

Magnesensor

SET-B3

Magneswitch

SET-K2

High accuracy non-contact Magnesensor and Magneswitch

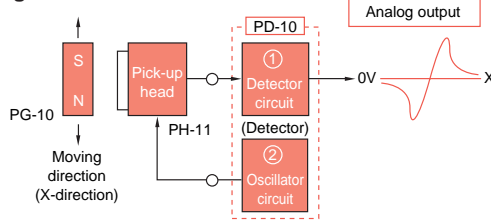
- Magnesensor SET-B3 can be used as a zero point or to detect small displacements.
- Magneswitch SET-K2 can be used as a zero point for Magnescale and rotary encoders.
- Excellent resistance to workshop conditions.
- Compact and lightweight. Non-contact design.
- Repeatability: $\pm 1 \mu\text{m}$
- Max response frequency: 1.7 kHz
- Output signal: analog (Set B3) / pulse (Set K2)
- Power supply: +12 V DC

Specifications

Model	Magnesensor SET-B3	Magneswitch SET-K2
Repeatability	$\pm 1 \mu\text{m}$ (under same conditions) (Note1)	
Operating range	—	$8 \pm 1 \text{ mm} / 0.31 \pm 0.04''$ (at $0.5 \text{ mm} / 0.019''$ clearance) (Note4)
Clearance	Max. $2.5 \text{ mm} / 0.11''$	Max. $3 \text{ mm} / 0.09''$
Max. response frequency	1.7 kHz (Note2)	max.delay: 0.1 ms (Note2)
Power supply	+12 V DC $\pm 5\%$	+12 V DC $\pm 10\%$
Power consumption	Max. 40 mA	Max. 20 mA
Output impedance	3 k Ω	12 k Ω
Temperature characteristics	$0.3 \mu\text{m} / ^\circ\text{C}$ (zero drift)	$0.8 \mu\text{m} / ^\circ\text{C}$ (Note5)
Voltage characteristics	$0.2 \mu\text{m}$ or less/ % (zero drift)	$8 \mu\text{m} / \text{V}$
Operating temperature	-10°C to $50^\circ\text{C} / 14^\circ\text{F}$ to 122°F	
Cable length (sensor)	3 m / 9.8' (extendable up to 15 m / 49.2' by MSK-5000) (Note3)	3 m / 9.8' (extendable up to 30 m / 98' by MSK-5000) (Note3)
Cable length (detector)	Max. 100 m / 328.0' by MSK-5100	Max. 20 m / 65.6' by MSK-5100

Configuration

Magnesensor SET-B3

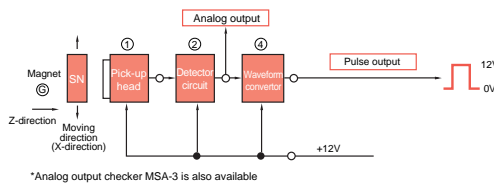


Note 1 Repeatability conditions: temperature change within $\pm 1.2^\circ\text{C}$, voltage change within $\pm 0.12 \text{ V}$, clearance change less than $3 \mu\text{m}$, speed change less than 10 mm/s .

Note 2 Response speed conditions: response frequency 1.7 kHz, which is an input signal frequency where the relative output level drops by 3 dB. Max.response speed is about 9 m/s when the standard PG-10/-910 magnet is used.

Note 3 Cable extension: Output voltage decreases about 2.3 %/m by cable extension.

Magneswitch SET-K2



Note 1 Repeatability: indicates the accuracy of the position at which the pulse output goes ON. Conditions for $\pm 1 \mu\text{m}$ are: clearance 0.5 mm , temperature change within $\pm 1.2^\circ\text{C}$, voltage change within $\pm 0.12 \text{ V}$, clearance change less than $3 \mu\text{m}$, speed change less than 10 mm/s .

Note 2 Response speed Max. delay 0.1 m/s
This is a proper time constant of the detector circuit and indicates a max. delay (T) from detection to pulse output rise. Max. response speed is l/T where l is a practically allowable detection tolerance. When the detector's proper time constant is taken into account in use, the time delay is negligible. (e.g.: the detector head and magnet are operated at the same speed.) The detector element's max. response speed is 10 MHz .

