SAGInoMIYA

# PRESSURE CONTROLS
## SERIES

## SAGINOMIYA PRODUCT CATALOG

- Pressure Sensors

# Contents

## PRESSURE SENSORS


| Type | Applications | Features | Connections | Accuracy (%) | ＊1 Standards | Page |
|---|---|---|---|---|---|---|
| NSK OEM<br>PRESSURE SENSORS (Ratiometric Output)<br> | ・Room air conditioners<br>・Packaged air conditioners<br>・Water boilers<br>・Water supply pumps<br>・Chillers | ・The pressure detection and signal conversion circuits are integrated into a single chip, delivering high precision and durability.<br>・Compatible with a variety of connection types. (Stainless steel wetted parts are also available.) | ・Flare<br>・1/4" Solder<br>・Taper pipe threads | ±1.0 | ・CE<br>・UL/cUL<br>・CQC | 2 |
| NSK<br>PRESSURE SENSORS<br> | ・Packaged air conditioners<br>・Water boilers<br>・Water supply pumps<br>・Chillers<br>・Large refrigeration equipment | ・Accuracy of ±1.0% F.S. across a wide temperature range.<br>・Compatible with a variety of connection types. (Stainless steel wetted parts are also available.)<br>・Current output type supports wiring up to 100m. | ・Flare<br>・1/4" Solder<br>・Taper pipe threads | ±1.0 | ・CE<br>・UL/cUL | 4 |
| HSK OEM<br>PRESSURE SENSORS FOR ULTRA HIGH PRESSURE<br> | ・Heat pump water heaters<br>・Display cases<br>・Condensing units<br>・Chillers | ・Compatible with R744 ($CO_2$).<br>・Accuracy of ±1.0% F.S. across a wide temperature range.<br>・Compatible with a variety of connection types. (Stainless steel wetted parts are also available.)<br>・Current output type supports wiring up to 100m. | ・φ6mm Solder<br>・1/4" Solder<br>・Taper pipe threads | ±1.0 | ・CE<br>・UL/cUL | 6 |
| XSK<br>PRESSURE SENSORS<br> | ・Packaged air conditioners<br>・Water boilers<br>・Water supply pumps<br>・Chillers | ・Current output (4 to 20mA DC)<br>・Compatible with a variety of connection types. (Stainless steel wetted parts are also available.) | ・Flare<br>・Taper pipe threads | ±3.0 | ・CE<br>・UL/cUL | 10 |
| YSK<br>PRESSURE SENSORS<br> | ・Packaged air conditioners<br>・Water boilers<br>・Water supply pumps<br>・Chillers | ・Supports a power supply voltage of 10.5 to 28.0 V.DC.<br>・Compatible with a variety of connection types. (Stainless steel wetted parts are also available.) | ・Flare<br>・Taper pipe threads | ±3.0 | – | 12 |
| KSK OEM<br>PRESSURE SENSORS FOR INDUSTRIAL MACHINERY<br> | ・Construction machinery<br>・Agricultural machinery | ・Standard atmosphere (1013 hPa abs) is set as 0 MPa.<br>・Excellent durability and noise resistance.<br>・Ratiometric output | ・Straight pipe threads | ±3.0 | – | 14 |


＊1 Not all models in the series have obtained certification. Certified models may have different catalog numbers. For more details, please contact us.



# REFERENCE INFORMATION

## TERMS AND DEFINITIONS

● Pressure Sensor Types

1. Gauge pressure type
   Pressure sensor that measures pressure relative to atmospheric pressure.
   Pressure higher than atmospheric pressure is called positive pressure, and pressure lower than atmospheric pressure is called negative pressure.
2. Absolute pressure type
   Pressure sensor that measures pressure relative to absolute vacuum. This type can be broadly divided into two categories.
   ①Those that set absolute vacuum as 0 MPa.
   ②Those that set a pressure of 1013 hPa abs as 0 MPa.
   Our pressure sensors are of type ②.

● Ratiometric Output
The output varies in proportion to the power supply voltage.
Example: When the power supply voltage increases by +5% (i.e., to 5.25 V.DC), the output Vout changes to 4.725 V (4,500 × 1.05).

● Accuracy (%F.S.)
Pressure sensor accuracy is expressed as "%F.S.", meaning the error remains consistent across the entire pressure range.
Example: ±1% F.S. means ±0.01 MPa for a pressure range of 0 to 1 MPa, and ±0.04 V for a voltage output range of 0.5 to 4.5 V.DC.

## SI UNITS

Quoted from JIS Z 8203 "SI units and recommendations for the use of their multiples and of certain other units".
(Pressure)

| kPa | MPa | $mmH_2O$ | $kgf/cm^2$ | mmHg |
|---|---|---|---|---|
| 1 | $1 \times 10^{-3}$ | $1.01972 \times 10^{2}$ | $1.01972 \times 10^{-2}$ | 7.50062 |
| $1 \times 10^{3}$ | 1 | $1.01972 \times 10^{5}$ | $1.01972 \times 10$ | $7.50062 \times 10^{3}$ |
| $9.80665 \times 10^{-3}$ | $9.80665 \times 10^{-6}$ | 1 | $1 \times 10^{-4}$ | $7.35559 \times 10^{-2}$ |
| $9.80665 \times 10$ | $9.80665 \times 10^{-2}$ | $1 \times 10^{4}$ | 1 | $7.35559 \times 10^{2}$ |
| $1.33322 \times 10^{-1}$ | $1.33322 \times 10^{-4}$ | $1.35951 \times 10$ | $1.35951 \times 10^{-3}$ | 1 |

## CONVERSION TABLES

### ■ Vacuum conversion table (MPa ⟷ MPa (abs) ⟷ cmHgV ⟷ $kgf/cm^2$ (abs))

Example: -0.0667 MPa ⟷ 0.0347 MPa (abs) ⟷ 50 cmHgV ⟷ 0.3535 $kgf/cm^2$ (abs)

| MPa | MPa (abs) | cmHg V | $kgf/cm^2$ (abs) |
|---|---|---|---|
| -0.1013 | 0.0000 | 76 | 0.0000 |
| -0.0987 | 0.0027 | 74 | 0.0272 |
| -0.0960 | 0.0053 | 72 | 0.0544 |
| -0.0933 | 0.0080 | 70 | 0.0816 |
| -0.0907 | 0.0107 | 68 | 0.1088 |
| -0.0880 | 0.0133 | 66 | 0.1360 |
| -0.0853 | 0.0160 | 64 | 0.1631 |
| -0.0827 | 0.0187 | 62 | 0.1903 |
| -0.0800 | 0.0213 | 60 | 0.2175 |
| -0.0773 | 0.0240 | 58 | 0.2447 |
| -0.0747 | 0.0267 | 56 | 0.2719 |
| -0.0720 | 0.0293 | 54 | 0.2991 |
| -0.0693 | 0.0320 | 52 | 0.3263 |
| -0.0667 | 0.0347 | 50 | 0.3535 |
| -0.0640 | 0.0373 | 48 | 0.3806 |

