YAMATAKE Specifications

# ST3000 Ace Smart Transmitter
# JTS Series of Remote-sealed Type Absolute Pressure Transmitters

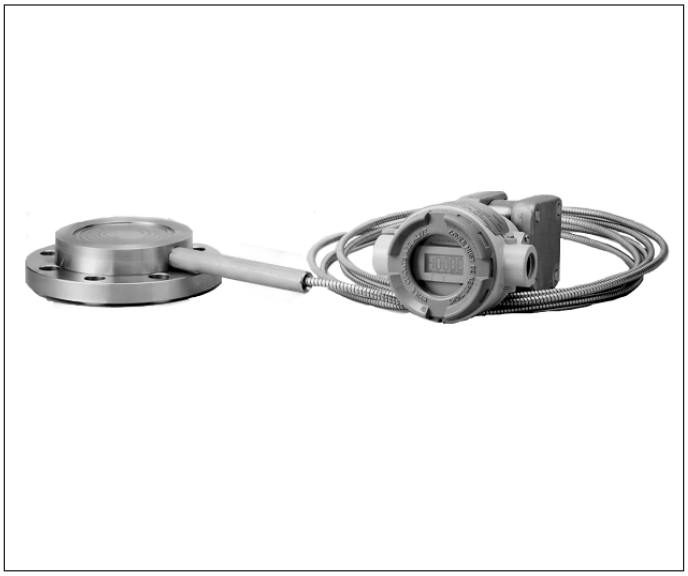
## JTS922A/JTS940A

## General

The ST3000 Ace* Smart Transmitter is a microprocessor-based smart transmitter that features high performance and excellent stability. Capable of measuring gas, liquid, and vapor pressures, and liquid levels, it transmits 4 to 20 mA DC analog and digital signals according to the measured differential pressure.

It can also execute two-way communications between the SFC (Smart Field Communicator), and, via DE protocol, with the TDCS3000 or 3000$^X$ and a database, thus facilitating self-diagnosis, range resetting, and automatic zero adjustment.

Remote-sealed absolute pressure transmitters are suitable for the measurement of pressures such as those encountered in reaction furnaces and distilling plants in which pressures change from vacuum to high pressure at high temperatures.



## Features

(1) Excellent stability and high performance
- Long-term stability has been proven in 500,000 installations worldwide.
- Unique characterization and composite semiconductor sensors realize excellent temperature and static pressure characteristics.

(2) A diverse lineup
- A wide range of models, including those for high-temperature vacuum and high-temperature high-vacuum service, is available to meet user requirements.

(3) Multiprotocol communication
- Either analog output (4 to 20 mA DC), analog FSK output (4 to 20 mA DC) or digital output (DE protocol) is possible.
- Two-way communication using digital output facilitates self-diagnosis, range resetting, automatic zero adjustment, and other operations.

(4) Full after-sales service program
- From product delivery to replacement, we will service all your needs. Our nationwide service network provides all the backup you require, including trial operation support and regular maintenance.

## Applications

Petroleum/Petrochemical/Chemical
- For the measurement of liquid levels including corrosive fluids at high temperatures, and high temperatures under vacuum
- For the measurement of pressures under vacuum, at high-temperatures, encountered in high-pressure reaction furnaces and distillation plants.

Electric Power/City Gas/Other Utilities
- For measurement applications that require a high degree of stability and accuracy
- For measurement of liquid levels of condenser of turbines and feed heater

Pulp and Paper
- For lines that need transmitters resistant to chemical liquids, corrosive fluids and the like

Iron and Steel/Nonferrous Metal/Ceramics
- For lines that require stable measurement under strictly controlled (temperature and humidity) conditions

Machinery/Shipbuilding
- For lines that require stable measurement under strictly controlled (temperature, humidity and vibration) conditions

# Specifications

**Measuring span/setting range/working pressure range/overload resistant value:**

See Table 1.

**Output/communication:**

Analog output (4 to 20 mA DC)

Analog FSK output (4 to 20 mA DC)

(Frequency shift keying signal transmission system)

Digital output (DE protocol)

**Supply voltage and load resistance:**

10.8 to 45 V dc. A load resistance of 250 Ω or more is necessary between loops. (See Figure 1)

**Fill fluid:** Silicone oil for high-temperature vacuum and high-temperature high-vacuum models

For specific gravity, see Table 2.

**Temperature ranges of wetted parts:**

See Table 2.

**Ambient temperature ranges:**

See Table 2, except for explosion-proof models with digital indicators, which have to be used within the following ranges:

Models with digital indicators:

Normal operating conditions: -20 to 70°C

Operative limits: -30 to 80°C

JIS pressure-resistant special explosion-proof models: -20 to 60°C

JIS intrinsically safe explosion-proof models:

-10 to 60°C

**Ambient humidity range:**

5 to 100% RH

**Stability against supply voltage change:**

±0.005% FS/V

**Lightning protection:**

Peak value of voltage surge: 100 kV

Peak value of current surge: 1000 A

**Dead time:** Approx. 0.4 sec

**Damping time constant:**

Selectable from 0 to 32 sec in ten stages

**Waterproof/dustproof structure:**

JIS C0920 watertight: NEMA3 and 4X

JIS F8001 class 2 watertight: IEC IP67

**Explosion-proof structure:**

JIS special explosion-proof models: (Exd II CT4X)

JIS intrinsically safe models: (i3aG4)

**Process pipe connection:**

Flanges (both higher and lower pressure sides)

Flush diaphragm:

JIS10K, 20K, 30K, and 63K-80mm (RF) equivalents

ANSI150, 300, and 600-3in. (RF) equivalents

JPI150, 300, and 600-3in. (RF) equivalents

Extended diaphragm:

JIS10K, 20K, 30K-100mm (RF) equivalents

ANSI150 and 300-4in. (RF) equivalents

JPI150 and 300-4in. (RF) equivalents

| | Measuring Span | Setting Range | Working Pressure Range | Overload Resistant Value |
|---|---|---|---|---|
| JTS922A | 4～104kPa abs {30～780mmHg abs} | 0～104kPa abs {30～780mmHg abs} | 0.01～104kPa abs {0.1～780mmHg abs} (For flange rating, see "Max Working Pressure") | 300kPa abs {3.0kgf/cm² abs} |
| JTS940A | 35～3500kPa abs {0.35～35kgf/cm² abs} | 0～3500kPa abs {0～35kgf/m² abs} | 0.01kPa abs～Up to the smaller value of either setting range or flange rating {0.1mmHg abs～Up to the smaller value of either setting range or flange rating } (For flange rating, see "Max Working Pressure") | 5250kPa abs {52.5kgf/cm² abs} |

**Table 1 Measuring Span, Setting Range, and Working Pressure Range/Overload Resistant Value**

| | | Temperature Range (℃) Note 1), Note 4) | |
|---|---|---|---|
| | | High-temperature vacuum models | High-temp. high-vacuum models |
| Wetted parts section | Normal operating range | -5～280 | 10～280 |
| | Operative limit range | -10～310 | -10～310 |
| Ambient temperature Note 2) | Normal operating range | -5～55 | 10～55 |
| | Operative limit range | -10～60 | -10～60 |
| Specific gravity of fill liquid Note 3) | | 1.07 | 1.09 |

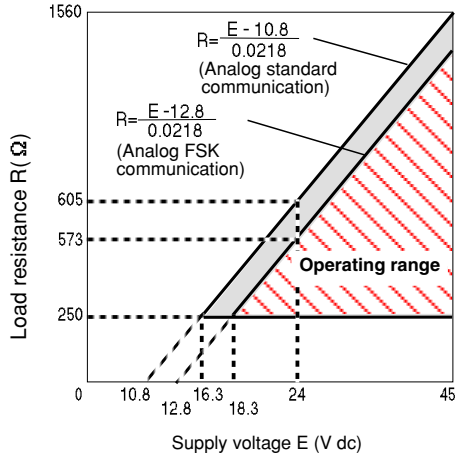
**Table 2 Temperature Range of Wetted Parts Section and Ambient Temperature Range**

Note 1) See the working pressures and temperatures of the wetted parts section in Figure 2.

Note 2) Ambient temperatures of the transmitter itself

Note 3) Approximate values at the temperature of 25°C

Note 4) Note that if the operating temperature falls below the lower limit of the normal operating range, the response of the transmitter becomes slower.




Note: For communication with SFC, a load resistance of 250 Ω or more is necessary.

