



## 2600T Series Pressure Transmitter Models 264DC Differential and 264HC Gage Level Transmitters

### Features Include

- ◆ **Base accuracy :  $\pm 0.075\%$**
- ◆ **Span limits**  
– 0.54 to 16000kPa; 2.14inH<sub>2</sub>O to 2320psi
- ◆ **Reliable sensing system coupled with very latest digital technologies**
- ◆ **Comprehensive sensor choice**  
– optimize in-use total performance and stability
- ◆ **5-year stability**
- ◆ **Flexible configuration facilities**  
– provided locally via local keys combined with LCD indicator or via hand held terminal or PC configuration platform
- ◆ **Multiple protocol availability**  
– provides integration with HART®, PROFIBUS PA and FOUNDATION Fieldbus platforms offering interchangeability and transmitter upgrade capabilities
- ◆ **Broad selection of variants, options, fill fluids and wetted materials**  
– allows total flexibility maximizing cost-effective aspect, also providing applications with critical process media at extended temperature range

The **ABB 264DC** Level Transmitters is a differential pressure model with a flanged direct mount seal on the high or positive side and a 1/2" npt connection on the low side for closed tank applications. The **264HC** model is a gage pressure version without the low side for open tank applications. There are many different diaphragm materials, flange sizes and fills available in both flush and extended diaphragms. They both have all the 2600T options such

as your choice of HART / 4-20 mA, PROFIBUS PA, and FOUNDATION Fieldbus. There are optional output meters and a new integral digital LCD display which allows configuration ability. The 2600T Toolbox software also includes a TankMaster tool. TankMaster will automatically calculate the polynomial coefficients that can be loaded into a 2600T transmitter to calculate the filled volume of a curved tank (even with a complex shape).



**ABB 2600T Series  
Engineered solutions  
for all applications**



## Condensed Specifications

Model 264DC and 264HC/NC detailed in this data sheet apply for those transmitters which include on high pressure measuring side, a direct mount seal which is integral to the transducer by a short capillary connection inside a protective rigid tube.

This construction forms a stand alone single assembly suitable to be mounted to the process by the seal mounting facilities. By properly selecting the high and low pressure side variant in the ordering codes model 264DC can be in the following versions :  
 a) one direct mount seal and one flange for process connection, 1/4in NPT direct or 1/2in NPT through adapter; this allows also to connect the other leg (wet or dry) for differential measurement. A proper filter is supplied as standard when 1/4in NPT connection is selected, in order to plug the unused entry, leaving it vented for gauge measurement with reference to atmosphere.  
 b) one direct mount seal and one remote seal with capillary; the two seals allow again a differential measurement and must be selected of same type/size.

Model 264HC and 264NC have the direct mount seal on the positive side, respectively with the reference at atmospheric or vacuum pressure, for gauge or absolute measurements. Allowed types of direct mount seal are those mainly used for chemical application:

- flush diaphragm flange mounted seal
- extended diaphragm flange mounted seal

These are suitable also for other process applications including food and sanitary, using FDA approved filling, which are defined as food fills and are Generally Recognized As Safe (GRAS) by the US Food and Drug Administration (FDA).

Refer to seal data sheet for all data and details relevant to seal element. The following table list the types of standard seal which can be mounted with 264DC/HC/NC transmitters (the mnemonic is used as reference in the compatibility table).

Seal type	Size	Mnemonic
Flanged flush diaphragm	2in / DN50 3-4in / DN80-100	P2 P3
Flanged extended diaphragm	2in / DN50 3in / DN80 4in / DN100	E2 E3 P3

All following specification data apply for identical characteristics of the two seals when the transmitter has the remote seal in addition to the direct mount one.

