PTS47W-PRD

Submerged Anti-corrosion
Pressure Transmitter
Accuracy:
Standard: 0.5%FS
Selected: 0.2%FS (HART protocol)

Pressure range:
0～40kPa…2MPa
0～4…200mH2O@4℃

Output
Two-wires：4~20mA
Two-wires：4~20mA+HART
Three-wires: 0-5VDC
Four-wires:Modbus-RTU/RS485

Features

- ✧ High-purity ceramic material (96% Al2O3) sensor
- ✧ Whole welding process
- ✧ Fluorine rubber ring sealing
- ✧ Whole potting process, high molecular sieve, prevent dew
- ✧ Built-in weight block in product

Application

- ✧ Water treatment industry
- ✧ Industrial automation field
- ✧ Medicine industry
- ✧ Environmental
- ✧ Protection industry

PTS47W-PRD submerged pressure transmitter is all sealed submerged structure and adopts ceramic capacitor pressure sensor. The probe into the measured medium is made of corrosion resistant materials such as PVC, PP or PVDF. The gas-guide cable adopts special anti-corrosive liquid level wire, which is mainly used for liquid level measurement of acid, base and other corrosive medium.

The product is reliable sealing with multiple designs in the connection of shell, wire and other links. The whole filling and sealing process is adopted inside, which ensures the product has a good service life. It is widely used in chemical industry, environmental protection, medicine, industrial process control and many other occasions.

Pressure Range						
Rated range (Gauge,kPa)	50	100	200	500	1000	2000
Min range (Gauge, kPa)	40	60	120	250	500	1000
Overload (kPa)	100	200	400	1000	1500	3500
Note：The measuring unit can be converted into mmH2O@ 4℃, inH2O@4℃ etc When m, mm, etc. are used as units, please give the density value of the measuring medium						

Input Signal/Power Supply		
Standard	Two wires:4~20mADC	/Vs=10~30Vdc
Standard	Two wires:4~20mADC+HART	/Vs=12~32Vdc
Standard	Three wires:0~5V etc	/Vs=10~30Vdc
Standard	Four wires:Modbus-RTU/RS485	/Vs=3~8Vdc or 10~30Vdc

Measurement Medium	
Medium Type	Any of various liquids compatible with contact materials

Charatistics	
Accurate	±0.5%F.S.(Typical) ±0.2%F.S.(HART) * Accuracy refer to IEC 60770(nonlinear, hysteresis, repeatability)
Load Resistant	4~20mADC two wires：RL≤（U-10）/0.02Ω 4~20mADC+HART two wires：RL≤（U-12）/0.02Ω Voltage three wires：RL>10kΩ
Long Stability	±0.2%FS/year
Response Time	About 1ms
Boot time	≤3s

Temperature drift Charatistics	
Temperature Compensation Range	25~80℃
Zero Temperature drift	≤±0.040%FS(within Temperature Compensation Range 25°)
Full Temperature drift	≤±0.015%FS(within Temperature Compensation Range 25°)

Environment	
Temperature Range	Working Environment Temperature: -10~70℃ Measurement Medium Temperature: -10~70℃ Storage Temperature: -30~80℃
Protection Grade	IP68
Electrical Protection	
Short-circuit protection	Permanence
Reverse Polarity Protection	No damage, circuit not working
Electromagnetic Compatibility	Compliance EN61326
Mechanical stability	
Vibration	20g(20~5000Hz)
Shock Resistant	20g(11ms)
Insulation	
Insulation Resistant	>100MΩ， 500VDC
Insulation Strength	500VAC 50Hz Test voltage， 1min no breakdowns and arcs

