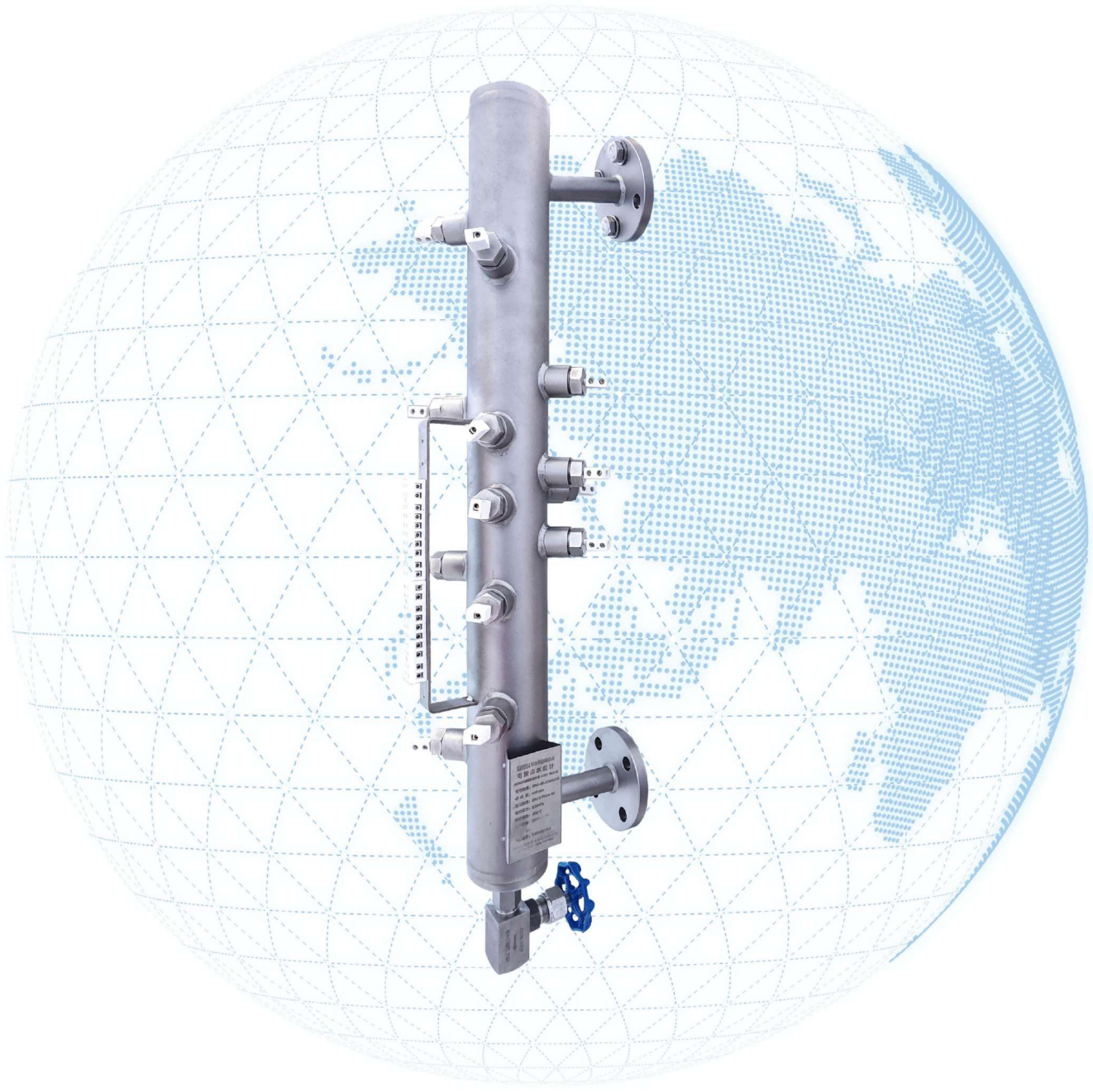
Product Manual | Electrode Contact Level Gauge