## Functional Specifications

### Range and span limits

Sensor Code	Upper Range Limit (URL)	Lower Range Limit (LRL)			Minimum span	Compatibility (allowed seal for 264DC)	
		264DC Direct mount differential	264DC Direct mount gauge	264HC/NC Direct mount gauge/absolute		Direct mount seal only	Direct mount and one remote seal (max length in m.)
<b>E</b>	16kPa 160mbar 64inH <sub>2</sub> O	-16kPa -160mbar -64inH <sub>2</sub> O	-16kPa -160mbar -64inH <sub>2</sub> O		0.54kPa 5.4mbar 2.14inH <sub>2</sub> O	P2 (*), P3 E3 (*)	P3 (3) E3 (2) (*)
<b>F</b>	40kPa 400mbar 160inH <sub>2</sub> O	-40kPa -400mbar -160inH <sub>2</sub> O	-40kPa -400mbar -160inH <sub>2</sub> O		0.67kPa 6.7mbar 2.67inH <sub>2</sub> O	P2, P3 E2 (*), E3	P2 (2) (*), P3 (5) E3 (3)
<b>G</b>	65kPa 650mbar 260inH <sub>2</sub> O	-65kPa -650mbar -260inH <sub>2</sub> O	-65kPa -650mbar -260inH <sub>2</sub> O		1.1kPa 11mbar 4.35inH <sub>2</sub> O	P2, P3 E2 (*), E3	P2 (2) (*), P3 (5) E3 (3)
<b>H</b>	160kPa 1600mbar 642inH <sub>2</sub> O	-160kPa -1600mbar -642inH <sub>2</sub> O	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	2.67kPa 26.7mbar 10.7inH <sub>2</sub> O	P2, P3 E2, E3	P2 (5), P3 (8) E2 (4), E3 (6)
<b>M</b>	600kPa 6bar 87psi	-600kPa -6bar -87psi	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	10kPa 0.1bar 1.45psi	P2, P3 E2, E3	P2 (8), P3 (8) E2 (6), E3 (8)
<b>P</b>	2400kPa 24bar 348psi	-2400kPa -24bar -348psi	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	40kPa 0.4bar 5.8psi	P2, P3 E2, E3	P2 (8), P3 (8) E2 (6), E3 (8)
<b>Q</b>	8000kPa 80bar 1160psi	-8000kPa -80bar -1160psi	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	134kPa 1.34bar 19.4psi	P2, P3 E2, E3	P2 (8), P3 (8) E2 (6), E3 (8)
<b>S</b>	16000kPa 160bar 2320psi	-16000kPa -160bar -2320psi	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	0.07kPa abs (\$) 0.7mbar abs (\$) 0.5mmHg (\$)	267kPa 2.67bar 38.7psi	P2, P3 E2, E3	P2 (8), P3 (8) E2 (6), E3 (8)

The combinations sensor code/seal type marked (\*) modify the base accuracy rating and static pressure effect; refer to performance specifications.

ALL AVAILABLE SEALS FOR DIRECT MOUNT ARE SUITABLE FOR LISTED RANGES OF MODELS 264HC/NC WITHOUT LIMITATION.

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**Span limits**

Maximum span = URL  
 (can be further adjusted up to ± URL (TD = 0.5) for differential models, within the range limits)  
 IT IS RECOMMENDED TO SELECT THE TRANSMITTER SENSOR CODE PROVIDING THE TURNDOWN VALUE AS LOWEST AS POSSIBLE TO OPTIMIZE PERFORMANCE CHARACTERISTICS.

**Zero suppression and elevation**

Zero and span can be adjusted to any value within the range limits detailed in the table as long as:  
 – calibrated span ≥ minimum span

**Damping**

Selectable time constant : 0, 0.25, 0.5, 1, 2, 4, 8 or 16s.  
 This is in addition to sensor response time

**Turn on time**

Operation within specification in less than 1s with minimum damping.

