PDS863 level transmitter



PDS863 level transmitter is mainly used to measure the liquid level and convert the measured value into 4-20mA d.c. current (superimposed with HART communication), PROFIBUS-PA communication signal, FF communication signal, Ethernet-APL communication signal and AutBus communication signal for output to achieve remove setting, monitoring and other functions through communication devices.

◆ Performance specification

Span ratio

Max. span ratio r (r=max. span/actual range)=30:1

Long-term stability

δ≤±0.1%FS/10 years

Span of transmitter

Span code	Minimum span	Maximum span	Measuring range
C	2.0 kPa	10 kPa	-10~10 kPa
D	5.0 kPa	100 kPa	-100~100 kPa
E	16 kPa	500 kPa	-500~500 kPa
F	0.1 MPa	3 MPa	-0.5~3 MPa
G	0.4 MPa	10 MPa	-0.5~10 MPa

Note: HC-276 diaphragm is not recommended when the span is less than 10kPa and the flange size is less than or equal to DN50.

The negative value in the table means the maximum negative migration of the corresponding span.

The upper limit of the best working pressure within the span C is ≤3.2MPa, and the maximum working pressure is 16MPa.

Reference accuracy δ

PDS863 span code	Accuracy δ
C	$\delta \leq \pm (0.04+0.035 \frac{\text{Maximum span}}{\text{Selected span}})$ %, span ratio≤5:1
D, E, F and G	δ≤±0.04% $\delta \leq \pm (0.02+0.002 \frac{\text{Maximum span}}{\text{Selected span}})$ %, span ratio >10:1

Impact of temperature

δ≤± (0.06r+0.2) %/28°C, -52°C~+120°C (body). Refer to the selected sealed liquid of diaphragm capsule for the minimum temperature

Limit of over pressure and static pressure

Nominal pressure of flange

◆Model

Model No.	code	Remarks
PDS863	-	Level transmitter
Type	W	Single flange level
Communication protocol	H	HART (7) communication (Note 1)
	P	PROFIBUS-PA (3.02) field bus communication
	F	FF (6.1.1) field bus communication
	A	Ethernet-APL communication(Note 2)
	B	AutBus communication
Liquid sealed in diaphragm capsule		Sealed liquid / Cleaning of measuring part / Temperature range (Note 3)
	-1	Silicone oil / Conventional / -40°C~205°C
	-2	Silicone oil / Degreasing treatment / -40°C~205°C
	-3	Fluorine oil / Degreasing treatment / -52°C~150°C
Measuring range		Span / Measuring range
	C	2~10kPa / -10~10kPa
	D	5~100kPa / -100~100kPa
	E	16~500kPa / -500~500kPa
	F	0.1~3MPa / -0.5~3MPa
	G	0.4~10MPa / -0.5~10MPa
Liquid contact material on L side		Isolation diaphragm / Liquid receiving material
	S	316L / 316
	H	HC-276 / 316
	T	Tantalum / 316
	M	Monel / 316
	C	HC-276 / HC-276
	K	Monel / Monel
Process connection on L side	1	Chamber flange is equipped with 1/4NPT female thread, with exhaust and drain ports at the side
	3	Process joint is provided with 1/2NPT female thread, with exhaust and drain ports at the side
Chamber bolt	1	SCM435 (35CrMo)
	2	304
	3	316

