

QPress Smart (HART) Differential Pressure Transmitter QDP-PROCESS 5600 Series

Smart DP transmitter with 4–20 mA + HART, wide turndown and process-class approvals.

Certifications

Quality Lab Solutions data sheet R4



Applications

- Flow measurement across orifice plates and Venturi tubes
- Level measurement in pressurised tanks
- Filter and pump differential monitoring
- Boiler and marine process control systems

Special Features

- 100:1 turndown; URL 100 bar, line pressure 420 bar
- 4–20 mA (HART); Modbus-RS485 option; Bluetooth option
- Reference accuracy to ± 0.05 %FS
- IP66/IP67; marine and Ex approvals
- Response time ≤ 100 ms; configurable damping 0–100 s

Description

QDP-PROCESS 5600 Series Differential pressure transmitter for process duties, pairing a capacitive DP sensor with smart electronics and HART communication. The unit covers spans from ± 20 mbar to 100 bar URL with a 100:1 turndown, fast response and robust temperature compensation. A choice of 316L, Hastelloy or tantalum wetted parts supports corrosive services, while IP66/IP67 housing and a coated aluminium or 316L enclosure ensure durability. Optional Modbus-RS485 and Bluetooth extend integration. Certified options include ATEX/IECEx/CSA and leading marine societies, making it suited to flow, level and filter monitoring across utilities and heavy industry.



QDP-PROCESS 5600

Specifications

TECHNICAL SPECIFICATIONS	
Pressure range	−20...20 mbar; −60...60 mbar; −0.4...0.4 bar; −2.5...2.5 bar; −10...10 bar; −30...30 bar; −30...100 bar
Pressure reference	Differential
Accuracy	±0.05 %FS (option); ±0.075 %URL (range-dependent)
Turn down	100:01:00
Temp. drift	Per 10 °C: 60 mbar range (0.1+0.05·TD) %SPAN; others (0.075+0.0375·TD) %SPAN
Response time	≤100 ms
Power consumption	≤500 mW @ 24 V
Ambient temp.	−50...85 °C (without LCD); −40...70 °C (with LCD)
Medium temp.	Silicone oil: −40...200 °C; Low-temp silicone oil: −55...120 °C; Fluorocarbon oil 2: −55...85 °C
Storage temp.	Without LCD: −50...100 °C; With LCD: −40...85 °C
Sensor operating temp.	−40...105 °C
Operating humidity	5...100 %RH @ 40 °C
Warranty	2; 3; 5
Damping time	0...100s
Relative humidity	5...100 %RH
Protection	IP66; IP67
Overpressure	Line pressure 420 bar; one-sided overload 250 bar (200 bar for 100 bar range)
Net weight	≈ 4 kg (without accessories)
Approvals/Certification	UKCA; CE; RoHS; ATEX; IECEx; CSA; EAC; Marine: DNV; BV; ABS; LR; KR; NK; RS
EX Protection types	Ex ia; Ex db; Ex tb
Temperature class	T4; T6; T80 °C; T85 °C
Outputs	4–20 mA (2-wire); HART; Modbus RTU (RS485); Bluetooth
Process connections	1/4-18 NPT female; 7/16-20 UNF drain/vent; adapters M20×1.5↔1/2 NPT↔G1/2
Cable Gland Types	M20×1.5 waterproof connector, IP67; flameproof adapters
Electrical entry threads	M20×1.5; 1/2 NPT
Fill fluid options	Silicone oil; Low-temp silicone oil; Fluorocarbon oil 2
Wetted parts	316L; Hastelloy C-276; Tantalum; FKM; PTFE; Modified FKM
Housing Material	Aluminium alloy (coated) or 316L stainless steel
Electrical connections	M20×1.5; 1/2 NPT; Waterproof cable gland (IP67)
Power Supply	18.3...44 V DC (standard); 18.3...30 V DC (intrinsically safe)
Longterm Stability	±0.1 %SPAN / 10 years
Vibration effect	<0.1 %
Bluetooth option	Yes (option)
HART Version	HART 5 (default); HART 7 (option)

Accuracy

Turn-down band	Linear output accuracy
TD ≤ 5	±0.075% URL (20 mbar, 60 mbar); ±0.075% URL (0.4 / 2.5 / 10 / 30 / 100 bar)
TD ≤ 5 (optional)	±0.05% URL (consult factory)
TD > 5 (20/60 mbar)	±(0.001 + 0.0148*TD) %
TD > 5 (≥0.4 bar)	±(0.0275 + 0.0095*TD) %
Square-root output	Accuracy is 1.5× linear output accuracy