STRUCTURE MATERIAL

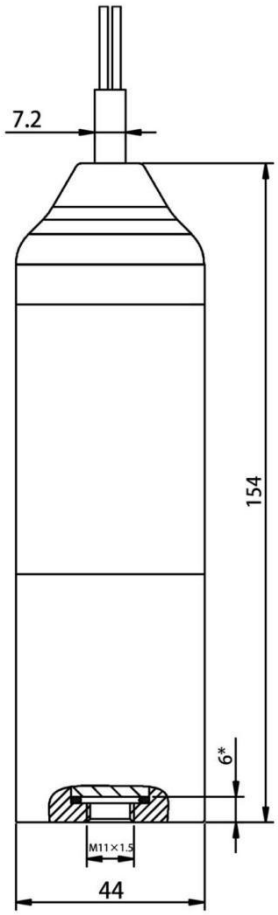
Code	Position	Instruction
DF	Probe Housing	PVDF
PC		PVC
PP		PP
M5	Sensor	Ceramic Al_2O_3 96%
F1	O-ring	FKM（Temperature range -20～200℃）
F2		FFKM（More anti-corrosion,temperature range -25~300° ）
FE	Cable	PTFE cable,outer diameter（7.2±0.2）mm
PU		PU cable， outer diameter(7.2±0.2）mm

WEIGHT (Unit: g)

Probe			
Housing Material	PVC	PP	PVDF
Weight	~ 480	~ 430	~ 530

Cable		
Cable material	PTFE	PU
Weight(1m)	~ 60	~ 50

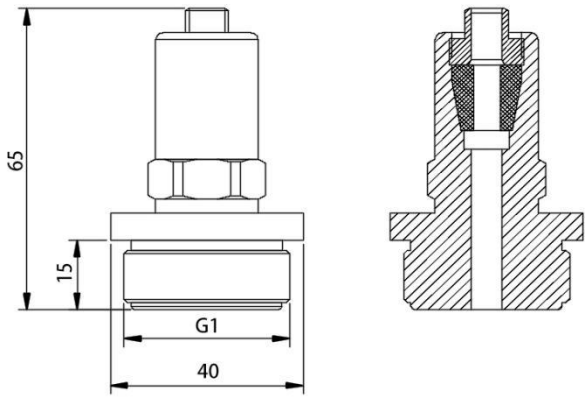
OUTLINE DRAWINGS (Dimension: mm)



* The size is the distance between the induction diaphragm and the bottom

INSTALLATION (Unit: mm)

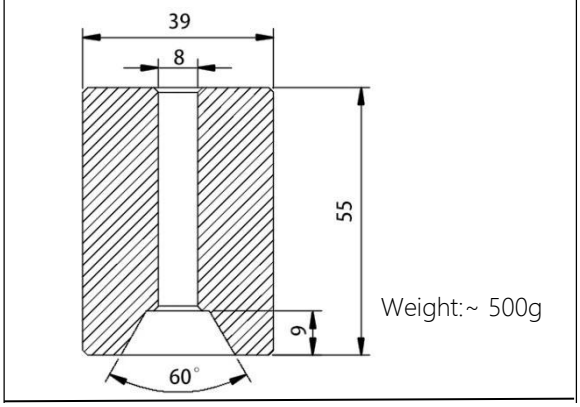
Thread installation (W1) dimension



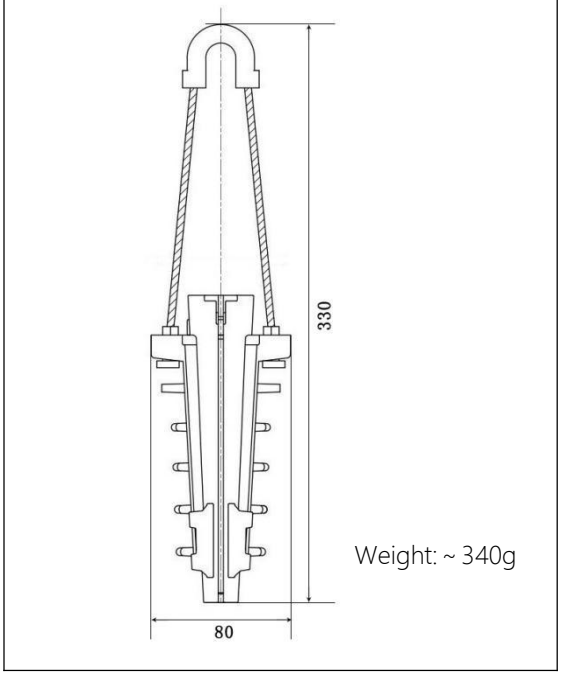
weight: ~ 450g

1. Used for fixing and supporting the whole product on the top
2. Besides G1 thread, other threads can be customized if needed

