

*Patton*



Ultrasonic Level Meter

**Datasheet**

# Patton

## Ultrasonic level meter

DP/DFG ultrasonic level meter

### Product description

The Ultrasonic Level Meter with Chinese and English menu and simple set, can meet different requirements from customer. Normally, after followed installation instruction, then set several parameters, it will start to work.

Compact transmitters for non-contact level measurement of fluids, pastes and coarse bulk materials

Our products can be debugged through three keys on the panel. Then, the measured value is showed by LED.



DFG  
Wall-mounted  
ultrasonic level meter



DP  
ultrasonic level meter

### Application

Compact transmitters for non-contact level measurement is ideally suited for corrosive, ultrapure, sticky or dirty liquids, and is broadly selected for bulk storage, day tank, lift stations and process tank level applications.

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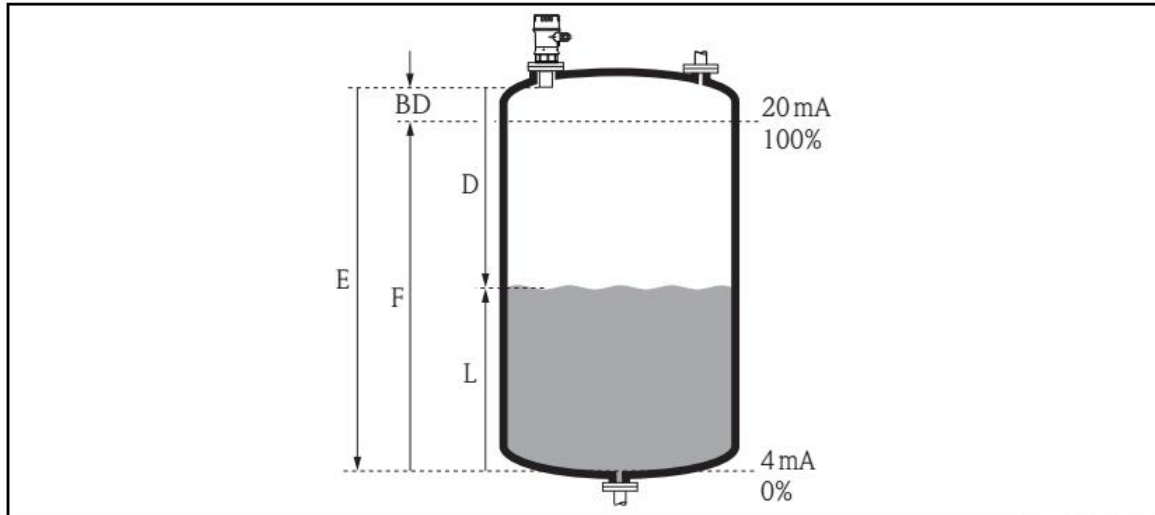
## **Features**

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1. Quick and simple commissioning via menu-guided on-site operation
  2. Envelope curves on the on-site display for simple diagnosis
  3. 2 languages selectable (English and Chinese)
  4. Installation possible from thread G2 upwards
  5. Non-contact measurement method minimizes service requirements
  6. Linearization function for conversion of the measured value into any unit of length
  7. Integrated temperature sensor for automatic correction of the temperature dependent sound velocity
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## Measuring principle

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The sensor of the instrument transmits ultrasonic pulses in the direction of the product surface. There, they are reflected back and received by the sensor. The instrument measures the time  $t$  between pulse transmission and reception. The instrument uses the time  $t$  (and the velocity of sound  $c$ ) to calculate the distance  $D$  between the sensor membrane and the product surface:

$$D = c \cdot t/2$$

As the device knows the empty distance  $E$  from a user entry, it can calculate the level as follows:

$$L = E - D$$

An integrated temperature sensor (NTC) compensates for changes in the velocity of sound caused by temperature changes.

### Interference echo suppression

The interference echo suppression feature on the instrument ensures that interference echos (e.g. from edges, welded joints and installations) are not interpreted as a level echo.

### Calibration

Enter the empty distance  $E$  and the span  $F$  to calibrate the device.

### Blocking distance

Span  $F$  may not extend into the blocking distance  $BD$ . Level echos within the blocking distance cannot be evaluated due to the transient characteristics of the sensor.

