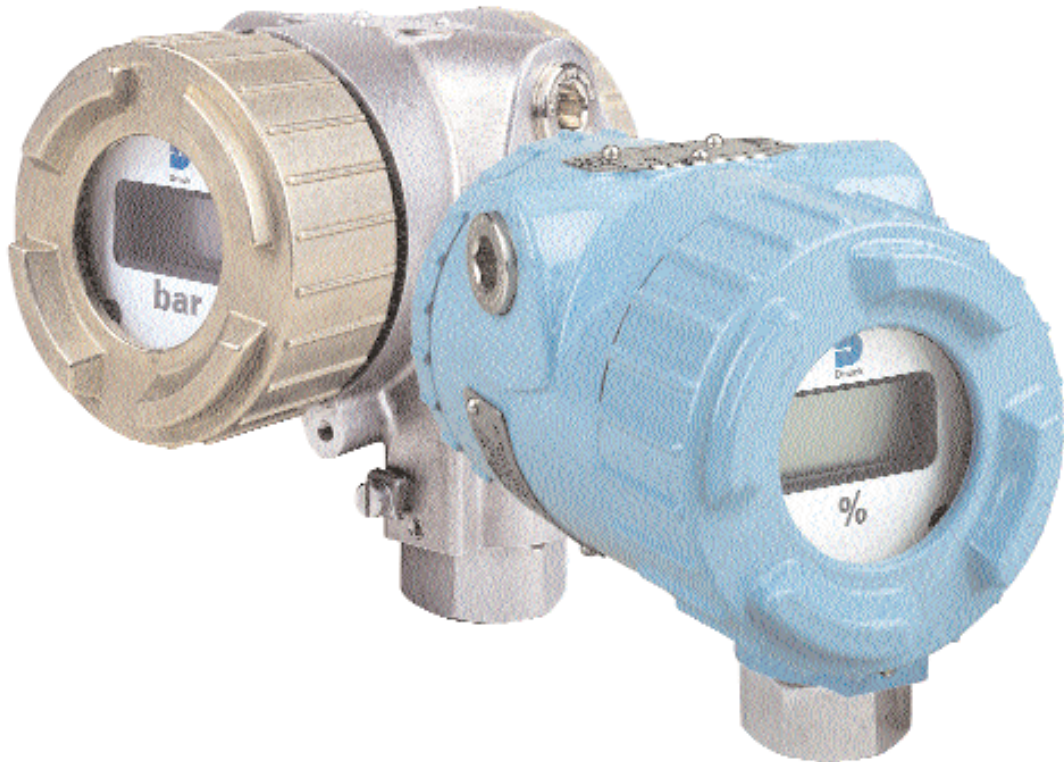


Druck

RTX 1000 Series

Analogue/HART® Pressure Transmitters

- Ranges from 20mbar to 1400 bar
- 'Best in class' performance
- Hastelloy C diaphragm as standard
- Aluminium or stainless steel electronics housing
- NAMUR compliant alarm outputs
- Simple set-up routine



Pressure Measurement

Druck - A World Leader in Pressure Instrumentation

Established in 1972, Druck specialises in the design and manufacture of pressure sensors for a wide range of applications, using micromachined silicon technology.

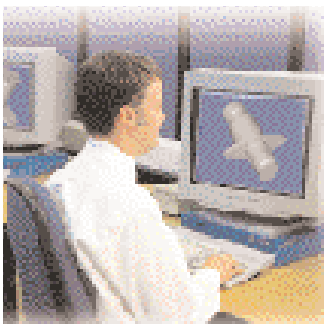
Silicon technology has a high profile and, despite the proliferation of silicon sensors designed by other companies, Druck is an established world leader.

Druck has one of the most comprehensive and technologically advanced silicon processing facilities. It is one of only a few companies worldwide converting raw silicon into finished products, by employing techniques such as micromachining.

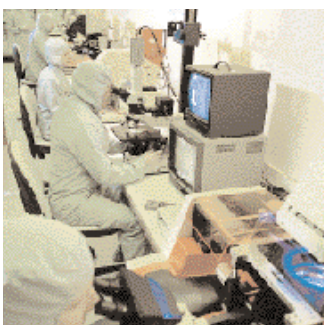
Multi-disciplined engineering teams are experienced in the use of hybrids, ASICs, microprocessors and surface mount technology. Together with packaging design and other facets of engineering, Druck provide a complete solution for pressure measurement.