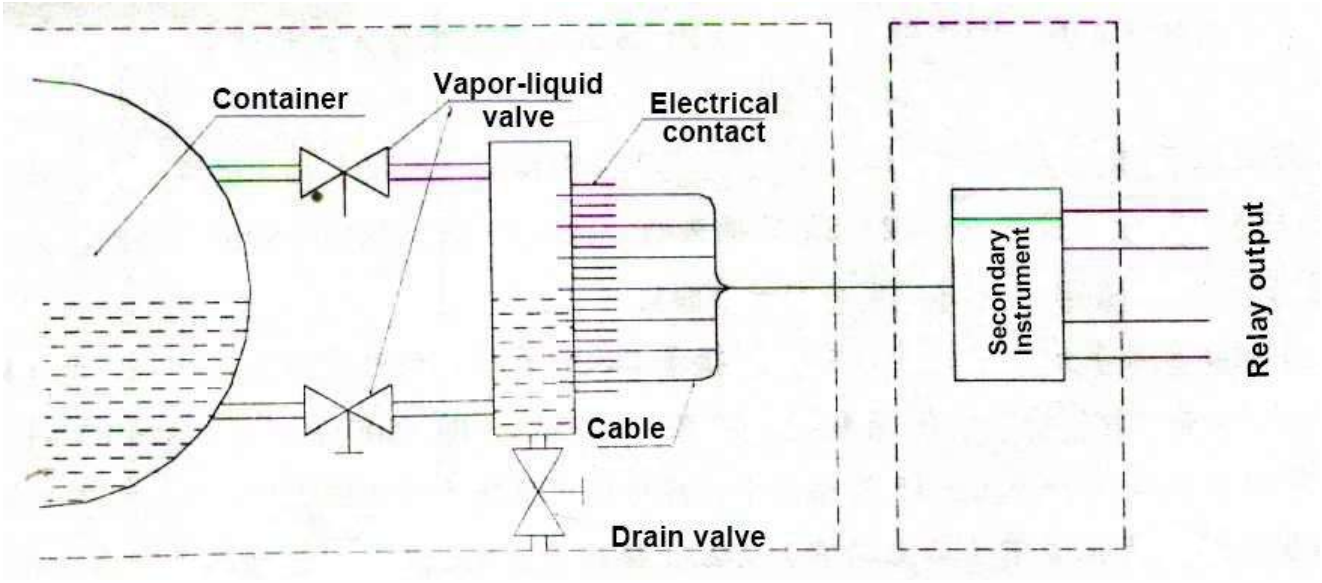
Product Description

The intelligent universal electric contact liquid level monitor is an electric contact liquid level measurement, display and control instrument composed of measuring cylinder, ultra pure ceramic electrode and display instrument. It uses red and green led to simulate steam (red) and water (green) in the display, which can clearly indicate the position of liquid level in the container, and has the functions of over limit alarm and output.

The intelligent electric contact liquid level monitor has the advantages of simple structure, intuitive display, reliable operation, small amount of maintenance, convenient judgment and troubleshooting. It adopts all electric signal transmission, not only has small delay, but also has no variation and scale error caused by mechanical transmission, so it does not need to calculate and adjust the error. The most outstanding advantage of the electric contact liquid level meter is that it can adapt to the variable parameter operation of the boiler. Under the variable parameter operation conditions such as the start and stop of the boiler, the instrument can accurately display the water level in the control room.

Working principle

This series of liquid level monitor and control system is composed of measuring cylinder, electric contact and secondary instrument, and its system working principle block diagram is as shown in the figure:



Because of the great difference between the electric conductivity of water and steam, the function of the measuring cylinder is to obtain the credit by the change of the water level through the change of the electric contact resistance. In the liquid state, due to the small dielectric resistivity, when a voltage is applied between the electric contacts, the current flowing is large; otherwise, the current flowing through the electric contacts that are not immersed in the liquid surface is small. In these two states, the current flowing is very related. It can be sent to the secondary instrument as a signal lock. After being amplified, it can display and control the output, thus realizing the remote monitoring.

