

# ATEX SPEED SENSORS

**DSD** = with integrated control in d.c.  
**ASD** = with integrated control in a.c.

Diameter

<b>DSD</b>	<b>18</b>	<b>/</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>KS</b>	<b>3GD</b>	<b>-5</b>
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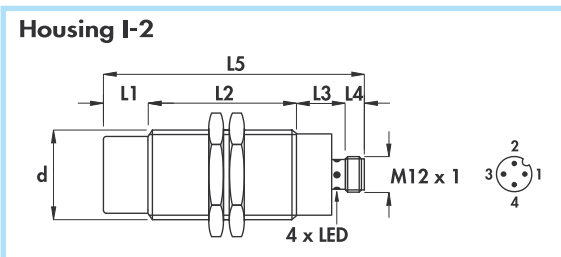
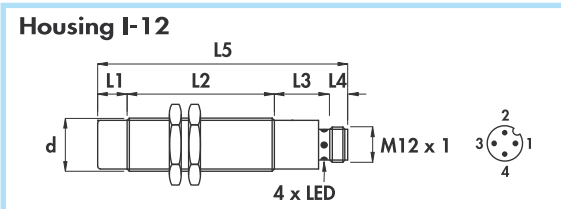
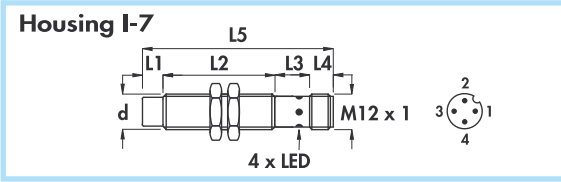
**3** = with connector M12 x 1  
**6** = standard type cable output

**K** = protection against short circuit and overload  
**S** = LED output status

Cable length (if required different than standard 2m)



Speed sensors with integrated control function •  
 3-wire - d.c. •  
 ATEX certified II 3GD for zone 2;22 •  
 Connector output M12 x 1 •



Diameter	M8 x 1	M12 x 1	M18 x 1	M30 x 1,5	
Nut	Size	SW13	SW17	SW24	SW36
	Thickness mm	4	4	4	5
Max tightening torque Nm	10	15	35	80	

**Materials:**

- Housing diameter 8 mm: stainless steel
- Housing diameters 12 - 18 - 30 mm: nickel plated brass
- Sensing face: plastic

**General features:**

These sensors enable the control with extremely high precision the rotation of a toothed wheel or reference marks, switching off the load or giving an alarm in case the speed falls below the minimum threshold. Thanks to the extremely wide measuring range they can be even used to control repetitive operations, signalling in case of unwanted stops. Further delays or other special functions may be implemented upon specific request.

The output is protected against wrong connection, overvoltages on line, and short circuit of the load. The connection is with a 4-wire M12x1 connector which must be ordered separately.

**Technical data:**

- Working voltage: 10 ÷ 30 Vdc
- Max ripple: 10%
- No-load supply current: <15 mA
- Rated operational current (I<sub>o</sub>): 100 mA
- Voltage drop: < 1,5 V
- Switching hysteresis (H): <10% S<sub>n</sub>
- Repeat accuracy (R): < 2% S<sub>n</sub>
- Maximum detectable interval (between two pulses): 2 min
- Detectable start-up time (T<sub>1</sub>): 0 ÷ 1 min (default 2 sec.)
- Temperature range: - 25° ÷ + 60°C
- Max thermal drift of sensing distance S<sub>n</sub>: ±10%
- Degree of protection: IP67
- Status indicator: yellow LED = out ON; frequency over the threshold
- Marking: II 3D Ex tc III C T80°C IP67 X  
II 3G Ex nAc II C T6 X

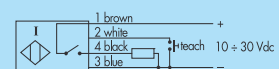
- Protected against short-circuit and overload
- Electromagnetic compatibility (EMC) according to EN60947-5-2
- According to: EN60079-0/EN60079-15/EN60079-31
- Shock and vibration resistance according to EN60068-2-27/EN60068-2-6

