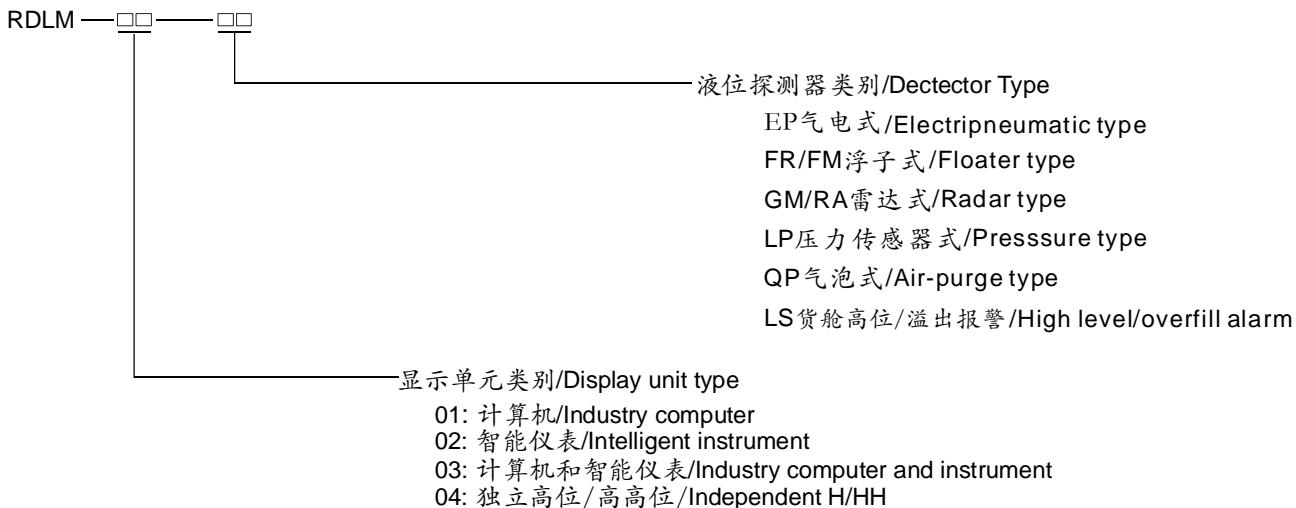


RDLM 系列液位监测报警系统

RDLM Series Level Monitoring and Alarm System



概 述

RDLM 系列液位监测报警系统由液位探测器(雷达传感器、导向微波传感器、磁浮球液位传感器、浮球液位开关、压力传感器和气\电式液位传感器等),安全栅(或接线盒)、模数转换单元、显示报警单元(工控机、数据采集卡、各类智能仪表)等组成,具有监视、遥测、报警、记录等多种功能,主要用于液货船舶、浮船坞及其他工程船舶的液货舱液位、压载水舱的液位、吃水和纵横倾的监测以及液货舱的压力和温度进行监测;本装置还能在控制室内对船舶的其他舱柜液位进行监视;也适用于海上移动平台的液货、压载集中监测和遥控系统。

RDLM 系列液位监测报警系统符合报警器规则的相关规定,并已获得了CCS、NK、GL等船级社型式认可。

- (1) RDLM-□□-GM/RA雷达式液位测量装置
- (2) RDLM-□□-FR/FM浮子式液位测量装置,附带温度及压力监测功能
- (3) RDLM-□□-LP压力式液位测量装置,附带吃水测量功能
- (4) RDLM-□□-QP气泡式液位测量装置,附带吃水测量功能
- (5) RDLM-02-EP气电式液位测量装置,附带吃水测量功能
- (6) RDLM-04-LS货舱高位/溢出报警系统

Summary

RDLM Series Level Monitoring and Alarm System is composed by level detectors (radar sensor, microwave sensor, magnetic type liquid level sensor, float level switch, pressure sensor and electric-pneumatic type level sensors), safety barrier (or junction box), analog-digital conversion unit, and monitor unit (industry computer, data collection card, various intelligent instrumentation) and so on. It is used to monitor, remote control, record level for liquid cargo tank, ballast, draft and trim/heeling, as well as be used in cargo pump, cargo valve, ballast pump, ballast valve and discharge valve. Besides, the system monitors other cabin level. And, also monitors and controls mobile offshore drilling units.