Explosion-proof			HART	PA and FF	APL	Autbus
	-A	Non explosion-proof type	Applicable	Applicable	Applicable	Applicable
	-B	NEPSI: Intrinsic safety type Ex ia ⅡC T4 Ga	Applicable	Applicable	-	-
	-C	NEPSI: Intrinsic safety type Ex ia ⅡC T6 Ga	Applicable	-	-	-
	-D	NEPSI: Flameproof type Ex db ⅡC T4/T6 Gb	Applicable	Applicable	Applicable	-
		NEPSI: Dust explosion proof Ex tb IIIC T85°C Db				
		NEPSI:"n" explosion-proof type Ex ec ⅡC T6 Gc				
	-G	ATEX: Intrinsic safety type Ex II 1 G Ex ia IIC T4 Ga	Applicable	-	-	-
		ATEX: Flameproof type Ex II 1/2 G Ex db IIC T6...T4 Ga/Gb				
	-J	IECEx: Intrinsic safety type Ex ia IIC T4 Ga	Applicable	-	-	-
		IECEx: Flameproof type Ex db IIC T6...T4 Ga/Gb				
	-P	EAC: Intrinsic safety type 0 Ex ia IIC T4/T6 Ga X	Applicable	-	-	-
		EAC: Flameproof type 0/1Ex d IIC TT6 Ga /Gb X				
		EAC: Dust explosion proof Ex tb IIIC T80° C Db X				

Housing (Note 4)		Material / Electrical interface
	1	Aluminium / 1/2 NPT female thread, two electrical interfaces
	2	Aluminium / M20×1.5 female thread, two electrical interfaces
	3	Stainless steel / 1/2 NPT female thread, two electrical interfaces
	4	Stainless steel / M20×1.5 female thread, two electrical interfaces
Display head (Note 5)	N	Without display
	D	LCD display
	E	Multi-functional LCD head (only applicable to HART7)
Installation bracket	N	Without installation bracket
Flange type	-P	Plane face flange
	-T	Boss flange

Flange size		P plane face flange	T boss flange	Insertion diameter
	-1	DN 25 (1 inch) embedded)	——	——
	-2	DN 50 (2 inch)	DN50 (2 inch)	48mm
	-3	DN 80 (3 inch)	DN80 (3 inch)	71mm
	-4	DN 100 (4 inch)	DN100 (4 inch)	96mm
Protrusion length of diaphragm on H side	0	X_2=0mm (select this option for P plane face flange)		
	2	X_2=50mm		
	4	X_2=100mm		
	6	X_2=150mm		
	8	X_2=200mm		
	9	X_2=250mm		
Diaphragm material on H side	S	316L		
	H	HC-276		
	T	Tantalum (Note 6)		
	M	Monel		
	G	316L gold plated		
	N	Nickel		
	K	Urea class EN 1.4466		
	R	Titanium		
Material of inserted cylinder	F	No inserted cylinder (select this option for P plane face flange)		
	S	316L		
	H	HC-276		
	M	Monel		
	K	Urea class 316L		
	D	2205 dual-phase steel		
Flange sealing type	1	RF face		
	2	RJ ring joint face		
	3	M		
	4	FM		
Flange standard (Note 7)		Standard	Pressure	
	A	ANSI 150	2.0MPa	
	B	ANSI 300	5.0MPa	
	C	ANSI 600	11MPa	
	D	DIN PN 10/16	1.6MPa	
	E	DIN PN 25/40	4.0MPa	
	F	DIN PN 64	6.4MPa	
	K	DIN PN 100	10MPa	
Material of flange	A	S25C		
	B	304		
	C	316		
	D	316L		
Additional options	/××	Refer to the additional options table		

◆Additional options

Item	Remarks	**Code** (Note 8)
High-end smart diagnosis	It includes the functions of detecting the blockage of pressure guide pipe, measuring the liquid contact temperature, recording events with time cut, capturing and recording process variable anomalies and forecasting and enabling health management	A10
suppressing the fluctuation	For the output of transient micro pressure fluctuation signals, an advanced composite digital filtering algorithm is adopted, which dynamically adjusts the filtering coefficients to achieve fast dynamic response of pressure signals and stable and reliable output	A11
Additional certification	EU SIL	C01
	CE	C02
	V&V	C03
	Russian SIL	C04
	Commonwealth of Independent States EAC020	C05
APL communication method	HART-IP	AH
	PROFINET	AP
Structural form	High temperature direct-coupled type (applicable to temperature range of high temperature process: 205°C~250°C)	G01