Top connect heavy bob (W2) Dimension

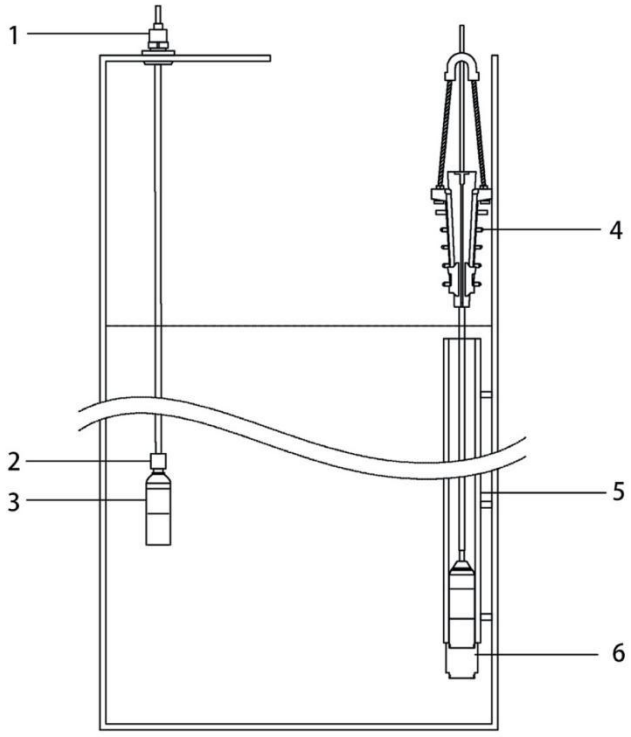


1. Used for fixing products in some areas with fast flow rate
2. Used for fixing products in some medium with excessive density
3. Avoid measurement errors caused by floating and moving products
4. Up to 3 hammers can be connected



Used to secure and support the entire product on top

Installation Instruction

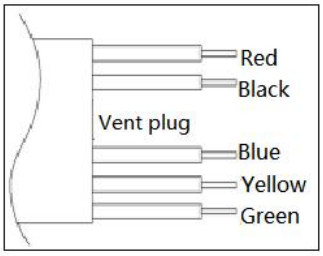


1. Threaded Mounting (W1)
2. Top connecting weight hammer (W2)
3. Pressure transmitter
4. Wire clamp (W8)
5. Protective tube
6.Bottom connection heavy hammer (W3) *

*Bottom connection hammer (W3) is not applicable to PTS47W-PRD model, but can be used for

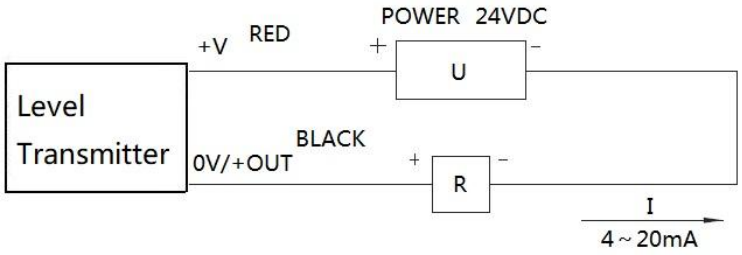
ELECTRICAL CONNECTION

4 ~ 20mA two wires	Three wires voltage	Modbus-RTU/RS485
Positive pole （+V)	Positive pole （+V)	Positive pole （+V)

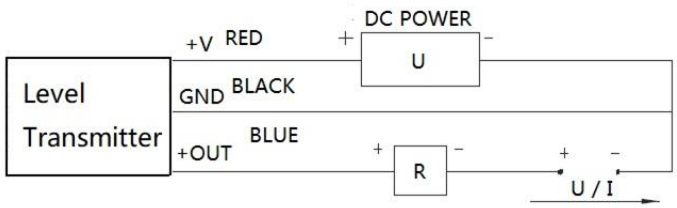


Negative pole (0V/+OUT)	Common port(GND)	Negative pole (0V/+OUT)
	Output + (+OUT)	
		RS485A
		RS485B