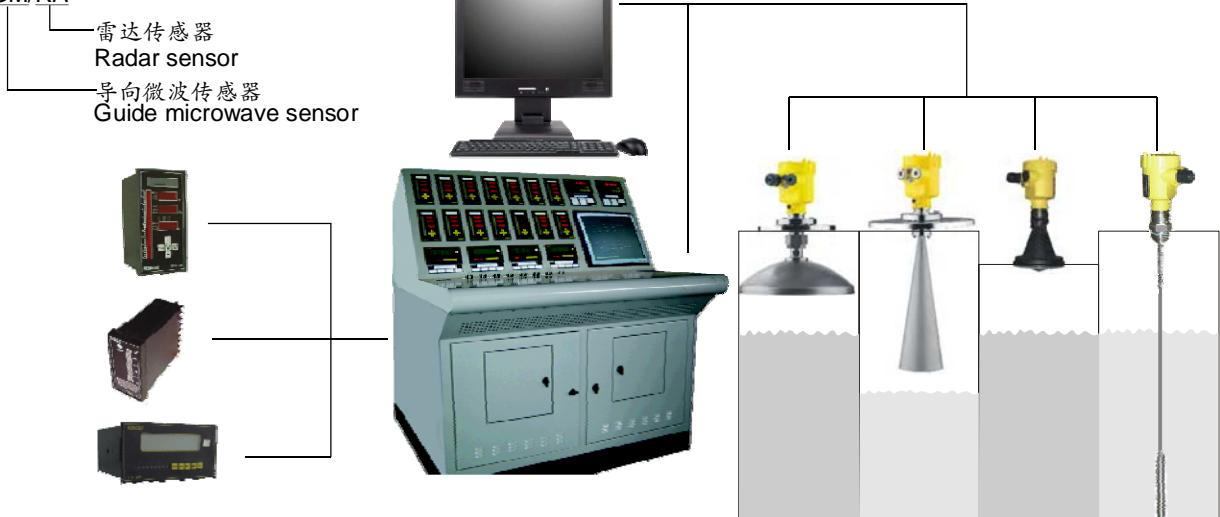
RDLM Series Level Monitoring and Alarm System complies with the requirements of monitoring devices. And, the system has been granted class type approval, such as CCS, NK, GL, etc..

- (1) RDLM-□□-GM/RA Radar Type Level Gauge
- (2) RDLM-□□-FR/FM Floater Type Level Gauge with Temperature & Pressure Monitoring
- (3) RDLM-□□-LP Presssure Type Level Gauge, with Draft Gauging System
- (4) RDLM-□□-QP Air-purge Type Level Gauge with Draft Gauging System
- (5) RDLM-02-EP Electric-Pneumatic Type Level Gauge, with Draft Gauging System
- (6) RDLM-04-LS C/H H/HH Level Alarm System

RDLM-□□-GM/RA雷达式液位测量装置

Radar Type Tank Level Gauge

RDLM-□□-GM/RA



工作原理

此系统用于连续物位测量，通过其传感器发射脉冲的信号，经目标反射后被接收系统收集，通过测量反射运行时间而确定目标的距离。再将这个物位距离转变成一个输出信号，并作为测量值输出。

适用范围

液位雷达适用于油轮及化学品运输船的液货舱及溢出舱的连续无接触液位的测量，同时也适用于其他各种油罐、塔、槽设备和采油平台的液位监测，其测量结果不受介质更换，温度变化，气体或水蒸气覆盖的影响。

技术参数

- | | |
|--------------------------------|-----------------------|
| ※ 电源电压: DC24V | ※ 防护等级: IP67 |
| ※ 测量精度: 0.2%FS, 0.5%FS | ※ 防爆等级: Exia II CT6 |
| ※ 信号输出: 4~20mA HART 或 PROFIBUS | ※ 型式认可证书: CCS, GL, NK |

特 点

- ※ 测量范围可高达35米
- ※ 不接触测量法
- ※ 介质温度可达400°C，压力可达100Bar
- ※ 全天候、坚固的仪器外壳将仪器受损的可能性降到最低
- ※ 高测量分辨率,设有长期漂移，智能软件分析处理回波信号
- ※ 不受温度变化,高压、浓缩气体或分层气体、噪音或强气流、粉尘或蒸汽的影响
- ※ 调试方法:调整模块PLICSCOM调试、安装调试软件DTM VEGA的PC

Working principle

The system is used for continuous level measurement. The sensor of the system emits pulses. These pulses are reflected by the product and received by the antenna as echoes. The running time of the pulses from emission to reception is proportional to the distance and hence to the level. The determined level is converted into an appropriate output signal and outputted as measured value.

Tech. Spec.

