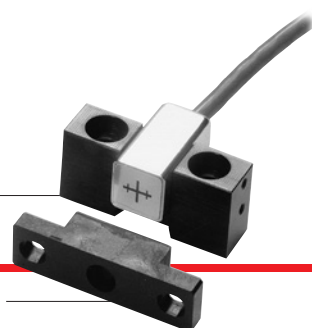


PH PH-100

High-precision, non-contact Magneswitch

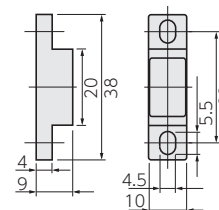
Sensor
PH-100

Magnet
PG-104

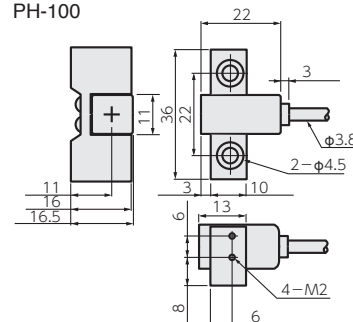


Dimensions

Magnet
PG-104



Sensor
PH-100



Unit: mm

- A combination of sensor PH-100 and magnet PG-104 that are connected to our interpolator can be used as a reference point for linear scales or rotary scales.
- Withstands extreme work conditions
- High precision: $\pm 1 \mu\text{m}$

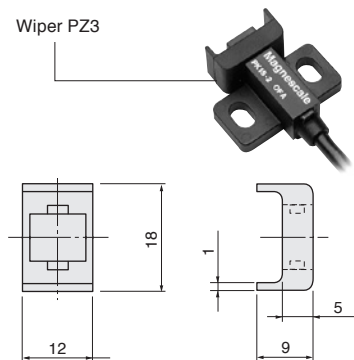
Specifications

| Model | PH-100 |
|---------------------|---------------------------------------------|
| Repeatability | $\pm 1 \mu\text{m}$ (under same conditions) |
| Magnet | PG-104 |
| Clearance | Max. 3 mm |
| Operating range | -10°C to 50°C |
| Detection direction | One direction |
| Cable length | 3 m |

We reserves the right to change product specifications without prior notice.

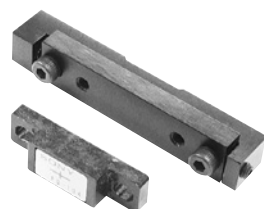
Accessory

Wiper PZ3 (for PK15/PK16)



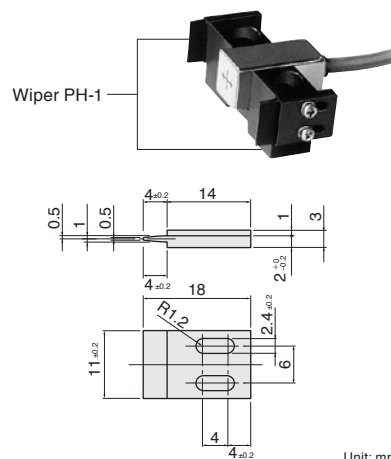
Unit: mm

Magnet mounting block PG-1 (for PG-10/PG-104)



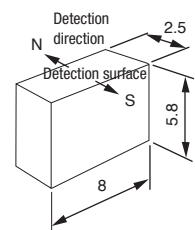
- Magnet (PG-104, PG-10) can be finely adjusted by $\pm 1 \text{ mm}$ in X direction.
- Very useful in setting a reference point

Wiper PH-1 (for PH-11, PH-100, or PH-500)



Unit: mm

PG-9010 (Magnet of PG-10)