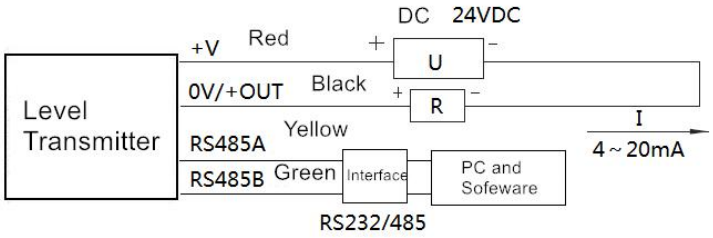
Gauge pressure have to refer the current atmospheric pressure, need to keep the plug dry, and prevent it from falling off



4 ~ 20mADC two-wire output transmitter electrical wiring diagram



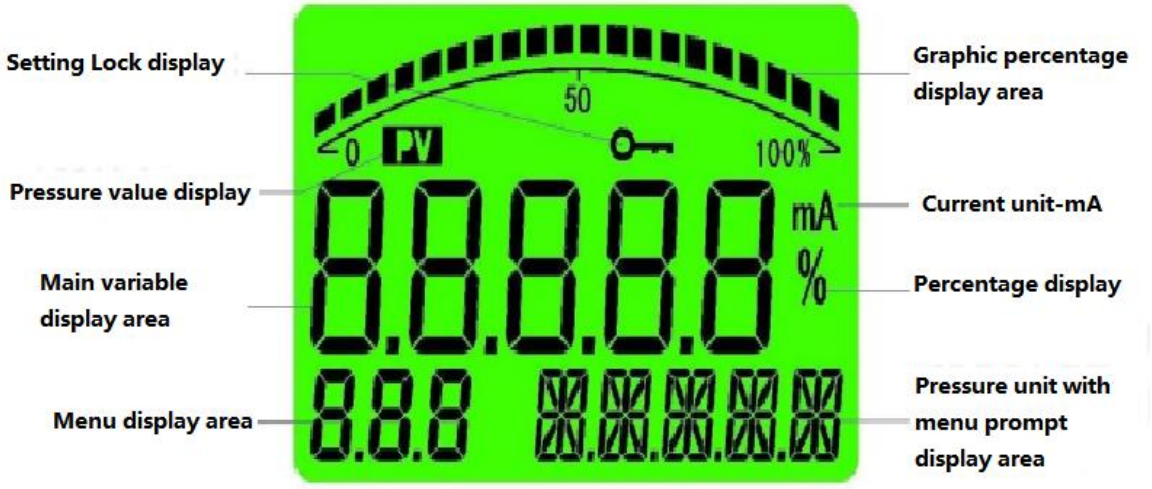
Three-wire voltage output transmitter electrical wiring diagram



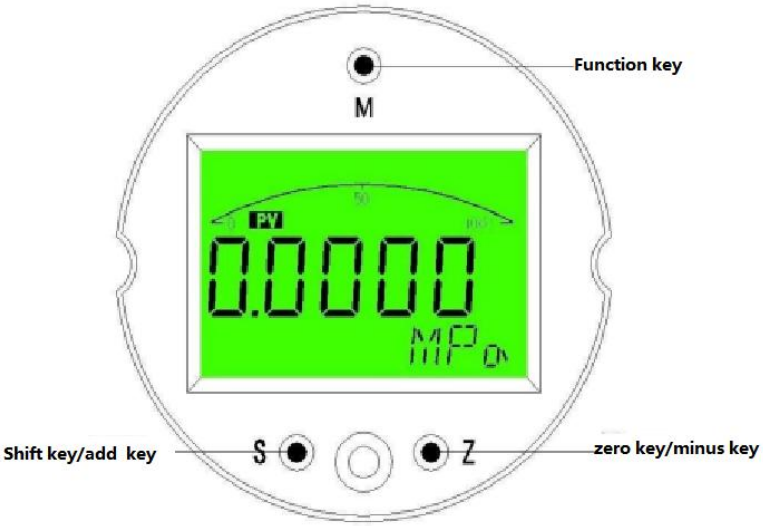
MODBUS-RTU /RS485 output transmitter Electrical wiring diagram

Penal Operation

1.1 Display instruction



1.1 Key Function description



1.2 .1 The function keys "M"

In measurement mode, press to enter the password setting.