Product Feature

- The display part of the instrument adopts analog display and digital display at the same time to display the rise and fall of water level in a very intuitive and real-time manner.
- The number of display points can be set arbitrarily within the range of 6-19 points according to the user's needs.
- The scale value of each scale can be set arbitrarily through panel operation, and the scale can be replaced conveniently according to the scale value, which overcomes the disadvantages of the old instrument such as poor universality, non interchangeability, and many specifications and varieties of spare parts.
- it has the function of sound and light alarm for liquid level exceeding limit and multiple alarm modes selection. The position of alarm point can be set arbitrarily within the scale scale scale range.
- With the function of automatic judgment and tracking of water resistance, this instrument can test each electrode separately, and display the water resistance (steam resistance) value at each point, so that you can find and judge whether the electrode works normally in time, help you decide whether the whole set of electrode needs to be cleaned or replaced, and accurately provide the adjustment parameters of the critical face value of vapor-liquid.
- It has strong fault tolerance. Due to the use of intelligent water level recognition technology, in the case of abnormal operation of individual electrodes, the instrument can still display the correct water level value, and immediately display the abnormal electrode on the panel scale in the form of flashing to remind you to carry out maintenance and replacement, overcoming the defect that the old instrument electrode can only be found after it is damaged.
- Strong anti-interference ability. Advanced digital filtering technology is adopted for the input link, and the electrode state judgment function with back difference is adopted, which greatly improves the reliability and anti-interference ability of the instrument. Delay alarm is adopted for the output link to prevent false alarm in case of strong instantaneous interference.
- The current output adopts a high-precision linear output mode (determined according to the setting value of the scale range), which avoids the blind end of the non-linear output of the old instrument and the signal transmission failure of the DCS system.
- The low-voltage protection technology is adopted in the self-supply power supply, which overcomes the battery damage after the old instrument self-supply power supply.
- Intelligent universal liquid level monitor can replace all the old products of electric contact liquid level monitor. All its interfaces are compatible with the old instruments and can directly replace the old instruments without any changes.

Application

The electric contact level monitor is suitable for the level measurement and control of conductive liquid. It is mainly used to monitor the water level of steam bubble, high and low pressure heater, deaerator, evaporator, condenser, Start-up Separator of once through boiler and other water tanks. But it is not suitable for inflammable and explosive occasions

Technical parameters

Liquid water resistance range:	0—500kΩ（automatic tracking）
Analog display:	A group of color changing LED (up to 19 points, special specification up to 38 points) displays the real-time liquid level value in the way of steam red, water green and scale scale scale
Digital display:	One compliance tube, three digit nixie tube (or four digit nixie tube) displays the real-time liquid level value in digital mode
Lead length from ultra pure ceramic electrode to secondary instrument:	≤200m
Isolated output:	0～10mA（RL＜1kΩ＝，4～20mA（RL＜500Ω）（linear）
Alarm output contact capacity:	AC220V, 1A; Four groups of normally open and normally closed contacts (two positions for upper and lower limits) are available, with special requirements. Six groups of normally open contacts can be provided and five groups and four groups of different combinations (three upper and three lower, three upper and two lower two upper and three lower, three up per and one lower, one upper and three lower) can be carried out
Power supply time of DC battery in the unit	≥1H
Working power supply:	AC220V±10%，50Hz±1Hz
Working conditions of the instrument:	ambient temperature：-10℃～+45℃；relative humidity：≤85%
Instrument opening size:	152^{+1}×76^{+1} or 152^{+1}×152^{+1}mm
External dimension of instrument:	Vertical type：80×160×150mm（width×height×length） Square Shape：160×160×150mm（width×height×length） Horizontal type：160×80×300mm（width×height×length） Wall mounted：173×225×80mm（width×height×length）