Note 3 When extending the cable, check the noise caused by external equipment.

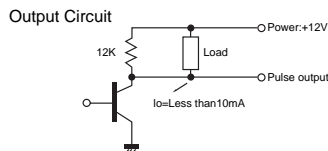
Note 4 Clearance

Clearance affects the operating range and repeatability.

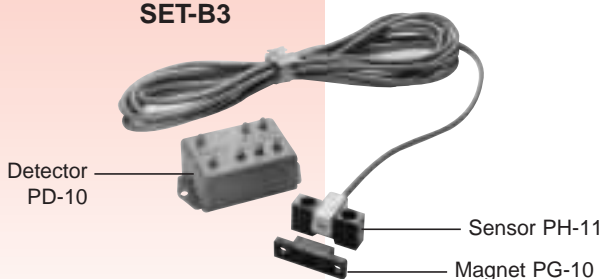
Note 5 Watch the temperature characteristics.

Accuracy	$1 \mu\text{m}$	$5 \mu\text{m}$	$10 \mu\text{m}$
Pulse	10 mm/s	50 mm/s	100 mm/s

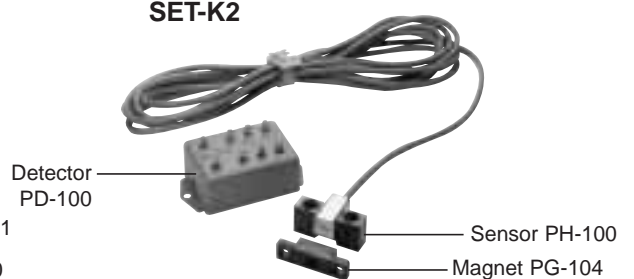
Max.speed change at the time of position detection at a constant speed.



SET-B3



SET-K2



SET-P15

SET-P16

High accuracy non-contact magnetic switch

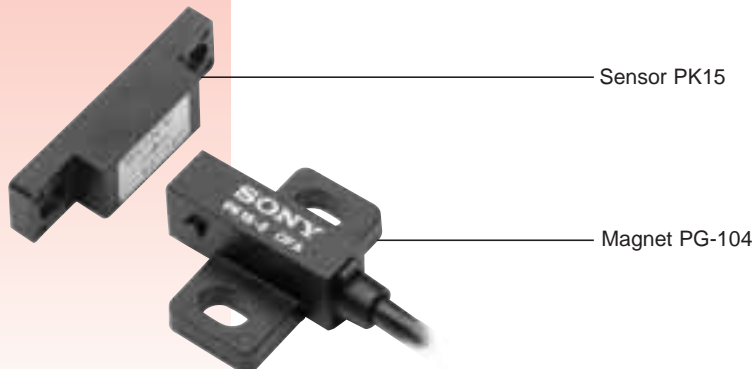
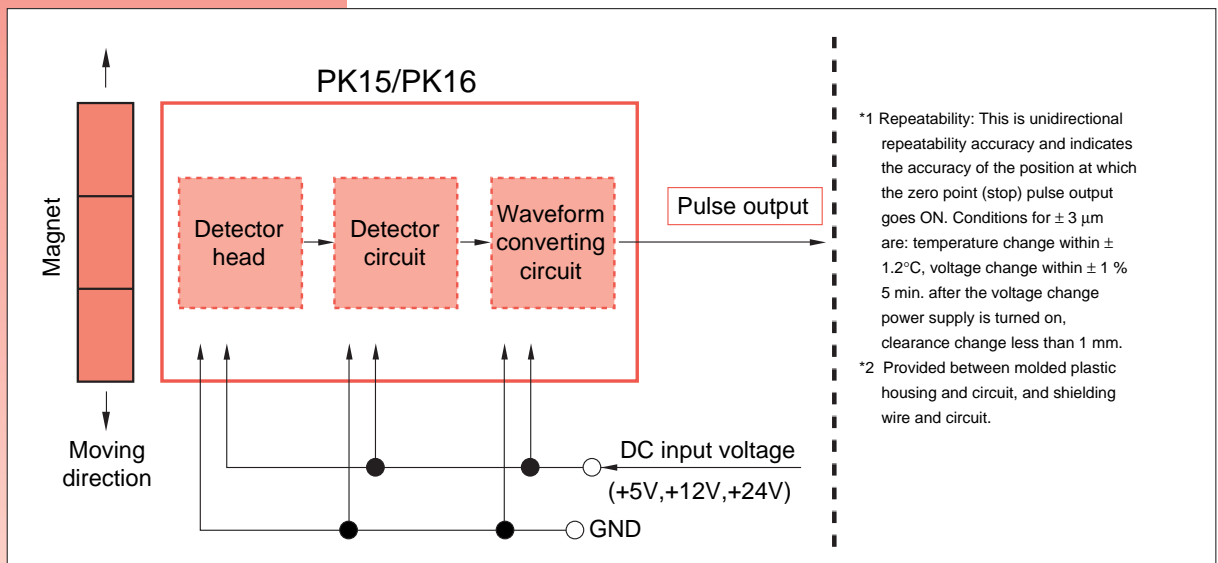
- SET-P15 can be used as a zero point for the DIGIRULER® (detector PL23) or as a limit switch.
- SET-P16 can be used as a zero point for the DIGIRULER® (Interpolator MJ100/110).
- Excellent resistance to workshop conditions.
- Resistant to oil, dirt, vibrations and shocks.
- High accuracy: $\pm 3 \mu\text{m}$
- Max. response frequency; 10 kHz
- Built-in circuit for direct connection to a control unit (SET-P15).
- Indication lamp (LED) for visual confirmation that the switching action is being made.