| MPa | MPa (abs) | cmHg V | $kgf/cm^2$ (abs) |
|---|---|---|---|
| -0.0613 | 0.0400 | 46 | 0.4078 |
| -0.0587 | 0.0427 | 44 | 0.4350 |
| -0.0560 | 0.0453 | 42 | 0.4622 |
| -0.0533 | 0.0480 | 40 | 0.4894 |
| -0.0507 | 0.0507 | 38 | 0.5166 |
| -0.0480 | 0.0533 | 36 | 0.5438 |
| -0.0453 | 0.0560 | 34 | 0.5710 |
| -0.0427 | 0.0587 | 32 | 0.5981 |
| -0.0400 | 0.0613 | 30 | 0.6254 |
| -0.0373 | 0.0640 | 28 | 0.6526 |
| -0.0347 | 0.0667 | 26 | 0.6798 |
| -0.0320 | 0.0693 | 24 | 0.7069 |
| -0.0293 | 0.0720 | 22 | 0.7341 |
| -0.0267 | 0.0747 | 20 | 0.7613 |
| -0.0240 | 0.0773 | 18 | 0.7885 |

| MPa | MPa (abs) | cmHg V | $kgf/cm^2$ (abs) |
|---|---|---|---|
| -0.0213 | 0.0800 | 16 | 0.8157 |
| -0.0187 | 0.0827 | 14 | 0.8429 |
| -0.0160 | 0.0853 | 12 | 0.8700 |
| -0.0133 | 0.0880 | 10 | 0.8972 |
| -0.0107 | 0.0907 | 8 | 0.9245 |
| -0.0080 | 0.0933 | 6 | 0.9517 |
| -0.0053 | 0.0960 | 4 | 0.9788 |
| -0.0027 | 0.0987 | 2 | 1.0060 |
| 0 | 0.1013 | 0 | 1.0332 |

# PRESSURE SENSORS / Type NSK (Ratiometric Output)

Type NSK-BC
(Molex connector)

Type NSK-BE
(Aptiv connector)

Type NSK-BH
(Lead wires)

**High Volume OEM Item**

Drawings must be exchanged for purchase.
Please contact SAGINOMIYA for more details.

## FEATURES

- The pressure detection and signal conversion circuits are integrated into a single chip, delivering high precision and durability.
- Compatible with a variety of connection types. (Stainless steel wetted parts are also available.)
- Ratiometric output
- Standards：CE (ATEX compliant), UL/cUL, CQC (Please contact us for details.)

## APPLICATIONS

- Room air conditioners
- Packaged air conditioners
- Water boilers
- Water supply pumps
- Chillers, etc.

## COMMON SPECIFICATIONS

- Accuracy：±1.0%F.S. (-40 to 85℃ or -20 to 100℃)
  ±1.5%F.S. (-20 to 120℃)
- Fluid temperature：-40 to 135℃
- Ambient temperature：-30 to 100℃
- Maximum power supply voltage：6 V.DC
- Current consumption：10mA or less
- Load resistance：10kΩ or more
- Load capacitance：Capacitor 1000pF or less
- Absolute pressure type：
  1 atmosphere (1013 hPa abs) is set as 0 MPa.
- Enclosure：IP66

## DESCRIPTION OF CATALOG NUMBER

＊Selecting the following options (Ⅱ to Ⅶ) will determine the catalog number.

NSK − B E 030 F − U ＊＊＊
Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ

| Ⅰ Type |
|---|
| NSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| B | 0.5 to 4.5 V.DC | 5 V±0.25 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| C | Molex connector |
| E | Aptiv connector |
| H | Lead wires |

・Compatible connector
Molex：52117-0340
Aptiv：12065287

| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| 010 | 0 to 1.0 MPa |
| 020 | 0 to 2.0 MPa |
| 030 | 0 to 3.0 MPa |
| 042 | 0 to 4.15 MPa |
| 050 | 0 to 5.0 MPa |

| Ⅴ Connection type | | | | |
|---|---|---|---|---|
| Symbol | Connection type | Brass C3604 | Stainless steel SUS304 | Copper |
| I | 1/4" Female flare (with pin) | ● | – | – |
| F | 1/4" Female flare | ● | – | – |
| B | 1/4" Male flare | ● | (●) | – |
| D | 1/4" Solder | – | – | ＊1 ● |
| M | NPT1/8", R1/8" | ● | (●) | – |
| M | NPT1/4", R1/4" | ● | – | – |

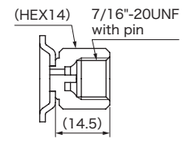
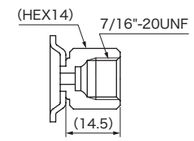
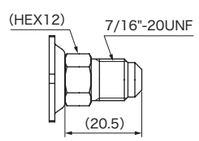
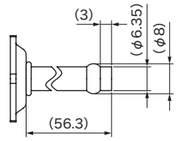
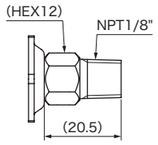
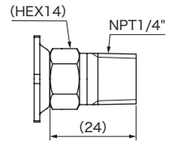
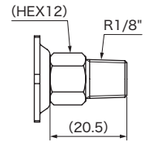
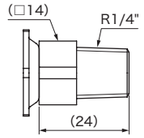
＊1 1/4" Solder connections are available only for NSK-BE and BH types.
・Weight：Approximately 0.05kg (not including lead wires)

| Ⅵ Standards | |
|---|---|
| Symbol | Standards |
| U | CE, UL/cUL, CQC |

| Ⅶ Serial number |
|---|
| ＊＊＊ |

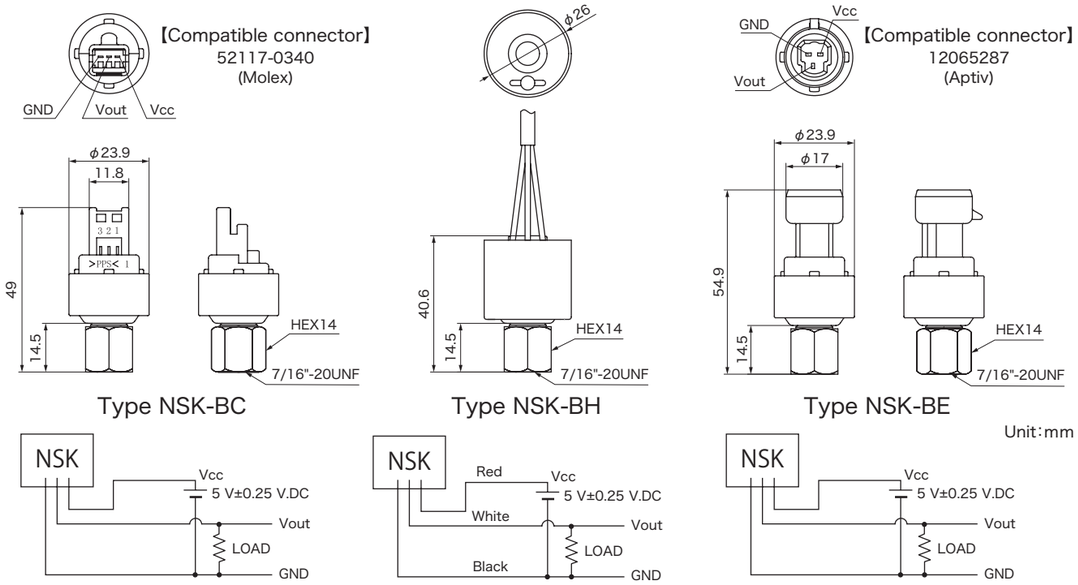
＊Specifications other than those listed above are also available upon request. Please contact us for details.