**Insulation resistance**

> 100M W at 1000VDC (terminals to earth)

**Pressure limits**

**Overpressure limits (without damage to the transmitter)**

0.067kPa abs, 0.67mbar abs, 0.01psia (double with inert filling) to transmitter sensor limit or flange rating of seal, whichever is less:

- 16MPa, 160bar, 2320psi for all sensor codes of model 264DC
- 21MPa, 210bar, 3045psi for all sensor codes of models 264HC/NC
- 2MPa, 20bar, 290psi for ANSI CL 150 flange
- 5MPa, 50bar, 725psi for ANSI CL 300 flange
- 10MPa, 100bar, 1450psi for ANSI CL600 flange
- 16MPa, 160bar, 2320psi for ANSI CL 900 flange
- 1.6MPa, 16bar, 230psi for DIN PN 16 flange
- 4MPa, 40bar, 580psi for DIN PN 40 flange
- 6.4MPa, 64bar, 930psi for DIN PN 64 flange
- 10MPa, 100bar, 1450psi for DIN PN 100 flange
- 16MPa, 160bar, 2320psi for DIN PN 160 flange

**Static pressure**

Transmitters for differential pressure model 264DC operates within specifications between the following limits:

- 1.3kPa abs, 13mbar abs, 0.2psia and 16MPa, 160bar, 2320psi or flange rating of seal as above, whichever is less
- 0.067kPa abs, 0.67mbar abs, 0.01psia and 16MPa, 160bar, 2320psi or flange rating of seal as above, whichever is less, using a second seal remote on negative pressure side.

**Proof pressure**

The transmitter can be exposed without leaking to line pressure of up to:  
 – 28MPa, 280bar, 4000psi for model 264DC  
 – 40MPa, 400bar, 5900psi for model 264HC/NC  
 or two times the flange rating of seal, whichever is less.  
 Meet ANSI/ISA–S 82.03 hydrostatic test requirements and SAMA PMC 27.1.

**Operative limits**

**Temperature limits °C (°F) :**

**Ambient (is the operating temperature)**

Filling	Models 264DC		Models 264HC/NC
	Sensors F to S	Sensor E	Sensors H to S
Silicone oil DC 200™	–40 and +85 (–40 and +185)	–25 and +85 (–13 and +185)	–40 and +85 (–40 and +185)
Inert Galden™	–20 and +85 (–4 and +185)	–10 and +85 (+14 and +185)	–20 and +85 (–4 and +185)
ABB fill	–20 and +85 (–4 and +185)	–10 and +85 (+14 and +185)	–40 and +85 (–40 and +185)

Lower ambient limit for LCD indicators: –20°C (–4°F)

Upper ambient limit for CoMeter and ProMeter : +70°C (+158°F)

Note : For Hazardous Atmosphere applications see the temperature range specified on the certificate/approval relevant to the aimed type of protection

FILL FLUIDS (APPLICATION)	OPERATING CONDITIONS			
	Tmax @ Pabs>of	Pmin mbar abs (psia)	Tmax @ P min	Tmin
Silicone oil-DC200™ (General purpose)	200 (390) @ 35mbar	0.7 (0.01)	160 (320)	–40 (–40)
Silicone oil-AN140™ (High temperature)	250 (480) @ 0.7mbar	0.7 (0.01)	250 (480)	–5 (+23)
Silicone Polymer–SylthermXLT™ (Low temperature)	100 (212) @ 110mbar	2 (0.03)	20 (68)	–100 (–148)
Vegetable oil-Necbee M-20™ (Food-Sanitary) FDA	200 (390) @ 1bar	130 (1.9)	150 (300)	–18 (0)
Glycerin Water (70%) (Food-Sanitary) FDA	93 (200) @ 1bar	1000 (14.5)	93 (200)	–7 (+20)
Mineral oil-MARCOL 82™ (Food-Sanitary) FDA	200 (390) @ 200mbar	33 (0.5)	40 (104)	–40 (–40)
Inert – Galden™ (Oxygen Service)	160 (320) @ 1bar	0.7 (0.01)	65 (150)	–18 (0)
ABB fill (Paints and specials)	250 (480) @ 35mbar	0.7 (0.01)	160 (320)	–10 (+14)

