

Pressure Sensors



Pressure Sensor Product Variations

Fluid

Pressure range

For Gas

Silicon diaphragm

- Air, Nitrogen, Argon, Carbon dioxide

For Gas and Liquid

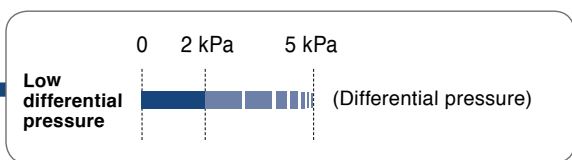
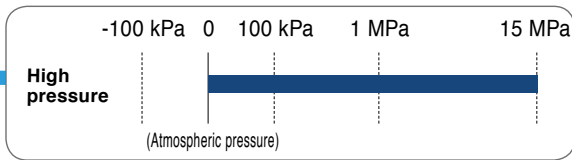
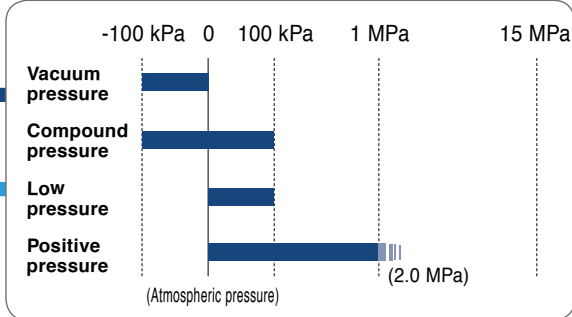
Stainless steel diaphragm

- Liquids such as water, oil, etc. Air, Nitrogen, Argon, Carbon dioxide
- Anti-corrosiveness, Airtightness

Ceramic diaphragm

- Liquids such as water, oil, etc. Air, Nitrogen, Argon, Carbon dioxide

Pressure Range and Application Example p.7

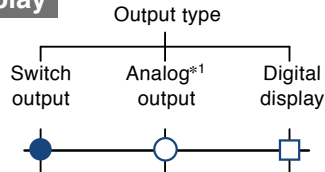


Pressure Sensor Product Variations

Product Type

Applicable Model

Integrated Display



- Sensor/Display integrated type
- Numerically displays the setting and measurement values.

*1 Excludes Z/ISE20

For Gas

For Gas and Liquid

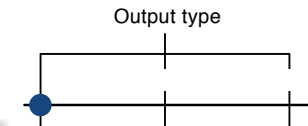
- Z/ISE20□ series
- Z/ISE10 series
- ISE7□ series



- Z/ISE20C series
- ISE7□G series
- ISE75H series (For high pressure)



Switch

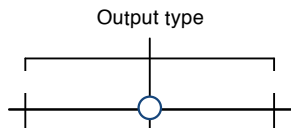


- Sensor only product
- ON/OFF confirmed by LED

- Z/ISE1 series
- Z/ISE2 series
- PS1000/1100/1200 series

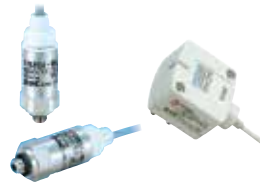


Remote Sensor



- Sensor only product
- Can be connected to a separate monitor

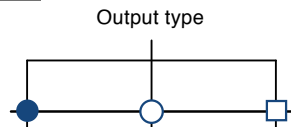
- PSE53□ series
- PSE54□ series
- PSE550 series (For low differential pressure)



- PSE56□ series
- PSE57□ series



Remote Monitor



- Sensor type display
- Numerical control can be placed in a distant location.