Silicon sensor technology provides excellent performance characteristics and a modular design approach allows for flexibility of packaging to suit many different applications, from aerospace and subsea to F1 motor racing.

Shown below is an example of sensor construction, silicon processing and also 3D solid modelling design tools for fast and accurate product development.



Multi-disciplined engineering



Class 100 Silicon processing facility



RTX 1000 Series

Analogue/HART® Pressure Transmitters

The Druck name is renowned for the design and manufacture of compact and rugged high quality products for extremely accurate pressure measurement.

The RTX 1000A (Analogue) pressure transmitters offer a cost effective solution to gauge and absolute pressure measurement with outstanding performance.

The RTX 1000H (HART®) extends the range still further to include a fully rangeable transmitter utilising the industry standard HART® protocol to provide enhanced performance and digital two-way communication.

The RTX 1000H can be set to any span within a 1:1 to 100:1 ratio of the pressure module upper range limit.

To adjust the span, the RTX 1000 uses a simple set-up routine using pushbuttons located on the electronics board. When calibration is complete, a switch locks the pushbuttons out of the main circuit, eliminating this potential source of drift to ensure optimum long term stability.

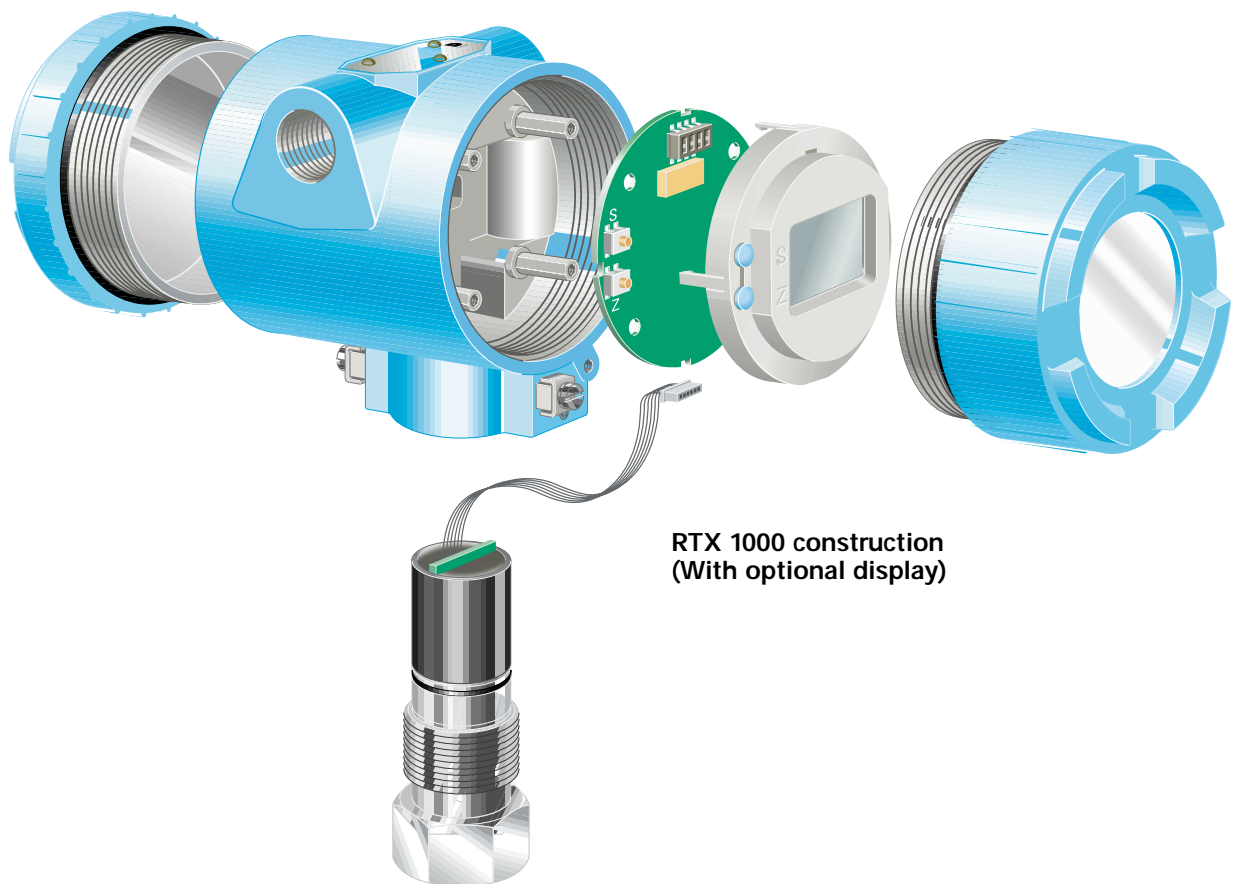
The electronics are enclosed in a compact and lightweight aluminum alloy housing which, in most cases, enables direct mounting to the process, eliminating the need for additional hardware. Alternatively, a stainless steel housing is also available. A Hastelloy media isolation diaphragm is fitted as standard enabling the RTX 1000 to be used across a broad range of aggressive process media.