**Storage**

Lower limit: –50°C (–58°F); –40°C (–40°F) for LCD indicators  
 Upper limit: +85°C (+185°F)



## Electrical Characteristics and Options

### HART digital communication and 4 to 20mA output

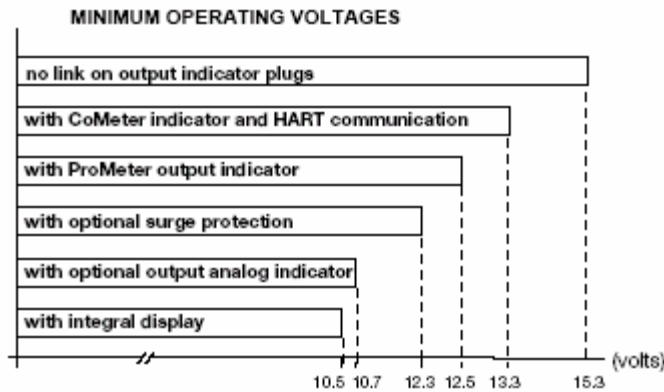
#### Power Supply

The transmitter operates from 10.5 to 42VDC with no load and is protected against reverse polarity connection (additional load allows operations over 42VDC).

For EEx ia and other intrinsically safe approval power supply must not exceed 30VDC.

#### Ripple

20mV max on a 250W load as per HART specifications



## Optional indicators

### Output meter

CoMeter and Prometer :

5-digit ( $\pm 99999$  counts) programmable with 7.6mm. high (3in), 7-segment numeric characters plus sign and digital point for digital indication of output value in percentage, current or engineer unit;

10-segment bargraph display (10% per segment) for analog indication of output in percentage;

7-digit LCD with 6mm. high (2.3in), 14-segment alphanumeric characters, for engineer units and configuration display

Analog : 36mm (1.4in) scale on 90°.

### Integral display

LCD, 15 lines x 56 column dot matrix providing 2 lines indication as

– top: 5-digit (numeric) plus sign or 7-digit alphanumeric

– bottom: 7-digit alphanumeric

and additional 50-segment bargraph for indication of analog output in percentage.

User-definable matrix display mode with HART communication:

– process variable in pressure unit or

– output signal as percentage, current or engineering units

Display also indicates in/out transfer function, static pressure,

sensor temperature and diagnostic messages and provides

configuration facilities.

## Optional surge protection

Up to 4kV

– voltage 1.2 ms rise time / 50 ms delay time to half value

– current 8 ms rise time / 20 ms delay time to half value

## Output signal

Two-wire 4 to 20mA, user-selectable for linear or square root output, power of 3/2 or 5/2, 5th order or two 2nd order switching point selectable programmable polynomial output.

HART® communication provides digital process variable (% , mA or engineering units) superimposed on 4 to 20mA signal, with protocol based on Bell 202 FSK standard.

