

ST3000 Ace Smart Transmitter Sanitary Differential Pressure / Pressure Transmitters

Model JTC929A/JTC940A, JTE929A/JTE930A

OVERVIEW

The Food and beverage industry and fermentation industry require equipment which satisfy stringent sanitary standards for the safety of their respective products.

ST3000 Ace sanitary differential pressure/pressure transmitters, which are equipped with micro-processors, meet sanitary standards plus maintain high reproducibility and precise accuracy. These transmitters utilize a sanitary clamp for process connection which conforms to the IDF (International Dairy Federation) standard and makes for easy installation and easy maintenance.

By using a SFC (Smart Field Communicator), configuration of the transmitter (ranging, damping, output conformity, constant current output) and self-diagnostics are possible.

FEATURES



Model JTC929A/JTC940A

Replaceable diaphragm structure

The sanitary model JTC features a replaceable add-on structure for its process interface. This allows a diaphragm to be quickly replaced.

IDF conform process interfaces

A 4S IDF clamp structure (Flush/Extended diaphragm) is employed for the process interface.

Broad measuring ranges

A broad range is covered by two models, the model JTC929A (2.5 to 100 kPa) and the model JTC940A (70 to 3500 kPa).

Integral digital indicator (optional)

The output can be checked in the field by using a digital indicator.



Model JTE929A/JTE930A

Various process interfaces

IDF 4S/3S 2S clamp structures and IDF 2S union nut structure are available for the process interface.

Ambient temperature compensation function (PAT. 1978534)

The ST3000's ambient temperature compensation function calculates the specific gravity in regards to the ambient temperature and compensates the output.

The shift in output by any ambient temperature change is dramatically reduced up to 1/10 of the shift without the compensation function.

Integral digital indicator (optional)

The output can be checked in the field with by using a digital indicator.

SPECIFICATIONS - Sanitary flange 4S clamp connection

Measuring span / Setting range / Working pressure range / Overload resistant value

Model	Measuring span	Setting span	Working pressure range
JTC929A	2.5 to 100 kPa {250 to 10,000 mmH ₂ O}	-100 to 100 kPa {-10000 to 10000 mmH ₂ O}	Up to the IDF clamp pressure rating (700 kPa {7 kgf/cm ² })
JTC940A	70 to 3500 kPa {0.70 to 35 kgf/cm ² }	-100 to 3500 kPa {-1 to 35 kgf/cm ² }	

Process pipe connection

IDF 4S clamp connection

(Flush diaphragm / Extended diaphragm type)

Materials

Flush diaphragm.....SUS316L

Wetted parts.....SUS316L

Center body.....SUS316

Transmitter case.....Aluminum alloy

Meter body cover.....SUSF304

Fill fluid

Propylenglycol (Food additive)

Specific gravity: 1.032

Working pressure range

10 kPa abs. (1000 mmH₂O abs.) up to the IDF clamp pressure rating (700 kPa {7 kgf/cm²})

For negative pressure range, see Figure 2.

Ambient temperature range

-10 to +60°C

Temperature ranges of wetted parts

-10 to +121°C

150°C, 60 min.

Temperature range for transportation and storage

-20 to +60°C

Ambient humidity range

5 to 100% RH

Weight

Approx. 4.2 kg (4S flush diaphragm type)

Other specifications

Refer to common specifications.

Accuracy / temperature characteristics

Model	JTC929A	JTC940A
Accuracy	± 0.3% (χ ≥ 25 kPa) ± (0.15 + 0.15 × $\frac{25}{\chi}$) % (χ < 25 kPa)	± 0.2% (χ ≥ 350 kPa) ± (0.05 + 0.15 × $\frac{350}{\chi}$) (χ < 350 kPa)
Ambient temperature characteristics Zero shift Change of 30°C	± (0.25 + 0.5 × $\frac{25}{\chi}$) %	± (0.15 + 0.30 × $\frac{350}{\chi}$)
Ambient temperature characteristics Combined shift Change of 30°C	± 1.6% (χ ≥ 25 kPa) ± (1 + 0.6 × $\frac{25}{\chi}$) % (χ < 25 kPa)	± 0.7% (χ ≥ 350 kPa) ± (0.25 + 0.45 × $\frac{350}{\chi}$) (χ < 350 kPa)

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).