At the heart of the instrument is a micro-machined silicon sensing element. Micro-machining defines the thickness and area of the silicon which forms the pressure sensitive diaphragm and a fully active four-arm strain gauge bridge is diffused into the appropriate regions. Silicon has excellent mechanical properties being perfectly elastic and free from hysteresis, and the 'atomically' diffused gauges provide high output signals and overload capabilities.

The basic sensor is housed within a high integrity glass to metal seal, providing both electrical and physical isolation from the pressure media. The Hastelloy isolation diaphragm is electron beam welded to this seal and transmits applied pressure to the sensor via a silicone fluid filling.

The electronics assembly is modular and utilizes microprocessor technology to create a compact circuit with the minimum of components whilst producing an extremely stable signal unaffected by shifts in ambient temperature.

User selectable switches provide direct access to damping adjustment, high or low failure alarm and write protection to inhibit any unauthorized change of instrument configuration.



RTX 1000 construction
(With optional display)

Pressure Measurement Specification

Standard Ranges

The transmitter is supplied in the following standard ranges or calibrated to any acceptable intermediate span/pressure unit specified:-

- 0 - 700mbar gauge or absolute
- 0 - 2 bar gauge or absolute
- 0 - 7 bar gauge or absolute
- 0 - 20 bar gauge or absolute
- 0 - 70 bar gauge or absolute
- 0 - 200 bar sealed gauge or absolute
- 0 - 700 bar sealed gauge or absolute
- 0 - 1400 bar sealed gauge or absolute (available with ATEX EEx ia and EEx nL approvals only)

Range Adjustment

The transmitter can be adjusted to give a full 4 - 20mA output change for any span down to these values for the Upper Range Limit (URL):

- RTX1000 H: 1% URL
- RTX1000 A: 10% URL

Example: A 2 bar device can be adjusted down to a minimum span of 0.02 bar (100:1 down ranging - RTX1000 H).

Zero offset:- for absolute configurations.

- RTX1000 H: 0 - 99% URL
- RTX1000 A: 0 - 90% URL

For gauge configuration, the zero (4mA) output of the transmitter can be set anywhere within the pressure range:

- RTX1000 H: -100% to 99% URL
- RTX1000 A: -100% to 90% URL

Example: A 2 bar gauge device can be adjusted to give 4 - 20mA for -1 to 1 bar. If down ranged to 0.2 bar span, 4 - 20mA can be provided anywhere within the pressure measurement range up to a maximum zero offset of 1.8 bar, allowing the calibrated range of 1.8 bar to 2 bar.

Overpressure

The rated pressure can be exceeded by the following multiples without degrading performance:-

- 6 x URL for 700mbar range
- 4 x URL (140 bar maximum) for ranges up to 70 bar
- 2 x URL (900 bar maximum) for ranges from 200 bar to 700 bar.
- 2000 bar for 1400 bar range.

Pressure Containment

Application of high pressure up to the following limits may damage the sensor but process media leakage will not occur:-

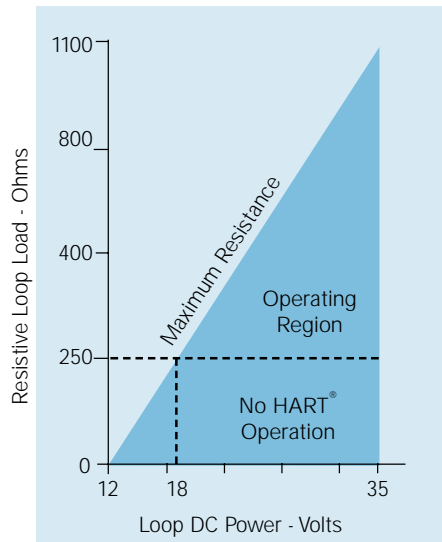
- 10 x FS for 700mbar gauge range
- 6 x FS (200 bar maximum) for ranges up to 70 bar gauge
- 200 bar for ranges up to 70 bar absolute
- 1400 bar for ranges up to 700 bar sealed gauge or absolute.
- 2100 bar for 1400 bar range.