Unit: mm

CE15 Series extension cable for PK16

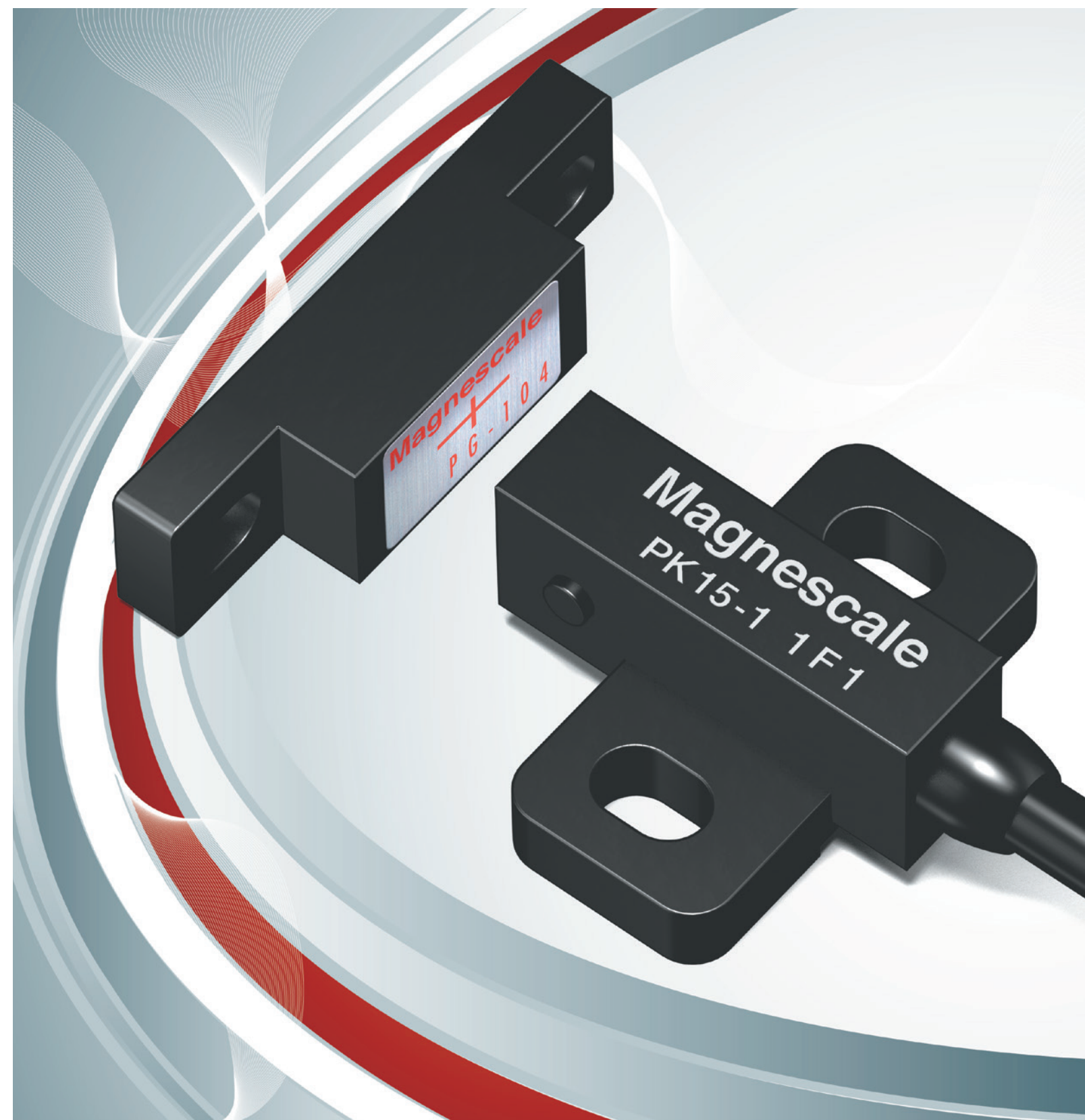
(Mini-DIN 6-pin plug ↔ mini-DIN 6-pin socket)

| Model | Cable length |
|------------------|--------------|
| CE15 -3 | 3 m |
| -5 | 5 m |
| -10 | 10 m |
| -15 | 15 m |
| Compatible model | MJ100/110 |

Magnescale

SPEED X PRECISION

Magnesensor
Magneswitch



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The contents of this literature are as of Jan. 2020.
 This catalog is printed with soy ink.
 MAGNESENSOR-EA02(01)C
 C.2408.CB

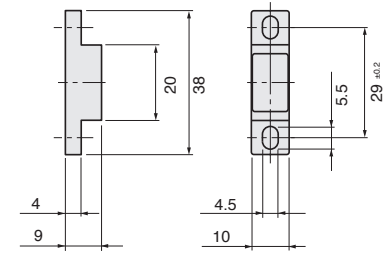
Magnescale Co., Ltd.

