HPM413 Submersible Level Transmitter

Nanjing Hangjia Electronic Technology Co., LTD.

Overview

HPM413 liquid level transmitter is a fully sealed submersible structure and uses an anti-corrosion ceramic piezoresistive pressure sensor. The probe put into the measured medium is made of 316L or titanium alloy. Cables are made of PTFE or polyurethane cables, which are mainly used in sewage, seawater and other media and all high-demand liquid level measurements.

The shell of this product adopts a full welding process, and the connections of the shell, wires and other links are reliably sealed with multiple designs. The interior adopts a full potting process to ensure that the product has a long service life and is widely used in the chemical industry, water treatment, environmental protection, medicine, industrial process control and many other occasions.

Features

- Ceramic (96% Al_2O_3) piezoresistive sensor
- High-cost performance
- 22mm diameter, suitable for 1-inch pipe installation
- Quasi-flush membrane structure, anti-clogging
- Anti-corrosion, wear-resistant
- Full welding process
- Full potting process, containing polymer sieve to prevent condensation
- Multiple protection and sealing structure design

Applications

- Urban sewage and industrial wastewater
- Viscous media
- Chemical industry
- Water treatment industry
- Environmental protection industry
- Industrial process control

Technical Parameters

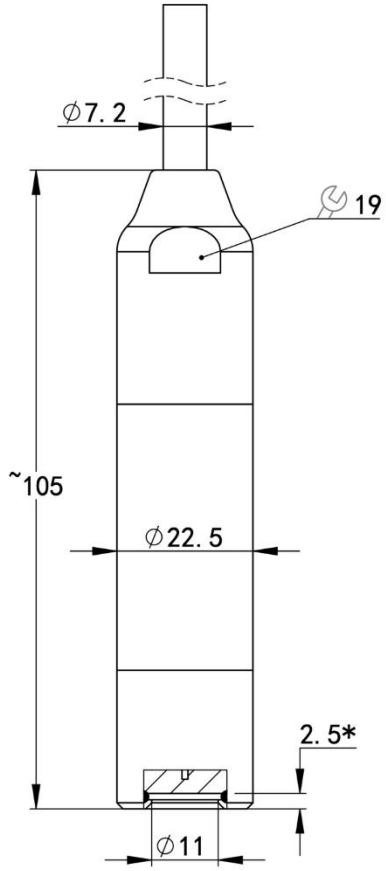
Measuring Range						
Rated range (Gauge pressure, kPa*)	50	100	200	500	1000	2000
Min Range (Gauge pressure, kPa)	20	60	120	250	500	1000
Overload(kPa)	100	200	400	1000	1500	3500
*The measurement unit can be converted to mH_2O@4℃, inH_2O@4℃, m, mm, etc. When using m, mm, etc. as the unit, please give the density value of the medium.						

Measuring Medium	Various liquids compatible with contact materials
Output Signal/Power Supply (1)	2-wire 4~20mA$_{DC}$ / Vs=10~30 V$_{DC}$
Output Signal/Power Supply (2)	2-wire 4~20mA$_{DC}$+HART / Vs=12~32 V$_{DC}$
Output Signal/Power Supply (3)	3-wire 0~5V$_{DC}$ etc. /Vs=10~30 V$_{DC}$
Output Signal/Power Supply (4)	4-wire Modbus-RTU/RS485 /Vs =3~8 V$_{DC}$ or 10~30 V$_{DC}$
Accuracy *Accuracy complies with IEC 60770 (non-linearity, hysteresis, repeatability)	±0.5%FS (typical)
Load characteristics	4~20mA$_{DC}$ 2-wire: R_L≤（U-10）/0.02Ω 4~20mA$_{DC}$+HART 2-wire: R_L≤（U-12）/0.02Ω Voltage output, 3-wire: R_L>10kΩ
Long-term Stability	±0.25%FS/year
Temperature Coefficient of Zero	≤±0.04%FS/℃（25~70℃, ref 25℃）
Temperature Coefficient of Full Scale	≤±0.02%FS/℃ (-10~70℃, ref 25℃)
Operation Temperature	-20~80℃
Medium Temperature	-20~80℃
Storage Temperature	-20~80℃
Protection Grade	IP68
Short circuit protection	With
Reverse polarity protection	No damage, circuit does not work
Insulation resistance	>100MΩ，500VDC
Dielectric strength	Apply 500VAC 50Hz test voltage, no breakdown or arcing for 1 minute.