## CONNECTION TYPES

| I：1/4" Female flare (with pin) | F：1/4" Female flare | B：1/4" Male flare | D：1/4" Solder |
|---|---|---|---|
|   |   |   |   |
| **M：NPT1/8"** | **M：NPT1/4"** | **M：R1/8"** | **M：R1/4"** |
|   |   |   |   |

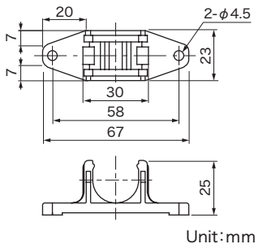
＊For connection types other than the above, please contact us.
Unit：mm

## DIMENSIONS / WIRINGS



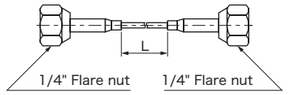

## OPTIONAL PARTS

- Bracket
  ＊Excluding NSK-BH



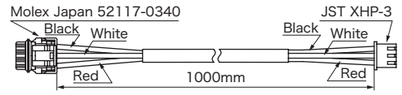

| Part number | NSK-PP02 |
|---|---|

- Assembled capillary tubes
  ＊For connection type B only



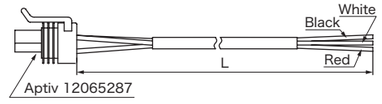

| Part number | L (mm) |
|---|---|
| SNS-AD01 | 1000 |
| SNS-AD02 | 1500 |
| SNS-AD03 | 2000 |
| SNS-AD06 | 1000 with pin |
| SNS-AD07 | 500 |
| SNS-AD10 | 500 with pin |

- Extension cable for NSK-BC




| Part number | NSK-PP16 |
|---|---|

- Extension cables for NSK-BE




| Part number | L (mm) |
|---|---|
| NSK-PP1005 | 1000 |
| NSK-PP1006 | 3000 |

＊Up to 3000mm

# PRESSURE SENSORS / Type NSK

NSK-AEA10B1

NSK-AEA10I1

NSK-AEA50B1

NSK-AEA50I1

(Aptiv connector)

## FEATURES

- Accuracy of ±1.0% F.S. across a wide temperature range.
- Compatible with a variety of connection types.
  (Stainless steel wetted parts are also available.)
- Compatible with various low-GWP refrigerants.
- Current output type supports wiring up to 100m.
- Standards：CE (ATEX compliant), UL/cUL (Please contact us for details.)

## APPLICATIONS

- Packaged air conditioners
- Water boilers
- Water supply pumps
- Chillers
- Large refrigeration equipment, etc.

## COMMON SPECIFICATIONS

- Accuracy：±1.0%F.S. (-40 to 100℃)
- Fluid temperature：-40 to 135℃
- Ambient temperature：-40 to 100℃
- Load resistance：Current output type (Vcc-7) /0.02A (Ω) or less
  Voltage output type【0 to 5 V/0 to 10 V】4.7kΩ or more/1000pF or less (pull-down)
  15kΩ or more/1000pF or less (pull-up)
  【1 to 5 V/1 to 6 V】 4.7kΩ or more/1000pF or less (pull-down/pull-up)
- Load capacitance：Voltage output type 1000pF or less
- Power supply voltage dependency：±0.05%F.S./10 V or less
- Fluids：Refrigerant, air, water, oil, inert gas
  ＊Please refer to the table on the right for compatible refrigerants.
  ＊Not suitable for corrosive fluids.
  ＊When using with water, please choose stainless steel connections.
- Absolute pressure type：1 atmosphere (1013 hPa abs) is set as 0 MPa.
- EMC：EN61000-6-2/EN61000-6-3
- Enclosure：IP66

| Safety group | Compatible refrigerants |
|---|---|
| A1 | R1233zd(E), R407A, R407C, R407F, R407H, R448A, R449A, R449B, R449C, R450A, R452A, R463A-J, R513A, R515B, R507A |

・For other refrigerants, please contact us.

## DESCRIPTION OF CATALOG NUMBER

＊Selecting the following options (Ⅱ to Ⅶ) will determine the catalog number.

NSK − A E A10 B1 − U 05
Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ

| Ⅰ Type |
|---|
| NSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| A | 4 to 20 mA DC | 7 to 35 V.DC |
| C | 0 to 5 V.DC | 7 to 35 V.DC |
| D | 0 to 10 V.DC | 11.5 to 35 V.DC |
| E | 1 to 5 V.DC | 7 to 35 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| E | Aptiv connector |

・Compatible connector：12065287

| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| A07 | -0.1 to 0.7 MPa |
| A10 | -0.1 to 1.0 MPa |
| A20 | -0.1 to 2.0 MPa |
| A30 | 0 to 3.0 MPa |
| A50 | 0 to 5.0 MPa |

| Ⅴ Connection type | |
|---|---|
| Symbol | Connection type |
| B1 | 1/4" Male flare(Stainless steel) |
| D1 | 1/4" Solder |
| I1 | 1/4" Female flare (with pin) (Stainless steel) |
| R1 | R1/8" (Stainless steel) |
| R2 | R1/4" (Stainless steel) |
| N1 | NPT1/8" (Stainless steel) |
| N2 | NPT1/4" (Stainless steel) |