Structure

Standard type

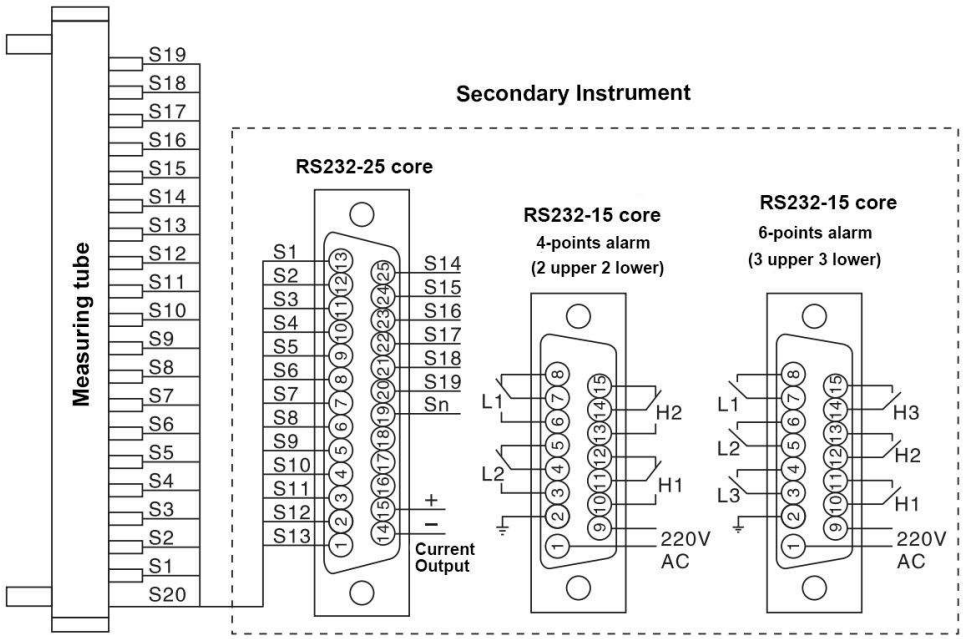
Intelligent type

Herizontal type

Wall mounted type

Wiring connection

1. SYX Type

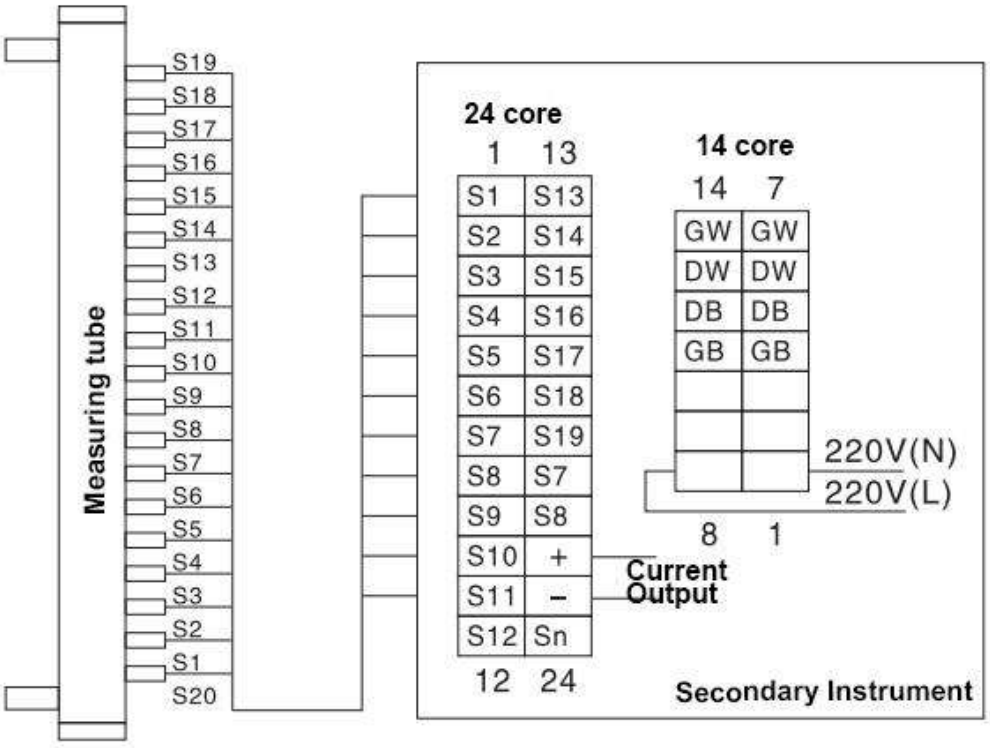


Note:

1. The common line (SN) of the electric contact measuring cylinder is connected to 19 pins of rs232-25 core;
2. The electrodes on the measuring cylinder are respectively connected from top to bottom to the corresponding pins of 25 cores, and the points below 13 are respectively connected to pins 13 to 20 of 25 cores, and points 14 to 19 are respectively connected to pins 25 to 20 of 25 cores. If the electrode measuring point is less than 19, it shall be deleted from the top to the bottom (from 19).
3. 15 core alarm output wiring Description:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4-point alarm	220 V(L)	Ground	Lower limit L2			Lower limit L1			220 V(N)	Lower limit L2			Lower limit L1		
6-point alarm			Extreme lower limitL3		Under the lower limitL2		Lower limit L1			Upper limit L1		Above the upper limit L2		Extreme upper limit L3	
Note: the following alarm modes should be selected in the six point alarm：3 upper and 1 lower, 1 upper and 3 upper, 2 upper and 3 lower, 3 upper and 2 lower, 1 upper and 3 lower															

2.UDZ Type

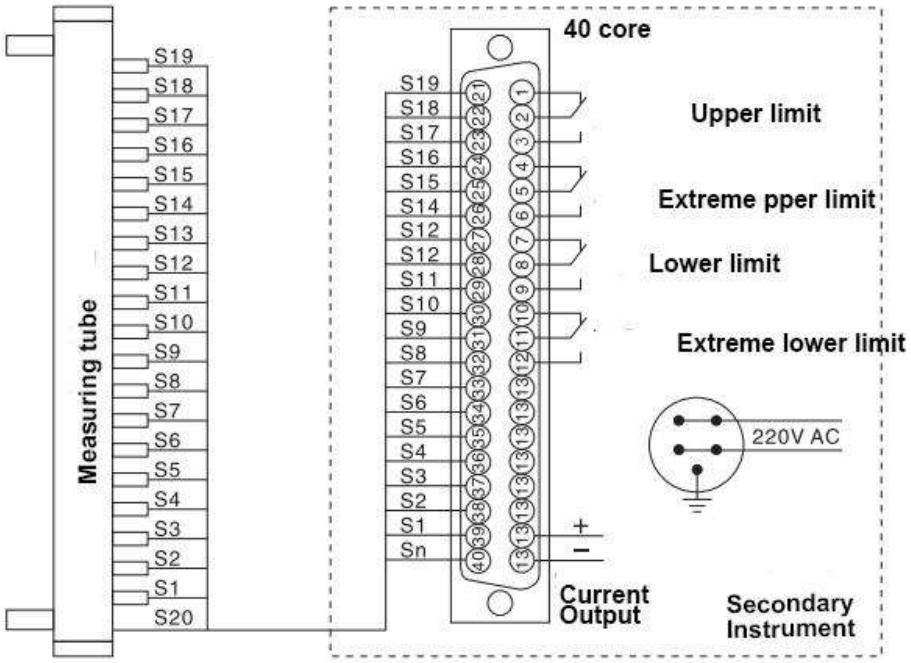


Note:

1. 24 pin of 24 core common wire of electric contact measuring cylinder;
2. The electrodes on the measuring cylinder are connected to the corresponding pins of 24 cores from bottom to top, and the electrode measuring points are connected to 1-19 pins of 24 cores in turn. If the measuring point is less than 19, the wiring shall be successively cut from the top to the bottom starting from S19.
3. 14 core alarm output wiring Description:

	1	8	2	9	3	10	4	11	5	12	6	13	7	14
4-points alarm	220 V(L)	220V (N)					Extreme lower limit		Lower limit		Upper limit		Above the upper limit	
5-points alarm					Extreme lower limit		Lower limit		Upper limit		Above the upper limit		Extreme upper limit	
6-points alarm			Extreme lower limit		Under the lower limit		Lower limit		Upper limit		Above the upper limit		Extreme upper limit	

3.SWJ Type



Note:

1. The common line of the electric contact measuring cylinder is connected to 40 pins of 40 cores;

2.19-point connection: the measurement points are from bottom to top, respectively connected to pins 39 ~ 21 of 40 cores; 17-point connection: the measurement points are from bottom to top, and are connected to 38 to 22 of 40 cores respectively; 15-point connection: the measurement points are from bottom to top, and are connected to pins 37 ~ 23 of 40 cores respectively. And so on ... 5-point connection: the measuring points are from bottom to top, and are connected to pins 32 ~ 28 of 40 cores respectively;

3. Alarm output wiring instructions:

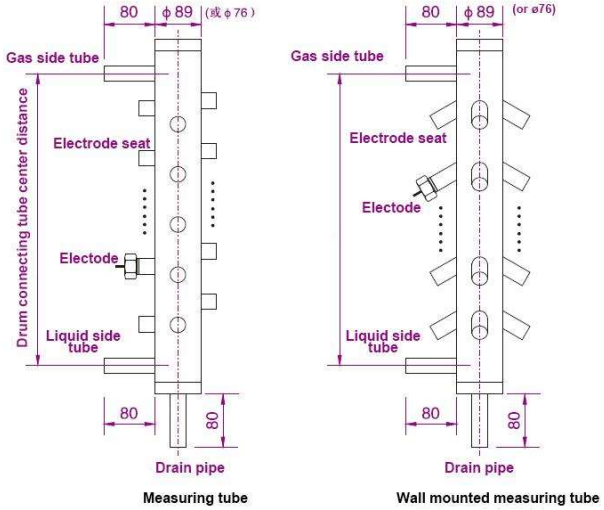
Upper limit: 4, 5, 6 (4, 5 normally closed contacts, 5 is the center contact)

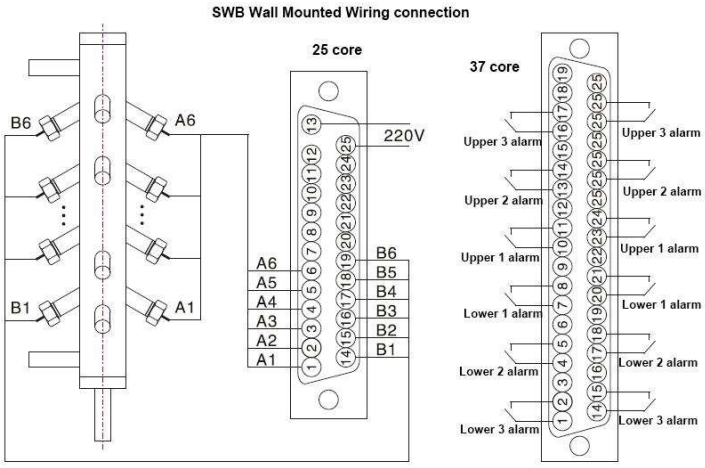
Upper limit: 1, 2, 3 (1,2 normally closed contacts, 2 is the center contact)

Upper limit: 7, 8, 9 (7, 8 normally closed arm, 8 is the center contact)

Upper limit: 10, 11, 12 (10, 11 normally closed point, 11 is the center contact)

Measuring tube





Measuring tube code:

Measuring tube No.	Rated pressure
01	6.4MPa
01A	10MPa
02	16MPa
03	20MPa
04	22MPa

Selection of measuring tube（For single selection ）

Measuring tube:	Just write the code: Example: “03” for 20MPa
	Example: 19A。
Material:	C:Carbon Steel
	P1: 304
	P2: 316L