Note) *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 SELECTIONS - Sanitary flange 4S clamp connection**Model JTC929A/940A - Sanitary service (Fill fluid: Propyleneglycol)**

Process connection: 4S clamp.

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

Basic model no.

Measuring span	2.5 to 100 kPa (250 to 10,160 mmH ₂ O)	Medium differential pressure	JTC929A
	70 to 3500 kPa (0.7 to 35 kgf/cm ²)	High differential pressure	JTC940A

Selections

I	Output	4 to 20 mA	1																		
II	Material	Ferrule	Wetted parts																		
		SUS316L	SUS316L	L																	
III	Fill fluid	Propyleneglycol (Food additive)		B																	
IV	Process connection	Open to atmosphere			V																
V	Flange rating	IDF				U															
VI	Clamp size	Clamp 4S					A														
VII	Ferrule type	Standard (Flush diaphragm)																			
		Length extended part 50mm																			
		Length extended part 100mm																			
VIII	Material of flange/ bolts and nuts	Ferrule																			

Options 1

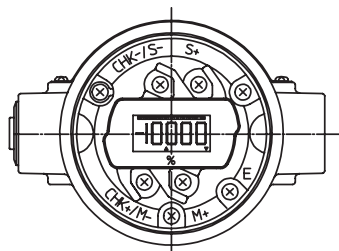
IX	Electrical connection / explosion-proof	G1/2, Watertight		X																		
		G1/2, JIS Flameproof with 1 pc. of cable gland attached		2																		
		G1/2, JIS Flameproof with 2 pcs. of cable gland attached.		3																		
X	Building indicating smart meter	None																		X		
		0 to 100% linear scales																			1	
		Engineering unit scales																				2
XI	Finish	Standard																		X		
		Corrosion-proof																			B	
XII	Finish of gasket face	Standard (JIS Ra3.2 (12.5S))																		X		
		Electro polishing																			A	
		Passivation																				B
XIII	Burnout feature	None																			X	
		Upper limit of output at abnormal condition																				U
		Lower limit of output at abnormal condition																				

Options 2

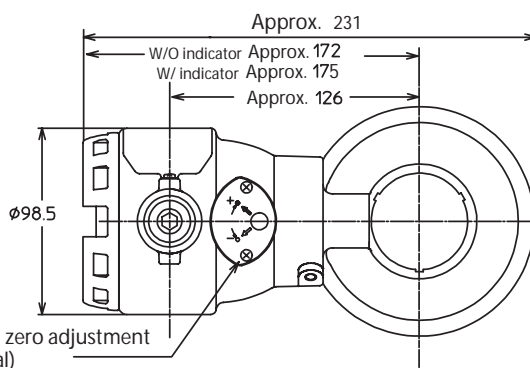
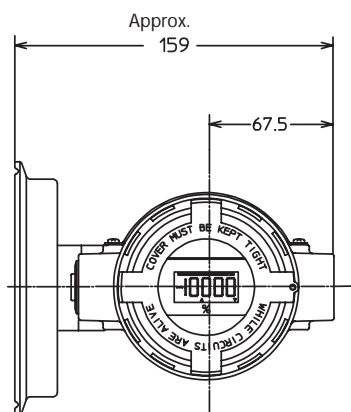
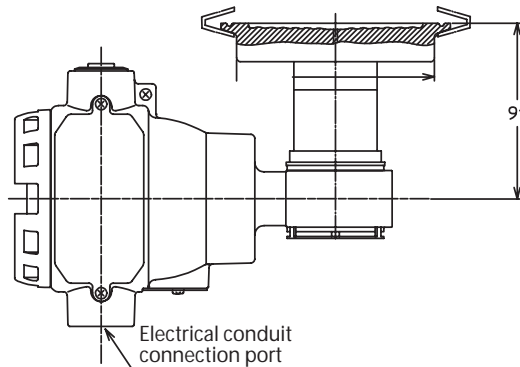
	No options	XX
	External zero adjustment	A2
	Lightening arrestor	A4
	Water free finish (included oil free finish)	D1
	Oil free finish	D2
	One elbow (Right)	G2
	Special burn-out feature (3.2 mA) *18	J8
	Test report	T1
	Traceability certificate	T8
	Two sets of IDF clamp with gaskets for flush diaphragm type	S1
	Two sets of IDF clamp	S2
	Two sets of gaskets for flush diaphragm type	S3
	Extended type tank spud for 4S clamp	S4
	Non-SI unit conformance	U2