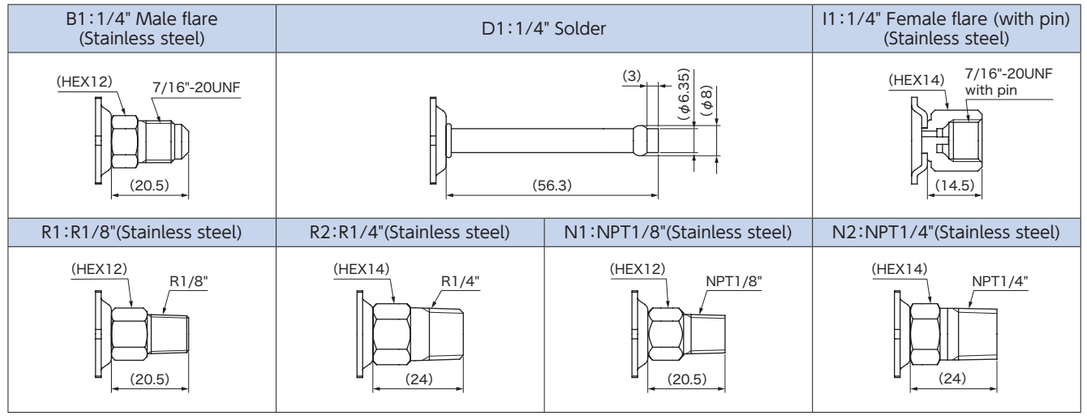
| Ⅵ Standards | |
|---|---|
| Symbol | Standards |
| U | CE, UL/cUL |

| Ⅶ Accuracy | |
|---|---|
| Symbol | Accuracy |
| 05 | ±1.0%F.S. (-40 to 100℃) |

＊Current output types with an accuracy of ±0.5% F.S. (at 25℃) and ±1.5% F.S. (-40℃ to 100℃) are also available upon request.
＊Specifications other than those listed above are also available upon request. Please contact us for details.

・Weight：Approximately 0.05kg

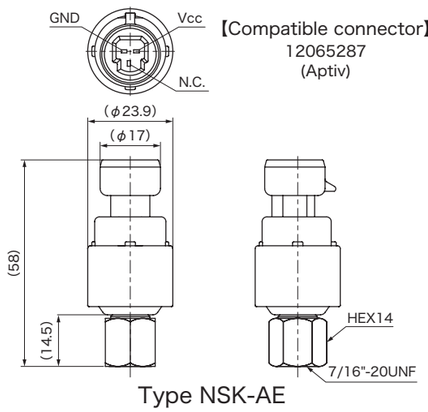
## CONNECTION TYPES



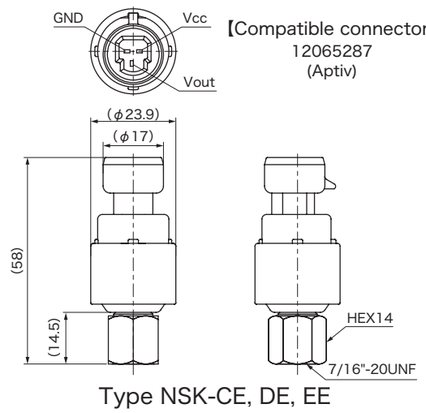

＊For connection types other than the above, please contact us.

Unit：mm

## DIMENSIONS / WIRINGS

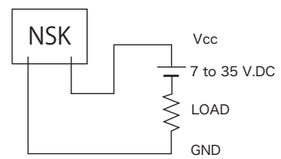


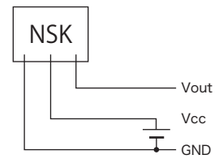

Type NSK-AE




Type NSK-CE, DE, EE

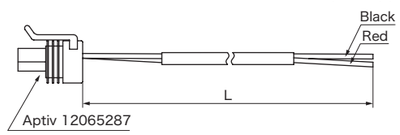
Unit：mm



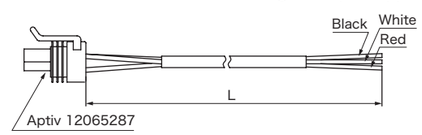

## OPTIONAL PARTS

- Extension cables for current output type




| Part number | L (mm) |
|---|---|
| NSK-PP1001 | 1000 |
| NSK-PP1002 | 3000 |
| NSK-PP1003 | 5000 |
| NSK-PP1004 | 10000 |

- Extension cables for voltage output type



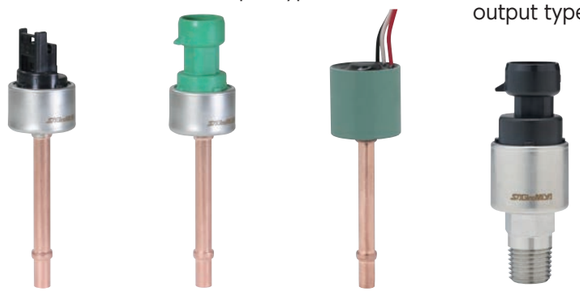

| Part number | L (mm) |
|---|---|
| NSK-PP1005 | 1000 |
| NSK-PP1006 | 3000 |

＊Up to 3000mm

# PRESSURE SENSORS FOR ULTRA HIGH PRESSURE / Type HSK

Ratiometric output type

Current output type



Type HSK-BC (Molex connector) | Type HSK-BE (Aptiv connector) | Type HSK-BH (Lead wires) | Type HSK-AE (Aptiv connector)

**High Volume OEM Item**

Drawings must be exchanged for purchase.
Please contact SAGINOMIYA for more details.

## FEATURES

- Compatible with R744 ($CO_2$).
- Accuracy of ±1.0% F.S. across a wide temperature range.
- Compatible with a variety of connection types.
  (Stainless steel wetted parts are also available.)
- The pressure detection and signal conversion circuits are integrated into a single chip, delivering high precision and durability.
- Capable of handling subcritical to supercritical pressures.
- Available in two types: ratiometric output and current output.
- Current output type supports wiring up to 100m.
- Standards：CE, UL/cUL (Excluding HSK-BH)
  (Please contact us for details.)

## APPLICATIONS

- Heat pump water heaters
- Display cases
- Condensing units
- Chillers, etc.

## COMMON SPECIFICATIONS

- Accuracy ： Ratiometric output type ±1.0%F.S. (-20 to 120℃)
  (including non-linearity, temperature characteristics, hysteresis, and repeatability)
- Fluid temperature ： -40 to 135℃
- Ambient temperature ： Ratiometric output type HSK-BH: -30 to 85℃
  HSK-BC, BE: -30 to 100℃
  Current output type -40 to 100℃
- Load resistance ： Ratiometric output type 10kΩ or more
  Current output type (Vcc-7)/0.02A Ω or less
- Power supply voltage dependency ： Current output type ±0.05%F.S./10 V or less
- Fluids ： R744 ($CO_2$), air, water, oil, inert gas
  ＊Not suitable for corrosive fluids.
  ＊When using with water, please choose stainless steel connections.
- Absolute pressure type ： 1 atmosphere (1013 hPa abs) is set as 0 MPa.
- EMC ： EN61000-6-2/EN61000-6-3
- Enclosure ： IP66

## DESCRIPTION OF CATALOG NUMBER (Ratiometric Output Type：HSK-BC, BE, BH)

＊Selecting the following options (Ⅱ to Ⅵ) will determine the catalog number.