Protection treatment (Note 9)	Corrosion grade C4: Moderate salt spray or moderately corrosive industrial areas (seaside or industrial zone)			P10
	Corrosion grade C5-M: High humidity and high salt spray areas (seaside and sea)			P11
	Corrosion grade C5-I: High humidity and severe corrosion area			P12
Flush ring	Material	Thread for flush hole	X: If X is 1, it means 1 flush hole If X is 2, it means 2 flush holes	
	304	1/4 NPT+plug		G30X
	316L	1/4 NPT+plug		G31X
	304	1/2 NPT+plug		G32X
	316L	1/2NPT+plug		G33X
Anti-corrosive coating of diaphragm	Teflon diaphragm (only applicable to DN50 and DN80 plane face flange and working pressure ≥0kPa)			G40
	PTFE coating (only applicable to 316L and HC-276, and only for weakly corrosive media under negative pressure)			G41
	PFA coating (only applicable to 316L and HC-276, and working pressure ≥0kPa)			G42
Diaphragm processing	Gold plating inside the flange diaphragm			J01
Companion flange	Type	Material		
	WN hubbed butt welding	S25C		F50
		304		G50
		316		H50
		316L		K50
	PL plate-type flat welding	S25C		F52
		304		G52
		316		H52
		316L		K52
	SO hubbed flat welding	S25C		F53
		304		G53
		316		H53
		316L		K53
	TH thread flange	S25C		F54
		304		G54
		316		H54
		316L		K54
Mounting accessories of flange	Carbon steel bolt+spiral wound gasket			G56
	Carbon steel bolt + tetrafluoroethylene			G57
	Carbon steel bolt+octagonal gasket			H56
	Stainless steel bolt+spiral wound gasket			G58
	Stainless steel bolt+polytetrafluoroethylene			G59
	Stainless steel bolt+octagonal gasket (Note: the material of stainless steel is 304 by default)			H58
Electrical connector	Specification and dimension		Material	
	M20×1.5 electrical connector + 1 sealing plug		Plastic	G60
	1/2 NPT electrical connector + 1 sealing plug		Plastic	G61
	M20×1.5 one sealing plug		304	G62
	M20×1.5 sealing plug（EAC）		316L	G63
	1/2 NPT sealing plug（EAC）		316L	G64
	M20×1.5 flameproof electrical plug + one sealing plug		316	G70
	1/2NPT flameproof electrical connector + 1 sealing plug		316	G71
	1/2 NPT one sealing plug		304	G72
	1/2 NPT one sealing plug		316	G73
	M20×1.5 one sealing plug		316	G74
	M20×1.5 flameproof electrical plug + one sealing plug (ATEX\IECEx)		316	G75
	1/2NPT flameproof electrical connector + 1 sealing plug (ATEX\IECEx)		316	G76
	M20×1.5 flameproof electrical plug + one sealing plug (EAC)		316L	G77
	1/2NPT flameproof electrical connector + 1 sealing plug (EAC)		316L	G78
Process joint on L side	Connection type		Material	
	1/2 NPT male thread-welded pipe joint		304	G81
	1/2 NPT male thread-welded pipe joint		316	H81
	1/2 NPT male thread-welded pipe joint		316L	K81
	1/2 NPT male thread-welded pipe joint		Q235	G91
	1/4 NPT male thread-welded pipe joint		304	G82
	1/4 NPT male thread-welded pipe joint		316	H82
	1/4 NPT male thread-welded pipe joint		316L	K82
	1/4 NPT male thread-welded pipe joint		Q235	G92