SET SET-B3/SET-K2

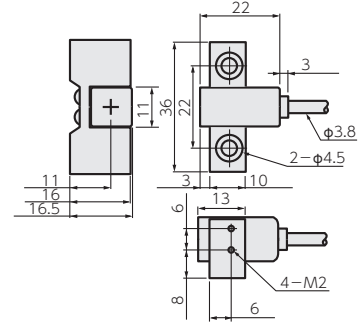
High-precision non-contact Magnesensor and Magneswitch

Dimensions

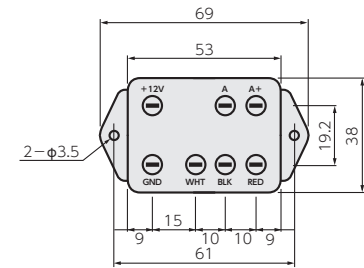
Magnet PG-10/PG-104



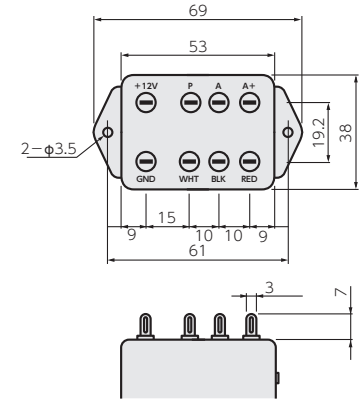
Sensor PH-11/PH-100



Detector PD-10



Detector PD-100

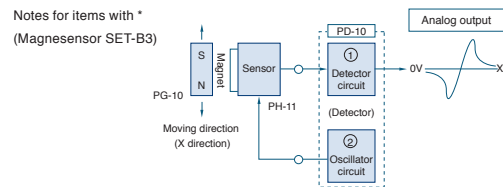


Unit: mm

| Specifications | | |
|-----------------------------|-----------------------------------------------------------------------|-------------------------------------------|
| Model | SET-B3 | SET-K2 |
| Repeatability | ±1 μm (under certain conditions)*1 | |
| Operating range | — | 8 ±1 mm (at 0.5 mm 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 |
| Protection grade | IP65 or equivalent for magnet/sensor, IP30 or equivalent for detector | |
| Operating temperature | -10 °C to 50 °C | |
| Cable length (sensor) | 3 m (expandable up to 15 m by MSK-5000)*3 | 3 m (expandable up to 30 m by MSK-5000)*3 |
| Cable length (detector) | Max. 100 m by MSK-5100 | Max. 20 m by MSK-5100 |

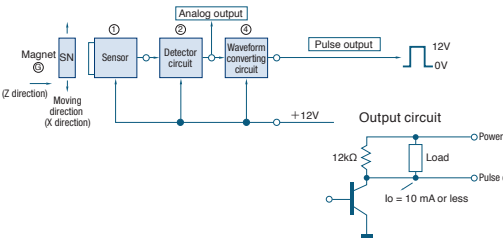
- Magnesensor SET-B3 can be used as a reference point or to detect small displacements.
- Magneswitch SET-K2 can be used as a reference point for linear scales or rotary scales.
- Resistant to oil, dust, vibration, and impact and withstands extreme work conditions
- Compact and lightweight. Non-contact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

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 PG-10 (PG-9010) is used.
- *3 Cable extension
Output voltage decreases approx. 2.3%/m by cable extension.

(Magneswitch SET-K2)



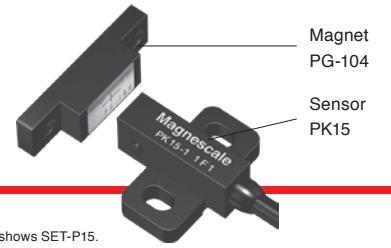
- *1 Repeatability
This indicates the accuracy of the position at which the pulse output goes ON (at 0.5 mm clearance).
Conditions for ±1 μm: temperature change within ±1.2°C, voltage change within ±0.12 V, clearance change 3 μm or less, and speed change 10 mm/s or less
- *2 Response speed
This is a 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 sensor 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.

SET SET-P15/-P16

High-precision, non-contact Magneswitch

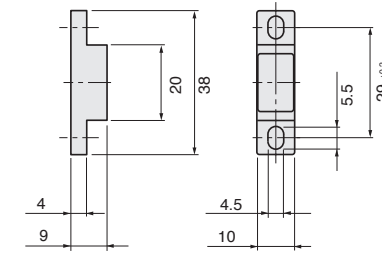


* Photo shows SET-P15.