**Use in hazardous area according to instruction manuals**

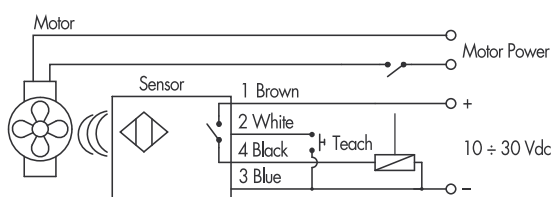
Housing	Flush mounting (*) Non flush mounting	L1	L2	L3	L4	L5	Female connector (see page G - 1)	Body diameter (d)	Max detectable frequency	Nominal sensing distance (S <sub>n</sub> ) ±10%	ORDERING REFERENCES	
		mm	mm	mm	mm	mm					n°	mm
I-7	•	-	43	15	8	66	8B-10	M12 x 1	1	2	DSD12/4309KS3GD	
I-7	•	7	36	15	8	66	8B-10	M12 x 1	1	4	DSD12/5309KS3GD	
I-12	•	-	50	19	8	77	8B-10	M18 x 1	1	5	DSD18/4309KS3GD	
I-12	•	10	50	19	8	87	8B-10	M18 x 1	1	8	DSD18/5309KS3GD	
I-2	•	-	65	17	8	90	8B-10	M30 x 1,5	0,8	10	DSD30/4309KS3GD	
I-2	•	15	50	17	8	90	8B-10	M30 x 1,5	0,4	15	DSD30/5309KS3GD	

**ORDERING REFERENCES**

**PNP (positive switching)**



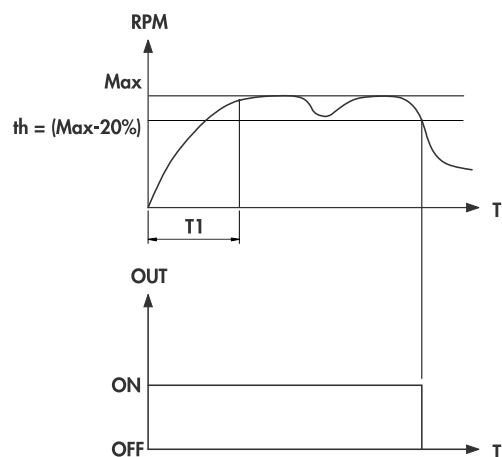
## Example of application



## Use of the sensor:

On power on, the yellow LED lights and the output switches to the ON state, driving the relay, which will drive the motor. After a start up delay time ( $T_1$ ) the sensor measures the speed of the motor and compares it to the threshold value. If the speed is under the threshold value, the output goes OFF, turning off the LED. The minimum threshold can be either factory preset or can be programmed from the sensor application with no need to perform any measurement.

## Procedure 1



## Threshold self-teaching procedure:

There are two different ways to perform the self-teaching of the threshold:

### 1 - Acquisition of start up time and calculation of the threshold from the maximum speed:

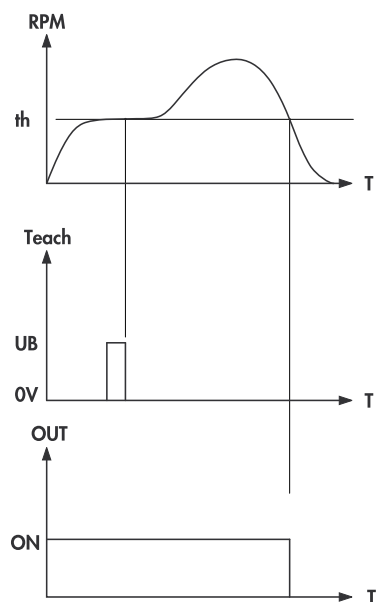
- connect the Teach input (white) to the positive of power supply (brown) before turning on the power
- Turn on the power supply to the machine and to the sensor and wait the speed gets the nominal value. The yellow LED will flash 4 times to indicate the acquisition complete
- Turn off the power supply
- At this stage the sensor has acquired the start up time ( $T_1$ ) and calculated the threshold as the maximum value of the speed reduced of -20%
- Disconnect the Teach in from the positive of power supply before running the machine again.

