

CLS 系列液位开关

CLS Series of Level Switch

➤ 产品介绍 Product Description

CLS 系列是基于电容原理开发的单点式液位传感器。用于液位的低位或高位测量，输出高电平、低电平或模拟量电压信号。

The CLS series is single-point liquid level sensor based on the capacitive principle and developed for measurement of low or high limit of liquid level. It outputs signal of high and low power level or analog voltage.

该传感器结构上没有任何机械活动部件，从而保证了稳定的性能和超长的使用寿命。IP67 的密封等级和高抗振性能，特别适合工程机械等恶劣工况的应用。

The sensor contains no any mechanical moving parts, thus ensures stable performance and long service life. The performance of IP67 protection class and high vibration-resistant is especially suitable for applications of harsh working conditions of construction machinery.

特种塑料制作的感应探头，可应用于结膜结垢的液体环境。

Made of special plastic, The sensing probe is anti-scale.

该传感器可测量水基介质和油基介质。导电性水基介质包括：发动机冷却液、尿素、洁净水、废水等。非导电性油基介质包括：机油、液压油、柴油和制动液等。

The level sensors are designed for measurement of two different medium types: for electrically conductive liquid medium such as coolants, AdBlue®, fresh water, waste water etc., and for electrically non-conductive liquid medium such as motor oils, hydraulic oils, fuels and brake fluids etc.



同时，根据工作电压的不同，分为 CLS40 和 CLS45 两款。

Also the level sensor has two models of CLS40 and CLS45 since the distinction of operating voltage.

➤ 产品特点 Product Features

- 质量稳定、寿命长；
Extreme stable and long service life
- 结构紧凑，体积小巧
Compact structure, small size
- 工作温度高达 150° C
Working temperature up to 150° C
- 安装螺纹可选
Various threads optional
- 输出高低电平或模拟量电压
High, low power level or analog voltage

➤ 主要技术参数 Technical Specifications

通用参数 General Specifications		
工作介质	Medium	water or oil based medium 水基或油基
功能	Function	minimum or maximum 低位或高位报警
介质温度	Medium temperature	water based medium 水基,-40°C~+125°C; oil based medium 油基-40°C~+150°C
大气温度	Ambient temperature	-40°C to +125°C
储存温度	Storage Temp.	-50°C to +125°C
安装位置	Mounting position	any 任意位置
电气参数 Electrical specifications		
工作电压	Operating voltage	CLS40: 12/24V(9-36 VDC); CLS45: 5/12V (4.5-18 VDC) CLS50: 5±0.25 VDC
电流消耗	Current consumption	<8mA
输出信号	Output	NPN,PNP,analog 模拟量, proportional analog 比例 电压
信号迟滞	Switch point hysteresis	<3mm
反向电压保护	Reverse polarity protection	yes
机械性能 Mechanical characteristics		
安装螺纹	Mounting thread	M14*1.5, M18*1.5, 1/4 NPTF, G1/4...
运行自检时间	Function control time	0,1,2S 可选
输出延时时间	Fault indication delay time	0,2,7,17S 可选
外壳材质	Housing	黄铜
探头材质	Sensing Probe	PTFE
防护等级	Protection class	IP67
环境测试 Environmental Practices		
热循环测试	Thermal Cycling	SAE J1455-2006
热冲击	Thermal Shock	SAE J1455-2006
湿度测试	Humidity	SAE J1455-2006
振动测试	Vibration	SAE J1455-2006
机械冲击	Mechanical Shock	SAE J1455-2006
IP 防护等级	IP Class	IEC 60529-2013/GB/T 4208-2017
EMI 电磁兼容性	EMC/EMI	SAE J1113-1/ISO 11452-2
ESD 测试(静电)	ESD	EN 61000-4-2

➤ **功能解释 Functions Explanation**

1) 运行自检 Automatic operational check time

标准出厂传感器设置了两秒的自检。

当接通电源时（例如打开点火开关），信号会出现两秒钟，表示运行良好。

The sensors have a two-second operational check built in as standard. When the supply voltage is applied (such as ignition being switched on), this signal appears for two seconds, thus signalling readiness to function. This signal appears for two seconds indicating ready for function.

也可根据实际应用工况设置不同的自检时间。

Other function control times are also available upon request.

2) 输出延时 Fault indication delay time

为避免短暂液位波动时出现误读数，输出信号按标准故障指示延迟时间 7 秒进行延时。

To avoid indication errors when the liquid level fluctuates momentarily, the output signal is delayed with the standard fault indication delay time of seven seconds.

也可根据实际应用工况设置不同的延时。

Other indication delay times are available upon request.