- [For 1 ch]
- PSE300A/300AC series




- [For 4 ch]
- PSE200A series



Basic Performance Table (For Gas and Liquid)

| Model Selection Table | | | | | | |
|---|---|---|---------------------|---|---|--|
| Sensors with Displays | | | | | | |
| Model | ZSE20(F) ISE20 | ZSE20A(F) ISE20A | ZSE20B(F) ISE20B | ZSE20B(F)-L ISE20B-L | ZSE10(F) ISE10 | ISE70/71 |
| Fluid | General pneumatic | | | | | |
| Calibration method | | | | | | Push-button calibration |
| Set pressure range | -105 to 10 kPa -105 to 105 kPa -0.105 to 1.05 MPa | | | | | -0.105 to 1.05 MPa -0.105 to 1.68 MPa |
| Power supply voltage | 12 to 24 VDC±10% (Ripple±10%) | | | 12 to 24 VDC±10% (Ripple±10%) 18 to 30 VDC±10%*1 (Ripple±10%) *1 When used as an IO-Link device | 12 to 24 VDC±10% (Ripple±10%) | 12 to 24 VDC±10% (Ripple±10%) 18 to 30 VDC±10%*1 (Ripple±10%) *1 When used as an IO-Link device |
| Temperature characteristics (based on 25°C) | ±2% F.S. (-5 to 50°C) | | | | ±2% F.S. (0 to 50°C) | |
| Repeatability | ±0.2% F.S. ±1 digit | | | | | ±0.5% F.S. |
| Hysteresis | | | | | | Hysteresis mode: Variable Window comparator mode: Variable |
| Output | NPN/PNP open collector | NPN/PNP open collector Analog voltage output Analog current output | | IO-Link: Switch output * Switch output: NPN or PNP switching type | NPN/PNP open collector Analog voltage output | IO-Link: Switch output 1 + Switch output 2 Switch output 1 + Switch output 2 * Switch output: NPN or PNP switching type |
| Display | 2-color display | | | | 1-color display | 2-color display |
| Enclosure | IP40 | | IP65 | | IP40 | IP67 |
| Note | 3-screen display Panel mounting possible Selectable pressure unit Anti-chattering function Display calibration function Power saving mode Sub screen setting function | 3-screen display Panel mounting possible Selectable pressure unit Anti-chattering function Display calibration function Power saving mode Sub screen setting function Copy function Auto shift function | | IO-Link compatible 3-screen display Panel mounting possible Selectable pressure unit Anti-chattering function Display calibration function Power saving mode Sub screen setting function | Panel mounting possible DIN rail mountable Selectable pressure unit Anti-chattering function Display calibration function Power saving mode Copy function | IO-Link compatible 3-screen display Selectable pressure unit Anti-chattering function Power saving mode Sub screen setting function |

Basic Performance Table (For Gas and Liquid)

| Model Selection Table | | | | | | |
|--|--|--|---|--|--|--|
| Sensors with Displays (* no display) | | | | | | |
| ISE7□G  | ISE75H  | ZSE20C(F) ISE20C(H)  | ZSE1 ISE1 *  | ZSE2 ISE2 *  | PS1000 PS1100 PS1200 *  | ISE35  |
| General fluids | | | General pneumatic | | | |
| | | | Trimmer calibration | | | Push-button calibration |
| -0.105 to 1.05 MPa -0.105 to 2.1 MPa -0.25 to 5.25 MPa -0.5 to 10.5 MPa | 0.5 to 15 MPa | -105 to 10 kPa -105 to 105 kPa -0.105 to 1.05 MPa -0.105 to 2.1 MPa | -101 to 0 kPa 0 to 100 kPa 0 to 1 MPa | | -100 to 0 kPa -0.1 to 0.4 MPa -0.1 to 0.45 MPa | -0.1 to 1 MPa |
| 12 to 24 VDC±10% (Ripple±10%) | | | | | | |
| ISE70G: ±3% F.S. Other models: ±5% F.S. (-5 to 50°C) | ±3% F.S. (0 to 50°C) | | ±3% F.S. (0 to 60°C) | | ±3% F.S. (0 to 60°C) | |
| | | ±0.2% F.S. ±1 digit | ±1% F.S. | | | |
| | | | Variable 1 to 10% Fixed 3% F.S. or less | Fixed 3% F.S. or less | Fixed 4% F.S. or less Fixed 10% F.S. or less | Hysteresis mode: Variable Window comparator mode: Variable |
| 1 setting NPN/PNP 2 settings NPN/PNP open collector PNP open collector | | NPN/PNP open collector Analog voltage output Analog current output | NPN/PNP open collector Analog voltage output | NPN/PNP open collector | 2-wire type | NPN/PNP open collector |
| | | | | | | 2-color display |
| | | IP65 | IP40 | | | |
| Selectable pressure unit Anti-chattering function Display calibration function | | 3-screen display Panel mounting possible Selectable pressure unit Anti-chattering function Display calibration function Power saving mode Copy function Auto shift function | Compliant with ZM ejector | Compliant with ZX/ZR ejector | | Modular type mountable Series ARM10/11 mountable Selectable pressure unit Anti-chattering function Power saving mode |