Measurement mode long press for 5 seconds to enter the main variable clearing (PV clearing).

Set mode Press to enable parameter modification. The modified parameter blinks. Tap again to confirm the parameter modification.

1.2.2 Shift key "S"

Measurement mode tap to modify the display mode.

Set mode adds one to the setting parameter, which shifts continuously in a long time.

1.2.3 Setting The Zero Key “Z”

Measurement mode tap to modify the display mode.

Set mode sets the parameter shift and subtraction function, which shifts or subtracts continuously in a long time.

1.2.4 Summarize

The instrument realizes the setting and collection of all parameter input and calibration data through three keys on the panel. The setting and input of the instrument take a variety of optimization measures to improve the operation speed of customers:

Meter shift key and increase key have shift rate function.

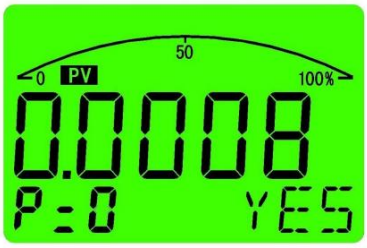
Meter has both shift and incremental input methods, using shift for a menu requiring substantial numerical modification and incremental for a menu requiring continuous input of data.

Meter stops the analog output when set, so that if the user does not operate the meter within 60 seconds, it automatically exits to the measurement state. Meter saves all Settings only when the menu is normally removd.

1.3 Shortcut Functions

Meter has a quick function to clear the main variable to facilitate rapid setting by the user on site.

1.4 The pivot variable is cleared



Principal variable clearance, namely PV clearance, is the zero point of relative atmospheric pressure, not the zero point of the sensor range.

Turn the transmitter straight. Under atmospheric pressure, long press "M" button for more than 5 seconds to enter the main variable clearing function, as shown in the picture on the right, "P=0" is displayed in the menu area, and "S" and "Z" keys are used to select the operation to be carried out, and "NO" is displayed in the prompt area.

No editor-in-chief clearance; "YES" for editor-in-chief zero;

If there are no keystrokes within 30 seconds, the meter will return to measurement mode. This function is forbidden in the production process, suitable for use in the field.

Selecting YES will result in two states, zero clear and anti-zero clear, which will be executed continuously in turn.

1.5 Menu Description

The menu of this instrument is divided into "advanced user"; "General user" is distinguished by the entry password of each menu.

"Advanced User menu"

The access password is "00016", which is used for some special Settings according to the requirements of the transmitter site.

"General user menu"

The password is 00001, and the display unit, current limiting, filtering, and display mode can be set.Note: If there is no button operation within 60 seconds, it will automatically exit the setting and return to the measurement mode.

1.5.1 Password Setting menu

PIN: password input menu, can be set range (19999 ~ 99999), menu prompt "LOCK"

Set the menu to enter the password, if the password is wrong or there is no key operation within 30 seconds, it will automatically return to the measurement mode.

1.5.2 General User menu, password 00001

UNT: Set the user unit. The value ranges from 0 to 24. Menu prompt is set for each unit "Mpa", "Kpa", "Pa", "bar", "MBAR", "PSI", "mH2O", "mmH2O", "inH2O", "ftH2O", "MHG", "mmHG", "INHG", "kg/cm2", "ATM", "Torr" ". Pressure units, and concentration units. The pressure units can be dynamically converted to each other.

"M", "CM", "MM", "KG", "°C", "PH", "F" ".

UDP: user decimal point, the range can be set to 0-5, 0-4 respectively corresponding to 0-4 decimal point, 5 automatic decimal point, the instrument will automatically plan the decimal point value according to the rangeof display.

SHO: Home screen display mode 0- current mode, 1- Measured value mode, 2- percentage mode.

(FIX) OUT: fixed current output, customer user field test output fixed current, one can be output 3.800, 4.0000, 8.000, 12.000, 16.000, 20.000, 20.500, 21.000 mA's current value.

END: END and save the Settings data menu, exit from here to the measurement mode, press M to exit.