➤ 编号规则 **Product Code Reference**

CLS	40	-	1	L	1
Series 系列	Supply Voltage 电压	Medium 介质	Mimumum/Maximum 高低位报警	Output active/inactive 输出激活	
CLS- capative level switch	40- 12/24 VDC (9-36V)	1- water based mudium 水基	L- minimum 低液位	1- Normally INACTIVE(Off or low level) in the liquid, turns ACTIVE(ON or high level) in the air(ONLY FOR MINIMUM SENSOR) 介质中静默,Off 或低电平输出; 空气中激活,ON 或高电平输出--仅限于低液位报警	
	45- 5/12 VDC (4.5-18V)	2- oild based mudium 油基	H- maximum 高液位	2- Normally ACTIVE(ON or high level) in the liquid, turns INACTIVE(Off or low level) in the air(ONLY FOR MINIMUM SENSOR) 介质中激活,ON 或高电平输出; 空气中静默,Off 或低电平输出--仅限于低液位报警	
	50- 5±0.25 VDC			3- Normally INACTIVE(Off or low level) in the air, turns ACTIVE(ON or high level) in the liquid(ONLY FOR MAXIMUM SENSOR) 空气中静默,Off 或低电平输出; 介质中激活,ON 或高电平输出--仅限于高液位报警	
				4- Normally ACTIVE(ON or high level) in the air, turns INACTIVE(Off or low level) in the liquid(ONLY FOR MAXIMUM SENSOR) 空气中激活,ON 或高电平输出; 介质中静默,Off 或低电平输出--仅限于高液位报警	

1	5	0	7	1
Output 输出信号	Threads 安装螺纹	Self-inspection Time 运行自检时间	Output Delay 输出信号延时	Connectors 电气连接
1- LSS,low side switch,NPN 正极接负载,NPN 输出	3- M18*1.5	0- 0s	0- 0s	1- Deutsch DT04-3P
2- HSS,high side switch,PNP 负极接负载,PNP 输出	5- M14*1.5	1- 1s	2- 2s	
3- AOV,anolog output,1.2V in the liquid,4.0V in the air 模拟电压, 介质中 1.2V,空气中 4.0V	6- 1/4-18 NPTF	2- 2s	5- 5s	

4- AOV,anolog output,0.5V in the liquid,4.5V in the air
模拟电压, 介质中 0.5V,空气中 4.5V

7- G1/4

7- 7s

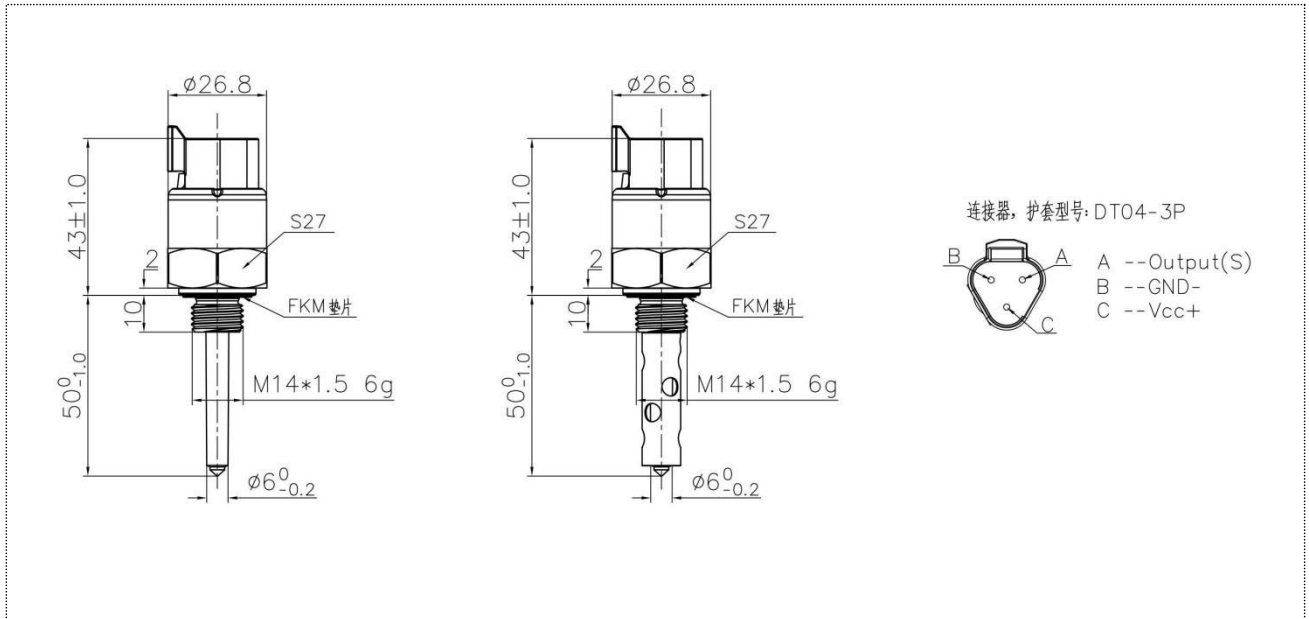
7- AOP,protional anolog output,30% of VCC in the liquid,
70% in the air

8- 3/8-18 NPTF

比例电压,介质中 30%供电电压,空气中 70%

9- 1/2-14 NPT

➤ 外形&安装尺寸 Mechanical Dimensions(mm)



➤ 应用 Applications

应用机型包括: 发动机、液压系统、农机、矿山设备、工程机械、商用车辆等。

The sensor is ideal for application of engines, hydraulic system, agricultural machinery, mining equipments, construction equipments and commercial vehicles.