Basic Performance Table (For Gas and Liquid)

Model Selection Table

Remote Sensors

| Model | PSE53□ | | PSE54□ | | PSE550 | PSE56□ | | PSE57□ | | |
|---|--|--|--|--|-------------------------|--|--|--|--|---|
| Fluid | General pneumatic | | | | | General fluids | | | | |
| Calibration method | | | | | | | | | | |
| Set pressure range | -101 to 0 kPa -101 to 101 kPa 0 to 101 kPa 0 to 1 MPa | | -101 to 0 kPa -100 to 100 kPa 0 to 1 MPa | | 0 to 2 kPa | -101 to 0 kPa -100 to 100 kPa 0 to 500 kPa 0 to 1 MPa | | -100 to 100 kPa 0 to 500 kPa 0 to 1 MPa 0 to 2 MPa | 0 to 5 MPa 0 to 10 MPa | |
| Power supply voltage | 12 to 24 VDC±10% (Ripple±10%) | | | | | | | | | |
| Temperature characteristics (based on 25°C) | ±2% F.S. (0 to 50°C) | | | | ±3% F.S. (0 to 50°C) | ±2% F.S. (0 to 50°C) ±3% F.S. (-10 to 60°C) | | PSE570 ±2% F.S. (0 to 50°C) ±3% F.S. (-10 to 60°C) | PSE573/574 ±3% F.S. (0 to 50°C) ±4% F.S. (-10 to 60°C) | PSE575/576/577 ±5% F.S. (-10 to 60°C) |
| Repeatability | ±1% F.S. | | ±0.2% F.S. | | ±0.3% F.S. | ±0.2% F.S. | | PSE570/573/574 ±0.2% F.S. | PSE575/576/577 ±0.5% F.S. | |
| Hysteresis | | | | | | | | | | |
| Output | Analog voltage output | | | | | Analog voltage output Analog current output | | | | |
| Display | | | | | | | | | | |
| Enclosure | IP40 | | | | | IP65 | | | | |
| Note | | | | | | | | | | |

Basic Performance Table (For Gas and Liquid)