Note) 18: This should be selected with upper/lower of burn out feature.

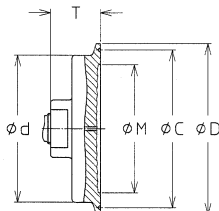
DIMENSIONS - Sanitary flange 4S clamp connection



Terminal connection diaphragm
(Terminal screw size: M4)

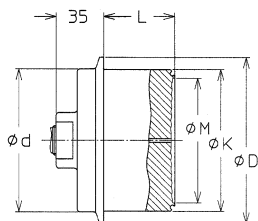


External zero adjustment
(optional)



Model no.			Ferrule size	φD	φd	φC	φM	T
Flange rating	Flange size	Flange type						
U	A	1	IDF 4S	119	102.5	110	90	35

Extended diaphragm flange dimensions



Model no.		Ferrule size	φD	φd	φK	φM	Model no.	L
Flange rating	Flange size						Flange type	
U	A	IDF 4S	119	102.5	101.5	90	2	50
							3	100

SPECIFICATIONS - Sanitary remote-sealed diaphragm 2S, 3S, 4S clamp connection

Measuring span / Setting range / Working pressure range / Overload resistant value

Model	Measuring span	Setting span	Working pressure range
JTE929A	2.5 to 100 kPa {250 to 10,000 mmH ₂ O}	-100 to 100 kPa {-10000 to 10000 mmH ₂ O}	Up to the IDF clamp pressure rating (700 kPa {7 kgf/cm ² })
JTE930A	35 to 700 kPa {0.35 to 7 kgf/cm ² }	-100 to 700 kPa {-1 to 7 kgf/cm ² }	

Process pipe connection

IDF 2S, 3S, 4S clamp connection

(Flush diaphragm / Extended diaphragm type)

Materials

Diaphragm.....SUS316L
Wetted parts.....SUS316L
Center body.....SUS316
Transmitter case.....Aluminum alloy
Meter body cover.....SCS13
Capillary tube coating.....Olefin

Fill fluid

Propyleneglycol (Food additive)
Specific gravity: 1.032

Working pressure range

10 kPa abs. (1000 mmH₂O abs.) up to the IDF clamp pressure rating (700 kPa {7 kgf/cm²})
For negative pressure range, see Figure 2.

Ambient temperature range

-10 to +60°C

Temperature ranges of wetted parts

-10 to +121°C (Sterilization)
150°C, 60 min. (Steam wash)

Temperature range for transportation and storage

-20 to +60°C

Ambient humidity range

5 to 100% RH

Weight

Approx. 7.4 kg (2S flush clamp connection and capillary 3 m)

Other specifications

Refer to common specifications.