Measuring Point& Display range code

CO	19A	19B	19C	19D	17A	17B	17C	17D	15A	15B	13A	13B	12A	11A	11B	11C	11D	10A	10B	09A	07A	
Scale ruler	+30	+25	+30	200														+70	220	+50		
	+25	+20	+25	170	+25	100	170	+22														
	+18	+	+20	160	+20	900	160	+	+20	120								+50	200	+35		
	+12	+10	+15	+15	+15	800	150	+14	+15	1100	+15	900	300								+75	
	+80	+80	+	140	+	750	140	+	+	100	+10	850	275	+10	160	300	220	+30	180	+20		
	+50	+50	+75	130	+75	700	130	+75	+75	900	+75	800	250	+75	130	280	200				+50	+70
	+35	+35	+50	120	+50	650	125	+50	+50	850	+50	750	200	+50	100	270	180	+15	160	+10		
	+20	+20	+30	110	+30	600	120	+30	+30	800	+30	700	175	+30	650	260	170				+25	+40
	+10	+10	+15	100	+15	550	1150	+15	+15	700	+15	600	150	+15	400	250	160	+50	150	+0		
	0	0	0	90	0	500	1100	0	0	600	0	500	125	0	300	240	150				0	0
	-10	-10	-15	80	-15	450	100	-15	-15	500	-15	450	100	-15	200	230	140	0	140	-10		
	-20	-20	-30	70	-30	400	900	-30	-30	450	-30	400	750	-30	150	220	130				-25	-40
	-35	-35	-50	60	-50	350	800	-50	-50	400	-50	300	500	-50	100	200	100	-50	130	-20		
	-50	-50	-75	50	-75	300	700	-75	-75	300	-75	200	250	-75	50	100	500				-50	-70
	-80	-80	-100	40	-100	250	600	-100	-100	200	-100	100	0	-100	0	0	0	-150	100	-35		
	-120	-100	-150	30	-150	200	400	-140	-150	100	-150	0									-75	
	-180	-150	-200	20	-200	100	200	-180	-200	0								-300	500	-50		
	-250	-200	-250	10	-250	0	0	-220														
	-300	-250	-300	0														-500	0			
Upper alarm point	+180	+200	+200	150	+200	800	1500	+220	+150	1000	+150	800	2750	+150	1600	2700	1800	+500	1800	+50	+75	+70
	+50	+50	+50	120	+50	750	1400	+50	+50	800	+50	700	2000	+50	1300	2500	1600	+300	1500	+35	+25	+40
Lower alarm point	-50	-50	-50	80	-50	600	1300	-50	-50	500	-50	450	1000	-50	650	2000	1400	-300	1300	-35	-25	-40
	-180	-200	-200	40	-200	500	700	-220	-150	400	-150	300	500	-150	150	1000	1000	-500	1000	-50	-75	-70
C-C distance reference	670	600	640	600	600	1000	1700	440	440	1200	440	900	3000	440	1600	2200	2200	1200	2200			

Selection Instruction

Intelligent level monitor

1. Model of level monitor				
SYX - Bi-color display type			UDZ - Liquid level type	
SWJ - Water level type			SWB - Wall mounted type	
2. Type				
2 - Standard type		2S - Standard digital display		4S - Intelligent type
61 - Wall mounted type（Water resistance W50K）			62 - Wall mounted type（Water resistanceW50K）	
3. Measuring Point & Display range				
☐☐☐Just write the code from the below table				
4. Rated pressure of measuring tube				
01 - 6.4MPa	01A - 10MPa	02 - 16MPa	03 - 20MPa	04 - 22MPa
5. Secondary instruments				
Z	H		F	X
Vertical 80x160x300	Horizontal 160x80x300		Square 160x160x300	Customization
6. With built-in power supply				
C - With			No - Mark Without	
7. Current output				
C - 4~20mADC			C1 - 0~10mADC	
8. Material of measuring tube				
C - Carbon steel		P1 - SS304		P2 - SS316L
HKD-UL-1 2 3 4 5 /6 7 8				

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& CONTROL INSTRUMENTS

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Manufacturer 2 : Chengdu City, Sichuan Province, China