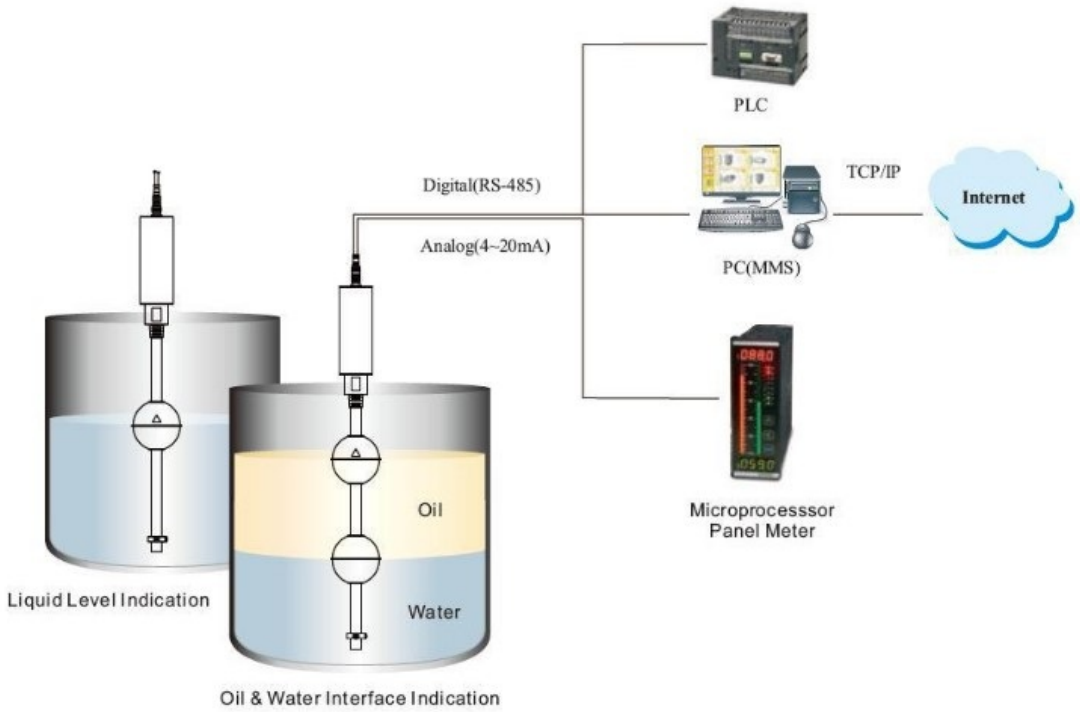
SRM901 Magnetostrictive level gauge

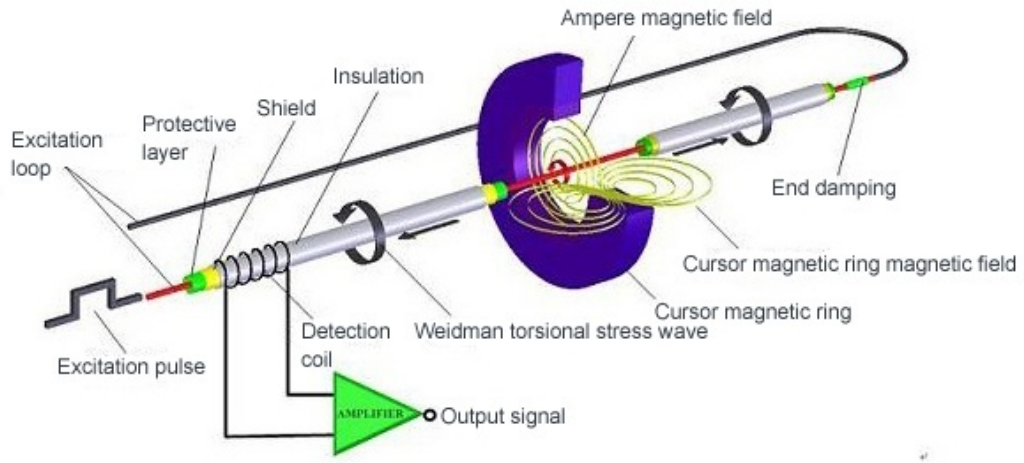
PRODUCT FEATURES

- Real time data transmission.
- Five-point temperature sensing.
- Maximum communication distance: 1200m.
- High precision as 0.5mm and resolution as 0.01mm.
- More reliable, environment friendly, could be used in torrid climate and freezing climate.
- Easy to install and maintain.
- Lightning protection and radio frequency interface