Accuracy / temperature characteristics

Model	JTE929A		JTE930A		
Accuracy	Linear out:	± 0.3% (χ ≥ 12.5 kPa) ±(0.3 × $\frac{12.5}{\chi}$)% (χ < 12.5 kPa)	Linear out:	± 0.2% (χ ≥ 210 kPa) ±(0.05 + 0.15 × $\frac{210}{\chi}$)% (χ < 210 kPa)	
Temperature characteristics (Shift from the set range) Change of 10°C	4S	Zero shift:	± 0.14% (χ ≥ 25 kPa) ±(0.14 × $\frac{25}{\chi}$)% (χ < 25 kPa)	4S 3S 2S	
		3S	Combined shift:		± 0.3% (χ ≥ 25 kPa) ±(0.3 × $\frac{25}{\chi}$)% (χ < 25 kPa)
	2S	Zero shift	± 0.36% (χ ≥ 25 kPa) ±(0.36 × $\frac{25}{\chi}$)% (χ < 25 kPa)		Combined shift:
		Combined shift:	± 2.18% (χ ≥ 25 kPa) ±(2.18 × $\frac{25}{\chi}$)% (χ < 25 kPa)		

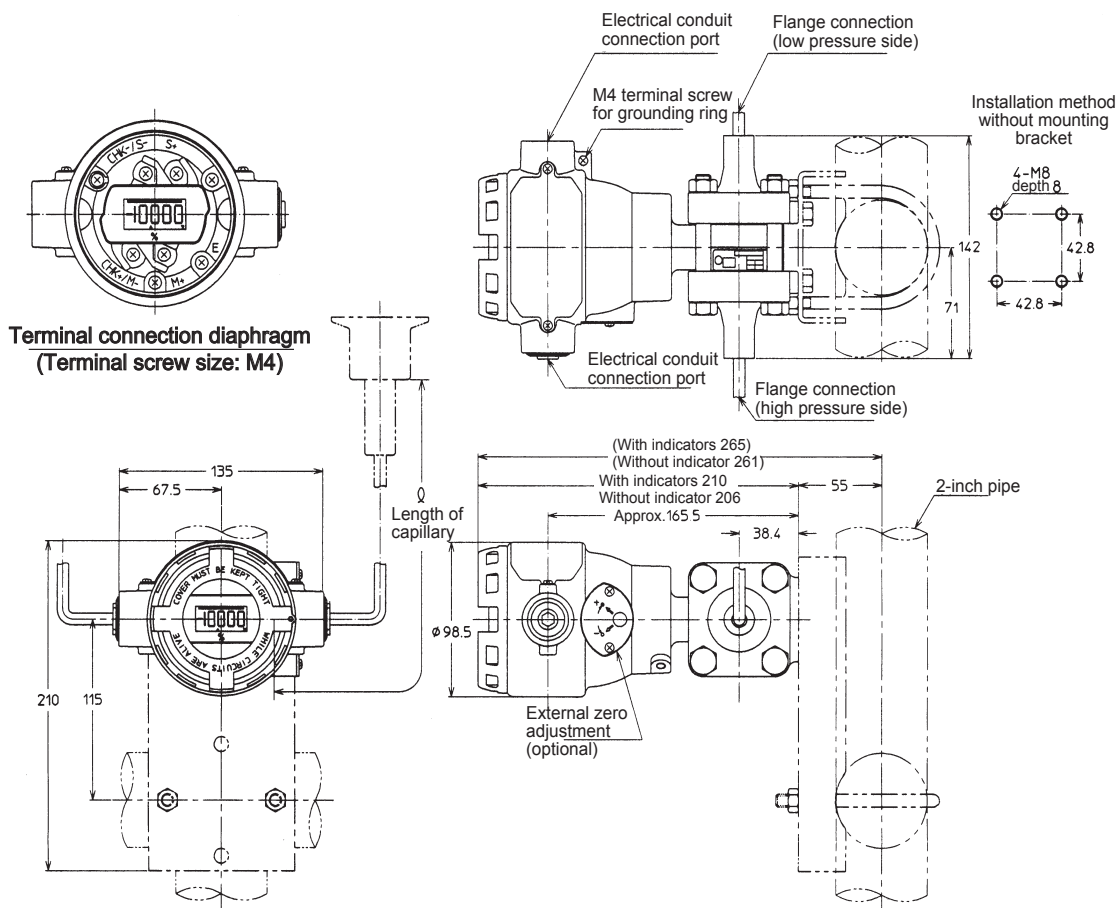
Shown for each item are the upper limit (URV)^{*1} and the lower limit (LRV)^{*2} of the calibration range or the percentage ratio of the maximum value of the span to χ (kPa).

