

## INCREMENTAL SPEED IMPULSE SENSORS

for multiquadrant operation - control

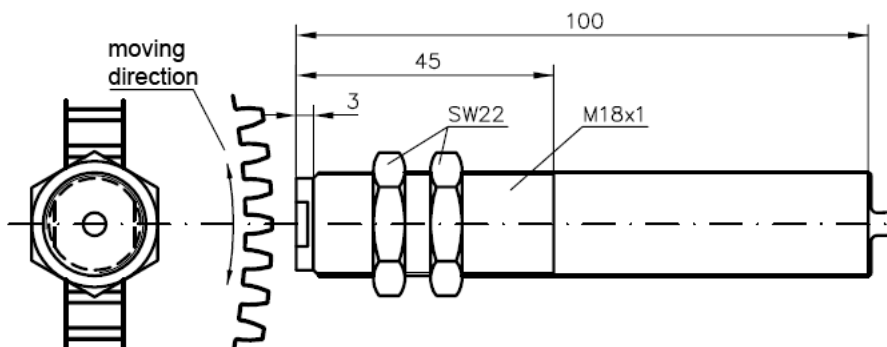


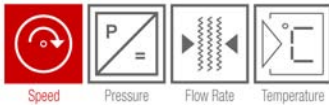
### Incremental Field Plate Impulse Sensor FDG 818 for pole wheel scanning

In connection with a pole wheel (module 1) the impulse sensor triggers 2 rectangular signals 90° phase delayed with complementary signal. It is especially suitable as actual value transmitter for control tasks as well as for detection of rotation direction. It replaces 2 impulse sensors which have to be mounted mechanically at the pole wheel 90° displaced (e.g. FG 612).

The outputs are short circuit proof. The sensor meets highest demands regarding important surrounding conditions as dirt, pressure, temperature, oil and EMC.

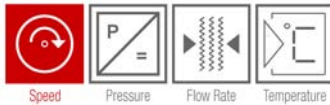
### Dimension diagram





### Technical Data - FDG 818

<b>MATERIAL</b>	1.4571
<b>PROTECTION CLASS</b>	IP 68 (head) / IP 67 (connection)
<b>FREQUENCY RANGE</b>	0 ... 100 kHz
<b>POWER SUPPLY</b>	9 ... 24 V DC $\pm$ 5%
<b>POWER CONSUMPTION</b>	0,7 W (without load)
<b>REVERSE POLARITY PROTECTION</b>	installed
<b>OUTPUT</b>	2 rectangular signals 90° phase delayed, phase displacement 90° $\pm$ 30° at adjustment acc. to installation instructions
<b>OUTPUT Hi</b>	$U_B - 2 V$
<b>OUTPUT Lo</b>	< 0,5 V
<b>OUTPUT IMPEDANCE</b>	60 $\Omega$
<b>MAX. LOAD CURRENT</b>	50 mA, circuit proof
<b>POLE WHEEL</b>	Ferromagnetic material Module 1, tooth height > 0,5 mm Tooth width > 10 mm Distance pole wheel -> sensor 0,3 mm $\pm$ 0,1 mm
<b>PRESSURE RESISTANCE (MEASURING SIDE)</b>	20 bar
<b>EMC ACC. TO IEC 801-4</b>	Severity level 2
<b>AMBIENT TEMPERATURE</b>	-20 ... 85°C
<b>STORAGE TEMPERATURE</b>	-20 ... 85°C
<b>VIBRATION RESISTANCE STRENGTH ACC. TO IEC 68-T2-6</b>	200 m/s <sup>2</sup>
<b>SHOCK RESISTANCE ACC. TO IEC 68-T2-27</b>	200 m/s <sup>2</sup>
<b>ELECTRICAL CONNECTION</b>	5m PVC-cable, 4-wire, screened, screening isolated from housing



# SPEED IMPULSE SENSORS

for measuring and controlling

Speed sensors for measuring and controlling are impulse transmitters for physical input quantity rotational speed, velocity and distance in connection with a pole wheel or pole piece of ferromagnetic material which has been mounted on the shaft (pole wheels see datasheet DS 107 E).

