PDS843 differential pressure transmitter



PDS843 differential pressure transmitter is mainly used to measure the differential pressure and flow of liquid, gas and steam 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=max. span/actual span)=100:1

Long-term stability

δ≤±0.1%FS/10 years

δ≤±0.2FS%/10 years, applicable to spans C and D of PDS843L microdifferential pressure type

Span of transmitter

Span code	PDS843M differential pressure type and 843H high static pressure type					PDS843L microdifferential pressure type			
	Minimum span	Maximum span	Measuring range	M differential pressure overload limit	H high static pressure overload limit	Minimum span	Maximum span	Measuring range	Overload limit
C	0.5 kPa	10 kPa	-10~10 kPa	16 MPa	——	0.1 kPa	2.0 kPa	-2~2 kPa	200 kPa
D	1.0 kPa	100 kPa	-100~100 kPa	16 MPa	42 MPa	0.1 kPa	2.0 kPa	-2~2 kPa	3.2 MPa
E	5.0 kPa	500 kPa	-500~500 kPa	16 MPa	42 MPa	50 Pa	100 Pa	-100~100 Pa	200 kPa
F	0.03 MPa	3 MPa	-0.5~3 MPa	16 MPa	42 MPa	——	——	——	——
G	0.14 MPa	14 MPa	-0.5~14 MPa	16 MPa	——	——	——	——	——

Note: 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 of PDS843M is ≤3.2MPa, and the maximum working pressure is 16MPa.

Reference accuracy δ

843M differential pressure span code	843H high static pressure span code	843L microdifferential pressure span code	Accuracy δ
E, F and G	E and F	——	δ≤±0.025% δ≤± (0.01+0.0015 $\frac{\text{Maximum span}}{\text{Selected span}}$) %, span ratio >10:1
C	——	——	δ≤± (0.013+0.027 $\frac{\text{Maximum span}}{\text{Selected span}}$) %, span ratio ≤20:1
D	D	——	δ≤±0.04% δ≤± (0.004+0.0036 $\frac{\text{Maximum span}}{\text{Selected span}}$) %, span ratio >10:1
——	——	C and D	δ≤± (0.05+0.025 $\frac{\text{Maximum span}}{\text{Selected span}}$) %, span ratio ≤20:1
——	——	E	δ≤±0.1%

Note: When the ultra-microdifferential pressure span code E of PDS843L is selected, the factory span and specific performance indexes shall be determined according to the actual working conditions.

Impact of temperature δ≤(0.06*r+0.01)%/28°C, -40°C~+80°C (The spans C and D of PDS843L are multiplied by 2 based on this index)

Process temperature range: -40°C~+120°C（Fluorine oil： -52°~+120°）

Impact of static pressure δ≤±0.03r%/16MPa

δ≤±0.1r%/3.2MPa, applicable to span C of PDS843M (10kPa)

δ≤±0.2r%/3.2MPa, applicable to span D of PDS843L microdifferential pressure type (2kPa)

δ≤±0.03r%/200kPa, applicable to span C of PDS843L microdifferential pressure type (2kPa)

◆Model

Model No.	code	Remarks				
PDS843	-	Differential pressure transmitter				
Type	L M H	Microdifferential pressure Differential pressure High static pressure				
Communication protocol	H P F A B	HART (7) communication (Note 1) PROFIBUS-PA (3.02) field bus communication FF (6.1.1) field bus communication Ethernet-APL communication(Note 2) AutBus communication				
Liquid sealed in diaphragm capsule	-1 -2 -3	Sealed liquid Silicone oil Silicone oil Fluorine oil-52°~+120°	Cleaning of measuring part Conventional Degreasing treatment Degreasing treatment			
Measuring range		M differential pressure	H high static pressure	L micropressure		
		Span	Span	Span	Measuring range	Overload
	C	0.5~10kPa	——	0.1~2kPa	-2~2kPa	200kPa
	D	1~100kPa	1~100kPa	0.1~2kPa	-2~2kPa	3.2MPa
	E	5~500kPa	5~500kPa	50~100Pa	-100~100Pa	200kPa
	F	0.03~3MPa	0.03~3MPa	——		
	G	0.14~14MPa	——	——		
Material of liquid contact part		Isolation diaphragm	Relevant liquid contact parts	M differential pressure	H high static pressure	L micropressure
	S	316L	316	Applicable	Applicable	Applicable
	H	HC-276	316	Applicable	Applicable	Applicable
	C	HC-276	HC-276 (Note 3)	Applicable	Applicable	——
	T	Tantalum	316	Applicable	Applicable	——
	M	Monel	316	Applicable	Applicable	——
	G	316L gold plated	316	Applicable	Applicable	——
	R	Tantalum	HC-27 (Note 3)	Applicable	Applicable	——
	L	316L gold plated	HC-27 (Note 3)	Applicable	Applicable	——
	K	Monel	Monel (Note 3)	Applicable	Applicable	
Process connection (Note 4)	0	Chamber flange is equipped with 1/4NPT female thread, with exhaust and drain ports at the back				
	1	Chamber flange is equipped with 1/4NPT female thread, with exhaust and drain ports at the side				
	2	Process joint is provided with 1/2NPT female thread, with exhaust and drain ports at the back				
	3	Process joint is provided with 1/2NPT female thread, with exhaust and drain ports at the side				
	4	Impulse port is downward and chamber flange is equipped with 1/4NPT female thread (not applicable to high static pressure of 843H)				
	5	Impulse port is downward and process joint is provided with 1/2NPT female thread (not applicable to high static pressure of 843H)				
Chamber bolt	1 2 3	SCM435 (35CrMo) 304 316				