## Output current limits (to NAMUR standard)

Overload condition

- Lower limit: 3.8mA

- Upper limit: 20.5mA

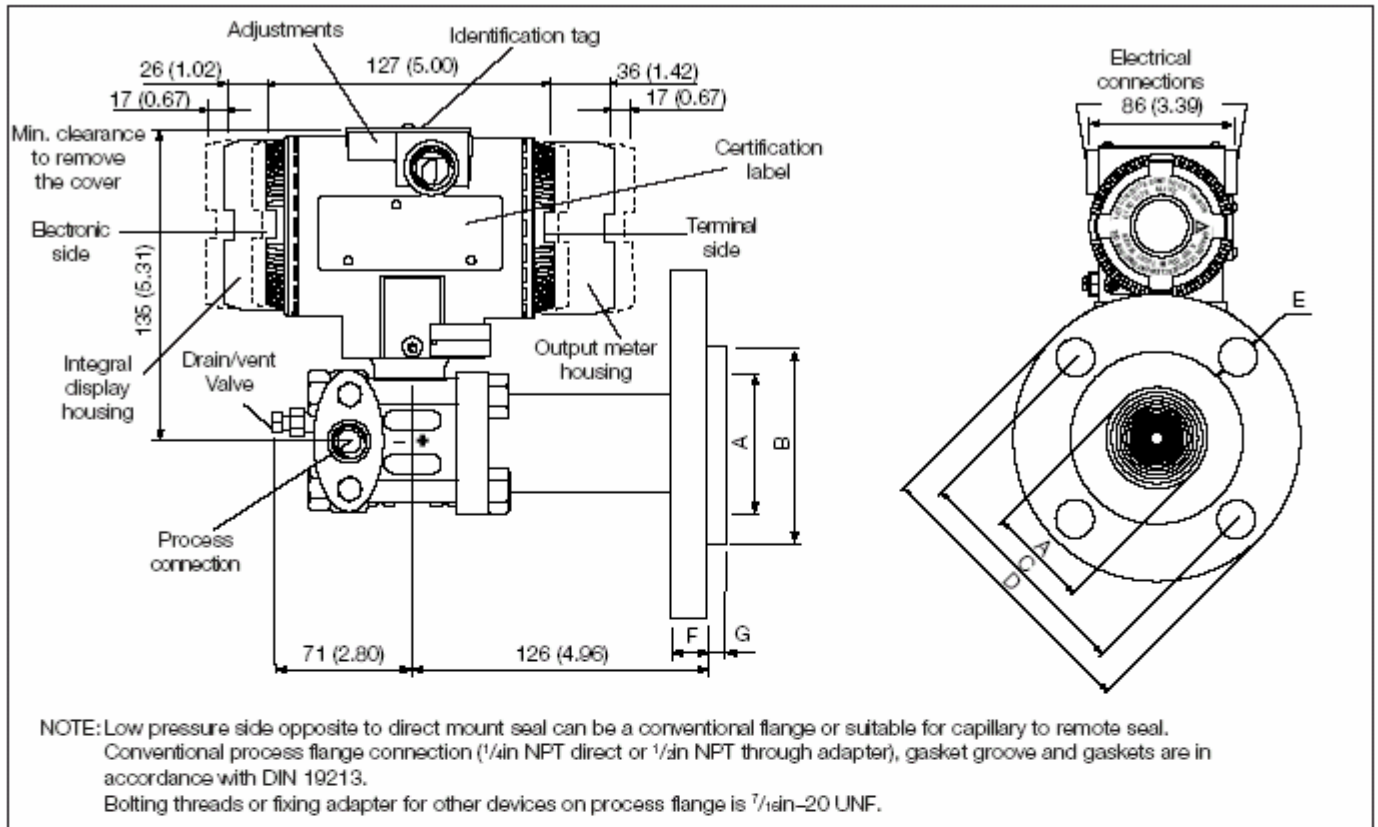
## Transmitter failure mode (to NAMUR standard)

The output signal can be user-selected to a value of 3.7 or 22mA on gross transmitter failure condition, detected by self-diagnostics.