HSK − B C 150 D − ＊＊＊
Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ

| Ⅰ Type |
|---|
| HSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| B | 0.5 to 4.5 V.DC | 5V±0.25 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| C | Molex connector |
| E | Aptiv connector |
| H | Lead wires |

・Compatible connector
Molex：52117-0340
Aptiv：12065287

| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| 060 | 0 to 6.0 MPa |
| 100 | 0 to 10.0 MPa |
| 150 | 0 to 15.0 MPa |

| Ⅴ Connection type | |
|---|---|
| Symbol | Connection type |
| B | 1/4" Male flare (Stainless steel) |
| D | 1/4" Solder, φ6mm Solder |
| I | 1/4" Female flare (with pin) (Stainless steel) |
| M | NPT 1/4" (Stainless steel) |

・Weight：Approximately 0.05kg (not including lead wires)

| Ⅵ Serial number |
|---|
| ＊＊＊ |

＊Specifications other than those listed above are also available upon request. Please contact us for details.

## DESCRIPTION OF CATALOG NUMBER (Current Output Type：HSK-AE)

＊Selecting the following options (Ⅱ to Ⅶ) will determine the catalog number.

HSK − A E B15 N2 − U 05
Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ

| Ⅰ Type |
|---|
| HSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| A | 4 to 20 mA DC | 7 to 35 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| E | Aptiv connector |

・Compatible connector：
12065287

| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| A60 | 0 to 6.0 MPa |
| B10 | 0 to 10.0 MPa |
| B15 | 0 to 15.0 MPa |

| Ⅴ Connection type | |
|---|---|
| Symbol | Connection type |
| B1 | 1/4" Male flare (Stainless steel) |
| D1 | 1/4" Solder |
| D2 | φ6mm Solder |
| I1 | 1/4" Female flare (with pin) (Stainless steel) |
| N2 | NPT 1/4"(Stainless steel) |

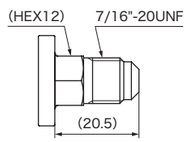
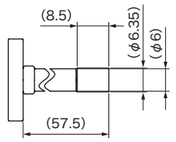
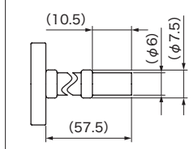
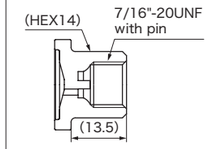
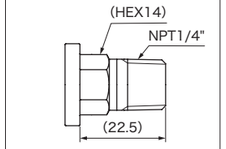
・Weight：Approximately 0.06kg

| Ⅵ Standards | |
|---|---|
| Symbol | Standards |
| U | CE, UL/cUL |

| Ⅶ Accuracy | |
|---|---|
| Symbol | Accuracy |
| 05 | ±1.0%F.S. (-40 to 100℃) |

＊Current output types with an accuracy of ±0.5%F.S. (at 25℃) and ±1.5%F.S. (-40℃ to 100℃) are also available upon request.
＊Specifications other than those listed above are also available upon request. Please contact us for details.

## CONNECTION TYPES

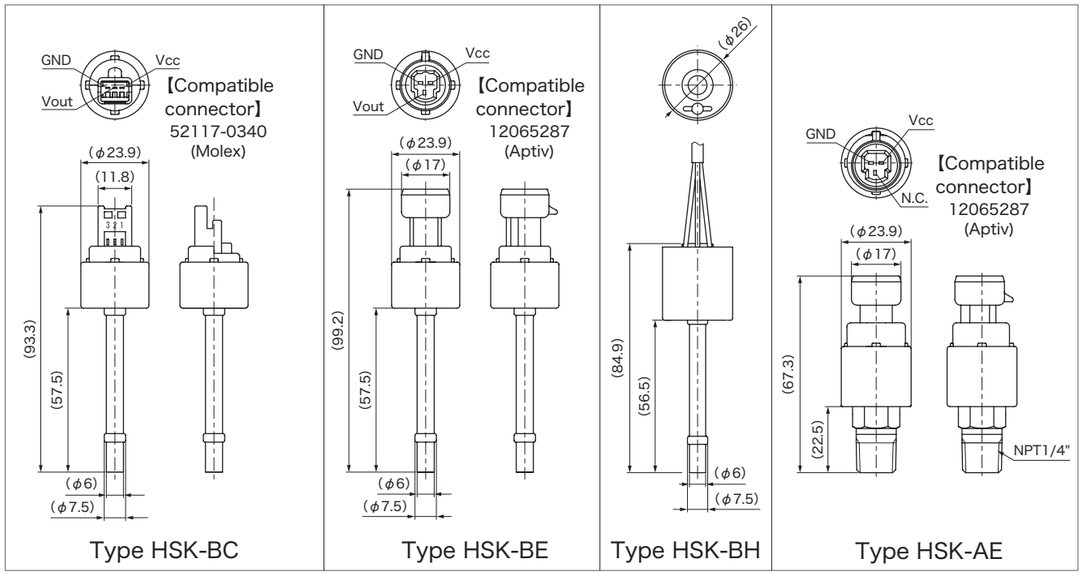
| 1/4" Male flare (Stainless steel) | 1/4" Solder | ϕ6mm Solder | 1/4" Female flare (with pin) (Stainless steel) | NPT 1/4" (Stainless steel) |
|---|---|---|---|---|
|  |  |  |  |  |



＊For connection types other than the above, please contact us.

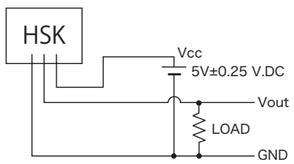
Unit：mm

## DIMENSIONS / WIRINGS



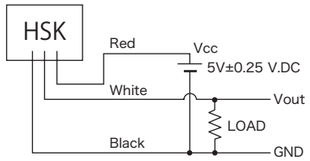


Unit：mm



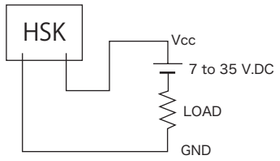


Type HSK-BC, BE





Type HSK-BH

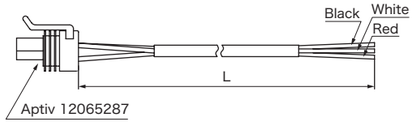




Type HSK-AE

## OPTIONAL PARTS

● Extension cables for HSK-BE

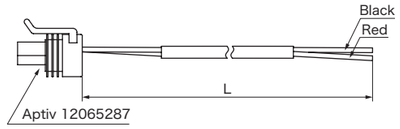




| Part number | L (mm) |
|---|---|
| NSK-PP1005 | 1000 |
| NSK-PP1006 | 3000 |

＊Up to 3000mm

● Extension cables for HSK-AE





| Part number | L (mm) |
|---|---|
| NSK-PP1001 | 1000 |
| NSK-PP1002 | 3000 |
| NSK-PP1003 | 5000 |
| NSK-PP1004 | 10000 |

# PRESSURE SENSORS / Type XSK

Type XSK-AC∗∗B

Type XSK-AC∗∗I

## FEATURES

- Current output (4 to 20mA DC)
- Supports a power supply voltage of 10.5 to 28.0 V.DC.
- Small lot orders available.
- Compatible with a variety of connection types.
  (Stainless steel wetted parts are also available.)
- Standards：CE, UL/cUL (Please contact us for details.)