Ambient temperature effects

Pressure reference	Effect per 10 degC of SPAN	Applicable nominal ranges
DP	$\pm(0.1 + 0.05 \cdot \text{TD})\% \text{SPAN}$ per 10 degC	60mbar
DP	$\pm(0.075 + 0.0375 \cdot \text{TD})\% \text{SPAN}$ per 10 degC	Other ranges

Environmental conditions

Item	Condition	Notes
Operating temperature	-50 to +85 deg (no LCD); -40 to +70 deg (with LCD)	Explosion-proof short pipe surface ≤ 80 deg
Storage temperature	-50 to +100 deg (no LCD); -40 to +85 deg (with LCD)	-
Sensor operating temperature	-40 to +105 deg	-
Medium temperature (silicone fill)	-40 to +200 deg	Subject to diaphragm and O-ring ratings
Medium temperature (low-temp silicone)	-55 to +120 deg	-
Medium temperature (fluorocarbon oil 2)	-55 to +85 deg	Select for oxygen service
Operating humidity	5 %RH to 100 %RH @ 40 deg	-

EMC standards

Test	Standard	Test conditions	Performance level
Radiated emission (enclosure)	CISPR 32	30 MHz–1000 MHz	Qualified
Conducted emission (DC port)	CISPR 32	0.15 MHz–30 MHz	Qualified
Electrostatic discharge immunity	IEC 61000-4-2	8 kV contact, 15 kV air	B
RF electromagnetic field immunity	IEC 61000-4-3	10 V/m (80 MHz–1 GHz)	A
Power-freq magnetic field immunity	IEC 61000-4-8	30 A/m	B
Electrical fast transient/burst immunity	IEC 61000-4-4	4 kV (5/50 ns, 100 kHz)	B
Surge immunity	IEC 61000-4-5	2 kV line-line; 4 kV line-ground (1.2/50 μ s)	B
Conducted RF immunity	IEC 61000-4-6	3 V (150 kHz–80 MHz)	A

Power supply & Load

Item	Specification	Notes
Supply voltage (HART)	18.3–44 VDC	13 VDC possible for non-IS on request
Supply voltage (IS HART)	18.3–30 VDC	Intrinsically safe circuits
Loop load (operation)	0–1476 Ω	-
Loop load (HART comms)	250–800 Ω	-
Transmission distance	< 1000 m	Twisted pair recommended
Power consumption	≤ 500 mW @ 24 VDC (20.8 mA)	-

Measuring Range (Gauge Pressure)

Range Code	Measuring Range	Minimum Range	LRL	URL	Overload	Overpressure	Accuracy
01	0...0.02 bar	0.002 bar	-0.02 bar	0.02 bar	250 bar	625000.0 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.001+0.0148*T D)%
02	0...0.06 bar	0.002 bar	-0.06 bar	0.06 bar	250 bar	208333.3 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.001+0.0148*T D)%
03	0...0.4 bar	0.004 bar	-0.4 bar	0.4 bar	250 bar	31250.0 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.0275+0.0095* TD)%
04	0...2.5 bar	0.025 bar	-2.5 bar	2.5 bar	250 bar	5000.0 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.0275+0.0095* TD)%
05	0...10 bar	0.1 bar	-10 bar	10 bar	250 bar	1250.0 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.0275+0.0095* TD)%
06	0...30 bar	0.3 bar	-30 bar	30 bar	250 bar	416.7 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.0275+0.0095* TD)%
07	0...100 bar	1 bar	-30 bar	100 bar	200 bar	153.8 %FS	TD≤5: ±0.075%URL; TD>5: ± (0.0275+0.0095* TD)%

Output Signals

Code	Output	Power Supply	Load
IH	4-20 mA (2-wire) + HART	18.3–44 VDC (non-IS) / 18.3–30 VDC (IS)	0–1476 Ω; 250–800 Ω for HART comms
IB	4-20 mA (2-wire) + HART + Bluetooth	18.3–44 VDC (non-IS) / 18.3–30 VDC (IS)	0–1476 Ω; 250–800 Ω for HART comms
RM	RS485 (MODBUS RTU)	18.3–44 VDC	