### 2 - Acquisition of a known threshold (start up time is not modified):

- Turn the power supply on to the machine and sensor and accelerate to the speed you want to get as threshold ( $th$ )
- Connect temporarily the Teach input (white) to the positive of power supply. This operation can be easily done with a push-button on the operator panel of the machine.
- At this stage the current speed becomes the minimum threshold ( $th$ ), under of which the sensor goes in OFF state.

Both of the procedures can be repeated unlimited times.

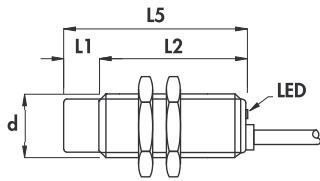
## Procedure 2



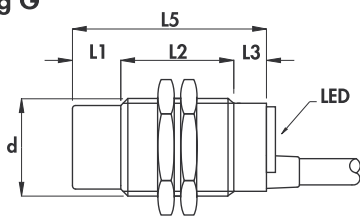


Speed sensors with integrated control function •  
 2-wire - a.c. •  
 ATEX certified II 3GD for zone 2;22 •  
 Cable output •

Housing B-2



Housing G



Diameter		M18 x 1	M30 x 1,5
Nut	Size	SW24	SW36
	Thickness mm	4	5
Max tightening torque Nm		35	80

**Materials:**

- Cable: 2m PVC - CEI 2022 II-90°C 300V-O.R.
- Housing: nickel plated brass
- Sensing face: plastic



**General features:**

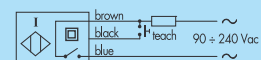
These sensors enable the control with extremely high precision the rotation of a toothed wheel or reference marks, switching off the load in case of the speed falls below the minimum threshold. Thanks to the extremely wide measuring range they can be even used to control repetitive operations, signalling in case of unwanted stops. They are able to drive directly a.c. relays from 90 to 240 Vac with no need external power supply or amplifiers. Further delays or other special functions may be implemented upon specific request. The output is protected against wrong connection, overvoltages on line, and short circuit of the load.

**Technical data:**

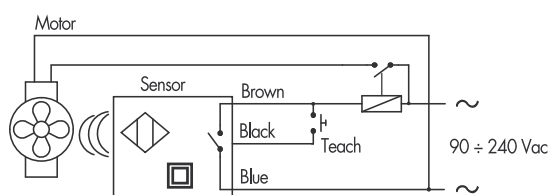
- Working voltage: 90 ÷ 240 Vac
- Electrical system frequency: 40 ÷ 60 Hz
- Off-state current at 220 V: <2,2 mA
- Minimum operational current: 8 mA
- Voltage drop: <8V
- Switching hysteresis (H): <10% Sn
- Repeat accuracy (R): <2% Sn
- Maximum detectable interval (between two pulses): 2 min
- Detectable start-up time (T1): 0 ÷ 1 min (default 2 sec.)
- Temperature range: -25° ÷ +60°C
- Max thermal drift of sensing distance S<sub>n</sub>: ±10%
- Degree of protection: IP67
- Cable conductor cross section: 0,50mm<sup>2</sup>
- Status indicator: yellow LED = out ON; frequency over the threshold  
red LED = out OFF; frequency under the threshold  
blinking red LED = out OFF; short circuit on the output
- Marking: II 3D Ex tc IIIC T80°C IP67 X  
II 3G Ex nAc IIC T6 X
- Protected against short-circuit and overload
- Electromagnetic compatibility (EMC) according to EN60947-5-2
- According to: EN60079-0/EN60079-15/EN60079-31
- Shock and vibration resistance according to EN60068-2-27/EN60068-2-6
- Class 2 equipment according to EN61140