1.5.3 Advanced User Menu, Password 00016

IUL: Set the lower limit of the transmission range. The range can be set (-19999 ~ 99999). The menu prompt displays the current pressure unit.

This function can realize the zero passive transfer of the transformer output. The set pressure value will correspond to the current value set in the "SoL" zero current menu. For the convenience of user setting, the decimal point position in this menu can be set by pressing the key, so that users can quickly set the required value.

The minimum range of the transmitter can be compressed by 3:1 of the sensor range, and the maximum range can be set by 1:1 of the sensor range. Beyond this range, the output accuracy of the transmitter will be affected.

IUH: Set the upper limit of the transmission range. The range can be set (-19999 ~ 99999). The menu prompt displays the current pressure unit. This function can realize the full point passive transfer of the transmission output, and the set pressure value will correspond to the current value set by the "SoH" full point current menu. In order to facilitate the user to set, the decimal point position in this menu can be set

by the key, so that the user can quickly set the required value.

The minimum range of the transmitter can be compressed by 3:1 of the sensor range, and the maximum range can be set by1:1 of the sensor range. Beyond this range will affect the accuracy of the converter output.

SOL: zero point electrical fine tuning, adjustable range (-1000 ~ 1000)

In the process of using the transmitter, if there is error in the output zero current value, ammeter can be connected in the transmitter power loop, through "S" and "Z" to fine-tune the zero current value, the current fine-tuning range is about ±0.35mA.

SOH: Full point current fine tuning, adjustable range (-1000 ~ 1000)

In the process of using the transmitter, if there is error in the output of the full point current value, ammeter can be connected in the transmitter power loop, through "S" and "Z" to fine-tune the full point current value, the current fine-tuning range of about ±0.35mA.

ZERO: ZERO full shielding coefficient, 0.001 marks 0.1%. The display and output of zero or full in the range of +-0.1%FS will not change. Keep the default value at zero or full.

CLE: Indicates that current output limit is enabled.

CLL: Current limit output zero value. The default value is 3.5Ma.

CLH: current full output limit value, such as 20.005, the maximum output to 2.005 will not increase the current. The default 21.000 ma

OFT: displays offset value, can be set range (-19999 ~ 99999), menu prompt displays the current pressure unit

By setting this menu value, you can offset the transmitter display and output value. The factory default value of this menu is 0. In general, there is no need to set this menu value.

COE: Sensor sensitivity correction coefficient, adjustable range (0.0001 ~ 1.9999), menu prompt "GAIN" In transmitter in use process, if the sensitivity of the sensor changes, through this menu for its correction, before to correct the transducer sensitivity should be reset through the main variables (PV) function of the transducer zero error correction, to ensure that the sensitivity of the revised linear normal transmitting, the default value for the "1.0000" menu.

Such as: The transmitter calibration range is 0.0000 ~ 20.000MPa, and the zero point becomes "0.0050MPa" and the full point becomes "20.160MPa" after the use of the transmitter for a period of time. At this time, the transmitter zero point and sensitivity have changed, and the main variable clearing function should be used to clear the zero error of the transmitter when it is corrected. After the main

variable is cleared, the zero point of the transmitter is "0.0000MPa" and the full point is "20.110MP". Then, the sensitivity of the transmitter is modified by dividing the theoretical full point by the actual full point value. That is 20.000MPa /20.110MPa=0.9945. The sensitivity change can be corrected by modifying the sensor sensitivity correction coefficient to "0.9945".

RST: Restores factory calibration data.

END: END and save the Settings data menu, exit from here to the measurement mode, press M to exit.

1.5.4 Exit the Settings menu

End: Exits the Settings menu. Press this menu to confirm and save the data and push it into measurement mode. In other menus, holding down the M key will exit without saving data and return to measurement mode.

CERTIFICTIONS

Certification organization	CQM
Quality management system	ISO 9001:2015
Certification scope	Pressure transmitter's research and manufacture
Registered number	CQM-32-2020-0052-0001

Certification organization	ECM
Certification scope	Pressure Transmitter
Standard	EN61326-1:2013
	EN61326-2-3:2013
	EN61000-6-2:2005/AC:2005
	EN61000-6-4:2007+A1:2011
Registered number	3Z200408.NHET098