HART Protocol

Code	Description
H5	HART 5 (default)
H7	HART 7

Electrical Connections & Pin outs

Code	Description	Pinout
E7	Terminal block via cable gland, dual conduit entries on case	- 2-wire current (IH/IB): Pin + = Supply +24V; Pin – = Loop– - Digital RS485 (RM): +24V to +; 0V to –; RS485A; RS485B

Enclosure & Conduit entry

Code	Case Material	Conduit Thread
EC1	316L SS case; dual outlets	M20×1.5
EC2	316L SS case; dual outlets	1/2 NPT
EC3	Aluminium alloy (polyester coated); dual outlets	M20×1.5
EC4	Aluminium alloy (polyester coated); dual outlets	1/2 NPT

Construction Materials

Code	Diaphragm	Flange Block	Valve/plug	Seals
A	316L	316	316	FKM
B	316L	316	316	PTFE (SS frame)
E	316L	316	316	Modified FKM
C	HC-276	316	316	FKM
D	HC-276	316	316	PTFE (SS frame)
F	HC-276	316	316	Modified FKM
G	Tantalum	316	316	FKM (≥0.4 bar only)
H	Tantalum	316	316	PTFE (SS frame) (≥0.4 bar only)
I	Tantalum	316	316	Modified FKM (≥0.4 bar only)

Cable Gland & Adapter

Code	Type	Thread	Material	Cable OD range	IP rating	Notes
GL0	None	—	—	—	—	
GLA	Flameproof metal plug (single ended)	—	316 SS	—	—	Flameproof
GL1	Waterproof cable gland with plug	M20×1.5	PVC	6–12 mm	IP67	
GL2	Non-flameproof adapter (M20×1.5 M to M20×1.5 F)	M20×1.5	316 SS	6–8 mm	IP67	
GL3	Flameproof adapter (M20×1.5 M to 1/2 NPT F)	M20×1.5 to 1/2 NPT	316 SS	6–12 mm	IP67	
GL4	Flameproof adapter (M20×1.5 M to M20×1.5 F)	M20×1.5 to M20×1.5	316 SS	6–12 mm	IP67	
GL5	Flameproof adapter (M20×1.5 M to G1/2 F)	M20×1.5 to G1/2	316 SS	6–12 mm	IP67	

Power Supply

Code	Supply	Notes
V4	18.3–44 V DC	Standard HART / RS-485 (non-IS)
V3	18.3–30 V DC	Intrinsically safe HART
V1	13 V DC (non-IS, by request)	Datasheet note; consult factory

Fill Fluid

Code	Fill Fluid	Operating window	Notes
HF	High-temperature silicone oil	0 to +315 degC (ambient 0 to +85 degC)	
LF	Low-temperature silicone oil	-55 to +120 degC (ambient -40 to +85 degC)	
HS	Normal-temperature silicone oil	-40 to +200 degC (ambient -40 to +85 degC)	
HE	Fluorocarbon oil 2	-55 to +85 degC (ambient -40 to +85 degC)	Select for oxygen service

Display

Code	Display	Temp window	Notes
N	None	-40 to +70 deg (Ex) / -50 to +85 deg (non-Ex)	
L	LCD	-40 to +70 deg	