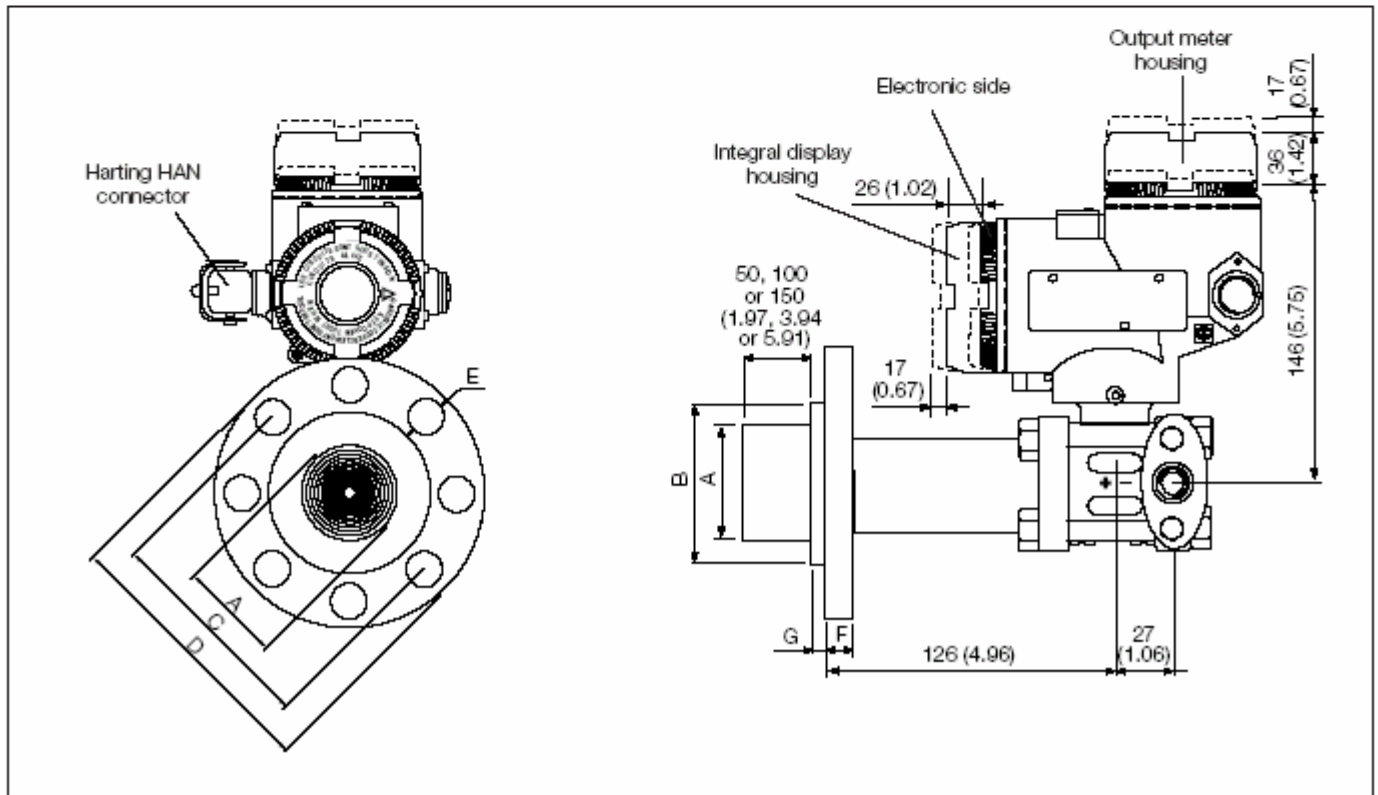
In case of CPU failure the output is driven <3.7mA or >22mA.