**Figure 1 Supply Voltage vs. Load Resistance Characteristics**

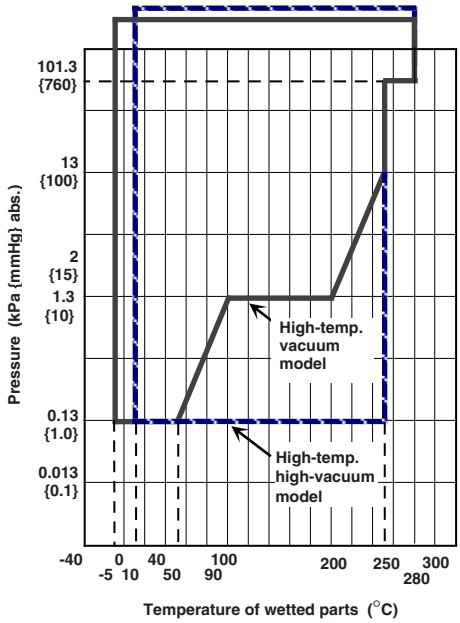
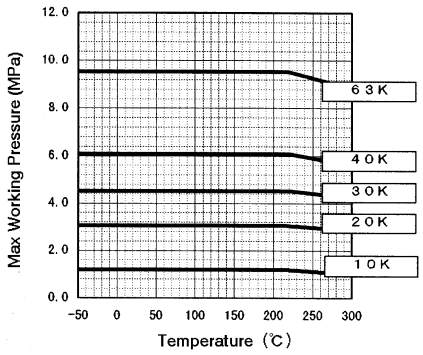
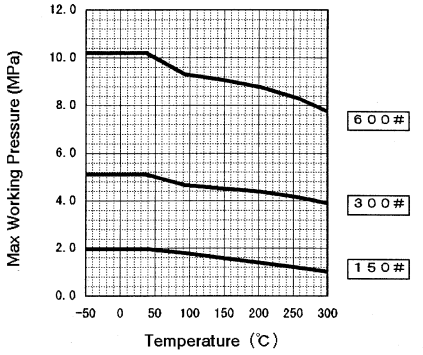
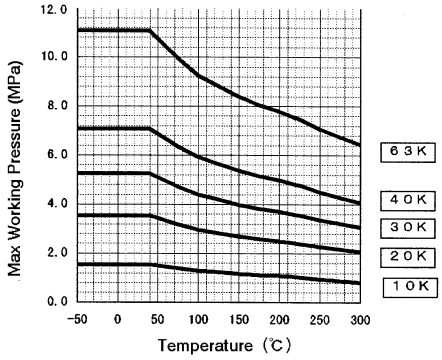
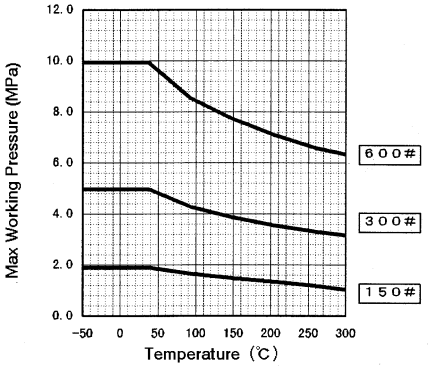
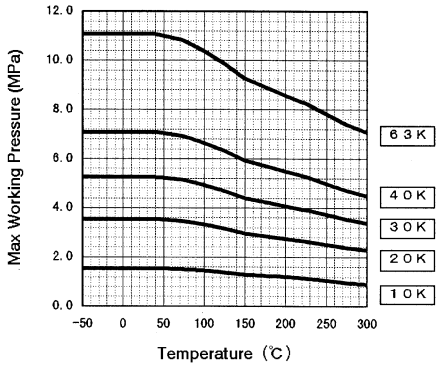
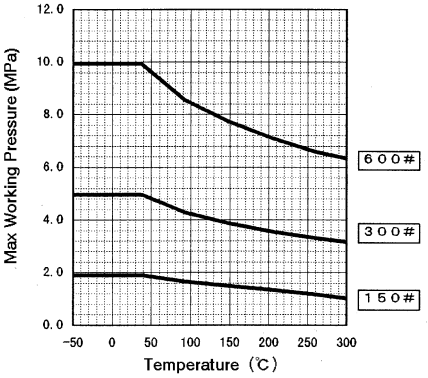
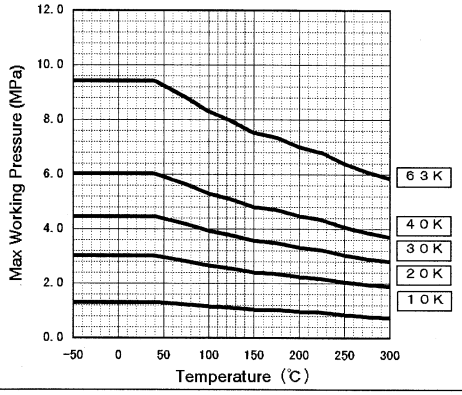
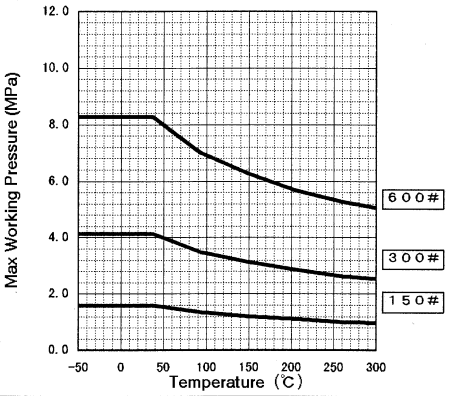



**Figure 2 Working Pressure and Temperature of Wetted Parts Section (for high-temperature vacuum and high-temperature high-vacuum models)**

# Max Working Pressure

Note 1. Max Working Pressure depends on flange rating, flange materials and operating temperature. Please refer to the following data.
Operating range of temperature depends on the specifications of transmitter.
Note 2. In the case of flange type (JTF940□, JTC940□) and remote sealed type (JTU940□, JTH940□),
Max Working Pressure depends on the smaller value of either 3.5MPa or following data.
Note 3. In the case of absolute remote sealed type (JTS940□),
Max Working Pressure depends on the smaller value of either 3.5MPa abs or following data.
As for the following data, the vertical axis represent gauge pressure.
Note 4. In the case of remote sealed type (JTH960□), Max Working Pressure depends on the smaller value of either 10MPa or following data.
Note 5. In the case of 1/2in. remote sealed type (JTE929□, JTE930□, JTH960□),
Max Working Pressure depends on the smaller value of either 5.1MPa or the following data as for adaptor flange (HF).

| | JIS | JPI/ANSI |
|---|---|---|
| **Carbon steel** |  |  |
| **SUS304** |  |  |
| **SUS316** |  |  |
| **SUS316L** |  |  |

**Electrical conduit connection:**

G1/2 internal thread

1/2NPT internal thread (Not usable with JIS explosion-proof models)

**Materials:**

Center body: SUS316

Transmitter case: Aluminum alloy

Meter body cover: SUSF304

**Wetted parts materials:**

SUS316 (SUS316L for diaphragm only)
SUS316L

**Flange materials:**

Carbon steel (SF440A), SUS304, SUS316, SUS316L

**Bolts and nuts materials (for fastening meter body cover):**

SUS630

**Capillary section:**

Capillary tube length: 2, 3, 4, 5, 6, 7, 8, 9, and 10 m

Capillary tube material: SUS316

Armored tube material: SUS304

**Finish:** Housing: light beige (Munsell 4Y7.2/1.3)

Cap: dark beige (Munsell 10YR4.7/0.5)

**Corrosion-resistant finish:**

Standard: Corrosion-resistant paint (Baked acrylic paint)

Corrosion-resistant finish:

Corrosion-resistant paint (Baked acrylic paint), fungus-proof finish

Corrosion-proof finish:

Corrosion-proof paint (Baked epoxy paint), fungus-proof finish

Corrosion-resistant finish (silver paint):

Transmitter case is silver-coated in addition to the above corrosion-resistant finish.