Note) *1: URV denotes the value for 100% (20 mA DC) output.

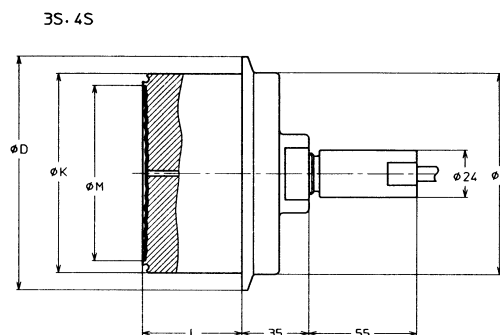
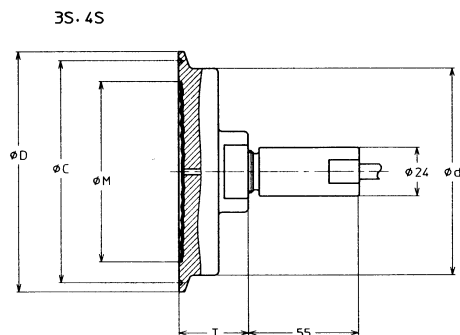
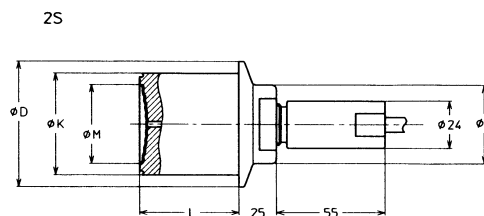
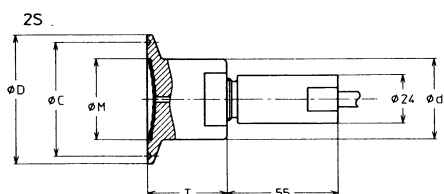
*2: LRV denotes value for 0% (4 mA DC) output

*3: Within a range of URV ≥ 0 and LRV ≥ 0

DIMENSIONS - Sanitary remote-sealed diaphragm 2S, 3S, 4S clamp connection



Flange dimensions



Flange dimensions

Model no.	Ferrule size	ϕD	ϕd	ϕC	ϕM	T	
U	A	ISO 100	119	102.5	110	90	35
	B	ISO 80	91	76.7	83.5	62	35
	C	ISO 50	64	40	56.5	43	40

Flange dimensions

Model no.	Ferrule sizes	ϕD	ϕd	ϕK	ϕM	
U	A	ISO 100	119	102.5	101.5	90
	B	ISO 80	91	76.7	72.9	62
	C	ISO 50	64	40	51.8	43

Length of extension

Model no.	L
2	50
3	100

SPECIFICATIONS - Sanitary remote-sealed diaphragm 2S cap nut connection

Measuring span / Setting range / Working pressure range / Overload resistant value

Model	Measuring span	Setting span	Working pressure range
JTE929A	2.5 to 100 kPa {250 to 10,000 mmH ₂ O}	-100 to 100 kPa {-10000 to 10000 mmH ₂ O}	Up to the IDF clamp pressure rating (700 kPa {7 kgf/cm ² })
JTE930A	35 to 700 kPa {0.35 to 7 kgf/cm ² }	-100 to 700 kPa {-1 to 7 kgf/cm ² }	

Process pipe connection

IDF 2S cap nut connection (Flush diaphragm)

Materials

Diaphragm.....SUS316L
 Wetted parts.....SUS316L
 Center body.....SUS316
 Transmitter case.....Aluminum alloy
 Meter body cover.....SUSF304
 Capillary tube coating.....Olefin

Fill fluid

Polyleneglycol(Food additive)
 Specific gravity: 1.032

Working pressure range

10 kPa abs. (1000 mmH₂O abs.) up to the IDF clamp pressure rating (700 kPa {7 kgf/cm²})
 For negative pressure range, see Figure 2.