**MOUNTING DIMENSIONS** (not for construction unless certified) - dimensions in mm (in)

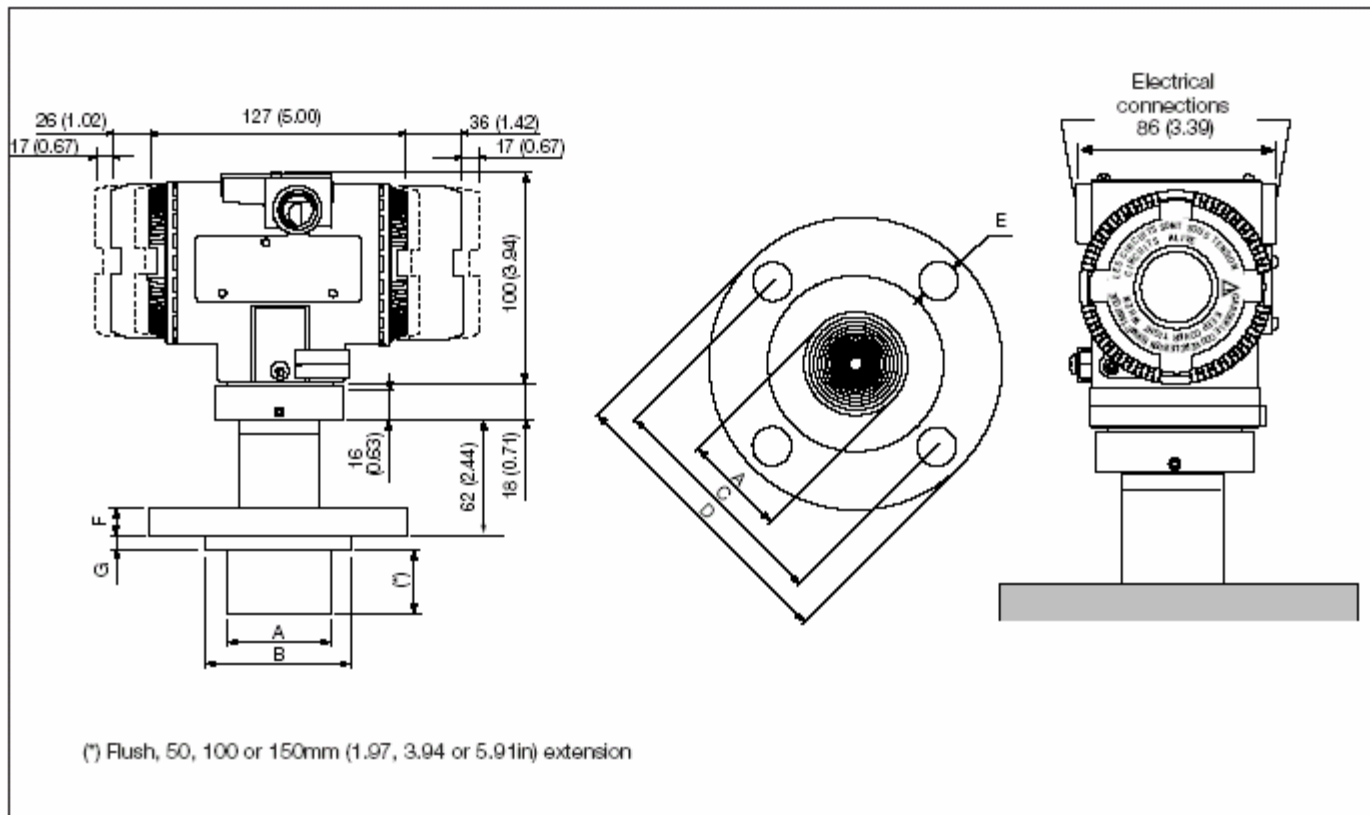
**264DC with direct mount flanged flush diaphragm seal (barrel housing)**



**264DC with direct mount flanged extended diaphragm seal (DIN housing)**



264HC/NC with direct mount flanged diaphragm seal (barrel housing)



