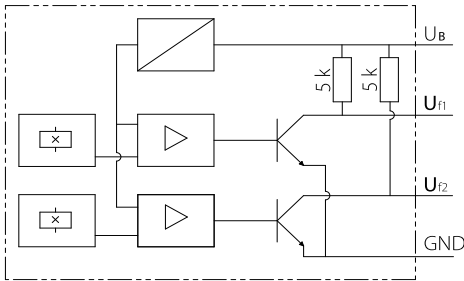
Block circuit diagram PNP



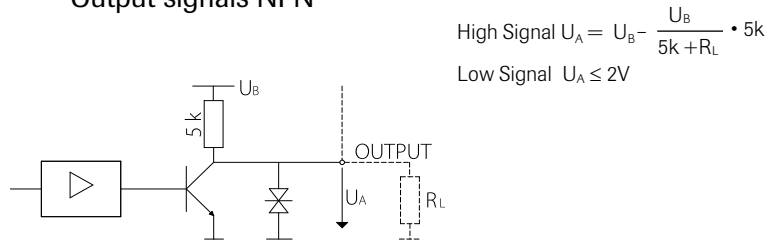
Output signals PNP



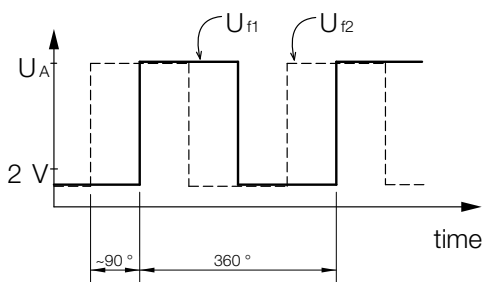
Block circuit diagram NPN



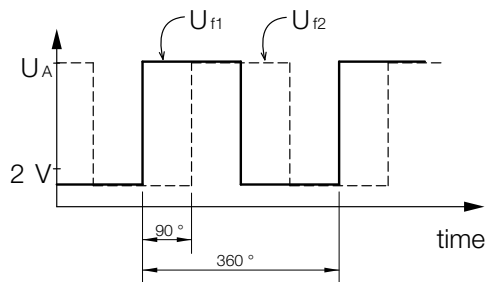
Output signals NPN



Clockwise rotation



Counter-clockwise rotation

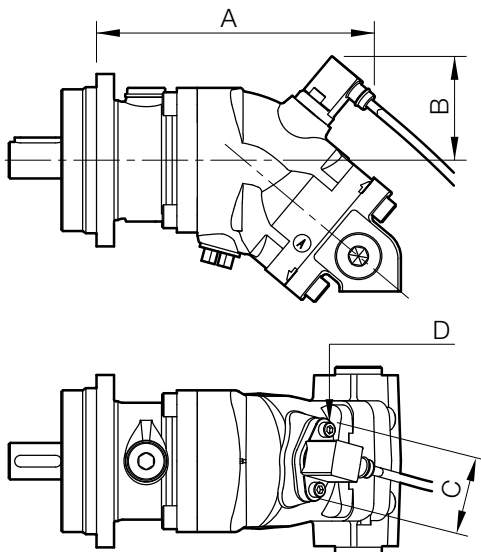


Ordering code

P1	Prepared for speed sensor
S1	Fitted speed sensor type PNP
S2	Fitted speed sensor type NPN

Example: Motor with speed sensor
SCM-025W-P-I42-K30-K3G-1S1

- Motor with speed sensor

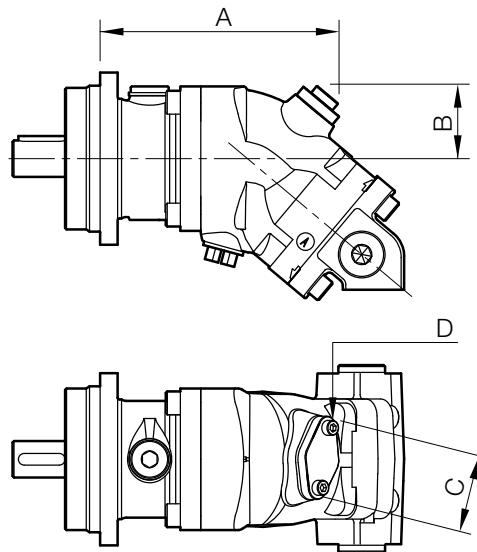


Dimensions

Type SCM-ISO and SAE [in]	A	B	C	D
012 - 034 cc ISO & SAE	7,48	2,80	2,3	M6x0,62
012 - 034 cc DIN	7,32			
040 - 064 cc ISO & SAE	8,50	2,91		
040 - 064 cc DIN	8,27			
084 - 108 cc ISO, DIN & SAE C	8,78	3,15		
084 - 130 cc SAE D	8,46			

Example: Motor prepared for speed sensor
SCM-025W-P-I42-K30-K3G-1P1

- Motor prepared for speed sensor mounted with a steel plug



Dimensions

Type SCM-ISO and SAE [mm]	A	B	C	D
012 - 034 cc ISO & SAE	6,46	1,97	2,4	M6x0,62
012 - 034 cc DIN	6,30			
040 - 064 cc ISO & SAE	7,48	2,09		
040 - 064 cc DIN	7,24			
084 - 108 cc ISO, DIN & SAE C	7,91	2,40		
084 - 130 cc SAE D	7,56			

NOTES

1. Line to sensor must be shielded
2. Lines to electronic unit must not be routed close to other power conducting lines in the machine or vehicle
3. A sufficiently large distance to radio systems must be maintained
4. If longer connecting lines are used, 5 m, the lines for each frequency signal should be separately shielded

Sunfab reserves the right to make changes in design and dimensions without notice. Printing and typesetting errors reserved.
© Copyright 2021 Sunfab Hydraulics AB. All Rights Reserved.