Dimensions

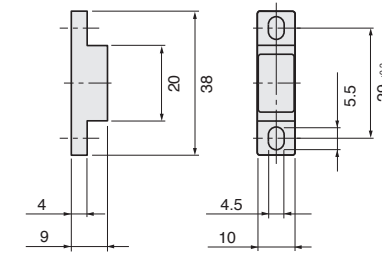
SET-P15

Magnet PG-104

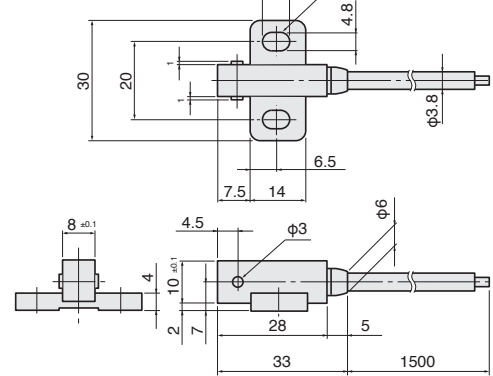


SET-P16

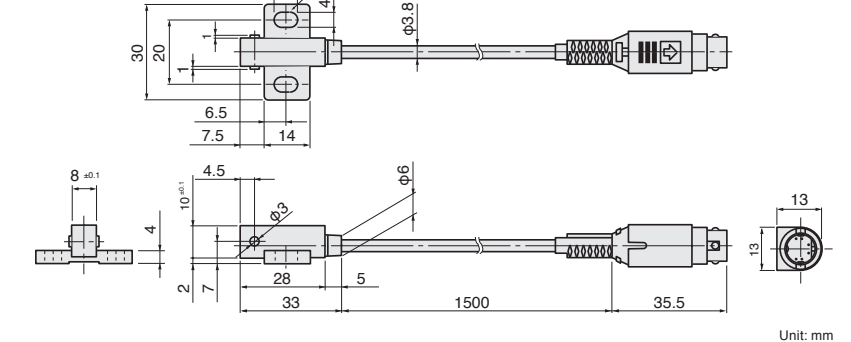
Magnet PG-104



Sensor PK15



Sensor PK16

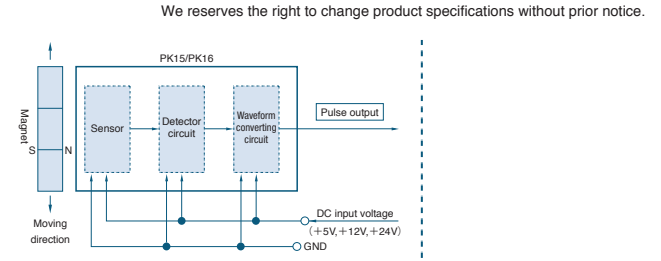


Unit: mm

- SET-P15 can be used as a reference point for DIGIRULER or as a limit switch.
- SET-P16 can be used as a reference point for DIGIRULER (interpolator MJ100/110 used in combination).
- Resistant to oil, dust, vibration, and impact and withstands extreme work conditions
- Repeatability: ±3 μm
- Max. response frequency: 10 kHz
- Built-in circuit for direct connection to a control unit
- Indication lamp (LED) for visual confirmation that the switching action is being made

| Specifications | | | | |
|-------------------------|--------------------|--------------------------------------------------------------------------------|--------------|--------------|
| Model | | PK15 | | PK16 |
| | | -1 | -2 | -3 |
| Repeatability | | ±3 μm (under certain conditions)*1 | | |
| Operating range | | 7.5 ±2 mm (at 1 mm clearance) | | |
| Clearance | | Max. 3 mm | | |
| 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 | Residual voltage V _{OL} = 0.4 V or less at I _{sink} of 30 mA | | |
| | Protection circuit | Surge killer, protection against reverse polarity | | |
| Indication lamp | | Red LED turns ON when activated | | |
| Power supply | | 5V DC ±10 % | 12V DC ±10 % | 24V DC ±10 % |
| Current consumption | | Max. 10 mA | | |
| Protection grade | | IP67 or equivalent | | |
| Insulation resistance | | 10 MΩ DC250 V*2 | | |
| Vibration resistance | | 49 m/s², 0 to 500 Hz | | |
| Shock resistance | | 980 m/s² | | |
| Operating temperature | | -10 °C to 60 °C | | |
| Storage temperature | | -20 °C to 80 °C | | |
| Cable length | | 1.5 m (expandable up to 30 m) | | |

- *1 Repeatability
This is unidirectional repeatability accuracy and indicates the accuracy of the position at which the reference point (stop) pulse output goes ON.
Conditions for accuracy ±3 μm: temperature change within ±1.2°C, voltage change within ±1% 5 min. after the power supply is turned ON, clearance variation 1 mm
- *2 Provided between molded plastic housing and circuit, and shielded wire and circuit



We reserves the right to change product specifications without prior notice.