## Product parameters

Function	Compact type	Remote type
Range	5m、10m、15m、20m、30m、40m、50m、60m	5m、10m、15m、20m、30m、40m、50m、60m、70m
Accuracy	0.5%-1%	0.5%-1%
Resolution	3mm or 0.1%	3mm or 0.1%
Display	Chinese and English LED	Chinese and English LED
Analog Output	Four-wire 4 ~ 20mA/510 Ω load Two-wire 4 ~ 20mA/250Ω load	4~20mA/510Ωload
Relay Output	Two groups:AC 250V/ 8A or DC 30V/5A Status can be programmed	Two groups for single channel Fourgroups fordouble channels AC 250V/ 8A or DC 30V/ 5A Status can be programmed
Power supply	Standard:24VDC Optional:220V AC+15%50 Hz	Standard:220V AC+15% 50Hz Optional:24VDC 120mA or Customize:12VDC or battery
Environment Temperature	LED : -20~+60℃, Probe : 20~+80℃	LED : -20~+60℃, Probe : 20~+80℃
Communication	Option:485,232 Communication (manufactures agreement)	Option:485,232 Communication (manufactures agreement)
Protection Grade	LED: IP65, Probe: IP68	LED: IP65, Probe: IP68
Cable Probe	No	standars:10m longest:100m
Probe installation	According to the range and the probe type	According to the range and the probe type

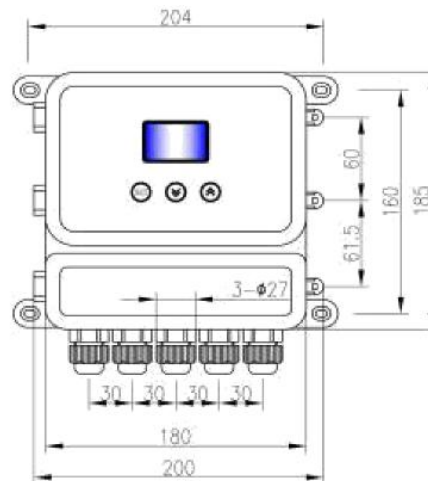
<p>Power Consumption</p>	<p>Split type            Power supply:24V,            No relay: 100mA            Channel 1 of Relay: 120mA;            Channel 2 of Relay: 145mA;            Channel 3 of Relay: 170mA;            Channel 4 of Relay: 190mA;            The specific power is as follows;            No relay: <math>24 \times 100\text{mA} = 2.4\text{W}</math>;            Channel 1 of Relay: <math>24 \times 120\text{mA} = 2.9\text{W}</math>;            Channel 2 of Relay: <math>24 \times 145\text{mA} = 3.5\text{W}</math>;            Channel 3 of Relay: <math>24 \times 170\text{mA} = 4.1\text{W}</math>;            Channel 4 of Relay: <math>24 \times 190\text{mA} = 4.6\text{W}</math>;</p>
<p>Power Consumption</p>	<p>Integrated type(four-wire system)            Power supply:24V,            No relay: 80mA            Channel 1 of Relay: 105mA;            Channel 2 of Relay: 130mA;            The specific power is as follows;            No relay: <math>24 \times 80\text{mA} = 1.9\text{W}</math>;            Channel 1 of Relay: <math>24 \times 105\text{mA} = 2.5\text{W}</math>;            Channel 2 of Relay: <math>24 \times 130\text{mA} = 3.1\text{W}</math>;</p>
<p>Power Consumption</p>	<p>Integrated type(two-wire system)            Power supply:24V,            No relay: 30mA            The specific power is as follows:            No relay: <math>24 \times 30\text{mA} = 0.72\text{W}</math></p>

**Note:**

Ultrasonic probes can also be customized according to customer need in this series: high pressure and high temperature resistant, light, small diameter, small blind area and other special regulatory probes.