Ambient temperature range

-10 to +60°C

Temperature ranges of wetted parts

-10 to +121°C (Sterilization)
 150°C, 60 min. (Steam wash)

Temperature range for transportation and storage

-20 to +60°C

Ambient humidity range

5 to 100% RH

Weight

Approx. 8.2 kg (2S cap nut connection and capillary 3 m)

Other specifications

Refer to common specifications.

Accuracy / temperature characteristics

Model		JTE929A		JTE930A	
Accuracy	Linear out:	± 0.3% (χ ≥ 12.5 kPa)		± 0.2% (χ ≥ 210 kPa)	
		±(0.3 × $\frac{12.5}{\chi}$) % (χ < 12.5 kPa)		±(0.05 + 0.15 × $\frac{210}{\chi}$) % (χ < 210 kPa)	
Temperature characteristics (Shift from the set range) Change of 10°C	Zero shift:	± 0.36% (χ ≥ 25 kPa)		±(0.05 + 0.09 × $\frac{210}{\chi}$) %	
		±(0.36 × $\frac{25}{\chi}$) % (χ < 25 kPa)			
	Combined shift:	± 2.18% (χ ≥ 25 kPa)		± 0.51% (χ ≥ 210 kPa)	
		±(2.18 × $\frac{25}{\chi}$) % (χ < 25 kPa)		±(0.4 + 0.11 × $\frac{210}{\chi}$) % (χ < 210 kPa)	

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).

Note) *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 SELECTIONS - Sanitary remote-sealed diaphragm 2S cap nut connection

Model JTE929A/930A - Sanitary service (Fill fluid: Propyleneglycol)

Process connection: 2S cap nut.

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

Basic model no.

Measuring span	2.5 to 100 kPa (250 to 10,160 mmH ₂ O)	Medium differential pressure	JTE929A
	35 to 700 kPa (0.35 to 7 kgf/cm ²)	High differential pressure	JTE930A

Selections

I	Output	4 to 20 mA	1																	
II	Material of wetted part	SUS316L	8																	
III	Fill fluid	Propyleneglycol (Food additive)	B																	
IV	Flange rating	IDF	U																	
V	Clamp size	Cap nut 2S	8																	
VI	Ferrule type	Standard (Flush diaphragm)	1																	
VII	Material of bolts and nuts	Carbon steel	N																	
		SUS304	P																	
		SUS630	Q																	
VIII	Length of capillary tube with olefin coating	2 m	B																	
		3 m	C																	
		5 m	D																	