Structure Material

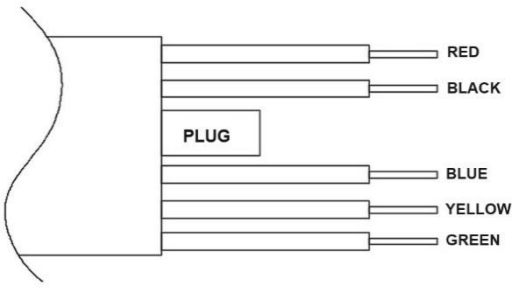
Code	Part	Note
S6	Probe shell	SS316L
TI		Titanium alloy
M6	Pressure sensor	Ceramic, Al_2O_3 96%
FK	O-ring	Fluorine rubber FKM (working temperature: -20~200℃)
FF		Perfluoro rubber FFKM (More corrosion resistant, working temperature: -25~300℃)
C2U	Cable	PU polyurethane cable, external diameter (7.2±0.2) mm
C2F		Fluoroplastic cable, external diameter (7.2±0.2) mm

Structure Drawings (Unit: mm)



* This size is the distance from the sensing diaphragm to the bottom

Electrical Connection

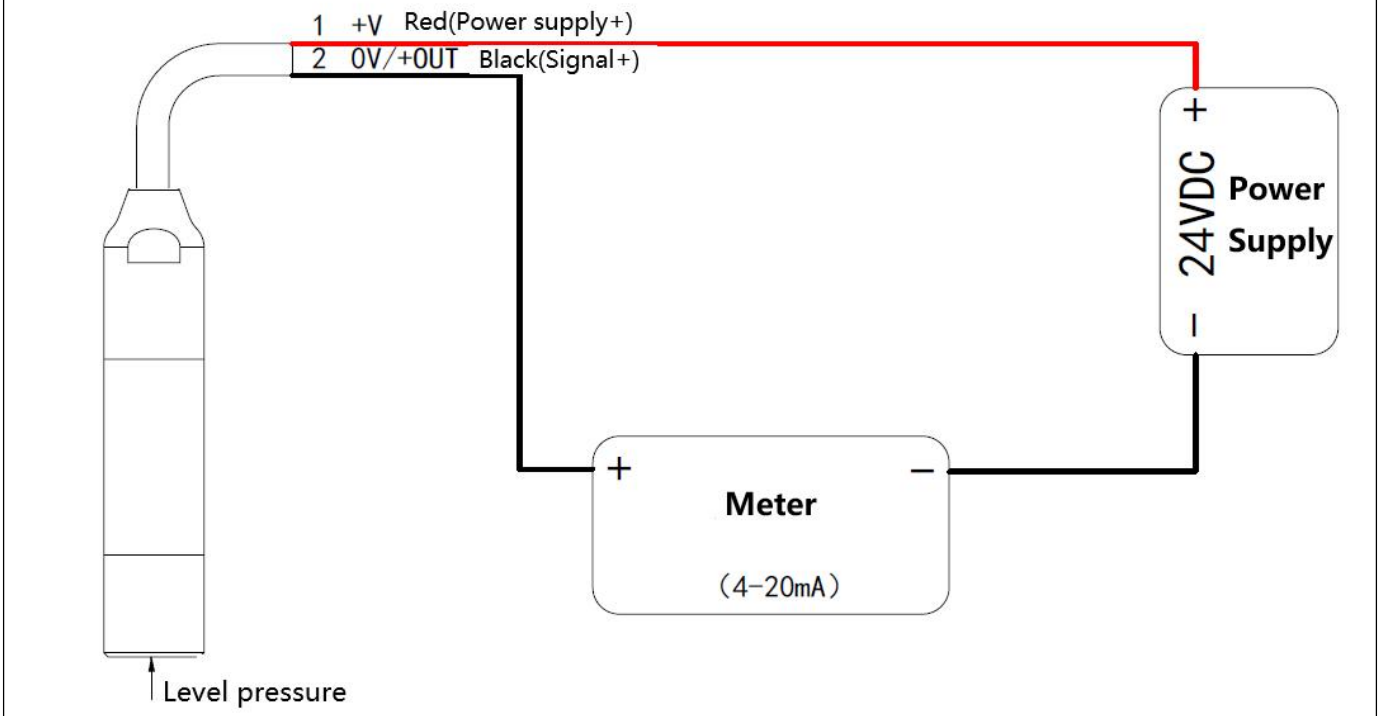


Wire color	4~20mA 2-wire	Voltage 3-wire	Modbus-RTU/ RS485
Red	Power supply+ (+V)	Power supply+(+V)	Power supply+ (+V)
Black	Power supply- (0V/+OUT)	Common (GND)	Power supply- (-V)
Blue	-	Output+ (+OUT)	-
Yellow	-	-	RS485A
Green	-	-	RS485B

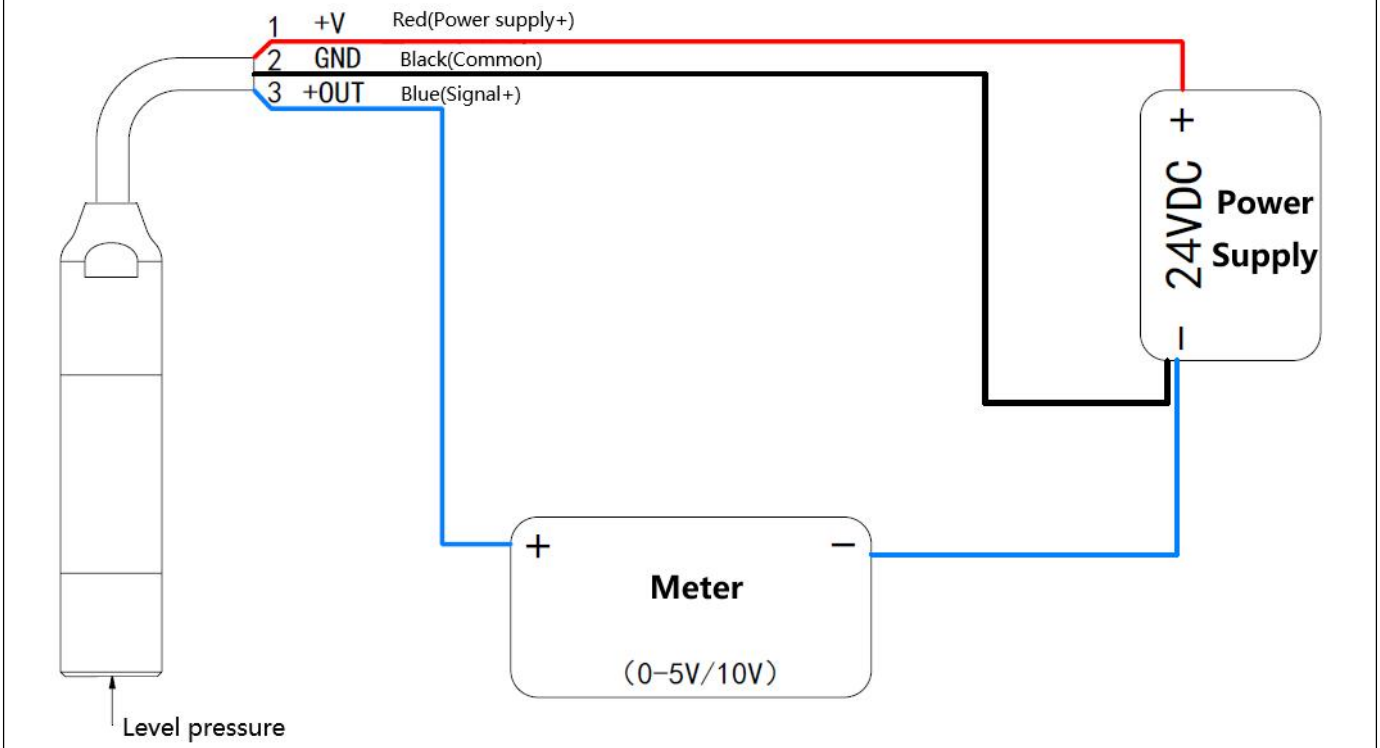
⚠ Gauge pressure products should refer to the current atmospheric pressure, and the breathable plug must be kept dry and prevented from falling off.