## Electromagnetic Impulse Sensors EG 510 A / EGH 530 A for pole wheel scanning

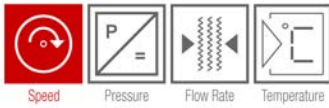
The electromagnetic sensor is an active transmitter and consists of an iron core with induction coil and a permanent magnet (bicycle dynamo principle) placed behind. The output voltage is dependent upon the distance sensor -> pole wheel and the circumferential velocity (pole wheels see datasheet DS 107 E).

The coil has no connection to the housing (floated).

### Technical Data - EG 510 A

MATERIAL	1.4571
PROTECTION CLASS	IP 64 (head)
DISTANCE POLE WHEEL - SENSOR	
MODULE 1	< 0,5 mm
MODULE 2 - 4 OR LARGER	1 - 2 mm
CORE DIAMETER	2,7 mm
GROUND CONNECTION TO HOUSING	no
FREQUENCY RANGE	8 Hz - 20 kHz
COIL RESISTANCE	1200 $\Omega$
INDUCTANCE	450 mH
TEMPERATURE RANGE	-70° ... +110°C
ELECTRICAL CONNECTION	2-pole plug connector, IP 50

Rev.-Nr.: DS 103 E V0.6 2009-08-18

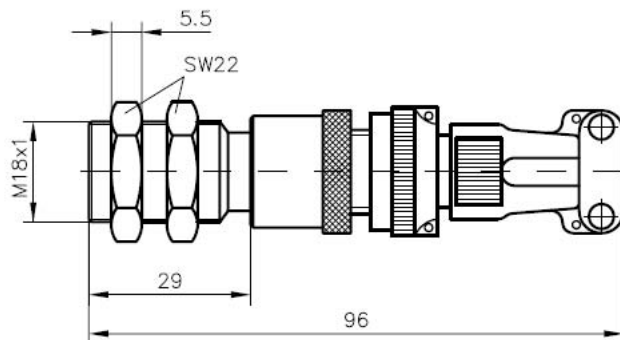


## Technical Data - EG 530 A

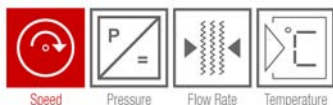
MATERIAL	1.4571
PROTECTION CLASS	IP 64 (head)
DISTANCE POLE WHEEL - SENSOR	
MODULE 1	< 0,5 mm
MODULE 2 - 4 OR LARGER	1 - 2 mm
CORE DIAMETER	2,7 mm
GROUND CONNECTION TO HOUSING	no
FREQUENCY RANGE	8 Hz - 20 kHz
COIL RESISTANCE	55 $\Omega$
INDUCTANCE	25 mH
TEMPERATURE RANGE	-70° ... +230°C
ELECTRICAL CONNECTION	2-pole plug connector, IP 50

## Dimension diagram

moving  
direction



EG 510 A / EGH 530 A

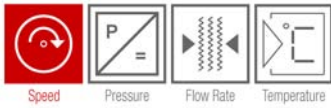


## Hall Effect Impulse Sensors, 3-wire technique for pole wheel scanning

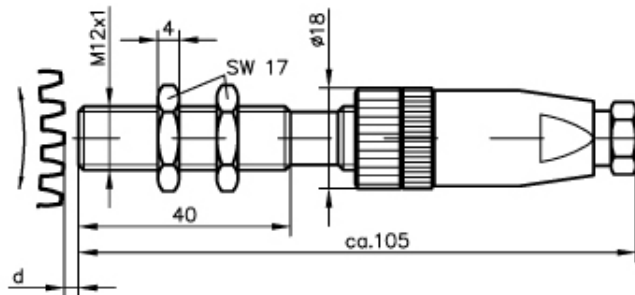
In connection with a pole wheel (gear wheel made of ferromagnetic material) these sensors are designed for generating speed proportional impulse frequencies (pole wheel see datasheet DS 107 E). They have an integrated signal amplitude with threshold characteristics. The output circuit is short-circuit-proof. The signal amplitudes are equal to the supply voltage minus 2 V.