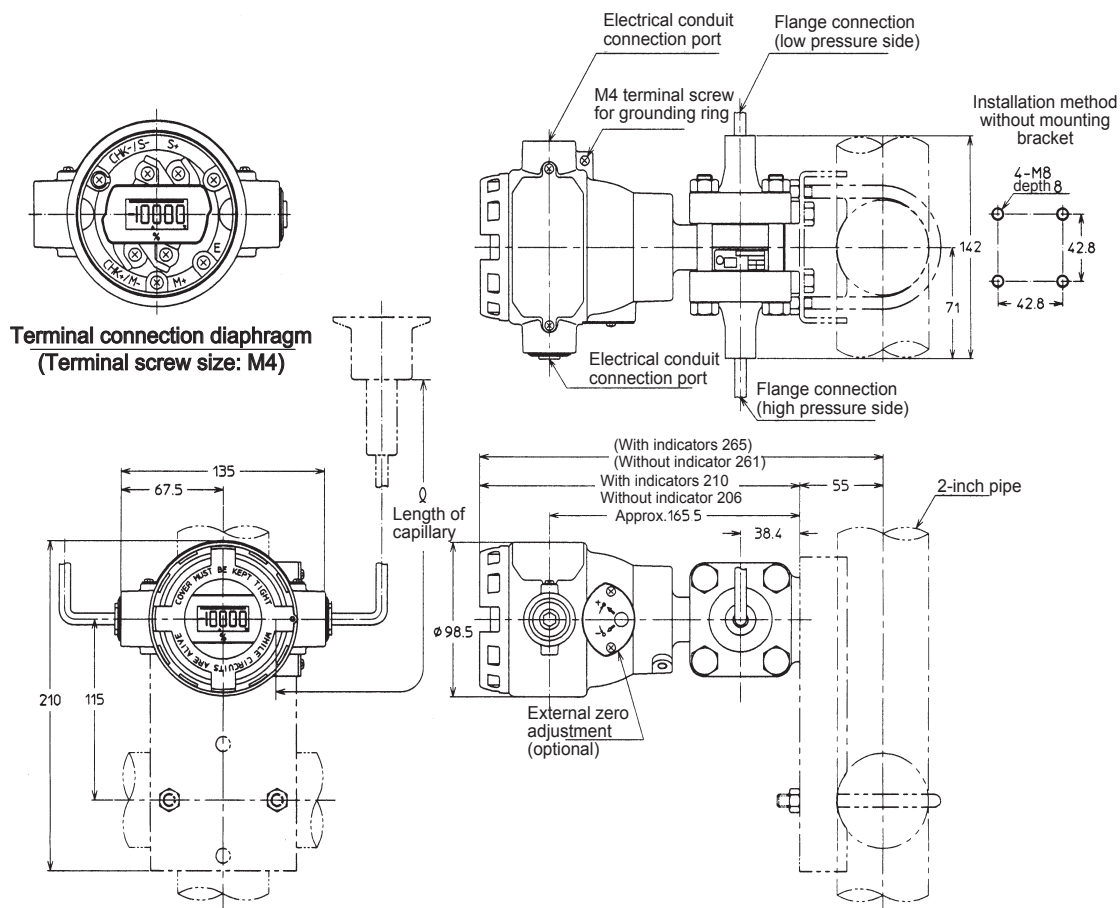
Options 1

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																		
X	Building indicating smart meter	None	X																		
		0 to 100% linear scales	1																		
		Engineering unit scales	2																		
XI	Finish	Standard	X																		
		Corrosion-proof	B																		
XII	Finish of gasket face	Standard (JIS Ra3.2 (12.5S))	X																		
		Electro polishing	A																		
		Passivation	B																		
XIII	Burnout feature	None	X																		
		Upper limit of output at abnormal condition	U																		
		Lower limit of output at abnormal condition	D																		
XIV	Mounting bracket	None	X																		
		Carbon steel	1																		
		SUS304	2																		

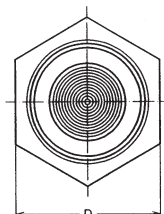
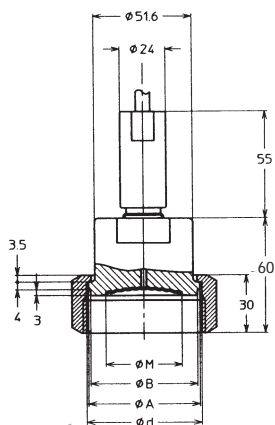
Options 2

	No options	XX
	External zero adjustment	A2
	Lightening arrestor	A4
	Water free finish (included oil free finish)	D1
	Oil free finish	D2
	One elbow (Left)	G1
	One elbow (Right)	G2
	Two elbows	G3
	Special burn-out feature (3.2 mA)	J8
	Test report	T1
	Traceability certificate	T8
	Two sets of gaskets for flush diaphragm type	S3

DIMENSIONS - Sanitary remote-sealed diaphragm 2S cap nut connection



Model no.		Terminal screw size	D	φ M	φ A	φ B
Flange rating	Flange size					
U	8	IDF 2S	76	43	56.2	60.5



SPECIFICATIONS - Common

Waterproof structure

JIS C 0920 watertight, JIS F 8001 class 2 watertight NEMA3 and 4X, IEC IP67

Explosion-proof structure

JIS Flameproof (Exd II CT4X)