Electrical wiring diagram

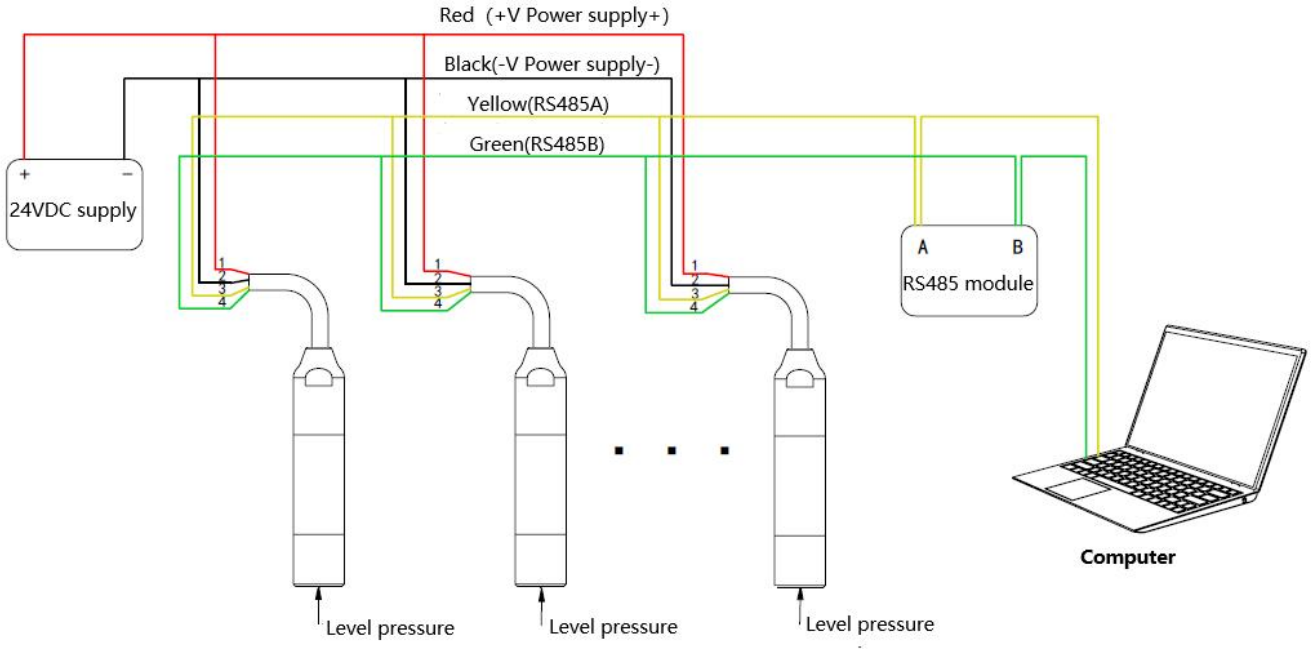
2-wire 4-20mADC output



3-wire voltage output

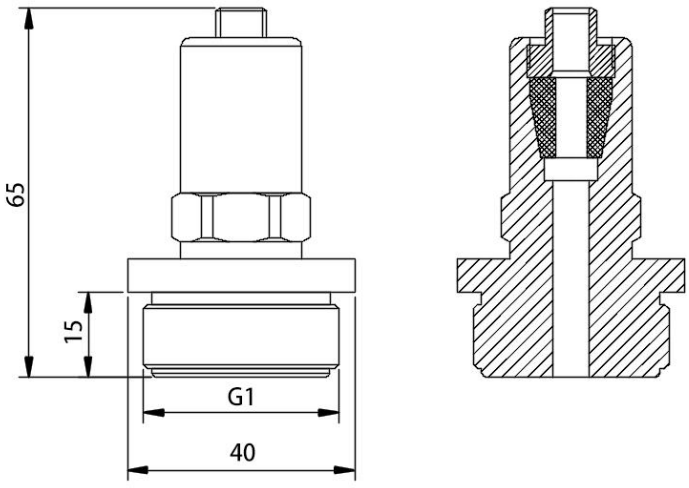


Modbus-RTU/RS485 output



Mounting (Unit: mm)

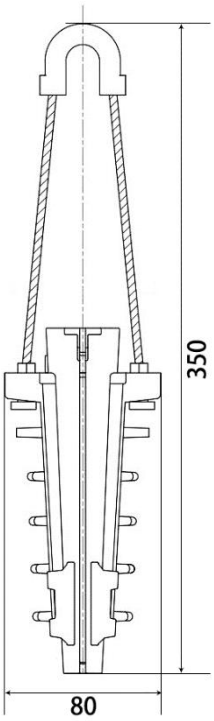
Threaded Mounting Parts (Ordering Code W1)