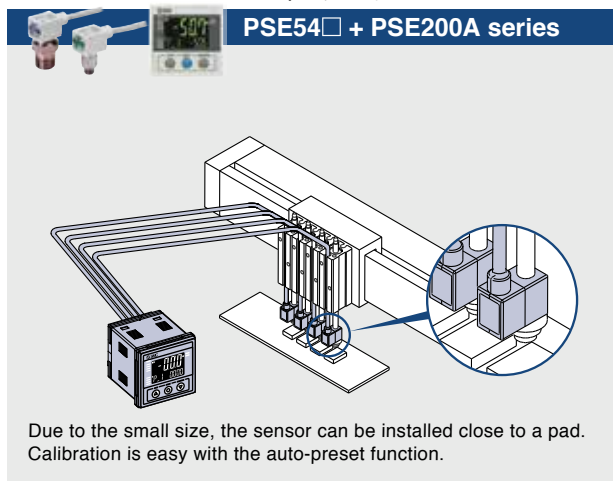
| Model Selection Table | | | |
|---|--|---|--|
| Remote Sensor Monitors | | | |
| Model | PSE200A | PSE300A | PSE300AC |
| Sensor input amount | 4 inputs | 1 input | |
| Calibration method | Push-button calibration | | |
| Set pressure range | -105 to 10 kPa PSE531/541/561 -105 to 105 kPa PSE533/543/563/573 -0.2 to 2.1 kPa PSE550 -10 to 105 kPa PSE532 -50 to 525 kPa PSE564/574 | -0.105 to 1.05 MPa PSE530/540/560/570 -0.105 to 2.1 MPa PSE575 -0.25(-0.1)*1 to 5.25 MPa PSE576 -0.5(-0.1)*1 to 10.5 MPa PSE577 *1 (): For PSE300AC | |
| Power supply voltage | 12 to 24 VDC±10% (Ripple±10%) | | |
| Temperature characteristics (based on 25°C) | ±0.5% F.S. (0 to 50°C) | | |
| Repeatability | ±0.1% F.S. ±1 digit | | |
| Hysteresis | Hysteresis mode: Variable Window comparator mode: Variable | | |
| Output | IO-Link NPN/PNP open collector 1 CH: 2 outputs 2 to 4 CH: 1 output | NPN/PNP open collector Analog voltage output Analog current output * Switch output: NPN or PNP (switching type) | NPN/PNP open collector * Switch output: NPN or PNP (switching type) |
| Display | 2-color display | | |
| Enclosure | Front only IP65 The rest IP40 | IP40 | IP65 |
| Note | IO-Link compatible 3-screen display Panel mounting possible Auto shift function Display calibration function Anti-chattering function Channel to channel copy function Selectable pressure unit | 3-screen display Panel mounting possible Auto shift function Display calibration function Anti-chattering function Selectable pressure unit Current input possible Copy function | 3-screen display Display calibration function Anti-chattering function Selectable pressure unit Current input possible |

Pressure Range and Application Examples

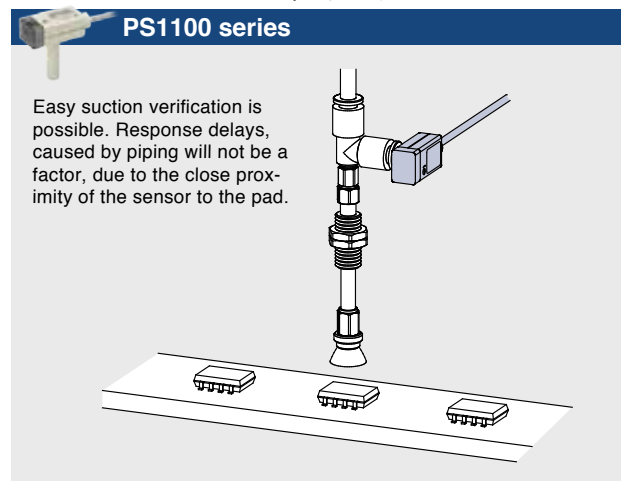
| Application Examples | Pressure range | (Atmospheric pressure) | | | | |
|---|---------------------------|---|---|---------|-------|--------|
| | | -100 kPa | 0 | 100 kPa | 1 MPa | 15 MPa |
| • Suction verification | Vacuum pressure | [Bar chart showing range from -100 kPa to 0] | | | | |
| • Suction verification (confirmation of release pressure) | Compound pressure | [Bar chart showing range from -100 kPa to 100 kPa] | | | | |
| • Workpiece placement verification | Low pressure | [Bar chart showing range from 0 to 100 kPa] | | | | |
| • Supply pressure confirmation • Leak test | Positive pressure | [Bar chart showing range from 0 to 2.0 MPa] | | | | |
| • Liquid coolant pressure control | High pressure | [Bar chart showing range from 0 to 15 MPa] | | | | |
| • Monitoring filter clogging • Level detection of a liquid | Low differential pressure | [Bar chart showing range from 0 to 5 kPa (Differential pressure)] | | | | |