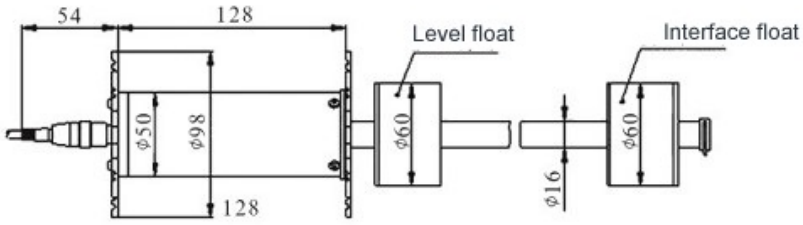
OVERVIEW

The magnetostrictive linear displacement (liquid level) transmitter is mainly composed of a measuring rod, an electronic bin and a non-contact magnetic ring (floating ball) sleeved on the measuring rod. A magnetostrictive wire (waveguide wire) is installed in the measuring rod. During operation, when an initial pulse is generated by the electronic circuit in the electronic warehouse and transmitted in the waveguide wire, the colleague generates a rotating magnetic field advancing in the direction of the waveguide wire. When this magnetic field meets the permanent magnetic field in the magnetic ring (floating ball), it generates a magnetostrictive effect, which causes the guide wire to generate a twist pulse, or a "return" pulse. This twist pulse is installed in the electronic warehouse The energy pickup mechanism senses and converts it into corresponding current pulses. The time difference between the start and return of the two pulses is calculated by the electronic circuit, and the measured position displacement can be accurately measured.





PROBE OUTLINE STRUCTURE



TECHNICAL PARAMETERS

Range	200mm–7000mm
Output mode	RS485, maximum communication distance 1200m
Power supply	DC24V
Product power consumption	⩽40mA
Working temperature	-40 ℃-+ 60 ℃
Measurement accuracy	± 0.5mm
Repeatability	± 0.2mm
Oil level resolution	± 0.01mm
Water level resolution	± 0.01mm
Temperature measurement points	5
Temperature sensor resolution	0.625℃
Upper blind zone	90mm
Lower blind area	50mm
Explosion-proof mark	EXiaIIA T4 Ga
Associated equipment	Zener safety barrier

Applicable medium	gasoline diesel kerosene light oil heavy oil alcohol mixture
Protection level	IP67
The communication address is a 2-digit probe address that supports 01-99. For the specific address, see the last two digits of the number on the probe nameplate.	

ENVIRONMENTAL PARAMETERS

Working temperature	-40- + 60 ℃
Atmospheric pressure	86kPa-106kpa

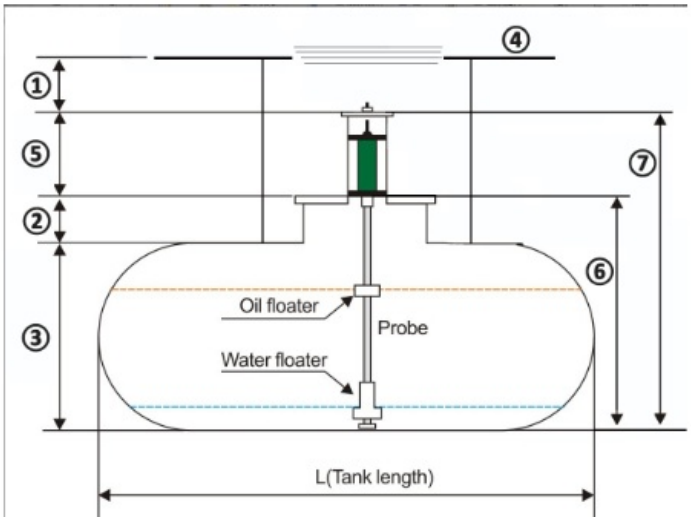
SERIAL PARAMETERS

Communication agreement	4800BPS
Invalid check, 8 data bits, 1 stop bit	

How to choose tank level gauge probe length?

For SRM901 probe, different lengths mean different specification. For example, SRM901-2870, which means the model is SRL901, length of probe rod (below probe head) is 2870mm. The selection of probe length as below:

Probe length = Probe length⑥=Tank diameter③+Manhole height②+minimum80mm



①—Minimum distance from top of riser pipe to manhole well cover

②—Manhole height

③—Tank diameter

④—Ground surface

⑤—Riser pipe (inner diameter 4 inches and height 35cm is suggested)

⑥—Probe length

PROTOCOL SETTING

Agreement one

1. Protocol structure:

The command sent from the terminal to the oil level gauge consists of five parts, as follows:

- Header: 2 bytes, fixed as ASCII $! (0x24 0x21).
- Command: 2 bytes, each is different, such as DO (0x44 0x4F).
- ID number: 2 bytes, ASCII serial number, such as 01 (0x30 0x31). Up to 99.
- Comparison: 2 bytes. The comparison and sum method is adopted. It is the lower 8 bits of the sum of all characters from the header to
- the ID number. Finally, the lower 8 bits are converted to ASCII in hexadecimal mode, as in the last. The calculated checksum is 0x0245. Only the lower 8 bits are retained, that is, 0x45, and the hexadecimal representation converted to ASCII is "45" (0x34 0x35).
- The end of the packet: 2 bytes, which is a carriage return and line feed, that is, 0x0D 0x0A

- The command sent by the oil level gauge to the terminal is also composed of six parts, as follows:
- Header: 1 byte, fixed as "*", that is, 0x2A.
- Identification: 3 bytes, indicating the data type of the current reply.
- ID number: 2 bytes, ASCII serial number, such as 01 (0x30 0x31). Up to 99.
- Value: 6 bytes, indicating the value of the current reply. The length is fixed at 6 bytes.