1. Used to fix the entire product at the top
2. Except for G1 thread, other threads can be customized if required

Weight ~450g

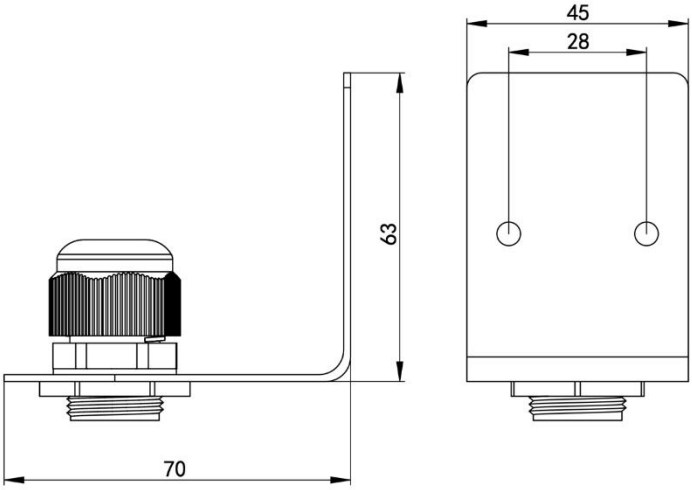
Cable clip (Ordering code W8)



Used to fix the entire product at the top

Weight ~340g

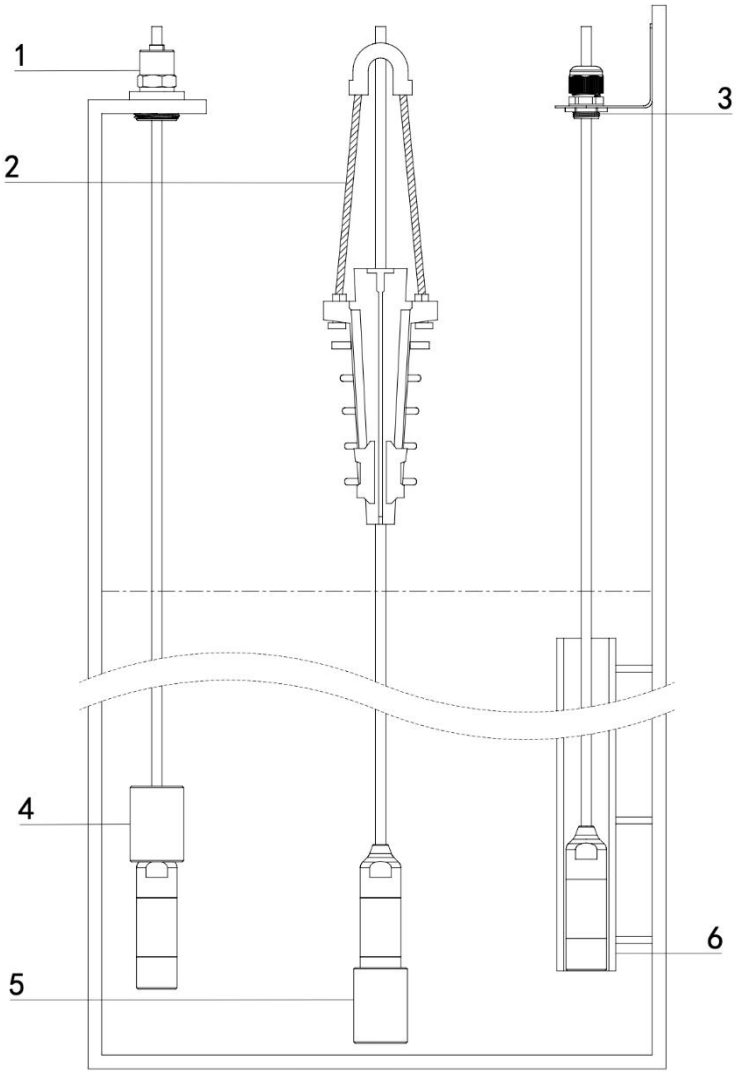
Right Angle Mounting Bracket Kit (Ordering code W4) Dimensions



Used to secure and support the entire product at the top.