### Technical Data - FG 612 A, FG 612 B, FG 618 A, FG 618 B, FG 622 A, FG 622 B

<b>MATERIAL</b>	1.4571
<b>PROTECTION CLASS</b>	IP 68 (sensor head and electrical connection)
<b>DISTANCE POLE WHEEL - SENSOR</b>	
<b>MODULE 1</b>	0,2 - 1 mm
<b>MODULE 2</b>	0,2 - 2,5 mm
<b>MODULE 4 AND LARGER</b>	0,2 - 4,5 mm
	Lateral offset at minimal width of magnet wheel 0,2 mm
<b>FREQUENCY RANGE / SIGNAL OUTPUT</b>	0 Hz - 15 kHz
<b>AMBIENT TEMPERATURE</b>	-20 ... +100°C (with integrated amplifier)
<b>POWER SUPPLY</b>	10 - 26 V DC, max. 10 mA without load
<b>TEST VOLTAGE</b>	Housing / shielding 500 V / 50 Hz / 1 min Shielding / electronics 500 V / 50 Hz / 1 min
<b>SHOCK RESISTANCE</b>	50 g during 20 ms, half sinus pulse
<b>WIRING RESISTANCE</b>	30 g in the range 5 - 2000 Hz
<b>ELECTRICAL CONNECTION</b>	
<b>FG 612 A</b>	Thread M 12 x 1 connector, IP 68
<b>FG 618 A</b>	Thread M 18 x 1 connector, IP 68
<b>FG 622 A</b>	Thread M 22 x 1 connector, IP 68
<b>FG 612 B</b>	Thread M 12 x 1 with firmly moulded 10m PVC-cable, screened, IP 68
<b>FG 618 B</b>	Thread M 18 x 1 with firmly moulded 10m PVC-cable, screened, IP 68
<b>FG 622 B</b>	Thread M 22 x 1 with firmly moulded 10m PVC-cable, screened, IP 68

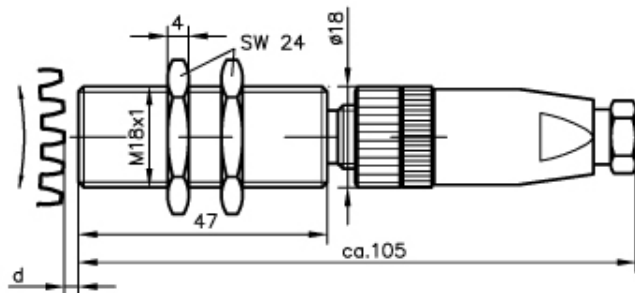


### Dimension diagram



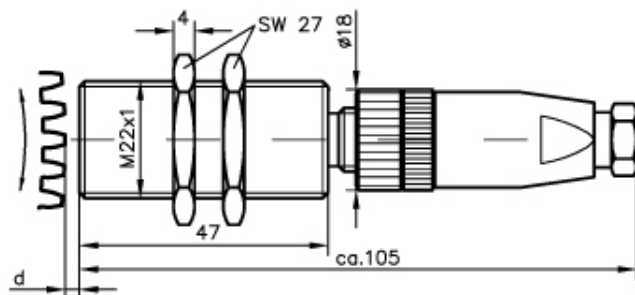
ca. = approx.

FG 612 A



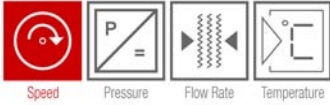
ca. = approx.

FG 618 A

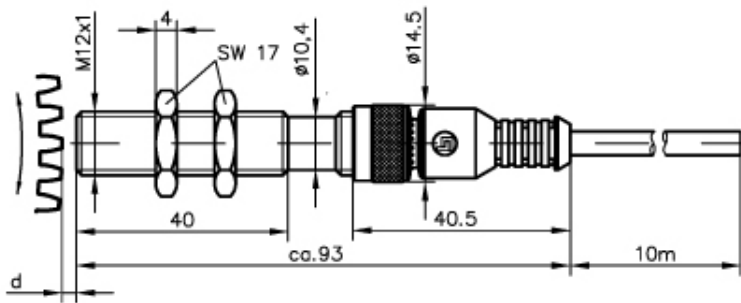


ca. = approx.