Process Media

Any liquid, gas or vapour compatible with a welded assembly of a Hastelloy C276 diaphragm with either 316 stainless steel or Hastelloy C body. NACE MR-01-75 compliant.

NB. 1400 bar unit only: liquid, gas or vapour compatible with Inconel 625.

Transmitter Supply Voltage



Output Current

4 - 20mA (2 wire configuration) proportional to the calibrated pressure range.

RTX1000 H: - HART[®] digital signal superimposed

Failure Mode (NAMUR NE 43 compliant)

If a pressure is applied to the transmitter outside of the upper or lower range settings, the output signal will saturate at the following values:

- Under Range: 3.8mA
- Over Range: 20.5mA

If fitted, the LCD indicator will flash to signify an "out of range" reading.

In the event of a transmitter failure, the output will be driven to <3.6mA or >21mA (user configurable) and, if fitted, the LCD indicator will display "ALA" to signify alarm state.

Performance Specification

Accuracy - RTX1000 H:

- Span \geq 10% URL
0.07% Span including the combined effects of non-linearity, hysteresis and repeatability (NLHR).
- Span < 10% URL
(0.025% + 0.005[URL/Span])% Span

Accuracy - RTX1000 A:

- 0.15% Span

Long Term Stability

At standard reference conditions, the calibration will not change by more than 0.1% URL per annum.

Time Response

100 ms time constant (63% response to step change in pressure with damping set to 0.1 second) typical.

Operating Temperature Ranges

- Ambient -40° to 85°C
(LCD option -20° to 70°C)
- Process -40° to 120°C
- Compensated -40° to 85°C

Temperature Effects - RTX1000 H:

Over the compensated temperature range, the output will not deviate from the room temperature calibration by more than:

- 0.1% configured span
- + 0.2% reading + 0.1% URL
(Reading expressed as a % of configured span)

Temperature Effects - RTX1000 A:

- Range -40 to -20°C Performance Effect (0.5% URL + 1% span)
- 20 to 50°C (0.25% URL + 0.75% span)
- 50 to 85°C (0.5% URL + 1% span)

Mounting Position Effect

Negligible effect, but for ranges below 700mbar, the 'g' offset effect can be adjusted via the zero controls.

Vibration Resistance

Negligible effect on performance at 5g from 5Hz to 2kHz.

Humidity Limit

0-100% RH.

Turn-on time

Less than 2 seconds.

Damping

RTX 1000H: Adjustable between 0.1 to 30 seconds.

RTX 1000A: 0.1 or 1 second (switch selectable).

Hazardous Area Approvals

Designed to meet international standards for Intrinsic Safety, Flameproof and Type 'n' approval.

ATEX Directive 94/9/EC:

Intrinsic Safety: EEx ia IIC, II 1 GD
T4 (-40°C \leq Ta \leq 80°C)
T5 (-40°C \leq Ta \leq 40°C)

Flameproof: EEx d IIC, II 2 G, II 1 D
T5 (-40°C \leq Ta \leq 80°C)

Type 'n': EEx nL IIC, II 3 G, II 1 D
T4 (-40°C \leq Ta \leq 80°C)
T5 (-40°C \leq Ta \leq 40°C)

FM and CSA:

Intrinsically Safe: Class I Groups A,B,C,D
Class II Groups E,F,G
Class III

Explosion Proof: Class I Groups A,B,C,D
Class II Groups E,F,G
Class III

Division 2: Class I Div 2 Groups A,B,C,D

CE Conformity

EMC Emissions: EN50081-1
EMC Immunity: EN61000-6-2: 1999

Pressure Equipment Directive:
Pressure accessory, Category 1
Certification: CE Marked.

Physical Specification

Electrical Connections

M20, 1/2 - 14 NPT, or PG13.5 Female threaded electrical conduit.

Process Connections

Ranges up to 700 bar: G1/2F, 1/2 NPTF, G1/2M to BS EN 837-1 (DIN 16288), or 1/2 NPTM.
 1400 bar range: 13/16" - 16 UN female thread and 60° cone for 9/16" AE medium pressure tube fitting (20,000 psi).