Suction Verification

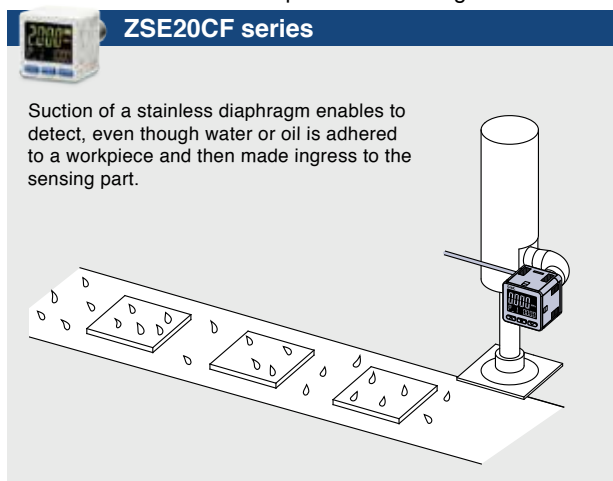
Sensor installed close to a pad(No. 1)



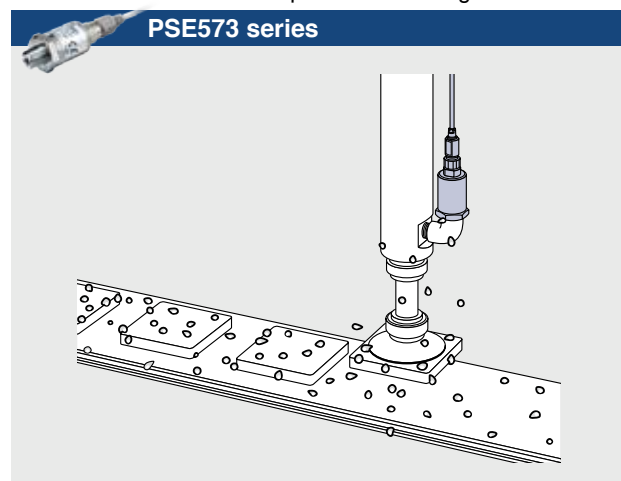
Sensor installed close to a pad(No. 2)



Suction verification of workpieces containing moisture




Suction verification of workpieces containing moisture



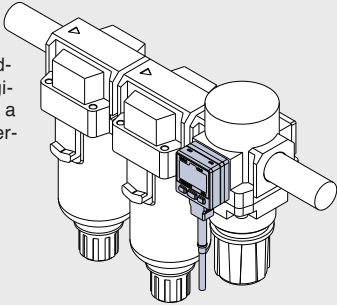
Supply Pressure Confirmation

Confirmation of supply pressure in air line

ISE35 series




The line pressure can be adjusted by monitoring the digital readout. Which provides a visual verification of the operating pressure. The output can be programmed to respond to supply pressure drops, etc.

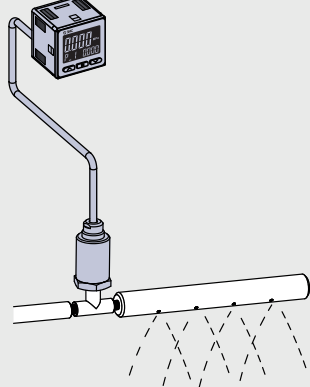


Confirmation of supply pressure of cleaning lines

PSE560 + PSE300A series




The supply pressure of water, oil, etc. can be confirmed by using a sensor for gas and fluids.