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

Housing (Note 5)		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 6)	N	Without display	
	D	LCD display	
	E	Multi-functional LCD head (only applicable to HART7)	
Installation bracket		Type	Material
	A	Horizontal (I type) mounting bracket	Q235
	B	Horizontal (I type) mounting bracket	304
	E	Horizontal (I type) mounting bracket	316
	C	Vertical (L type) mounting bracket	Q235
	D	Vertical (L type) mounting bracket	304
	F	Vertical (L type) mounting bracket	316
	N	Without installation bracket	
Additional options	/××	Refer to the additional options table	

◆Additional options

Item	Remarks	Code (Note 7)
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
Protection treatment (Note 8)	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
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	Connection type	Material	
	1/2NPT male thread-welded pipe joint	304	G81
	1/2NPT male thread-welded pipe joint	316	H81
	1/2NPT male thread-welded pipe joint	316L	K81
	1/2NPT male thread-welded pipe joint	Q235	G91
	1/4NPT male thread-welded pipe joint	304	G82
	1/4NPT male thread-welded pipe joint	316	H82
	1/4NPT male thread-welded pipe joint	316L	K82
	1/4NPT male thread-welded pipe joint	Q235	G92
	1/2NPT male thread-M20×1.5 male thread	304	G84
	1/2NPT male thread-M20×1.5 male thread	316	H84
	1/2NPT male thread-M20×1.5 male thread	316L	K84
Liquid contact seals	Chamber flange seal ring	Material: Polytetrafluoroethylene	M01
	Chamber flange seal ring +joint flange gasket	Material: Polytetrafluoroethylene	M02
Valve manifold integration	The valve manifold and the transmitter are assembled and tested integrally before delivered from the factory.		S
radiation-resistance	Accumulated radiation tolerance dose 1000Gy		C06
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 9)		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)		L01
	Russian (product manual, packing list, product note and main nameplate are all in Russian)		L02
	French (product manual, packing list, product note and main nameplate are all in French)		L03
Display unit	PV Unit / Code / PV Unit / Code		
	% / U01 / ftH_2O / U29		
	mA / U20 / mbar / U30		
	Pa / U21 / bar / U31		
	kPa / U22 / psi / U32		
	MPa / U23 / mmHg / U33		
	gf/cm^2 / U24 / inHg / U34		
	kgf/cm^2 / U25 / Torr / U35		
	mmH2O / U26 / atm / U36		
	mH_2O / U27 / $i4H_2O$ (inches of water 4°C) / U37		
	inH_2O / U28 / $m4H_2O$ (millimeters of water 4°C) / U38		
Valve manifold	G8 valve manifold SICV valve manifold		See options of 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: The mounting thread can only be 7/16-20UNF, with the maximum overload pressure 32MPa.

Note 4: The high-pressure side (H) is on the right by default, the mounting thread for process connection is 7/16-20UNF, and the mounting bolt is made of the same material as the chamber bolt. If M10 mounting thread is required, please select the additional option E2.