**Built-in indicating meter:**

The digital LCD indicator (optional) indicates actual flow rates (in SI units) and can be set freely between -19999 and 19999 (4.5 digits). For actual calibration, specify the following items when placing your order:

- Actual calibration range
- Actual calibration unit
- Proportional representation and instructions about square-root extraction

Various kinds of data can be set using the SFC smart communicator (Ver. 7.1 or newer).

**Burnout feature:**

Choice of three states at abnormal condition:

Burnout of output values: none
upper limit
lower limit

**Grounding:** Grounding resistance 100 Ω max.

**Mounting:** Direct mounting on the process side

Using 2-inch pipe mounting brackets:

Mount the transmitter on a horizontal or vertical 2-inch pipe, then use the brackets.

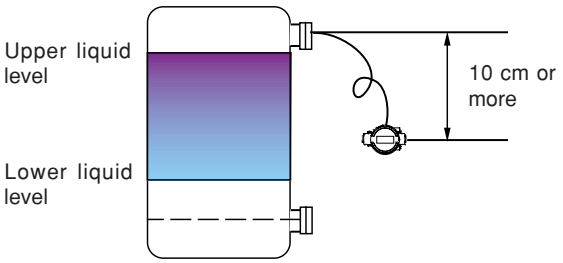
Materials: Brackets: carbon steel
U bolts and nuts: SUS304

**Weight:** Approx. 19.8 kg

(including JIS10K-80mm flange and capillary 5 m long)

**Mounting Notes**

<For pressure measurement>




1) If the fluid to be measured contains hydrogen, please consult a Yamatake representative.
2) When mounting the transmitter, leave a space of at least 10 cm under the lower nozzle of the tank. If no space is available, please consult a Yamatake representative.

# Optional Specifications

**External zero adjustment function:**

The transmitter can be easily zero-adjusted in the field with a flat-head screwdriver.

**Additional lightning protection:**

It is possible to achieve a lightning protection performance of 200 kV, 2000 A, twice the standard performance (100 kV, 1000 A). This is advisable when the transmitter is to be used in lightning-prone areas such as mountains, hills or wherever high-performance lightning protection is required.

**Elbow:** This is an adaptor for changing the electrical conduit connection port from the horizontal to the vertical direction if required by wiring conditions in the field. One or two elbows may be used as needed.

**Water free treatment (including oil free treatment):**

The transmitter is shipped with dry and oil-free wetted parts.

**Oil free treatment:**

The transmitter is shipped with oil-free wetted parts. (The vent drain plug is coated with a small amount of fluorine oil to prevent galling.)

**Electric power specification:**

This specification applies to where stringent quality control is required, such as in the electric power and city gas industries.

**Special burnout (3.2 mA):**

The burnout output value (in the lower-limit direction) under abnormal conditions shall be 3.2 mA (-5%) or less.

**Test report:** The test report indicates the results of appearance, I/O characteristics, insulation resistance, and breakdown voltage tests.

**Material certificate:**

The material certificate shows the chemical composition, heat-treatment conditions, and mechanical properties of the materials used for the wetted parts.

**Strength calculation sheet:**

The strength calculation sheet indicates the strength of the meter body cover, flanges, bolts, etc.

**Withstand pressure and airtight tests (for general purposes):**

The withstand pressure and airtight test result sheet shows the results of a pressure resistance test (under water pressure for 10 minutes) performed on the wetted parts.

**Traceability certificate:**

This certificate consists of three parts: the transmitter's measurement control system configuration diagram, a calibration certificate, and a test report.

**Conformance to non-SI units:**

We deliver transmitters set to any non-SI unit you specify.

# Transmitter Handling Notes

To get the most from the performance this transmitter can offer, please use it properly noting the points mentioned below. Before using it, please read the Instruction Manual.

### Transmitter Installation Notes

**⚠ Warning**

- **When installing the transmitter, ensure that gaskets do not protrude from connecting points into the process (such as adapter flange connection points and connecting pipes and flanges). Gasket protrusion may result in leaks and output errors.**
- **Do not use the transmitter outside its defined pressure, temperature, and connection specifications. A serious accident may otherwise occur due to damage and leaks.**
- **When performing wiring work in explosion-proof areas, follow the work method specified in the explosion-proof guidelines. In addition, when the wiring for an explosion-proof product is a pull-in pressure-resistant packing-cable, be sure to use a pressure-resistant packing-cable adapter certified by Yamatake Corporation.**
- **Be sure to use the cable which allowable temperature is more than 65˚C.**

**⚠ Caution**

- **After installing the transmitter, do not step or stand on it. Using it as a foothold could cause it to collapse and cause physical injury.**
- **Be careful not to hit the glass indicator with tools etc. This could break the glass and cause injury.**
- **This transmitter is heavy. Wear safety shoes and take care when installing it.**

### Wiring Notes

**⚠ Warning**

- **To avoid shocks, do not perform electrical wiring work with wet hands or with live wires.**

**⚠ Caution**

- **Do wiring work properly in conformance with the specifications. Wiring mistakes may result in malfunction or irreparable damage to the instrument.**
- **Use a power supply that conforms to the specifications. Use of an improper power supply may result in malfunction or irreparable damage to the instrument.**

# Performance

Shown for each item are the upper limit (URV) (*1) and the lower limit (LRV) (*2) of the calibration range or the percentage ratio of the maximum value of the span to χ (kPa).