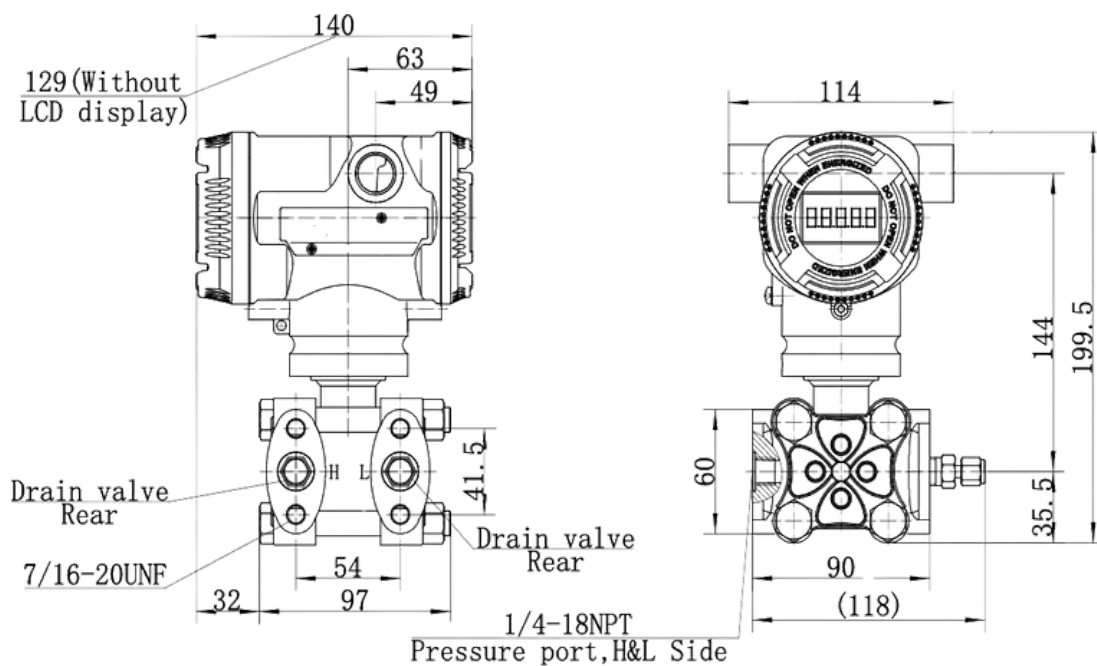
Certification / Documentation

Code	Description
CE	CE (EMC)
UK	UKCA
RO	RoHS
AT	ATEX (db / ia / tb)
IX	IECEx (db / ia / tb)
UL	CSA/UL North America (Division/Zone)
CU	EAC Ex

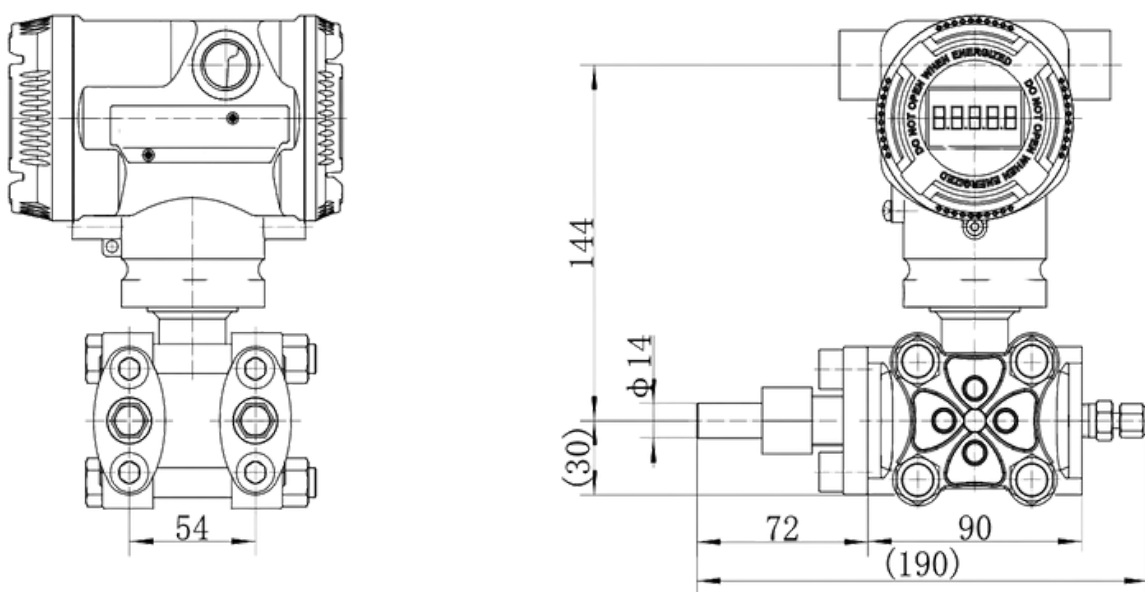
Process Connections/Drawings

Code	Thread / Port
P01	Female 1/4-18 NPT; rear of flange; 7/16-20 UNF(F); horizontal mount
P02	Female 1/4-18 NPT; above side; 7/16-20 UNF(F); horizontal mount
P03	Female 1/4-18 NPT; under side; 7/16-20 UNF(F); horizontal mount
P04	Female 1/4-18 NPT; side drain/vent valve; 7/16-20 UNF(F); vertical mount