FG 622 A

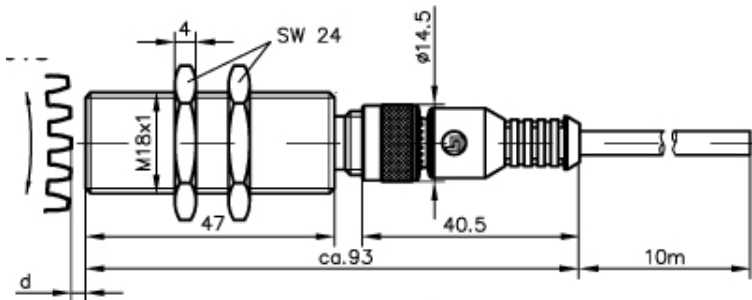


## Dimension diagram



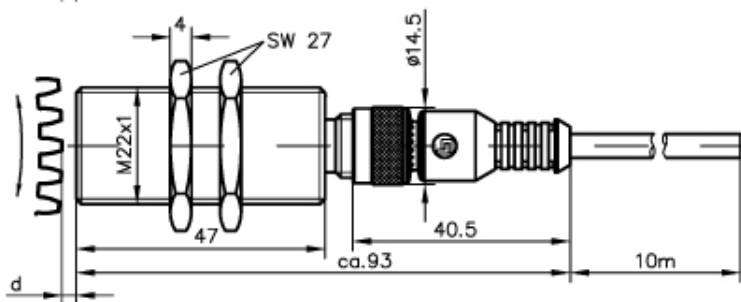
ca. = approx.

FG 612 B



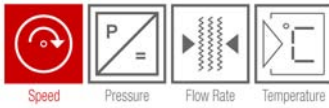
ca. = approx.

FG 618 B



ca. = approx.

FG 622 B



## HF 2-wire Namur Sensors acc. to DIN 19234

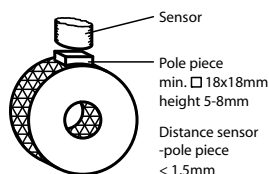
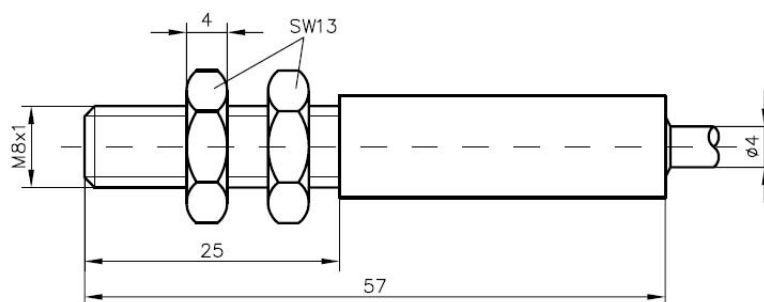
The impulse sensor contains a high-frequency oscillator. Its moving coil is placed at the sensor head. The pole piece with gap effectuates a differing damping of the oscillator circuit and therefore a higher and lower supply current. HF-sensors thus are two-pole, the impedance is non-reactively calculated by the position of the pole. The signal amplitude is dependent on the distance between pole piece and sensor and the dimensions of the poles but independent concerning circumferential speed respectively speed of the shaft.

HF-sensors are especially designed for the operation in plants with high electromagnetic low frequency interferences with sensor-frequencies starting at 1Hz.

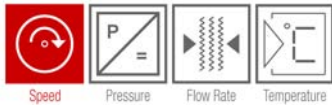
### Technical Data -HFG 720

MATERIAL	1.4571
PROTECTION CLASS	IP 67 (head)
DISTANCE POLE WHEEL - SENSOR	< 1,5 mm
FREQUENCY RANGE	0 - 5 kHz
AMBIENT TEMPERATURE	-25 ... +100°C
PERMISSIBLE SHOCK	b <= 30 g; T <= 11 ms
DYNAMIC LOAD	f <= 55 Hz; a <= 1 ms
ELECTRICAL CONNECTION	20 m PVC-cable, 2-wire, screened

### Dimension diagram



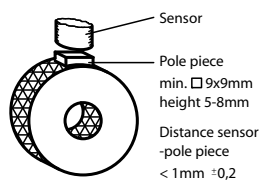
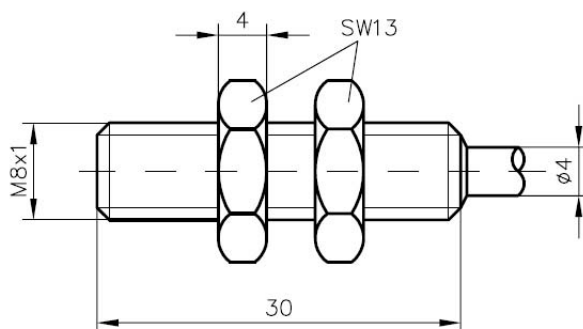
HFG 720 and pole piece