## APPLICATIONS

- Packaged air conditioners
- Water boilers
- Water supply pumps
- Chillers, etc.

## COMMON SPECIFICATIONS

- Accuracy：±3%F.S.
  (including non-linearity, temperature characteristics, hysteresis, and repeatability)
- Fluid temperature：-20 to 70℃
- Ambient temperature：-20 to 70℃
- Current consumption：10mA or less
- Fitting materials：Brass, stainless steel
- Fluids：Refrigerant, air, water, oil, inert gas
  ∗Please refer to the table on the right for compatible refrigerants.
  ∗Not suitable for corrosive fluids.
  ∗When using with water, please choose stainless steel connections.
- Absolute pressure type：
  1 atmosphere (1013 hPa abs) is set as 0 MPa.
- Enclosure：IP66

| Safety group | Compatible refrigerants |
|---|---|
| A1 | R1233zd(E), R407A, R407C, R407F, R407H, R448A, R449A, R449B, R449C, R450A, R452A, R463A-J, R513A, R515B, R507A |

・For other refrigerants, please contact us.

## DESCRIPTION OF CATALOG NUMBER

∗Selecting the following options (Ⅱ to Ⅵ) will determine the catalog number.

XSK − A C 10 B − 107
Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ

| Ⅰ Type |
|---|
| XSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| A | 4 to 20 mA DC | 10.5 to 28.0 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| C | Molex connector |

・Compatible connector：
52117-0340

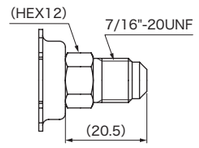
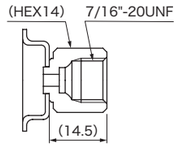
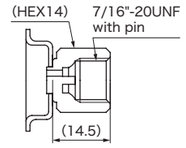
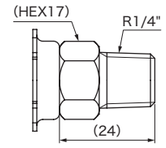
| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| 10 | 0 to 1.0 MPa |
| 20 | 0 to 2.0 MPa |
| 30 | 0 to 3.0 MPa |
| 35 | 0 to 3.5 MPa |
| 50 | 0 to 5.0 MPa |

| Ⅴ Connection type | | Ⅵ Fitting material (Serial number) | |
|---|---|---|---|
| Symbol | Connection type | Brass C3604 | Stainless steel SUS304 |
| B | 1/4" Male flare (comes with a bracket) | 107 | 103 |
| F | 1/4" Female flare | 211 | — |
| I | 1/4" Female flare (with pin) | 212 | — |
| M | R1/8" | 201 | 204 |
| | R1/4" | 202 | 205 |
| | R3/8" | 203 | 206 |

・Weight：Approximately 0.09kg
(not including extension cable and bracket)

∗Specifications other than those listed above are also available upon request. Please contact us for details.

## CONNECTION TYPES

| B：1/4" Male flare | F：1/4" Female flare | I：1/4" Female flare (with pin) | M：R1/4" |
|---|---|---|---|
|  |  |  |  |





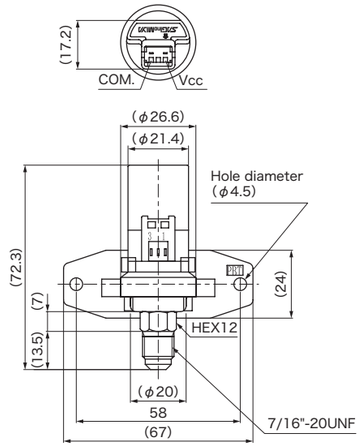




∗For connection types other than the above, please contact us.

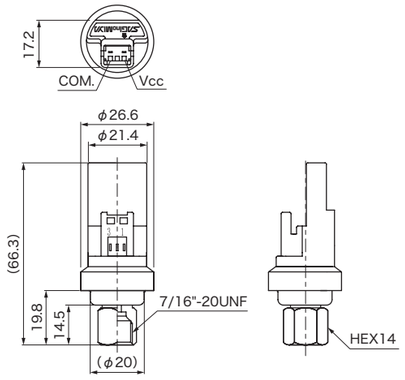
Unit：mm

## DIMENSIONS / WIRINGS



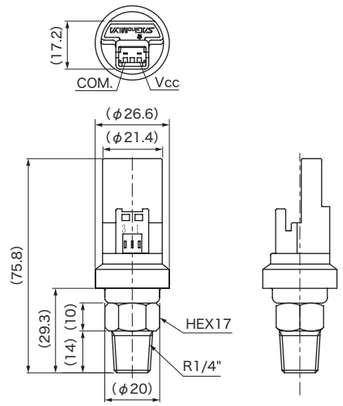


Type XSK-AC∗∗B



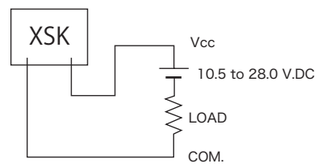


Type XSK-AC∗∗F





Type XSK-AC∗∗M

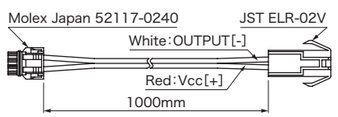




Unit：mm

## STANDARD ACCESSORIES

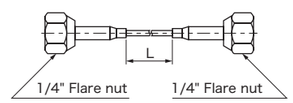
- Bracket (For connection type B only)
- Extension cable (1000 mm with electrical connectors)





## OPTIONAL PARTS

- Assembled capillary tubes





| Part number | L (mm) |
|---|---|
| SNS-AD01 | 1000 |
| SNS-AD02 | 1500 |
| SNS-AD03 | 2000 |
| SNS-AD06 | 1000 with pin |
| SNS-AD07 | 500 |
| SNS-AD10 | 500 with pin |

# PRESSURE SENSORS / Type YSK

Type YSK-AA　　Type YSK-AC　　Type YSK-AD

## FEATURES

- Supports a power supply voltage of 10.5 to 28.0 V.DC.
- Small lot orders available.
- Compatible with a variety of connection types.
  (Stainless steel wetted parts are also available.)

## APPLICATIONS

- Packaged air conditioners
- Water boilers
- Water supply pumps
- Chillers, etc.

## COMMON SPECIFICATIONS

- Accuracy：±3%F.S.
  (including non-linearity, temperature characteristics, hysteresis, and repeatability)
- Fluid temperature：-20 to 70℃
- Ambient temperature：-20 to 70℃
- Current consumption：10mA or less
- Load resistance：5kΩ or more
- Fitting materials：Brass, stainless steel
- Fluids：Refrigerant, air, water, oil, inert gas
  ＊Please refer to the table on the right for compatible refrigerants.
  ＊Not suitable for corrosive fluids.
  ＊When using with water, please choose stainless steel connections.
- Absolute pressure type：
  1 atmosphere (1013 hPa abs) is set as 0 MPa.
- Enclosure：YSK-AA IP40/YSK-AC IP66/YSK-AD IP66

| Safety group | Compatible refrigerants |
|---|---|
| A1 | R1233zd(E), R407A, R407C, R407F, R407H, R448A, R449A, R449B, R449C, R450A, R452A, R463A-J, R513A, R515B, R507A |

・For other refrigerants, please contact us.