Electrical Housing

Low copper aluminium alloy with epoxy painted coating or stainless steel with aluminium bronze end caps. Environmental Protection IP67 (NEMA 4X).

Fill fluid

Silicone Oil.

Shipping Weight

Aluminium Housing: 1.2kg (without options)
 Stainless Steel Housing: 2.7kg (without options).

Options

- (1) 5 Digit LCD Indicator.
- (2) Mounting bracket for 2" pipe/panel, supplied in 304 stainless steel.
- (3) Material traceability for pressure containment parts to EN10204 3.1b.

Ordering Information

Please state the following:

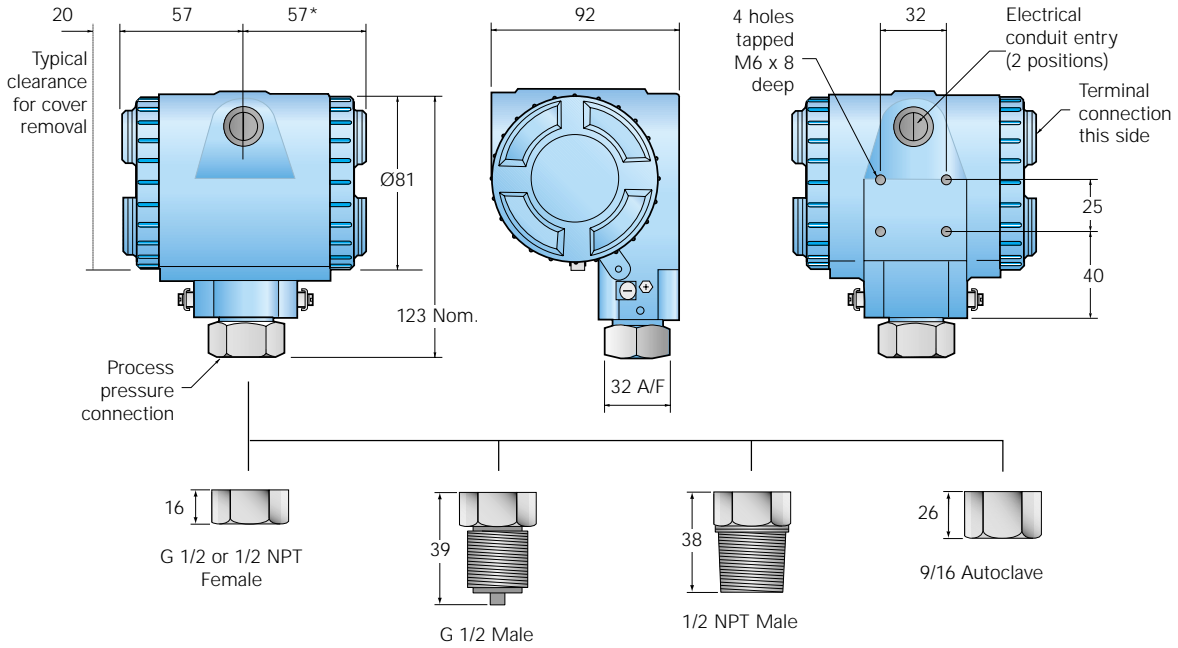
X 10	Code	Base Model Number	Process Wetted body	Fill Fluid
	00	Hastelloy C*	316 Stainless Steel*	Silicone Oil
	10	Hastelloy C	Hastelloy C	Silicone Oil
	Code	Output		
	A	4 - 20 mA		
	H	4 - 20 mA + HART®		
	Code	Max Span	Min Span (Code A)	Min Span (Code H)
	04	0 - 700 mbar	0 - 70 mbar	N/A
	07	0 - 2 bar	0 - 200 mbar	0 - 20 mbar
	10	0 - 7 bar	0 - 700 mbar	0 - 70 mbar
	13	0 - 20 bar	0 - 2 bar	0 - 200 mbar
	16	0 - 70 bar	0 - 7 bar	0 - 700 mbar
	18	0 - 200 bar	0 - 20 bar	0 - 2 bar
	22	0 - 700 bar	0 - 70 bar	0 - 7 bar
	24	0 - 1400 bar**	0 - 140 bar	0 - 14 bar
	Code	Type		
	A	Absolute		
	G	Gauge (sealed gauge for ranges above 70 bar)		
	Code	Process Connection		
	1	G 1/2 female		
	2	1/2 - 14 NPT female		
	3	G1/2 male to BS EN 837-1 (DIN 16288)		
	4	1/2 NPT male		
	5	9/16 AE medium pressure tube autoclave fitting***		
	Code	Electrical Entry		
	M	M20 female		
	N	1/2 - 14 NPT female (via adaptor)		
	P	PG 13.5 female (via adaptor)		
	Code	Electronics Housing		
	0	Aluminium Alloy		
	S	Stainless Steel		
	Code	Approvals		
	0	Safe Area		
	I	ATEX Intrinsically Safe		
	D	ATEX Flameproof		
	N	ATEX Type 'n'		
	F	FM/CSA Intrinsically Safe / Explosion proof / Division 2		
	Code	Options		
	0	None		
	LA	Digital Indicator(with output code A)		
	LH	Digital Indicator(with output code H)		
	B	Mounting Bracket		
	T	DIN 3.1B Material Certificate		
X 10	00	- H	- 07	- G
				- 1
				- M
				- 0
				- D
				- LHB
				Typical Model Number