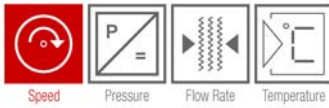
## Technical Data - HFG 721

MATERIAL	1.4571
PROTECTION CLASS	IP 67 (head)
DISTANCE POLE WHEEL - SENSOR	< 1,5 mm
FREQUENCY RANGE	0 - 5 kHz
AMBIENT TEMPERATURE	-25 ... +100°C
PERMISSIBLE SHOCK	b ≤ 30 g; T ≤ 11 ms
DYNAMIC LOAD	f ≤ 55 Hz; a ≤ 1 ms
ELECTRICAL CONNECTION	2 m PVC-cable, 2-wire

## Dimension diagram



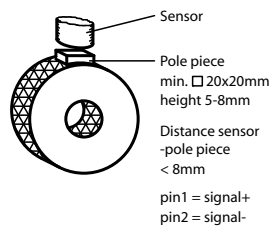
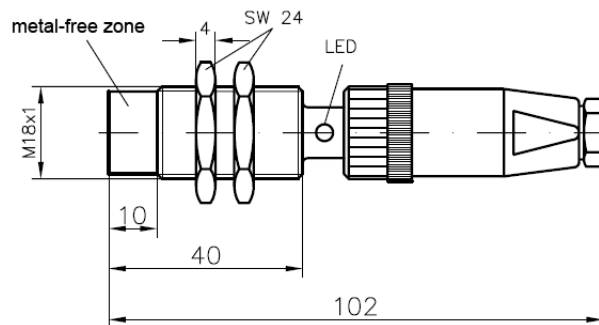
HFG 721 and pole piece



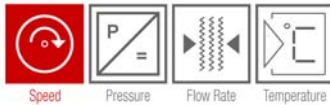
## Technical Data - HFG 718 A

MATERIAL	Nickel-plated brass
PROTECTION CLASS	IP 67
DISTANCE POLE WHEEL- SENSOR	< 8 mm
FREQUENCY RANGE	0 - 500 Hz
AMBIENT TEMPERATURE	-25 ... +70°C
ELECTRICAL CONNECTION	Plug connector, IP 65 max. temperature -25...+85°C

## Dimension diagram



HFG 718 A and pole piece



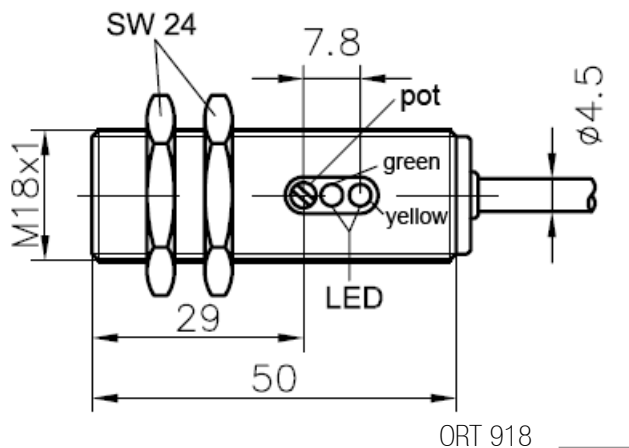
## Infrared Reflex Sensor ORT 918 for contactless speed measurement at rotating shafts

The reflex sensor sends out infrared light. If there is a reflective mark in the operating area, the output is switched by the downstream electronics.  
(3-wire-transistor output npn).

### Technical Data - ORT 918

REFLECTIVE MARK	10 x 10 mm
SWITCHING DISTANCE	< 200 mm (400 mm on demand)
PROFILE	M 18 x 1
HOUSING MATERIAL	Metal
SWITCHING FREQUENCY	1 kHz
REACTION TIME	0,65 ms
SUPPLY VOLTAGE	10 ... 30 V DC, 100 mA
VOLTAGE DROP	< 2,5 V
LED	Display switching signal
POTENTIOMETER	Switch distance regulation
SHORT CIRCUIT AND REVERSE POLARITY PROTECTION	yes
PROTECTION CLASS	IP 65
TEMPERATURE RANGE	-10 ... +60°C
ELECTRICAL CONNECTION	3m PVC-cable

### Dimension diagram



### Schematic diagram