## DESCRIPTION OF CATALOG NUMBER

＊Selecting the following options (Ⅱ to Ⅵ) will determine the catalog number.

YSK − A A 10 B − 107
Ⅰ　Ⅱ Ⅲ Ⅳ Ⅴ　Ⅵ

| Ⅰ Type |
|---|
| YSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| A | 1 to 5 V.DC | 10.5 to 28.0 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| A | JST connector |
| C | Molex connector |
| D | Lead wires |

・Compatible connector
JST:ELP-03V
Molex:52117-0340

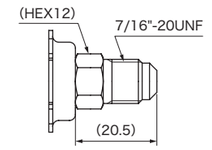
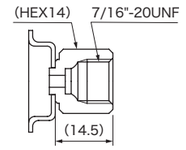
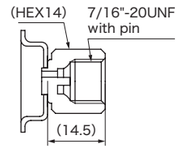
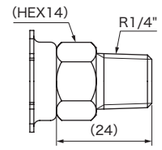
| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| 10 | 0 to 1.0 MPa |
| 20 | 0 to 2.0 MPa |
| 30 | 0 to 3.0 MPa |
| 35 | 0 to 3.5 MPa |
| 50 | 0 to 5.0 MPa |

| Ⅴ Connection type | | Ⅵ Fitting material (Serial number) | |
|---|---|---|---|
| Symbol | Connection type | Brass C3604 | Stainless steel SUS304 |
| B | ＊1 1/4" Male flare (comes with a bracket) | 107 | 103 |
| F | 1/4" Female flare | 911 | — |
| I | 1/4" Female flare (with pin) | 912 | — |
| M | R1/8" | 901 | 904 |
| | R1/4" | 902 | 905 |
| | R3/8" | 903 | 906 |

＊1 Bracket is not included with the lead wire type.
・Weight:Approximately 0.08kg
(not including extension cable and bracket)

＊Specifications other than those listed above are also available upon request. Please contact us for details.

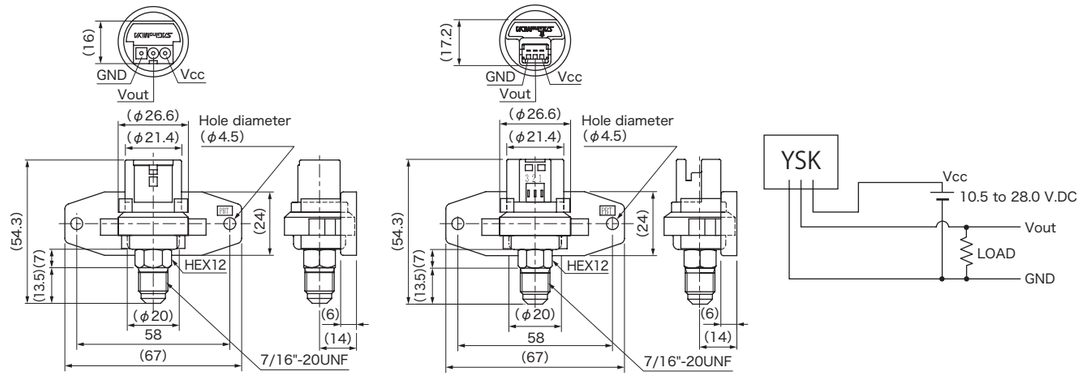
## CONNECTION TYPES

| B:1/4" Male flare | F:1/4" Female flare | I:1/4" Female flare (with pin) | M:R1/4" |
|---|---|---|---|
|  |  |  |  |



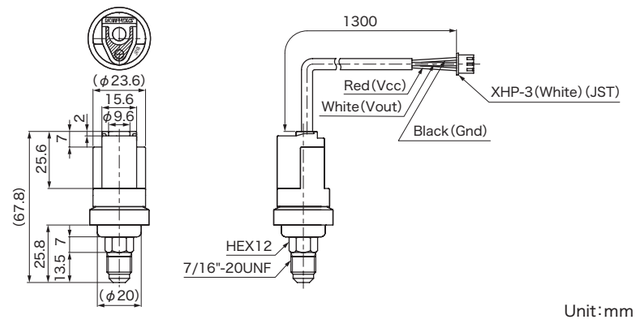
＊For connection types other than the above, please contact us.　　Unit:mm

## DIMENSIONS / WIRINGS



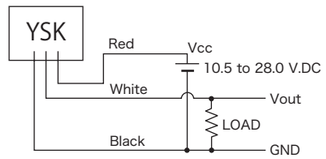


Type YSK-AA＊＊B　　Type YSK-AC＊＊B





Type YSK-AD＊＊B

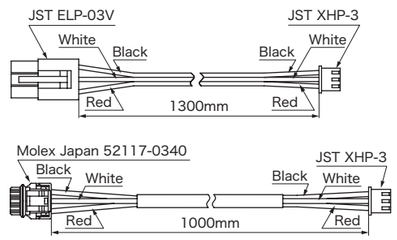




Unit:mm

## STANDARD ACCESSORIES

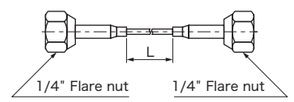
- Bracket (For connection type B only)
- Extension cable
  (Lead wire length: 1300mm for JST connector and lead wire type, and 1000mm for Molex connector type.)





## OPTIONAL PARTS

- Assembled capillary tubes





| Part number | L (mm) |
|---|---|
| SNS-AD01 | 1000 |
| SNS-AD02 | 1500 |
| SNS-AD03 | 2000 |
| SNS-AD06 | 1000 with pin |
| SNS-AD07 | 500 |
| SNS-AD10 | 500 with pin |

# PRESSURE SENSORS FOR INDUSTRIAL MACHINERY / Type KSK

Type KSK

**High Volume OEM Item**

Drawings must be exchanged for purchase.
Please contact SAGINOMIYA for more details.

## FEATURES

- Ideal for hydraulic measurements for industrial machinery.
- Excellent durability and noise resistance.
- Ratiometric output

## APPLICATIONS

- Construction machinery
- Agricultural machinery, etc.

## COMMON SPECIFICATIONS

- Accuracy：±3%F.S.
  (including non-linearity, temperature characteristics (-30 to 100℃), hysteresis, and repeatability)
- Fluid temperature：-30 to 100℃
- Ambient temperature：-30 to 100℃
- Maximum power supply voltage：6 V.DC
- Current consumption：10mA or less
- Load resistance：1MΩ or more
- Load capacitance：Capacitor 1000 pF or less
- Absolute pressure type：1 atmosphere (1013 hPa abs) is set as 0 MPa.
- Enclosure：IP66

## DESCRIPTION OF CATALOG NUMBER

＊Selecting the following options (Ⅱ to Ⅵ) will determine the catalog number.