Specifications

Model	PK15			PK16
	-1	-2	-3	-1
Repeatability	$\pm 3 \mu\text{m}$ (under same circumstance)* ¹			
Operating range	$7.5 \pm 2 \text{ mm} / 0.29" \pm 0.07"$ (at 1 mm clearance)			
Clearance	Max. 3 mm/ 0.11"			
Max. response frequency	10 kHz			
Output	Circuit	NPN transistor, open collector		
	Operation	Turns ON in proximity		
	Contact capacity	Max. current 30 mA, max. voltage 30 V		
	Residual voltage	Max. 0.4 V, with 30 mA		
	Protection circuit	Surge killer; protection against reversed polarity		
Indication lamp	LED turns on, when activated			
Power supply	+5 V DC $\pm 10\%$	+12 V DC $\pm 10\%$	+24 V DC $\pm 10\%$	+5 V DC $\pm 10\%$
Power consumption	Max. 10 mA			
Protective design grade	Equivalent to IP67			
Insulation resistance	$10\text{M}\Omega$ (250 V DC)* ²			
Vibration resistance	49 m/s ² , 0 to 500 Hz			
Shock resistance	980 m/s ²			
Operating temperature	-10°C to 60°C / 14°F to 140°F			
Storage temperature	-20°C to 80°C / -4°F to 176°F			
Cable length	1.5 m / 4.9' (extendable up to 30 m / 98.4')			

*The PK16 has a 6-pin mini DIN connector.

Configuration



SET-P15

SET-P16

High accuracy non-contact magnetic switch

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Indication lamp	LED turns on, when activated			
Power supply	+5 V DC $\pm 10\%$	+12 V DC $\pm 10\%$	+24 V DC $\pm 10\%$	+5 V DC $\pm 10\%$
Power consumption	Max. 10 mA			
Protective design grade	Equivalent to IP67			
Insulation resistance	$10\text{M}\Omega$ (250 V DC)*2			
Vibration resistance	49 m/s ² , 0 to 500 Hz			
Shock resistance	980 m/s ²			
Operating temperature	-10°C to 60°C / 14°F to 140°F			
Storage temperature	-20°C to 80°C / -4°F to 176°F			
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