**Use in hazardous area according to instruction manuals**

Housing	Flush mounting Non flush mounting	L1	L2	L3	L4	L5	Cable diameter	Body diameter (d)	Max detectable frequency	Rated operational current (I <sub>e</sub> )	Nominal sensing distance (S <sub>n</sub> ) ±10%	ORDERING REFERENCES	
												mm	mm
C	•	-	50	-	-	50	5	M18 x 1	800	200	5	ASD18/4A09KS3GD	
C	•	10	40	-	-	50	5	M18 x 1	400	200	8	ASD18/5A09KS3GD	
G	•	-	50	10	-	60	6	M30 x 1,5	400	200	10	ASD30/4609KS3GD	
G	•	15	35	10	-	60	6	M30 x 1,5	200	200	15	ASD30/5609KS3GD	



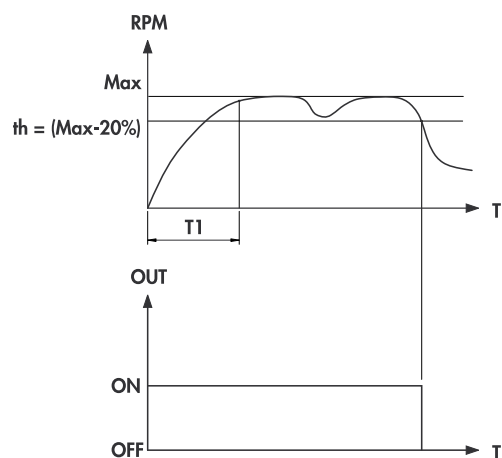
## Example of application



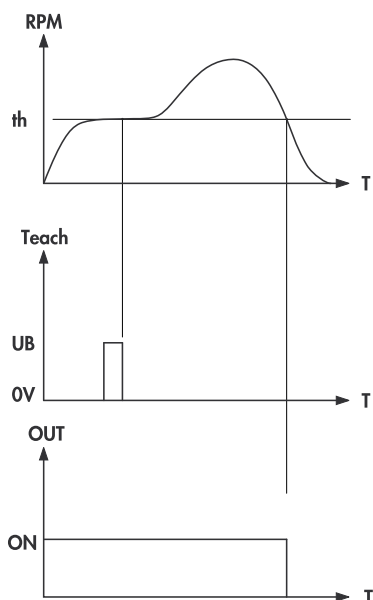
## Use of the sensor:

On power on, the yellow LED lights and the output switches to the ON state, driving the relay, which will drive the motor. After a start up delay time ( $T1$ ) the sensor measures the speed of the motor and compares it to the threshold value. If the speed is under the threshold value, the output goes OFF, giving an alarm indication with the red LED. The minimum threshold can be either factory preset or can be programmed from the sensor application with no need to perform any measurement.

## Procedure 1



## Procedure 2



## Threshold self-teaching procedure:

There are two different ways to perform the self-teaching of the threshold:

### 1 - Acquisition of start up time and calculation of the threshold from the maximum speed:

- connect the Teach input (black) to the brown before turning on the power
- Turn on the power supply to the machine and to the sensor and wait the speed gets the nominal value
- Turn off the power supply
- At this stage the sensor has acquired the start up time ( $T1$ ) and calculated the threshold as the maximum value of the speed reduced of -20%
- Disconnect the Teach in from the brown wire before running the machine again.

### 2 - Acquisition of a known threshold (start up time is not modified):

- Turn the power supply on to the machine and sensor and accelerate to the speed you want to get as threshold ( $th$ ).
- Connect temporarily the Teach input (black) to the brown wire. This operation can be easily done with a push-button on the operator panel of the machine.
- At this stage the current speed becomes the minimum threshold ( $th$ ), under of which the sensor goes in OFF state.

Both of the procedures can be repeated unlimited times.