  Comparison: 2 bytes, the comparison and sum mode is adopted, which is the lower 8 bits of the sum of all characters from the header to the value. Finally, the lower 8 bits are converted to ASCII in hexadecimal mode, such as the last The calculated checksum is 0x0245, and only the lower 8 bits are retained, that is, 0x45, and the hexadecimal representation converted to ASCII is "45" (0x34 0x35).

  End of packet: 2 bytes, carriage return and line feed, ie 0x0D 0x0A

2. Agreement content:

- Reading level:

  Commands from the terminal or computer to the level gauge (without any filtering):

  ASCII: $! DO0139

  01 indicates the ID number.

  Among them, 39 represents the checksum, which is the lower 8 bits from the $ character (that is, 0x24) to the direct sum of all the characters before the checksum, which are converted into hexadecimal ASCII codes, such as $! (After adding DO01, it is 0x0139, so the comparison value is ASCII 39, which is 0x33 0x39.)

  Hex: 24 21 44 4F 30 31 33 39 0D 0A

  Level meter reply:

  ASCII: * RFV01000.0197

  RFV is the return mark for reading the liquid level.

  01 is the current oil level sensor ID number.

  000.01 is the current oil level value, expressed as a percentage, the highest value is 100.00. It is fixedly expressed in the form of XXX.XX, and the short position is supplemented by zero. For example, 012.21, it is expressed as 12.21%.

  98 is the comparison.

  Hexadecimal: 2A 52 46 56 30 31 30 30 30 2E 30 31 39 38 0D 0A

- Read the current level AD value:

  Commands from the terminal or computer to the level gauge (with filtering):

  ASCII: $! RY0151

  Hex: 24 21 52 59 30 31 35 31 0D 0A

- Level meter reply:

  ASCII: * CFV0100FA32B6

  00FA32 is the current AD value, 00 is less than 6 bytes and replaced by 0, FA32 is the hexadecimal representation of the current oil level AD value in ASCII, which means that the current oil level value is 0xFA32.

  Note: This AD value is the corresponding AD value of 000000 ~~ 00FFFF when the oil level changes from 0% to 100%.

  Hex: 2A 43 46 56 30 31 30 30 46 41 33 32 42 36 0D 0A

- Set the level meter ID:

  Commands sent from the terminal or computer to the level gauge: (ID range 0--99)

  ASCII: $! ID0133

  ID is the command

  01 is the ID value

Hex: 24 21 49 44 30 31 33 33 0D 0A

- Level meter reply:

  ASCII: * SID01OKOKOK39 indicates success.

  * SID01NONONO42 indicates failure.

  01 indicates the set ID value, OKOKOK indicates that the setting was successful, and ONONON indicates that the setting failed.

  Hex: 2A 53 49 44 30 31 4F 4B 4F 4B 4F 4B 33 39 0D 0A

  2A 53 49 44 30 31 4E 4F 4E 4F 4E 4F 34 32 0D 0A

- Set the filter coefficient:

  Command from terminal or computer to level gauge

  ASCII: $! Z40134

  Z is the command

  01 is the ID value

  4 is the filter coefficient, the optional parameters are: 0,1,2,3,4,5,6,7,8,9 The remaining parameters are invalid

  Hexadecimal: 24 21 5A 34 30 31 33 34 0D 0A,

  Filtering range: 0 ~~ 9 levels

  0, no filtering

  1, 12 seconds

  2, 24 seconds

  3, 36 seconds

  4, 60 seconds

  5, 120 seconds

  6, 180 seconds

  7, 240 seconds

  8, 480 seconds

  9, 960 seconds

  Level meter reply:

  ASCII: * SZN01OKOKOK54 indicates success.

  * SZN01NONONO5D means failure

  Hexadecimal: 2A 53 5A 4E 30 31 4F 4B 4F 4B 4F 4B 35 34 0D 0A

  2A 53 5A 4E 30 31 4E 4F 4E 4F 4E 4F 35 44 0D 0A

Agreement two

Query command: * 020600 #

Reply: $ XROIL0202DDDDXX \ n DDDD is the fuel value, XX is the XOR check value, '\ n' terminator

DDDD is the percentage of oil level

Example: $ XROIL02025678XX \ n

The oil level percentage is 56.78%

Read the current level percentage * 020600 #

Damping coefficient * 0206X3 # x is 0–9 (0 without damping, 9 maximum time as above