**JTS922A (for high-temperature vacuum and high-temperature high-vacuum models)**

| | | |
|---|---|---|
| **Accuracy (*3)** | Linear output: | ± 0.75% (χ ≧ 12kPa abs {90mmHg abs})<br>± (0.75 × 12/χ) % (χ < 12kPa abs {90mmHg abs}) |
| **Temperature characteristics (Shift from the set range) Change of 10°C (*3)** | Zero shift: | ± 0.36% (χ ≧ 12kPa abs {90mmHg abs})<br>± (0.36 × 12/χ) % (χ < 12kPa abs {90mmHg abs}) |
| | Combined shift: | ± 0.43% (χ ≧ 12kPa abs {90mmHg abs})<br>± (0.43 × 12/χ) % (χ < 12kPa abs {90mmHg abs}) |

**JTS940A (for high-temperature vacuum and high-temperature high-vacuum models)**

| | | |
|---|---|---|
| **Accuracy (*3)** | Linear output: | ± 0.75% (χ ≧ 350kPa abs {3.5kgf/cm² abs})<br>± (0.75 × 350/χ) % (χ < 350kPa abs {3.5kgf/cm² abs}) |
| **Temperature characteristics (Shift from the set range) Change of 10°C (*3)** | Zero shift: | ± 0.36% (χ ≧ 350kPa abs {3.5kgf/cm² abs})<br>± (0.36 × 350/χ) % (χ < 350kPa abs {3.5kgf/cm² abs}) |
| | Combined shift: | ± 0.43% (χ ≧ 350kPa abs {3.5kgf/cm² abs})<br>± (0.43 × 350/χ) % (χ < 350kPa abs {3.5kgf/cm² abs}) |

Notes) (*1): URV denotes the value for 100% (20 mA DC) output.
(*2): LRV denotes value for 0% (4 mA DC) output.
(*3): Within a range of URV ≧ 0 and LRV ≧ 0

# Model Number Configuration Table

*DSTJ3000 ACE Electric Absolute Pressure Transmitter Remote-sealed diaphragm style*

| Model | Pressure range/style | | Service (Fill fluid) | Process connection |
|---|---|---|---|---|
| JTS922A | 4 to 104kPa abs (30 to 780mmHg abs) | Medium absolute pressure | High temperature and vacuum(Silicon oil), High temperature and high vacuum(Silicon oil) | Flush diaphragm 3 in. (80mm) |
| JTS940A | 35 to 3500kPa abs (0.35 to 35kgf/cm2 abs) | High absolute pressure | High temperature and vacuum(Silicon oil), High temperature and high vacuum(Silicon oil) | Flush diaphragm 3 in. (80mm) |

| | Selections | Options 1 | |
|---|---|---|---|
| Basic model No. | -I II III IV V VI VII VIII | -IX X XI XII XIII XIV | -Options 2 |

Options 1, 2: Refer to page 11.

Basic Model No.

| | | | |
|---|---|---|---|
| | Measuring span | 4 to 104kPa abs (30 to 780mmHg abs) | JTS922A |
| | | 35 to 3500kPa abs (0.35 to 35kgf/cm2 abs) | JTS940A |

Selections

| | | | | |
|---|---|---|---|---|
| I | Output | 4 to 20mA | 1 | |
| | | 4 to 20mA(Analog FSK Communication) | 2 | *3 |
| | | Digital output (DE protocol) | 3 | *1, *2 |
| II | Material of wetted part | SUS316L | 8 | |
| III | Fill Fluid | For high temperature vacuum (Silicon oil) | 4 | |
| | | For high temperature high vacuum (Silicon oil) | 7 | |
| IV | Flange rating *29 | JIS 10K | A | |
| | | JIS 20K | C | |
| | | JIS 30K | D | |
| | | JIS 63K | F | |
| | | ANSI 150 | G | |
| | | ANSI 300 | H | |
| | | ANSI 600 | J | |
| | | JPI 150 | N | |
| | | JPI 300 | P | |
| | | JPI 600 | Q | |
| V | Flange size | 3 in. /80 mm | 2 | |
| VI | Flange type | Standard | 1 | |
| VII | Flange material/bolt and nut | Carbon steel/SUS630 | C | |
| | | SUS304/SUS630 | F | |
| | | SUS316/SUS630 | J | |
| | | SUS316L/SUS630 | M | |
| VIII | Length of Capillary tube | 2m | 2 | |
| | | 3m | 3 | |
| | | 4m | 4 | |
| | | 5m | 5 | |
| | | 6m | 6 | |
| | | 7m | 7 | |
| | | 8m | 8 | |
| | | 9m | Q | |
| | | 10m | A | |

Notes

1 Digital output (DE protocol) should be selected with upper/lower direction of burn out feature.

2 Digital output (DE protocol) can not be combined with an external zero adjustment function.

3 Analog FSK Communication can not be combined with Intrinsically safe.

29 Flange rating should be selected based on the operative pressure range.

## *DSTJ3000 ACE Electric Absolute Pressure Transmitter Remote-sealed diaphragm style*

| Model | Pressure range/style | | Service (Fill fluid) | Process connection |
|---|---|---|---|---|
| JTS922A | 4 to 104kPa abs (30 to 780mmHg abs) | Medium absolute pressure | High temperature and vacuum(Silicon oil), High temperature and high vacuum(Silicon oil) | Flush diaphragm 4 in. (100mm) |
| JTS940A | 35 to 3500kPa abs (0.35 to 35kgf/cm2 abs) | High absolute pressure | High temperature and vacuum(Silicon oil), High temperature and high vacuum(Silicon oil) | Flush diaphragm 4 in. (100mm) |

| | Selections | Options 1 | |
|---|---|---|---|
| Basic model No. | -I II III IV V VI VII VIII | -IX X XI XII XIII XIV | -Options 2 |

Options 1, 2: Refer to page 11.