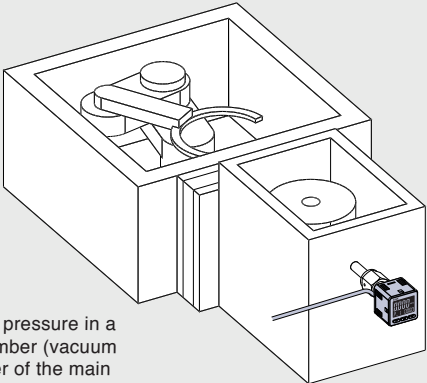


Confirmation of atmospheric pressure for a load lock chamber

ZSE20CF series


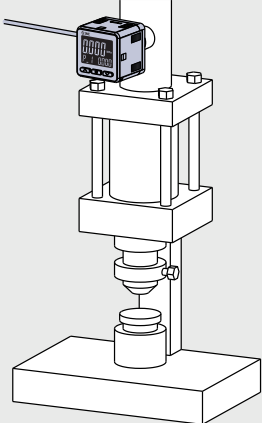


Verification of pressure in a load lock chamber (vacuum spare chamber of the main chamber)




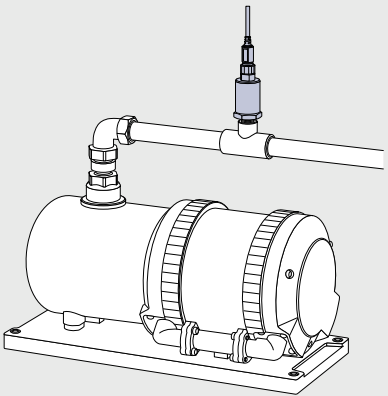
Confirmation of working pressure of hydraulic cylinder

ISE20C series

Discharge pressure control for compressor


PSE57□ series

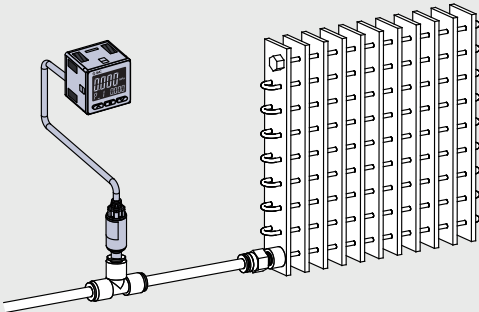
Leak Test

Inspection of a radiator

PSE532 + PSE300A series

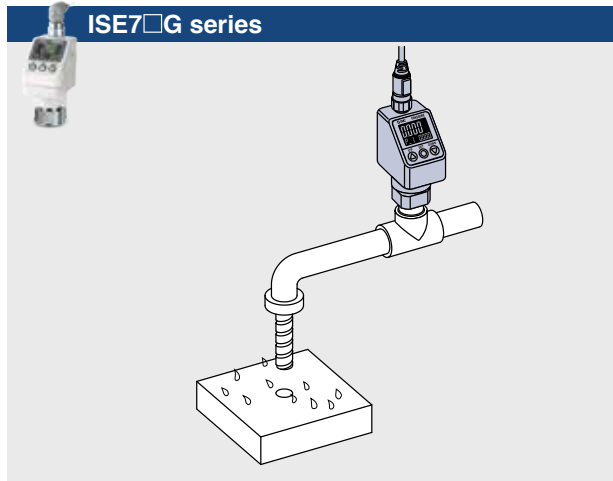


A low pressure sensor (PSE532□) is used to detect minute differences. The auto shift function reduces the influence of fluctuations in the supply pressure.