	1/2 NPT male thread-M20×1.5 male thread 1/2 NPT male thread-M20×1.5 male thread 1/2 NPT male thread-M20×1.5 male thread	304 316 316L	G84 H84 K84
Weather prevention	Weather prevention pipe	316	FY
Lightning prevention	Lightning prevention terminal board		F20
Lithium battery	The content of copper and zinc on the surface of medium contact parts is ≤0.5%, and the content of copper and zinc on the surface of other exposed parts is ≤1%.		LD
Quality assurance system	Comply with the Company's nuclear quality assurance system (if this option is not selected, it will conform to the ISO9001 by default).		NP
Alarm	Alarm current: 22.8mA (if this option is not selected, the alarm current is 3.6mA by default).		A1
Document	Delivery and acceptance document (Note 10)		D1
Mounting thread for process connection	M10 (If this option is not selected, 7/16-20UNF inch thread is determined by default)		E2
Language	English (product manual, packing list, product note and main nameplate are all in English) Russian (product manual, packing list, product note and main nameplate are all in Russian) French (product manual, packing list, product note and main nameplate are all in French)		L01 L02 L03
Display unit	PV Unit % mA Pa kPa MPa gf/cm^2 kgf/cm^2 mmH_2O mH_2O inH_2O ftH_2O mbar bar psi mmHg inHg Torr Atm $i4H_2O$ (inches of water 4°C) $m4H_2O$ (millimeters of water 4°C)		Code U01 U20 U21 U22 U23 U24 U25 U26 U27 U28 U29 U30 U31 U32 U33 U34 U35 U36 U37 U38
Valve manifold			Two-valve manifold

Special reminder

※: In case of any special ordering requirements, please mark "Z" after order code, and add text description.

Note 1: If Hart 6 is selected, Z shall be added for description. For SIL (functional safety) type, only Hart7 is supported.

Note 2: To select Ethernet APL Ethernet communication, you need to choose the specific APL communication method, as shown in the additional options.

Note 3: If the temperature is higher than 205°C, high temperature structure should be selected. Refer to additional options.

Note 4: Flameproof electrical connector must be selected for flameproof transmitter, referring to additional options.

Note 5: The default display is pressure value, and the other display modes are described in "Additional Options".

Note 6: When the measuring span C is adopted, the flange type is P (plane face flange), the flange size is 1 inch (DN25) and the H side diaphragm is made of T (tantalum), the minimum span should be ≥5kPa.

Note 7: Serial numbers A, B and C are adapted to American system in HG20615-2009~HG20635-2009 and GB/T9112-2000~GB/T9131-2000. Serial numbers D, E, F and K are adapted to European system in HG20592-2009~HG20614-2009 and GB/T9112-2000~GB/T9131-2000.

Note 8: The options shall be separated with a "/", for example "/P10/G61/K81".

Note 9: If the housings in P11 and P12 are selected, please choose 1 or 2.

Note 10: It refers to the common materials provided by the manufacturer for inspection of products received except the standard delivery materials (such as original qualification certificate, instructions, and packing list), and a detailed list shall be provided when ordering. In case of third-party test report or other special requirements, it will be quoted separately.

Size specification of plane face flange DN25 (embedded)

Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	110	79.4	66	34	12.7	4	16
ANSI 300	125	88.9	66	34	15.9	4	18
ANSI 600	125	88.9	66	34	17.5	4	18
DINPN10/16	115	85	66	34	18	4	14
DIN PN25/40	115	85	66	34	18	4	14
DIN PN64/100	140	100	66	34	24	4	18

Size specification of plane face flange DN50

Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	150	120.7	100	61	19.5	4	18
ANSI 300	165	127	100	61	22.7	8	18
ANSI 600	165	127	100	61	32.4	8	18
DINPN10/16	165	125	100	61	18	4	18
DIN PN25/40	165	125	100	61	20	4	18
DIN PN64	180	135	100	61	26	4	22
DIN PN100	195	145	100	61	28	4	26

Size specification of plane face flange DN80

Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	190	152.4	130	89	24.3	4	18
ANSI 300	210	168.3	130	89	29	8	22
ANSI 600	210	168.3	130	89	38.8	8	22
DIN PN10/16	200	160	130	89	20	8	18
DIN PN25/40	200	160	130	89	24	8	18
DIN PN64	215	170	130	89	28	8	22
DIN PN100	230	180	130	89	32	8	26