Basic Model No.

| | | | |
|---|---|---|---|
| | Measuring span | 4 to 104kPa abs (30 to 780mmHg abs) | JTS922A |
| | | 35 to 3500kPa abs (0.35 to 35kgf/cm2 abs) | JTS940A |

Selections

| | | | | |
|---|---|---|---|---|
| I | Output | 4 to 20mA | 1 | |
| | | 4 to 20mA(Analog FSK Communication) | 2 | *3 |
| | | Digital output (DE protocol) | 3 | *1, *2 |
| II | Material of wetted part | SUS316 (Diaphragm : SUS316L) | 2 | |
| | | SUS316L | 8 | |
| III | Fill Fluid | For high temperature vacuum (Silicon oil) | 4 | |
| | | For high temperature high vacuum (Silicon oil) | 7 | |
| IV | Flange rating *29 | JIS 10K | A | |
| | | JIS 20K | C | |
| | | JIS 30K | D | |
| | | ANSI 150 | G | |
| | | ANSI 300 | H | |
| | | JPI 150 | N | |
| | | JPI 300 | P | |
| V | Flange size | 4 in./100A | 1 | |
| VI | Flange type | Length of extended part 50mm | 2 | |
| | | Length of extended part 100mm | 3 | |
| | | Length of extended part 150mm | 4 | |
| VII | Flange material/bolt and nut | Carbon steel/SUS630 | C | |
| | | SUS304/SUS630 | F | |
| | | SUS316/SUS630 | J | |
| | | SUS316L/SUS630 | M | |
| VII | Length of Capillary tube | 2m | 2 | |
| | | 3m | 3 | |
| | | 4m | 4 | |
| | | 5m | 5 | |
| | | 6m | 6 | |
| | | 7m | 7 | |
| | | 8m | 8 | |
| | | 9m | Q | |
| | | 10m | A | |

Notes

1 Digital output (DE protocol) should be selected with upper/lower direction of burn out feature.

2 Digital output (DE protocol) can not be combined with an external zero adjustment function.

3 Analog FSK Communication can not be combined with Intrinsically safe.

29 Flange rating should be selected based on the operative pressure range.

*DSTJ3000 ACE Electric Absolute Pressure Transmitter Remote-sealed diaphragm style*

| Basic model No. | Selections -I II III IV V VI VII VIII | Options 1 -IX X XI XII XIII XIV | -Options 2 |
|---|---|---|---|

Options1

| | | | |
|---|---|---|---|
| IX | Electrical connection / explosion-proof | G1/2, Watertight | X |
| | | G1/2, JIS Flameproof with 1 pc. Of cable gland attached. | 2 |
| | | G1/2, JIS Flameproof with 2 pcs. Of cable gland attached. | 3 |
| | | G1/2, intrinsically safe *3 | 6 |
| | | 1/2 NPT, Watertight | A |
| X | Builting indicating smart meter | None | X |
| | | 0 to 100 % linear scales | 1 |
| | | Engineering unit scales | 2 |
| XI | Finish | Standard | X |
| | | Corrosion-resistant | A |
| | | Corrosion-proof | B |
| | | Corrosion-resistant (Silver coating) | D |
| XII | Finish of gasket face | Standard (JISRa3.2(12.5S)) | X |
| XIII | Burnout feature *1 | None | X |
| | | Upper limit of output at abnormal condition | U |
| | | Lower limit of output at abnormal condition | D |
| XIV | Mouting bracket | None | X |
| | | Carbon steel | 1 |
| | | SUS304 | 2 |

Option 2

| | | |
|---|---|---|
| | XX | No options |
| | A2 | External Zero adjustment *2 |
| | A4 | Lightning arrestor |
| | B7 | For mounting a high load resistance smart meter |
| | C1 | Color : Red (Munsell 5R4/13) |
| | C2 | Color : Yellow (Munsell 2.5Y8/16)) |
| | C3 | Color : Blue (Munsell 7.5BG7/2) |
| | C7 | Process connection ; reverse |
| | D1 | Water free finish (included oil free finish) *16 *17 |
| | D2 | Oil free finish *16 *17 |
| | G1 | One elbow (left) |
| | G2 | One elbow (right) |
| | G3 | 2 elbows |
| | J8 | Special burn-out feature (3.2mA) *18 |
| | T1 | Test report |
| | T2 | Material certificate *19 |
| | T5 | Strength calculation sheet *20 |
| | T6 | Withstand pressure and airtight test (for regular service) *21 |
| | T8 | Traceability certificate |
| | U2 | Non-SI unit conformance |