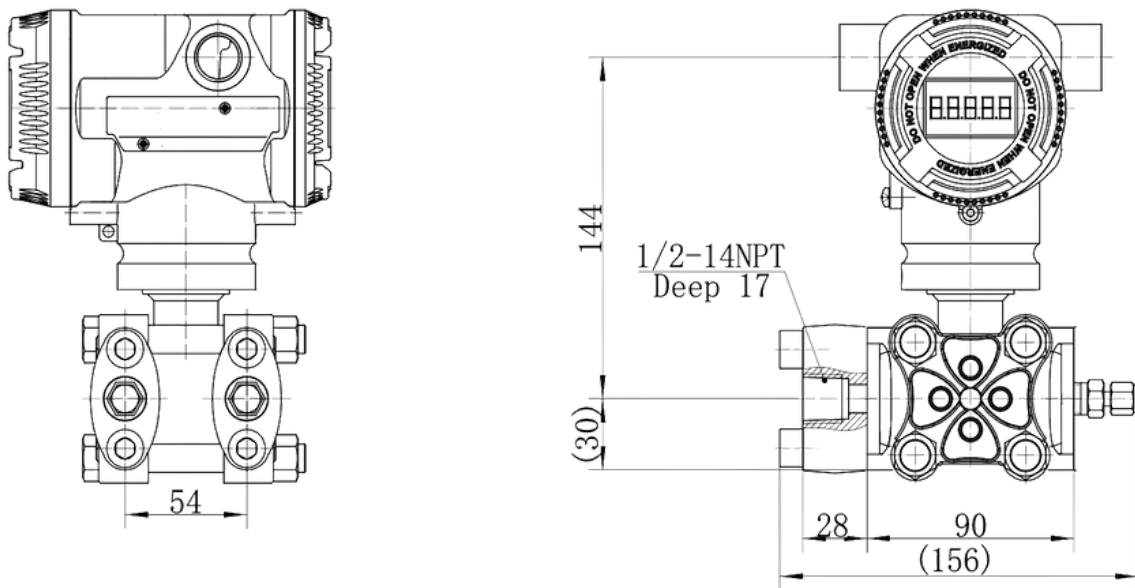
Transmitter with display



Transmitter with display & PC20 Adapter fitting



Transmitter with display & PC22 Adapter fitting



Mounting options



Hazardous area

Code	Scheme	Explosion protection marking	Key standards (non-PRC)	Notes
AT	ATEX (EU)	II 1G Ex ia IIC T4 Ga	EN IEC 60079-0; EN 60079-11	Intrinsically safe
AT	ATEX (EU)	II 2G Ex db IIC T6 Gb; II 2D Ex tb IIIC T80°C Db	EN IEC 60079-0; EN 60079-1; EN 60079-31	Flameproof & dust
IX	IECEx (International)	Ex ia IIC T4 Ga	IEC 60079-0; IEC 60079-11	Intrinsically safe
IX	IECEx (International)	Ex db IIC T6 Gb; Ex tb IIIC T80°C Db	IEC 60079-0; IEC 60079-1; IEC 60079-31	Flameproof & dust
UL	North America (CSA/UL)	Class I, Div 1, Groups A–D T4; Class I, Zone 0, AEx ia IIC T4 Ga	ANSI/UL 60079-0/-11; UL 61010-1; CSA C22.2 60079-0/-11	Intrinsically safe
UL	North America (CSA/UL)	Class I, Div 1, Groups A–D T6; Class II Div 1 Groups E–G T80°C; AEx db IIC T6 Gb; AEx tb IIIC T80°C Db	ANSI/UL 60079-0/-1/-31; CSA C22.2 60079-0/-1/-31	Flameproof & dust
CU	EAC Ex (Eurasian)	1Ex db IIC T6 Gb; 0Ex ia IIC T4 Ga	GOST 31610.0; GOST IEC 60079-1/-11	—