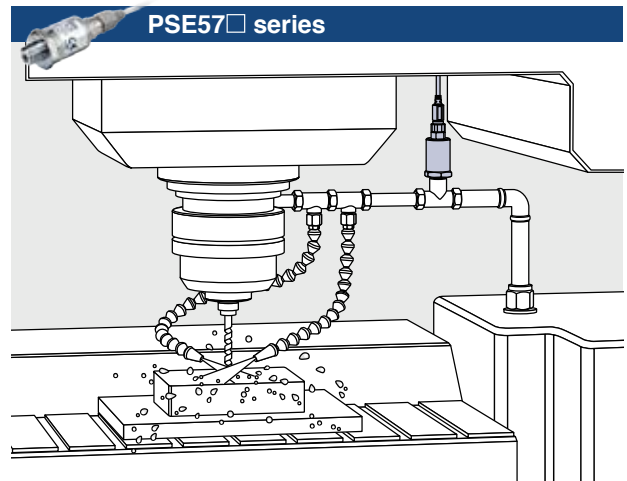


Liquid Coolant Pressure Control

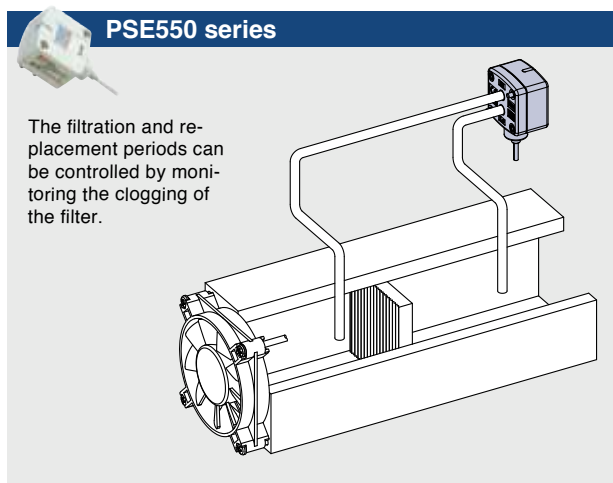
Liquid pressure control of a gun drill



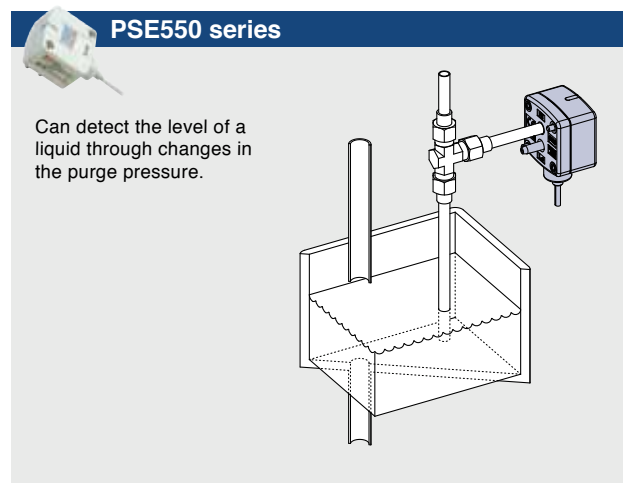
Liquid coolant pressure control



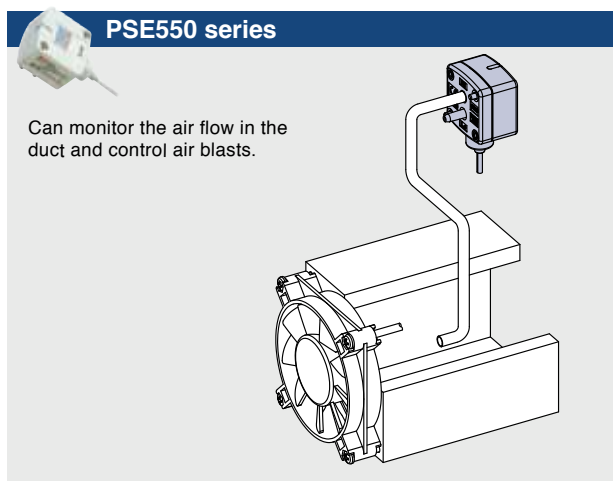
Monitoring Filter Clogging



Liquid Level Detection



Air Flow Control



IO-Link Compatible

3-Screen Display High-Precision Digital Pressure Sensor
ZSE20B(F)/ISE20B
 2 outputs

Videos can be viewed here





IO-Link Compatible

- IO-Link version V1.1
- Process data length 2-byte input
- Transmission speed COM2 (38.4 kbps)
- Minimum cycle time 2.3 ms

3-Screen Display High-Precision Digital Pressure Sensor
ISE7□/7□(G)

Videos can be viewed here






IO-Link Compatible

- IO-Link version V1.1
- Process data length 2-byte input
- Transmission speed COM2 (38.4 kbps)
- Minimum cycle time 2.3 ms
- IO-Link port type Class A