* For 1400 bar device (range code 24) diaphragm and process wetted body is Inconel 625.
 ** Available with Process Connection Code 5 only. Available with ATEX EEx ia and EEx nL approvals only.
 *** Applies to range code 24 only

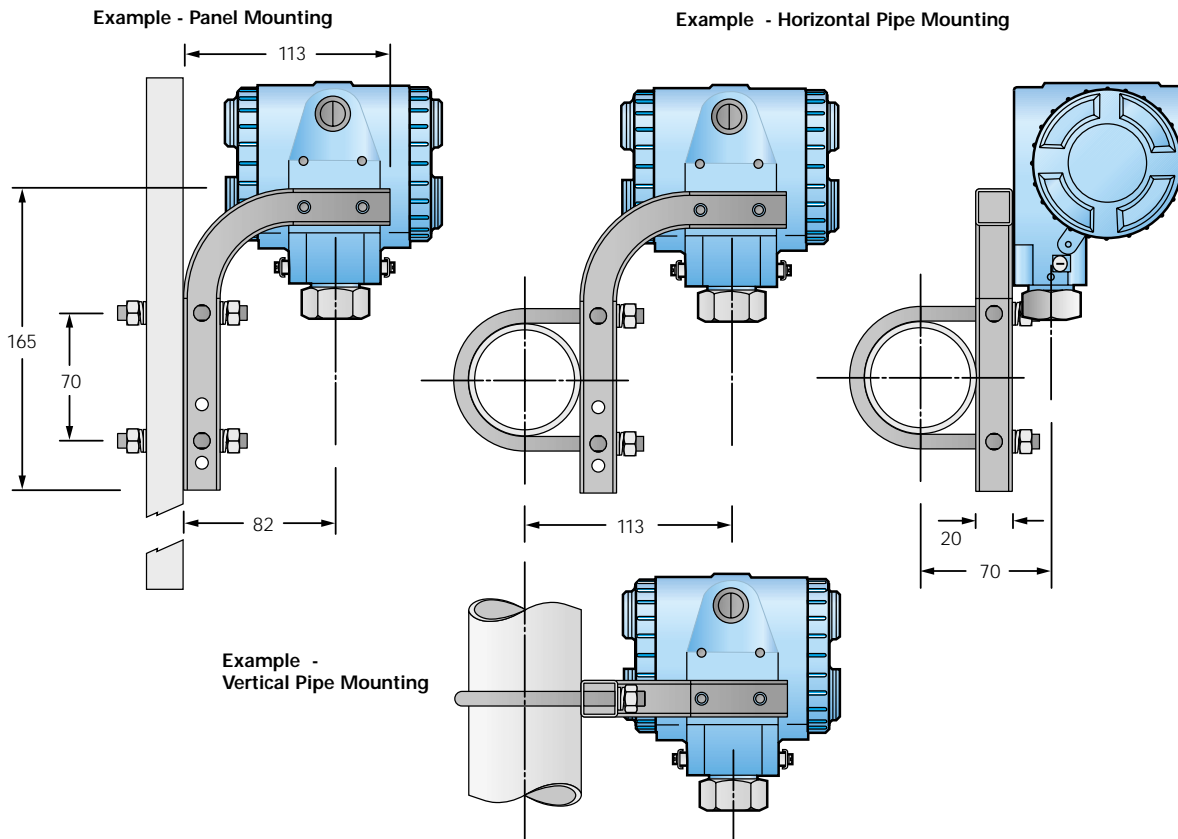


Installation Drawings - Dimensions in mm

* LCD indicator option : 77



Installation - With Optional Mounting Bracket





Druck

Accessories



HART® Communicator

The Model 275 HART® Communicator is the most widely used communicator on the market. Supplied with 12MB of memory, it contains the device descriptions for all HART® devices regardless of manufacturer. It also holds up to 10 transmitter configurations, with optional data packs available to expand this capability to 100 devices.