Notes

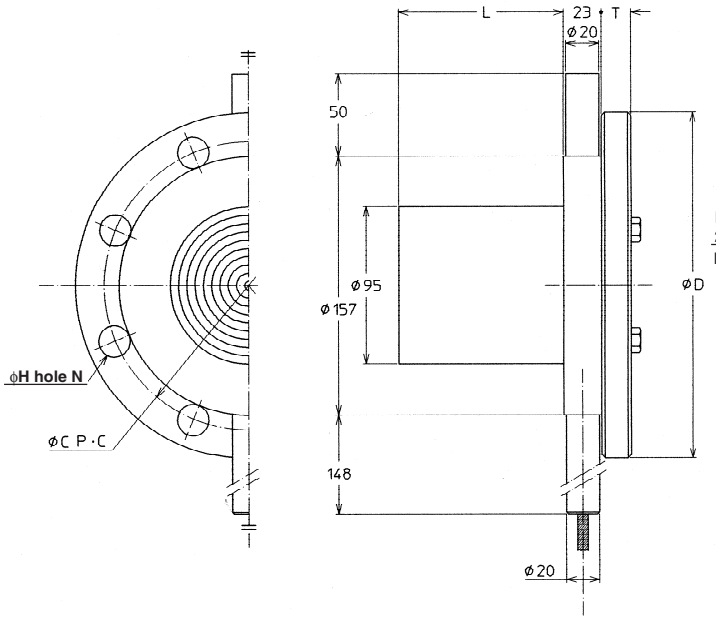
1 Digital output (DE protocol) should be selected with upper/lower direction of burn out feature.
2 Digital output (DE protocol) can not be combined with an external zero adjustment function.
3 Analog FSK Communication can not be combined with Intrinsically safe.
16 When the fill fluid is for oxygen or chroline service, there is not needed to select this.
17 The carbon steel for meterbody cover material is not available for this option.
18 This should be selected with upper/lower direction of burn out feature.
19 Available only for material of wetted part.
20 When ordering, designed pressure and designed temperature are required.
21 When ordering, withstand pressure and airtight test pressure are required.

# Dimensions

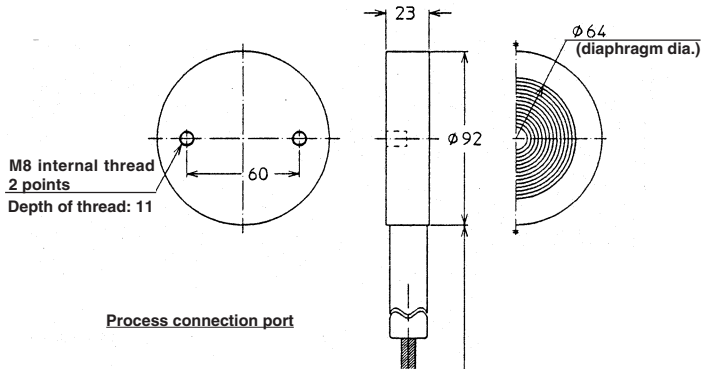
(Unit: mm)