Size specification of plane face flange DN100

Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	230	190.5	155	115	24.3	8	18
ANSI 300	255	200	155	115	32.2	8	22
ANSI 600	275	215.9	155	115	45.1	8	26
DINPN10/16	220	180	155	115	20	8	18
DIN PN25/40	235	190	155	115	24	8	22
DIN PN64	250	200	155	115	30	8	26
DIN PN100	265	210	155	115	36	8	30

Size specification of boss flange DN50

Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	150	120.7	100	48	19.5	4	18
ANSI 300	165	127	100	48	22.7	8	18
ANSI 600	165	127	100	48	32.4	8	18
DIN PN10/16	165	125	100	48	18	4	18
DIN PN25/40	165	125	100	48	20	4	18
DIN PN64	180	135	100	48	26	4	22
DIN PN100	195	145	100	48	28	4	26

Size specification of boss flange DN80

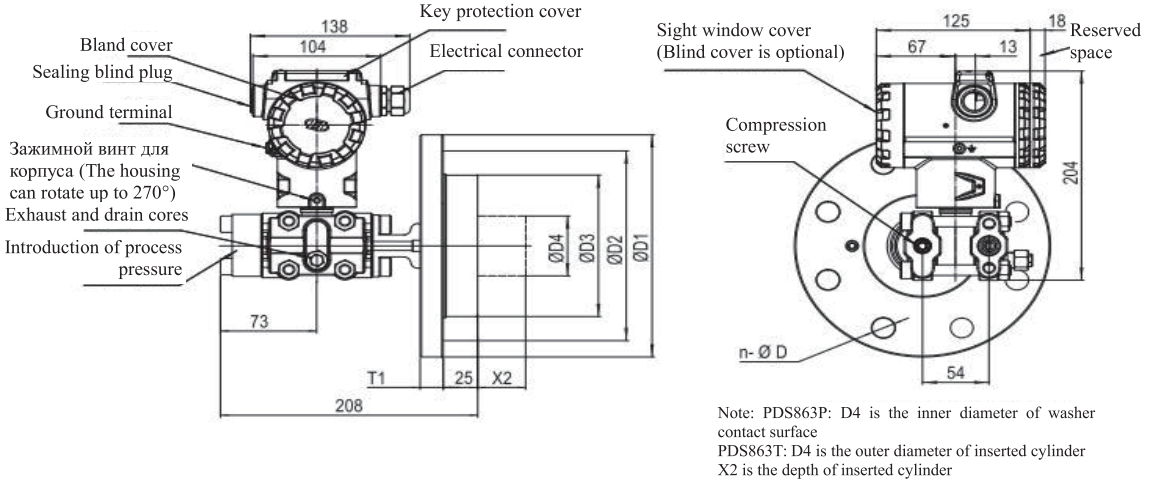
Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	190	152.4	130	71	24.3	4	18
ANSI 300	210	168.3	130	71	29	8	22
ANSI 600	210	168.3	130	71	38.8	8	22
DIN PN10/16	200	160	130	71	20	8	18
DIN PN25/40	200	160	130	71	24	8	18
DIN PN64	215	170	130	71	28	8	22
DIN PN100	230	180	130	71	32	8	26