Weight ~75g

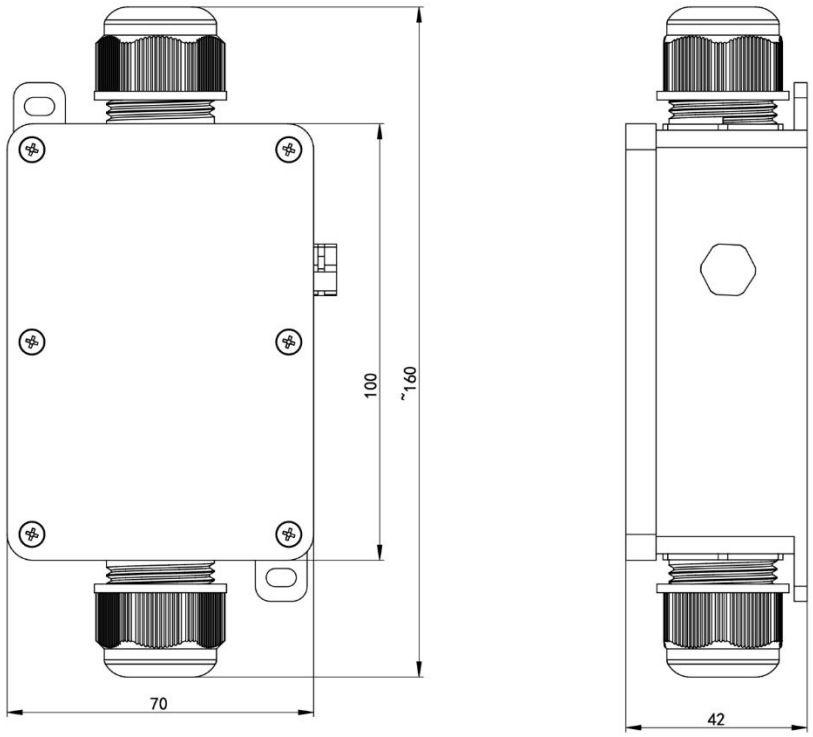
Installation diagram



1. Threaded mounting parts (W1)
2. Cable clip (W8)
3. Right-angle mounting bracket kit (W4)
4. Top connecting counterweight (W2)
5. Bottom connecting counterweight (Not available for this model)
6. Protective tube

Accessories (unit: mm)

Waterproof and breathable junction box (Ordering code W9)



Weight ~150g

1. Junction box with IP68 protection rating
2. Used to extend the ventilated cable and ensure the product's waterproof and breathable function
3. Recommended cable diameter range is 5-8mm. After wiring, ensure the waterproof cable connectors at both ends are tightened securely.

Ordering Guide

Item No.	Type							
HPM413	Submersible level Transmitter							
	Pressure Range	Measuring Range						
	[0 ~ X]mH$_2$O (Ln)	X is measuring range Ln is the length of cable						
		Code	Output Signal					
		B1	(4 ~ 20)mA					
		B4	(0 ~ 5)V					
		B7	Modbus-RTU/RS485					
		B8	(4 ~ 20)mA+HART					
			Code	Cable Material				
			C2F	PTFE				
			C2U	PU				
				Code	Mounting method			
				N	No			
				W1	Threaded mounting parts			
				W2	Top connecting counterweight			
				W4	Right-angle mounting bracket kit			
				W8	Cable clip			
					Code	Pressure sensor		
					M5	Ceramic piezoresistive		
						Code	Probe shell material	
						S6	316L	
						TI	Titaniumalloy	
							Code	Sealing ring material
							FK	FKM
							FF	FFKM
								Code / Additional Functions
								QF: Factory report
								W9: Waterproof and breathable junction box
								Other requests
eg:HPM413	[0 ~ 3]mH$_2$O (4)	B1	C2F	N	M5	S6	FK	QF W9

Certification Information

Factory certification	
Certification organization	CQM
Quality management system	ISO 9001:2015
Certification scope	Research, development and manufacture of pressure transmitter and temperature transmitter
Certificate No.	00223Q21711R1S

CE	
Certification organization	ECM
Certification scope	Pressure Transmitter
Standard	2014/30/EU
Certificate No.	6G241223.NHEWC83