Size/Rating	Dimensions mm (in)								N° of holes
	A (dia)		B (dia)	C (dia)	D (dia)	E (dia)	F	G	
	flush	extended							
2in ANSI CL 150	60 (2.36)	48 (1.9)	92.1 (3.62)	120.5 (4.74)	152.5 (6)	20 (0.79)	19.5 (0.77)	9.5 (0.37)	4
2in ANSI CL 300	60 (2.36)	48 (1.9)	92.1 (3.62)	127 (5)	165 (6.5)	20 (0.79)	22.5 (0.88)	9.5 (0.37)	8
2in ANSI CL 600	60 (2.36)	NA	92.1 (3.62)	127 (5)	165 (6.5)	20 (0.79)	25.5 (1)	9.5 (0.37)	8
2in ANSI CL 900	60 (2.36)	NA	92.1 (3.62)	165 (6.5)	216 (8.5)	26 (1.02)	38.5 (1.51)	9.5 (0.37)	8
3in ANSI CL 150	89 (3.5)	72 (2.83)	127 (5)	152.5 (6)	190.5 (7.5)	20 (0.79)	24 (0.94)	9.5 (0.37)	4
3in ANSI CL 300	89 (3.5)	72 (2.83)	127 (5)	168.5 (6.63)	210 (8.26)	22 (0.86)	28.5 (1.12)	9.5 (0.37)	8
3in ANSI CL 600	89 (3.5)	NA	127 (5)	168.5 (6.63)	210 (8.26)	22 (0.86)	32 (1.26)	9.5 (0.37)	8
3in ANSI CL 900	89 (3.5)	NA	127 (5)	190.5 (7.5)	241 (9.48)	26 (1.02)	38.5 (1.51)	9.5 (0.37)	8
4in ANSI CL 150	89 (3.5)	94 (3.7)	157.2 (6.2)	190.5 (7.5)	228.6 (9)	20 (0.79)	24 (0.94)	9.5 (0.37)	8
4in ANSI CL 300	89 (3.5)	94 (3.7)	157.2 (6.2)	200.2 (7.88)	254 (10)	22 (0.86)	32 (1.26)	9.5 (0.37)	8
DN50 DIN FN16	60 (2.36)	48 (1.9)	102 (4.02)	125 (4.92)	165 (6.5)	18 (0.71)	20 (0.79)	9.5 (0.37)	4
DN50 DIN FN40	60 (2.36)	48 (1.9)	102 (4.02)	125 (4.92)	165 (6.5)	18 (0.71)	20 (0.79)	9.5 (0.37)	4
DN50 DIN FN64	60 (2.36)	NA	102 (4.02)	135 (5.31)	180 (7.08)	22 (0.86)	26 (1.02)	9.5 (0.37)	4
DN50 DIN FN100	60 (2.36)	NA	102 (4.02)	145 (5.71)	195 (7.67)	26 (1.02)	28 (1.1)	9.5 (0.37)	4
DN50 DIN FN160	60 (2.36)	NA	102 (4.02)	145 (5.71)	195 (7.67)	26 (1.02)	30 (1.18)	9.5 (0.37)	4
DN80 DIN FN16	89 (3.5)	72 (2.83)	138 (5.43)	160 (6.3)	200 (7.87)	18 (0.71)	20 (0.79)	9.5 (0.37)	8
DN80 DIN FN40	89 (3.5)	72 (2.83)	138 (5.43)	160 (6.3)	200 (7.87)	18 (0.71)	24 (0.94)	9.5 (0.37)	8
DN80 DIN FN64	89 (3.5)	NA	138 (5.43)	170 (6.7)	215 (8.46)	22 (0.86)	28 (1.1)	9.5 (0.37)	8
DN80 DIN FN100	89 (3.5)	NA	138 (5.43)	180 (7.08)	230 (9.05)	26 (1.02)	32 (1.26)	9.5 (0.37)	8
DN80 DIN FN160	89 (3.5)	NA	138 (5.43)	180 (7.08)	230 (9.05)	26 (1.02)	36 (1.42)	9.5 (0.37)	8
DN100 DIN FN16	89 (3.5)	94 (3.7)	158 (6.22)	180 (7.08)	220 (8.66)	18 (0.71)	20 (0.79)	9.5 (0.37)	8
DN100 DIN FN40	89 (3.5)	94 (3.7)	162 (6.38)	190 (7.48)	235 (9.25)	22 (0.86)	24 (0.94)	9.5 (0.37)	8