KSK – B G 050 M – ＊＊＊
Ⅰ　Ⅱ Ⅲ Ⅳ Ⅴ　Ⅵ

| Ⅰ Type |
|---|
| KSK |

| Ⅱ Output | | |
|---|---|---|
| Symbol | Output signal | Power supply voltage |
| B | 0.5 to 4.5 V.DC | 5 V±0.25 V.DC |

| Ⅲ Electrical connector | |
|---|---|
| Symbol | Electrical connector |
| G | TE connector |

・Compatible connector
174357-2

| Ⅳ Pressure range | |
|---|---|
| Symbol | Pressure range |
| 010 | 0 to 1.0 MPa |
| 035 | 0 to 3.5 MPa |
| 050 | 0 to 5.0 MPa |

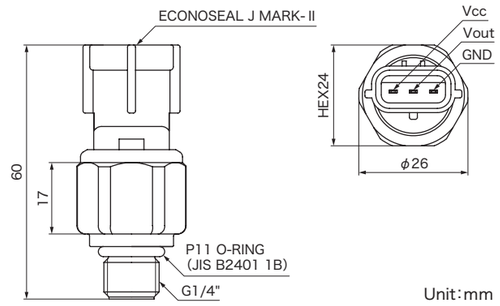
| Ⅴ Connection type | |
|---|---|
| Symbol | Connection type |
| M | G1/4" |

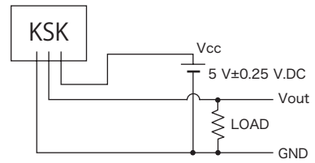
・Weight：Approximately 0.08kg

| Ⅵ Serial number |
|---|
| ＊＊＊ |

＊Specifications other than those listed above are also available upon request. Please contact us for details.

## DIMENSIONS / WIRINGS



# CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as "Saginomiya"), truly appreciate your choosing Saginomiya's product (hereinafter referred to as this "Product").
When this Product is used, this document as provided below shall be applicable except to the extent that there is anything to the contrary in any applicable estimate, agreement, catalogue, specification, etc.

## ●CONFIRMATION OF OPERATION

All customers using this Product (hereinafter referred to as "Customers") are requested to, after properly installing this Product, test the operation of this Product to confirm that all the systems in connection with this Product fully function.
In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers' machinery or equipment due to improper installation of this Product, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (*2).

(*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure
(*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of this Product
Be sure to confirm the proper operation of this Product and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of this Product caused by Saginomiya.

## ●RESTRICTIONS OF USE

This Product is designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but is not designed and manufactured for the purpose of using this Product for any instrument or system related to human life or health purposes.
Therefore, the use of this Product in fields related to items (1) through (3) below is not intended whatsoever.
Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of this Product under item (3).

(1) In any field related to nuclear power and radiation;
(2) In any field related to space or seafloor equipment;
(3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using this Product under the fields related to items (1) through (10), (except for item (3), in relation to which this Product must never be used), please be sure to notify Saginomiya's contact desk in charge of sales and obtain Saginomiya's prior written approval for such use.

Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of this Product in relation to these fields if the Customers do not notify Saginomiya's contact desk and obtain Saginomiya's prior written approval.

(4) Heating, cooling and air conditioning equipment that uses flammable and/or toxic refrigerants, or various industrial equipment that uses flammable and/or toxic fluids;
(5) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
(6) Disaster-prevention or crime-prevention device;
(7) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing;
(8) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
(9) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
(10) Other machineries or equipment equivalent to those set forth in the above items (4) to (9) which require for high reliability and safety.

It is recommended to replace this Product within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on this Product.

## ●SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THIS PRODUCT DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THIS PRODUCT DUE TO A DEFECT OF THIS PRODUCT; PROVIDED, HOWEVER, THAT IN ANY EVENT THE RATIO OF THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THIS PRODUCT OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THIS PRODUCT WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS' EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

(1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THIS PRODUCT BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
(2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THIS PRODUCT;
(3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THIS PRODUCT MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
(4) WHEN CAUSED BY THE USE OF THIS PRODUCT IN VIOLATION OF THE ABOVE "RESTRICTIONS OF USE" OR "CONFIRMATION OF OPERATION";
(5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA'S SHIPMENT; OR
(6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THIS PRODUCT FROM INTERNET AUCTION, ETC.

SAGINOMIYA SEISAKUSHO, INC.
2024.5

## ⚠ WARNING

Failure to read and follow all instruction carefully before installing or operation the product could cause personal injury and/or property damage.

Specifications are subject to change without notice.

Headquarters

Sayama Plant

SAGInoMIYA
Shinjyuku Garden Tower 22F
8-2, Okubo 3-chome, Sinjyuku-ku
Tokyo, 169-0072 Japan

Tokorozawa Plant

Yonezawa Plant

# OVERSEAS NETWORK

**SAGINOMIYA EUROPE Sp. z o.o. (Poland)**
Aleje Jerozolimskie 212 02-486
Warsaw, Poland
Sales

**FOSHAN HUALU AUTOMATIC CONTROLS LIMITED (China)**
No.59&61, Wenhua Nan Road, Chancheng District
Foshan, Guangdong, China
Sales & Manufacturing

**SAGINOMIYA AMERICA, INC. (USA)**
655 Metro Place South suite 220, Dublin
Ohio 43017, U.S.A.
Sales

**Danfoss Saginomiya Sp. z o.o. (Poland)**
ul. Chrzanowska 5, 05-825 Grodzisk
Mazowiecki, Poland
Manufacturing

**Saginomiya (Thailand) Co., Ltd. (Thailand)**
159/38 Serm-mit Tower, Room No.2401, 24th floor
Sukhumvit 21 Road, Klongtoey Nua Sub-district
Wattana District, Bangkok 10110, Thailand
Sales & Manufacturing

**⚠ NOTES FOR SAFETY**

Failure to read and follow all instruction carefully before installing or operating the product could cause personal injury and/or property damage.

Specifications are subject to change without notice.


SAGINOMIYA SEISAKUSHO, INC.

＜Japan, Korea, Oceania＞
**E-mail : inter@saginomiya.co.jp**
Tel : +81-3-6205-9124
URL : https://www.saginomiya.co.jp/en/

〈Asia〉
**Saginomiya (Thailand) Co., Ltd.** E-mail : info@saginomiya.co.th
Tel : +66-2260-8364 Fax : +66-2260-8366

〈Europe, Middle East, Africa〉
**SAGINOMIYA EUROPE Sp. z o.o.** E-mail : info@saginomiya.eu
Tel : +48-22-101-30-00 Fax : +48-22-101-30-01

〈North America, Latin America〉
**SAGINOMIYA AMERICA, INC.** E-mail : sales@saginomiya-am.com
Tel : +1-614-766-7390 Fax : +1-614-766-7391


2025.5