Optional Extras

Group	Code	Description
Mounting bracket accessories	G7	L-bracket (sq), 316 SS
	G8	L-bracket (sq), Q235 carbon steel
Adapter fittings	D3	T-adapter M20×1.5 + vent tube Φ14×2×30 mm, 316 SS ×2
	D4	Waist adapter 1/2–14 NPT(F), 316 SS ×2
Valve manifold (integrated)	VT	Integrated valve manifold (factory assembled) — specify model
Leakage test report	QD1	Leak test 200 bar, 10 min (nominal 100 bar)
	QD2	Leak test 250 bar, 10 min (nominal 60 mbar–30 bar)
Diaphragm surface treatment	J2	Diaphragm gold plated 5 μm (HP & LP)
Application	CL1	Oil-free degreasing of wetted parts (select fluorocarbon oil E for oxygen service)
Function settings	SQ	Square-root output mode (LRL set to zero)
Verification report	Q1	Verification report per customer template
Identification plate	PT	316L hanging nameplate (ID ≤16 chars)
Language & documentation	LE	English docs & nameplate
	LR	Russian docs & nameplate
Delivery documentation	XM	Additional acceptance documents
Warranty period	Y2	2-year warranty
	Y3	3-year warranty
	Y5	5-year warranty
Process connection accessories	PC20	T-shaped adapter (M) M20x1.5 and vent tube 14 mm x 2 mm x 30 mm, 316 SS, x2
	PC22	Waist-shaped adapter, 1/2-14 NPT (F), 316 SS, x2

Order Guide

Segment	Your Code	Options
Product family	QDP-PROCESS 5600	QDP-PROCESS 5600
Pressure Reference	DP	DP
Range	01/02/03/04/05/06/07	See Measuring range
Output	IH/IB/RM	See Output Signals
Power Supply	V4/V3/V1	See Power Supply
Enclosure & Conduit Entry	EC1/EC2/EC3/EC4	See Enclosure & Conduit Entry
Cable Gland & Adapter	GL0/GLA/GL1/GL2/GL3/GL4/GL5	See Cable Gland & Adapter
Display	N/L	See Display
Construction Materials	A....I	See Construction Materials
Fill Fluid	HF/LF/HS/HE	See Fill fluid
Process Connection	P01/P02/P03/P04	See Process Connections & Drawings
Electrical Connection	E7	See Electrical Connections
Certification	NA/UK/CE/RO/AT/IX/UL/CU	See Certification
Hazardous Area	AT/IX/UL/CU	See Hazardous Area
Marine Class Certification	CCS/DNV/BV/ABS/LR/KR/NK/RS	See Marine Class Certification
Metrological Certification	PAC/PBY	See Metrological Certification
Calibration (LRV-URV)	CAL	See Calibration (LRV-URV)
Function Settings (Damping/Alarm)	ST/WH/WL/SQ	See Function Settings
HART Version	H5/H7	See HART Version
Language & Nameplate	LE/LR	See Language & Nameplate
Identification Plate	PT	See Identification Plate
Verification & Leak Test	QD1/QD2	See Verification & Leak Test
Valve Manifold (Integrated)	VM1	See Valve Manifold (Integrated)
Diaphragm Surface Treatment	J2	See Diaphragm Surface Treatment
Delivery Documentation	XM	See Delivery Documentation
Accessories	G7/G8/D3/D4	See Accessory

Ordering Example DP transmitter; 30 bar range (code 06); 4-20 mA + HART7 (IH); power 18.3–30 V DC (V3); aluminium case EC3 (M20x1.5 dual outlets); GL1 cable gland; LCD display (L); High-Temp Silicone oil fill; materials I; Female 1/4-18 NPT; above side; 7/16-20 UNF(F); horizontal mount; E7 terminals; Integrated manifold ; ATEX; CAL; damping/alarm ST/WH; English; T-shaped adapter (M) M20x1.5 and vent tube 14 mm x 2 mm x 30 mm, 316 SS, x2

Product family	Pressure Reference	Range	Output	Power Supply	Enclosure & Conduit Entry	Cable Gland & Adapter	Display	Construction Materials	Fill Fluid	Process Connection	Electrical Connection
QDP-PROCESS 5600	DP	06	IH	V3	EC3	GL1	L	I	HF	P02	E7

Certification	Hazardous Area	Marine Class Certification	Metrological Certification	Calibration (LRV-URV)	Function Settings (Damping/Alarm)	HART Version	Language & Nameplate	Identification Plate	Verification & Leak Test	Valve Manifold (Integrated)	Application / Other Options	Flange (non-diaphragm)	Diaphragm Surface Treatment	Delivery Documentation	Accessories
AT	AT	-	-	CAL	ST/WH	H7	LE			VM1	-	-	-	-	PC20

Notes

Ensure media compatibility with wetted parts. Torque depends on gasket, mating material and lubrication.