Size specification of boss flange DN100

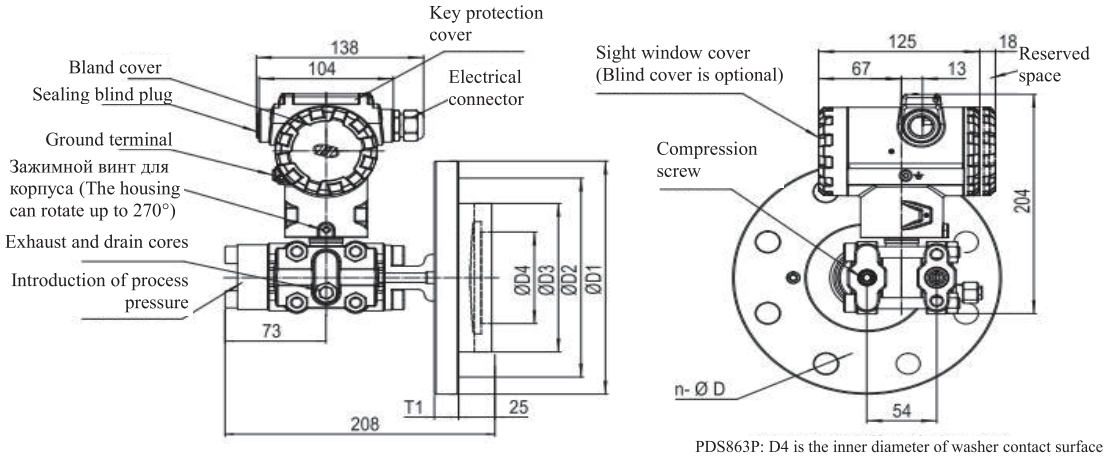
Flange standard	D1	D2	D3	D4	T1	Bolt number n	Bolt hole diameter d
ANSI 150	230	190.5	155	96	24.3	8	18
ANSI 300	255	200	155	96	32.2	8	22
ANSI 600	275	215.9	155	96	45.1	8	26
DIN PN10/16	220	180	155	96	20	8	18
DIN PN25/40	235	190	155	96	24	8	22
DIN PN64	250	200	155	96	30	8	26
DIN PN100	265	210	155	96	36	8	30

◆Overall and installation size of DS863

Unit: mm

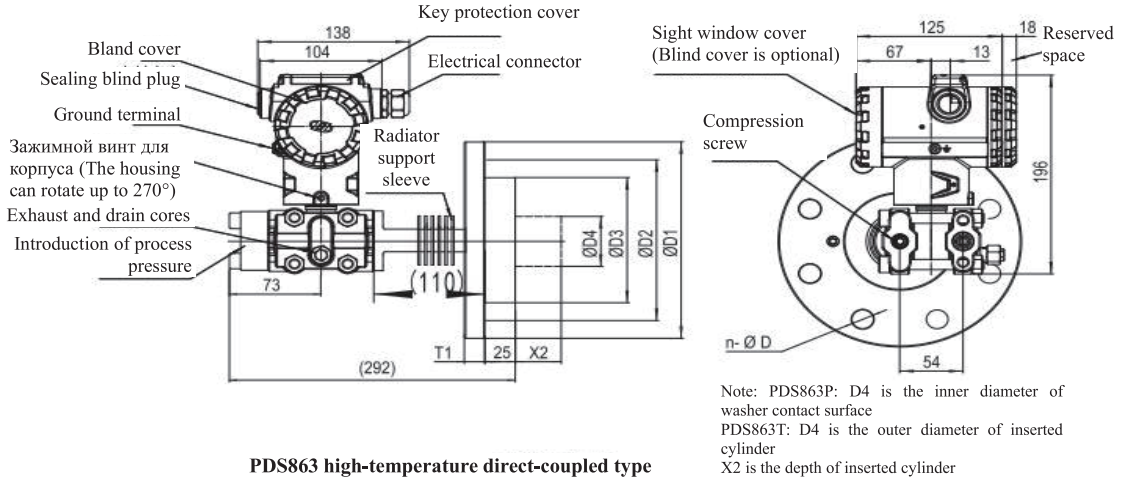


Note: PDS863P: D4 is the inner diameter of washer contact surface
PDS863T: D4 is the outer diameter of inserted cylinder
X2 is the depth of inserted cylinder



PDS863P: D4 is the inner diameter of washer contact surface

PDS863P DN25 embedded diaphragm



Note: PDS863P: D4 is the inner diameter of washer contact surface
PDS863T: D4 is the outer diameter of inserted cylinder
X2 is the depth of inserted cylinder

PDS863 high-temperature direct-coupled type

Note: D4 is the inner diameter of washer contact surface or the outer diameter of inserted cylinder.
The insertion depth of X2 can be selected from 50mm, 100mm, 150mm, 200mm and 250mm, or be customized according to the working conditions at site.