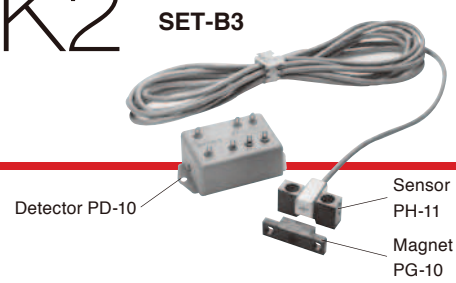
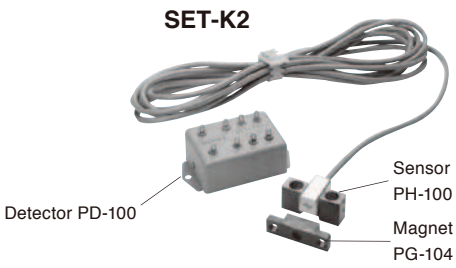
SET SET-B3/SET-K2

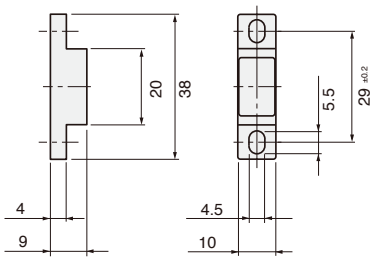
High-precision non-contact Magnesensor and Magneswitch



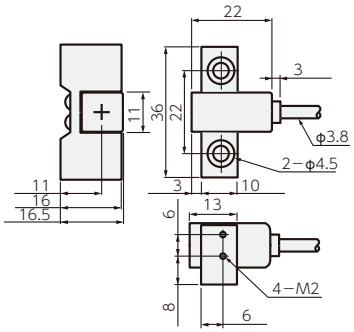


Outer dimensions

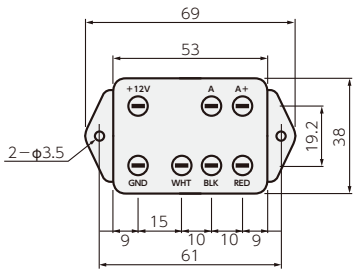
Magnet PG-104(PG-10)



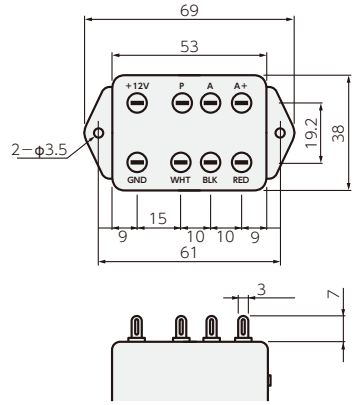
Sensor PH-11/PH-100



Detector PD-10



Detector PD-100



Unit: mm

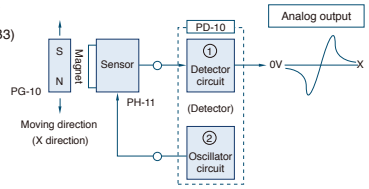
- Magnesensor SET-B3 can be used as a reference point or to detect small displacements.
- Magneswitch SET-K2 can be used as a reference point for Magnescale or rotary encoders.
- Resistant to oil, dust, vibration, and impact and withstands extreme work conditions
- Compact and lightweight. Non-contact design
- Repeatability: ±1 µm
- Output signal: analog (SET-B3), pulse (SET-K2)
- Power supply: +12 V DC

Specifications

Model	SET-B3	SET-K2
Repeatability	±1 µm (under same conditions)*1	
Operating range	—	8 ±1 mm (at 0.5 mm/0.019' clearance)*4
Clearance	Max. 2.5 mm	Max. 3 mm
Max. response frequency	1.7 kHz*2	—
Max. delay	—	0.1 ms*2
Power supply	12V DC ±5 %	12V DC ±10 %
Current consumption	Max. 40 mA	Max. 20 mA
Output impedance	3 kΩ	12 kΩ
Temperature characteristics	0.3 µm/°C (zero drift)	0.8 µm/°C*5
Voltage characteristics	0.2 µm or less/% (zero drift)	8 µm/V
Protective design grade	IP65 or equivalent for scale section, IP30 or equivalent for interface unit	
Operating temperature	–10 °C to 50 °C	
Cable length (sensor)	3 m/9.8' (expandable up to 15 m/49.2' by MSK-5000)*3	3 m/9.8' (expandable up to 30 m/98' by MSK-5000)*3
Cable length (interpolator)	Max. 100 m/328.0' by MSK-5100	Max. 20 m/65.6' by MSK-5100

Notes for items with *

(Magnesensor SET-B3)

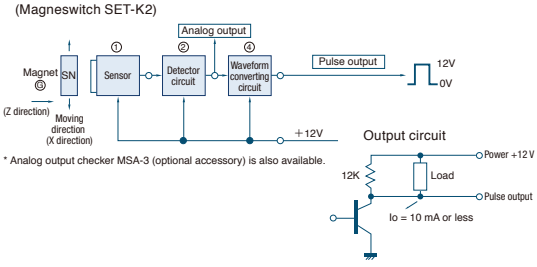


*1 Repeatability
Conditions for ±1 µm: temperature change within ±1.2°C, voltage change within ±0.12 V, clearance change 3 µm or less, and speed change 10 mm/s or less

*2 Response speed Response frequency characteristics 1.7 kHz
This is the input signal frequency where the relative output level drops by 3 dB in the response frequency characteristics. This causes the maximum response speed to be approx. 9 m/s if the standard magnet PG10 (PG-9010) is used.

*3 Cable extension
Output voltage decreases approx. 2.3%/m by cable extension.

(Magneswitch SET-K2)



* Analog output checker MSA-3 (optional accessory) is also available.

*1 Repeatability
This indicates the accuracy of the position at which the pulse output goes ON (at 0.5 mm clearance).

*2 Response speed
This is a proper time constant of the detector circuit and indicates a max. delay (T) from detection to pulse output rise. The maximum 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 maximum response speed is 10 MHz.

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

*4 Clearance
Clearance affects the operating range and repeatability.

*5 Pay attention to the temperature characteristics.

Accuracy	1 µm	5 µm	10 µm
Max. response speed	10 mm/s	50 mm/s	100 mm/s

For position detection at the same speed, maximum speed change is caused.