The LCD is an eight-line by twenty-one character display providing a clear, easy to read window to all functions of a HART® device. A user programmable 'hot' key allows single key stroke access to the most frequently used tasks.

The Model 275 HART® Communicator is supplied with Intrinsic Safety approval to allow use in hazardous locations.



Remote Diaphragm Seals

Remote diaphragm seals provide a reliable means of measuring pressure whilst preventing the process fluid from directly contacting the pressure transmitter. The use of a diaphragm seal with suitable fluid filled capillary leg should therefore be considered where physical process conditions are not directly compatible with the pressure sensor.

For example, process media which is hostile to the transmitter wetted materials, contains suspended solids or is viscous may corrode or clog the usual transmitter impulse piping and pressure connections. In the case of hygienic applications, a sanitary grade pressure fitting may be required. Process temperature which is beyond transmitter operating limits and cannot be brought within the required range (e.g. by use of impulse piping) may also damage the transmitter and present a safety risk. A variety of remote diaphragm seals are available to meet these requirements.

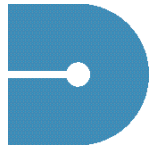


Valve Manifolds

A range of 2, 3 and 5 valve manifolds are available to operate with the Druck range of process pressure transmitters. Manufactured from 316 stainless steel, these rugged instrument manifolds are supplied complete with Teflon gaskets and high tensile carbon steel bolts.

Stainless steel colour coded identity tags are affixed to individual valve head units; blue for isolate, green for equalise and red for vent functions. High temperature Grafoil gaskets and stainless steel bolts are available as an option and all valves are available to NACE MR-01-75 for sour gas service if required.

The standard manifold valves are rated up to a maximum working pressure of 600 psi (414 bar). Alternative a high pressure option up to 10,000 psi is available.



Druck

Related Products

**SMART/HART® Pressure Transmitter
STX 2100**



- Ranges up to 20 bar
- Line pressures to 140 bar
- 0.1% accuracy

**Slimline Pressure Transmitter
PTX 7800 Series**



- Range from 70mbar to 700 bar
- Diameter 30mm
- Intrinsically Safe/Flameproof

**Heavy Duty Pressure Transmitter
PTX 7900 Series**



- Range from 70mbar to 700 bar
- Intrinsically Safe/Flameproof
- Stainless/aluminium bronze housing

**Low Pressure Transmitter
LP1000 Series**



- Ranges from 0.25mbar to 15mbar
- Gauge and differential
- Ideal for HVAC and cleanrooms

**Level Pressure Transmitter
1830 Series**



- Titanium material
- 17.5mm diameter
- Suitable for tank level applications

**Loop Calibrator
UPS III**



- Rugged and compact
- Measure and source 0 - 24 mA
- Accuracy 0.01% of reading

**Portable Pressure Calibrators
DPI 615/DPI 615IS**



- From 2.5mbar to 700 bar
- Accuracy 0.025% F.S.
- Pneumatic and hydraulic pressure generation



**Portable Multifunction Calibrators
TRX II**



- Pressure/temperature/electrical
- Dual readout: Measure and source
- Fully documenting - RS232/PCMCIA



**Portable High Pressure Pneumatic Calibrators
DPI 325**



- From 35 bar to 200 bar
- Rugged and truly portable
- Self contained pressure source

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Fax: +44 (0) 116 231 7103
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Internet: www.druck.com



Agent:

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商斯达工控安防网：<http://www.pc-ps.net/>

商斯达电子元器件网：<http://www.sunstare.com/>

商斯达微波光电产品网：[HTTP://www.rfoe.net/](http://www.rfoe.net/)

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传真：0755-83376182 (0) 13902971329 MSN: SUNS8888@hotmail.com

邮编：518033 E-mail:szss20@163.com QQ: 195847376

深圳赛格展销部：深圳华强北路赛格电子市场 2583 号 电话：0755-83665529 25059422

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