## Installation dimension of level meter

### (1) Split type



### (2) Integrated Type (Enhanced Mode)



Figure 4-3 Side view



Figure 4-4 Front view

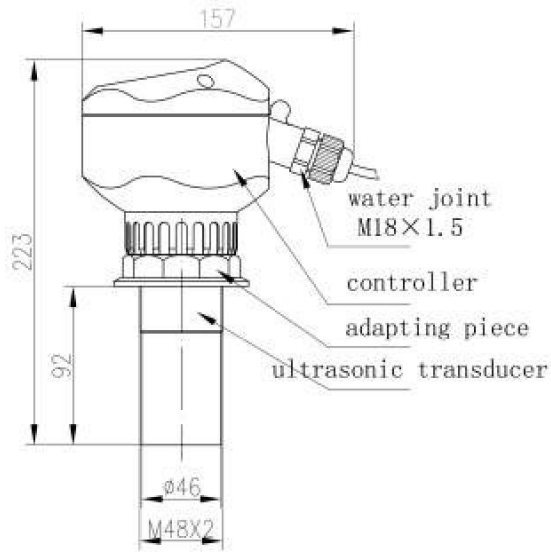


Figure 4-5 Thread of sensor (M48×2)

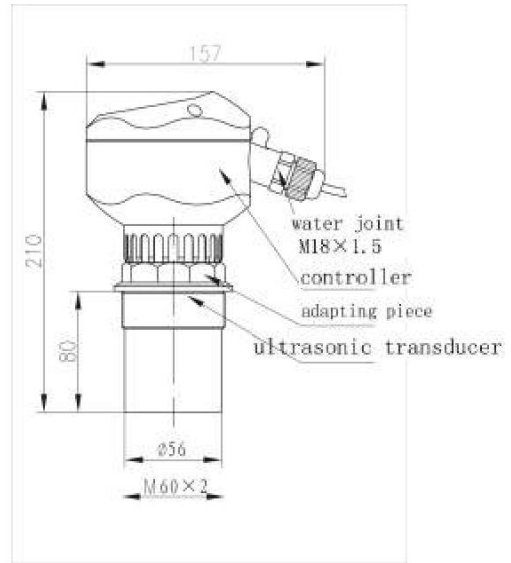


Figure 4-6 Thread of sensor (M60×2)

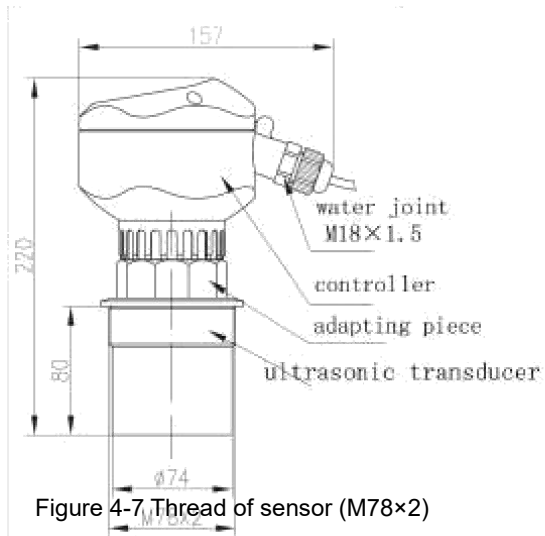


Figure 4-7 Thread of sensor (M78×2)

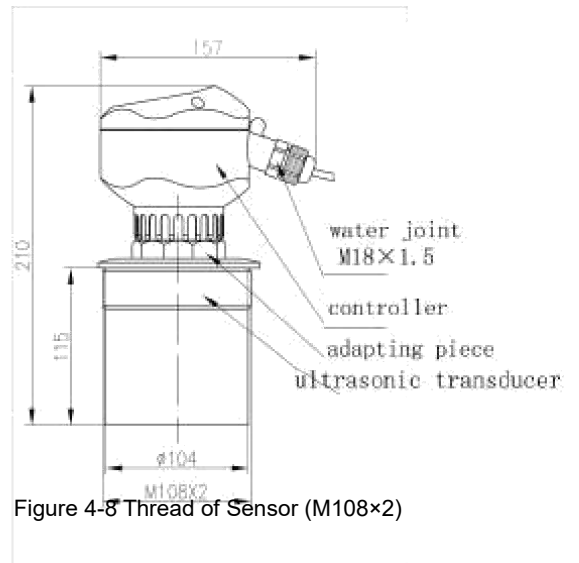


Figure 4-8 Thread of Sensor (M108×2)