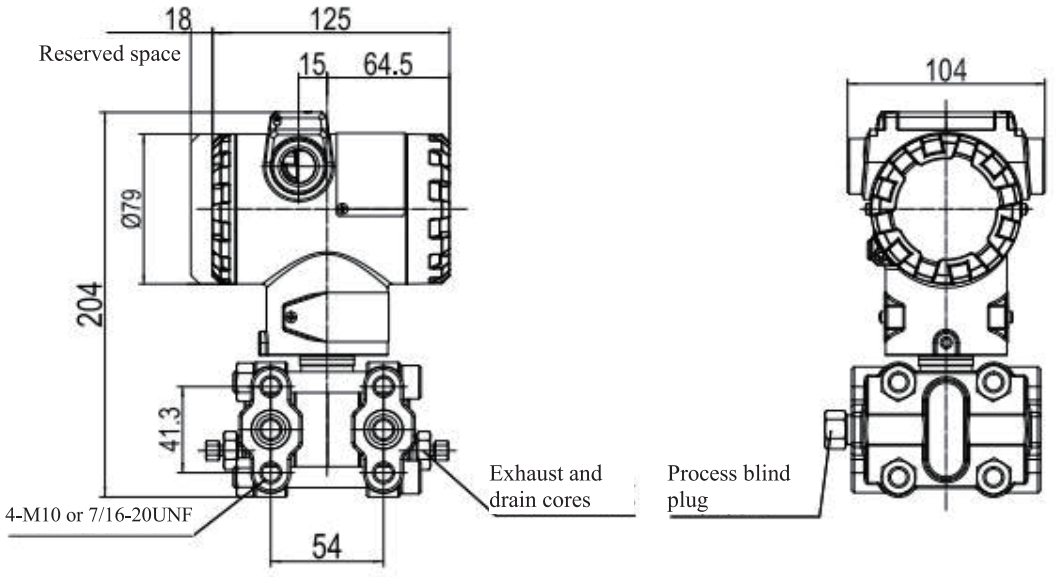
Note 5: Flameproof electrical connector must be selected for flameproof transmitter, referring to additional options.
Note 6: The default display is pressure value, and the other display modes are described in "Additional Options".
Note 7: The options shall be separated with a “/”, for example “/P10/G61/K81”.
Note 8: If the housings in P11 and P12 are selected, please choose 1 or 2.
Note 9: 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.

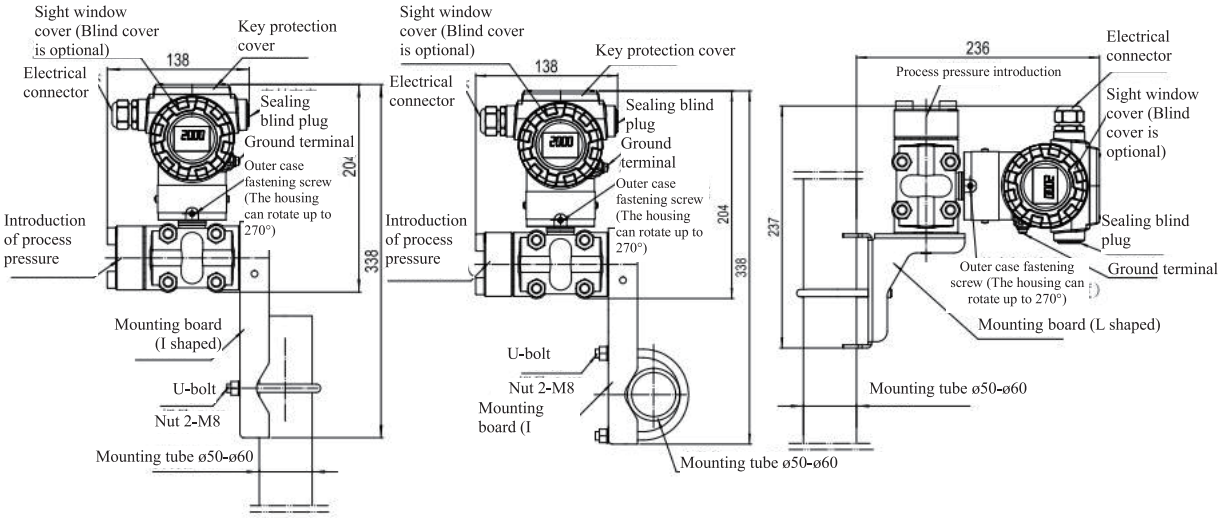
Example of model

Just as PDS843MH-1DS23-A1DE/G61/S G85-NB5MLD2/T, the models of transmitter and valve manifold shall be separated by space.
Or just as PDS843MH-1DS23-A1DE/G61/S SICV5-NCMLD2/N, the models of transmitter and valve manifold shall be separated by space.

◆Overall and installation size of PDS843

Unit: mm





Horizontal piping mounting type (vertical mounting pipe)

Horizontal piping mounting type (horizontal mounting pipe)

Vertical piping mounting type (vertical mounting pipe)