**JTS920A/940A High-Temperature Vacuum and High-Temperature High-Vacuum Models**

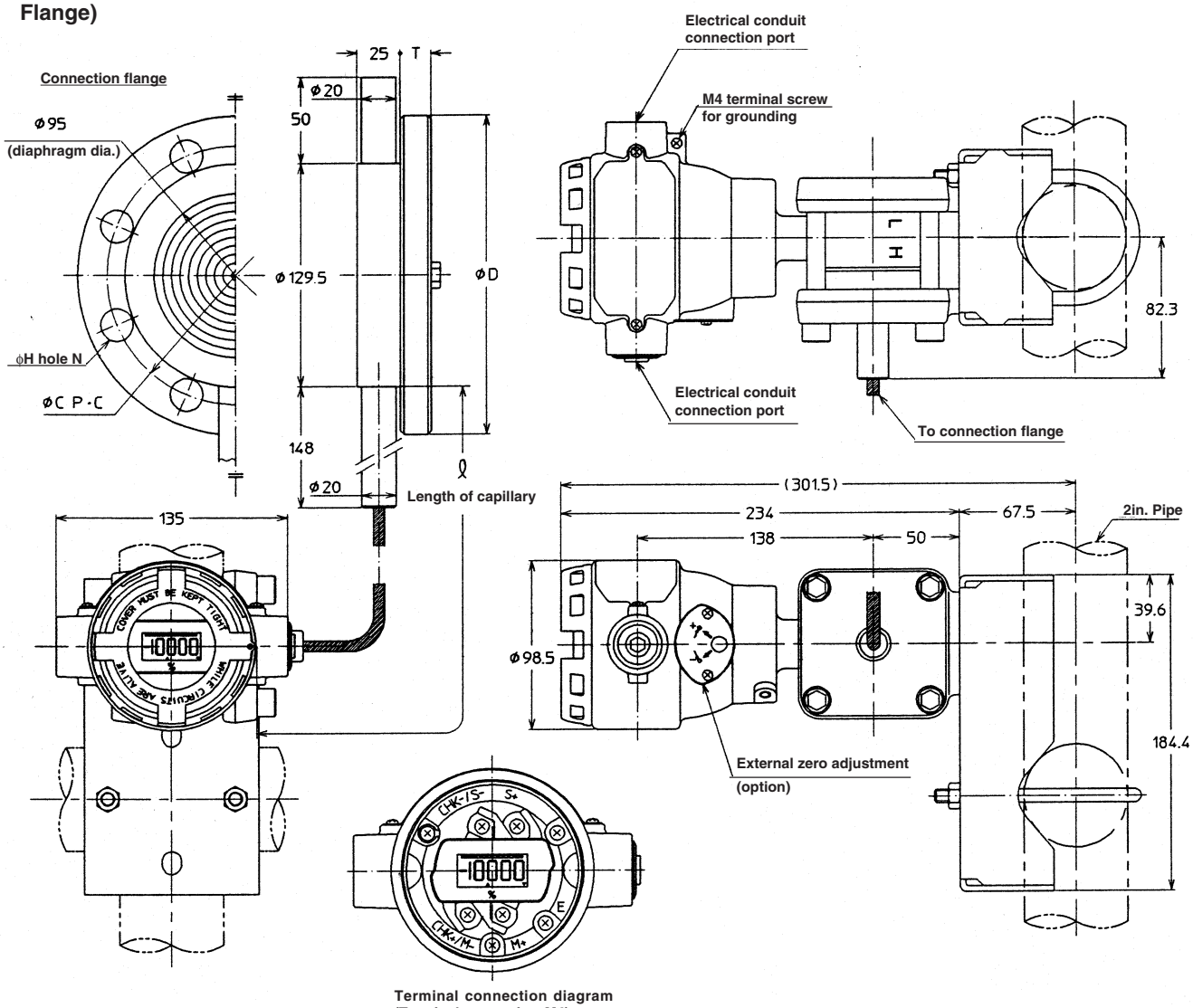
**(Extended Diaphragm Flange)**




**(Wafer)**




**(Flush Diaphragm Flange)**




Terminal connection diagram
(Terminal screw size: M4)

## Table of Flange Dimensions

(Unit: mm)

### (Flush Diaphragm Flange)

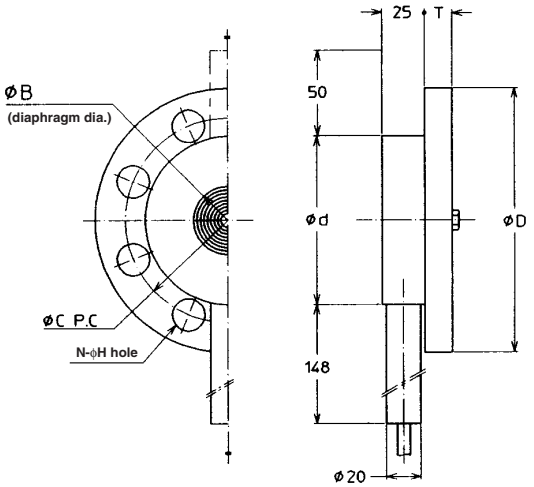



Table of Flange Dimensions

| Flange standard | ø D | T | ø C | N | ø H | ød | øB |
|---|---|---|---|---|---|---|---|
| JIS 10K-80mm | 185 | 18 | 150 | 8 | 19 | 129.5 | 95 |
| JIS 20K-80mm | 200 | 22 | 160 | 8 | 23 | | |
| JIS 30K-80mm | 210 | 28 | 170 | 8 | 23 | | |
| JIS 63K-80mm | 230 | 40 | 185 | 8 | 25 | | |
| ANSI 150-3 in. | 190 | 24 | 152.4 | 4 | 19 | | |
| ANSI 300-3 in. | 210 | 28.5 | 168.1 | 8 | 22 | | |
| ANSI 600-3 in. | 210 | 32 | 168.1 | 8 | 22 | | |
| JPI 150-3 in. | 190 | 24 | 152.4 | 4 | 19 | | |
| JPI 300-3 in. | 210 | 28.5 | 168.1 | 8 | 22 | | |
| JPI 600-3 in. | 210 | 32 | 168.1 | 8 | 22 | | |

### (Extended Diaphragm Flange)

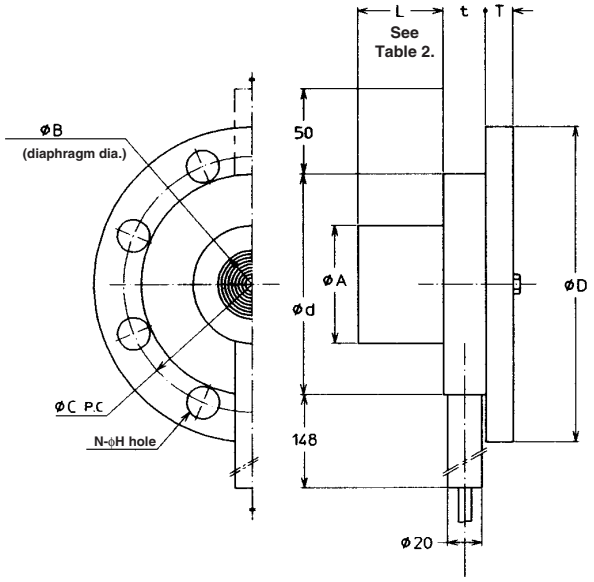



Table 1 Table of Flange Dimensions

| Flange standard | øD | T | t | øC | N | øH | ød | øA | øB |
|---|---|---|---|---|---|---|---|---|---|
| JIS 10K-100mm | 210 | 18 | 23 | 175 | 8 | 19 | 95 | $95^{\pm1}$ | 90.4 |
| JIS 20K-100mm | 225 | 24 | | 185 | 8 | 23 | | | |
| JIS 30K-100mm | 240 | 32 | | 195 | 8 | 25 | | | |
| ANSI 150-4in. | 229 | 24 | | 190.5 | 8 | 19 | | | |
| ANSI 300-4in. | 254 | 32 | | 200.2 | 8 | 22 | | | |
| JPI 150-4in. | 229 | 24 | | 190.5 | 8 | 19 | | | |
| JPI 300-4in. | 254 | 32 | | 200.2 | 8 | 22 | | | |

Table 2 Length of Extension

| L |
|---|
| 50 |
| 100 |
| 150 |

# Note

YAMATAKE

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