3-Screen Multi-channel Digital Sensor Monitor
PSE200A

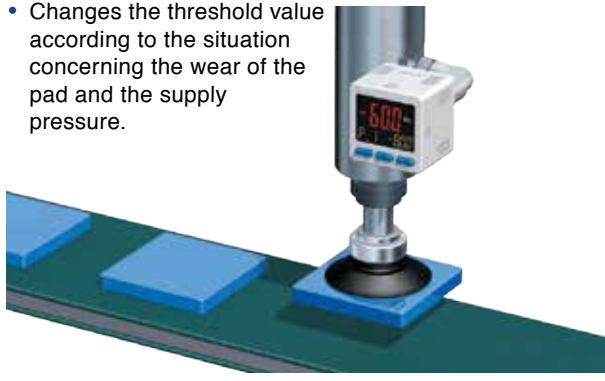
IO-Link Compatible

- IO-Link version V1.1
- Process data length 10-byte input
- Transmission speed COM2 (38.4 kbps)
- Minimum cycle time 4.8 ms



Employs predictive maintenance for the early detection of declining adsorption capacity

- Monitors switch ON/OFF signals and analog values to determine the wear of the pad.
- Changes the threshold value according to the situation concerning the wear of the pad and the supply pressure.



Preventive maintenance to prevent supply pressure and sensor abnormalities

Confirm the pressure condition during operation and monitor the device status.

Monitor the abnormal pressure and the abnormal status of a pressure sensor remotely to prevent unexpected stops.



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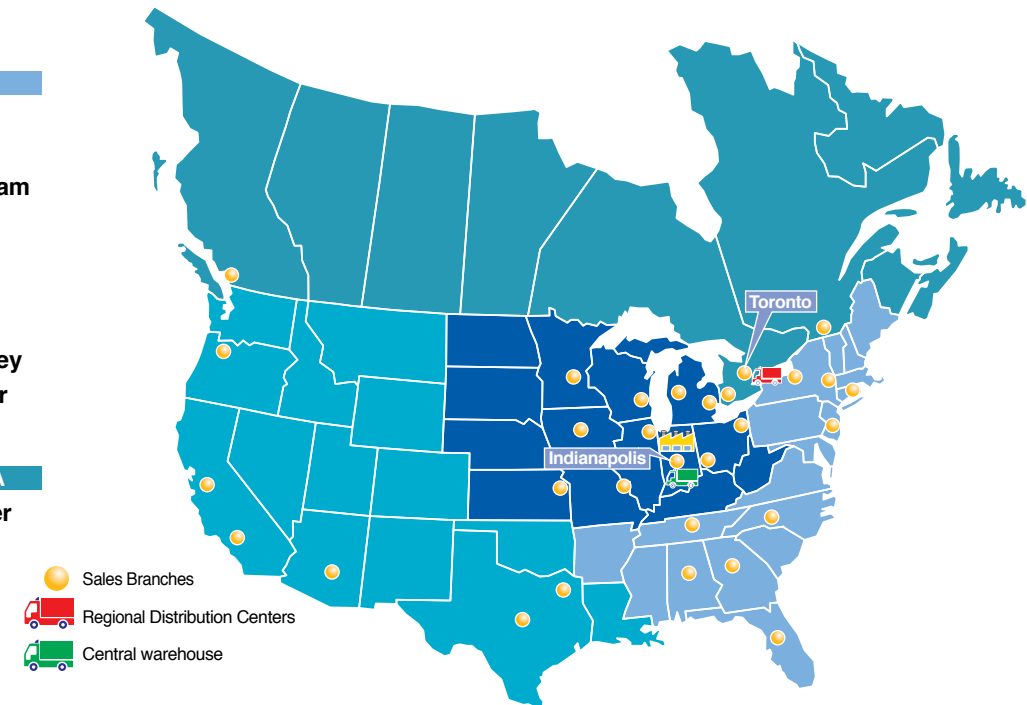
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S E S C S C O S C O C O