Electrical conduit connection

G1/2 internal thread

Finish

Baked acrylic paint

Color

Transmitter case: Light beige (Munsell 4YR7.2/1.3)

Transmitter cover: Dark beige (Munsell 10YR4.7/0.5)

Output

4 to 20mA DC

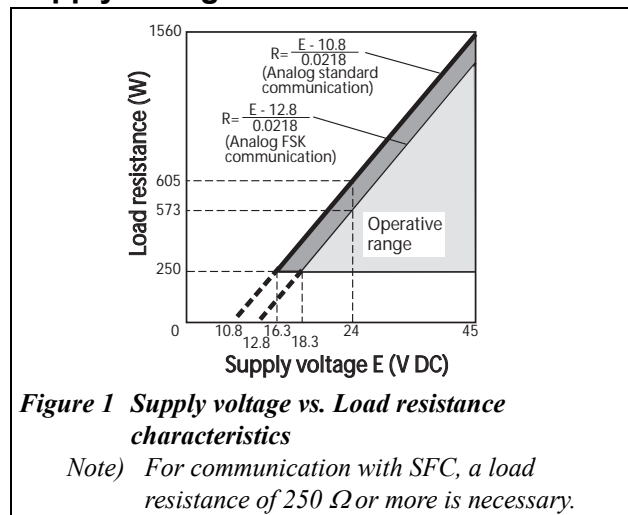
Dead time

Approx. 400 ms

Zero adjustment function

External zero adjustment function (option)

Supply voltage / Load resistance



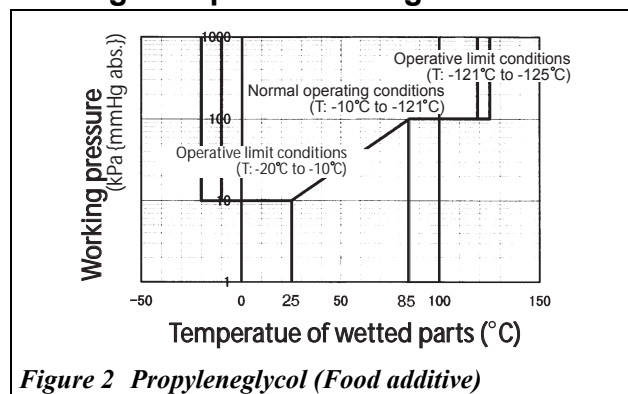
Stability against supply voltage change

0.005% F.S./V

Mounting

Direct mounting on the process side

For negative pressure range



OPTIONAL SPECIFICATIONS

Built-in indicating meter

The digital LCD indicator

Oil free treatment

The transmitter is shipped with oil-free wetted parts.

Water free treatment (including oil free treatment)

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

Passivation treatment

Applying passivation treatment on the wetted part results better anti-corrosion.

Electro-polishing

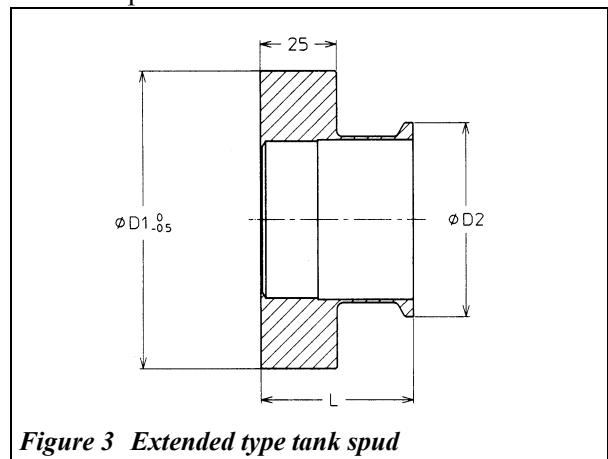
Finish 2 μm

Corrosion-proof finish

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

Extended type tank spud

Extended type tank spud is for retaining a diaphragm of wetted part. It is welded to tank.



Dimensions	4S	
L	50	100
D1	200	
D2	119	

azbil

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