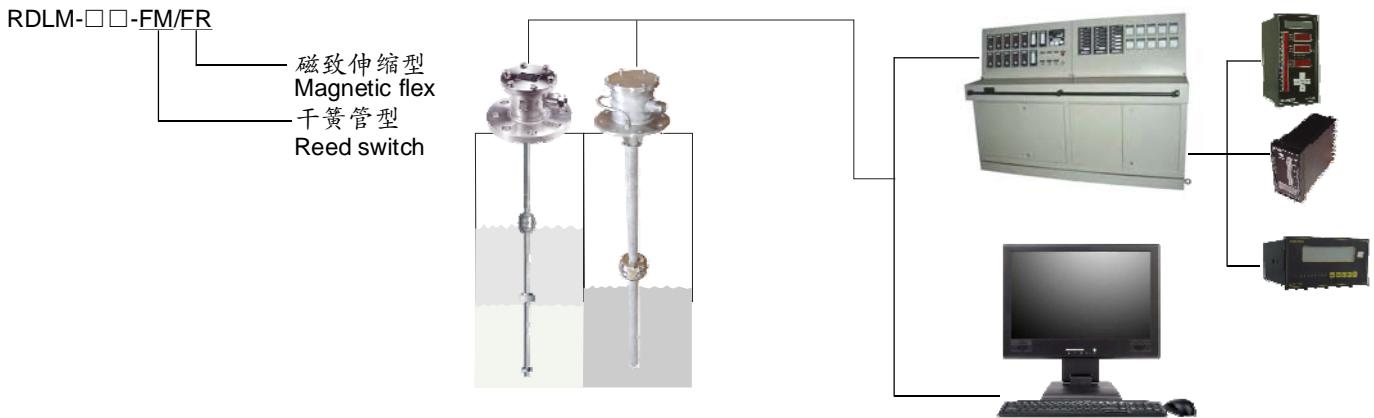
- | | |
|---|--------------------------------|
| ※ Power: DC24V | ※ Protection class: IP67 |
| ※ Output signal: 4~20mA HART or PROFIBUS,2wires | ※ Ex-proof degree: Exia IIC T6 |
| ※ Accuracy: 0.2%FS, 0.5%FS | ※ Type approval: CCS, GL, NK |

Characteristic

- ※ Max measure height:35m
- ※ Contactless measure method
- ※ Medium temp.limit: 400°C, press.limit: 100 Bar
- ※ Max reduce potential damage by all-weather and solid housing.
- ※ Fine resolution, without long term drift, process echo signal by knowledge ware
- ※ Anti-temperature, anti high-pressure, anti enrich gas, anti layered gas, anti-sound, anti blast air, stive or steam
- ※ Debug mode: PLICSCOM, VEGA PC DTM

RDLM-□□-FR/FM浮子式液位测量装置

Floater Type Tank Level Gauge



概 述

浮子式液位测量装置，不仅可以用于压载水舱，燃油舱，吃水测量表，以及液货舱的测量液位，显示温度及蒸汽压力，还可以在数值超出设定界限时发出警报信号并以多种单位来显示液货舱的情况。此装置测量到的所有信息都可以完整的包含在全船控制系统中，并即时在装载电脑或仪表上显示出来。

传感器内含：液位测量，压力测量及多点温度测量(可选)。可与上位机通讯联系。

其主要特点是易于操作维修，因为探测器的传感器是灵活可调的，因此对于原油船，成品油船及化学品船的维护和修理，变得简单易行，我们可以直接用手将它提起维修，而无需维修人员钻入液货舱中进行作业。

技术参数

- ※ 电源电压: DC24V
- ※ 测量精度: $\pm 0.2\%$ FS (仅磁致伸缩型)
- ※ 测量盲区: 100mm
- ※ 量程范围: 0~10m,0~30m
- ※ 工作环境温度: -25°C ~ +80°C
- ※ 连接电缆: 电源线: $2 \times 2.5\text{mm}^2$
信号线: $2 \times 1.0\text{mm}^2$ 屏蔽电缆
- ※ 型式认可证书: CCS, GL, NK

特 点

- ※ 可同时监测液面、温度、压力
- ※ 可多种信号输出: RS485; 4~20mA; 电阻信号
- ※ 结构简单、坚固、全密封设计
- ※ 耐温、耐高压、高磁灵敏度、对ESD不敏感
- ※ 防液体波动设计、可外加不锈钢护套
- ※ 高可靠性,电磁兼容设计

Working principle

Floater type level gauge measures tank level, temp., press. for ballast tank,fuel oil tank,draft gauge and cargo tank, meanwhile emitting alarm when exceed limited value and displaying tank's status by various units. All of the information can be comprehensively utilized by integrated ship operation control system, and on-line interface with a loading computer or intelligent indicator.

The sensor include level element, pressure element and temp. element. It communicate with control unit through digital data.

A key feature of the system is ease of handling, because the sensors in the detector are flexible, it can be lifted up by hand without the need to enter tanks, even in the case of cargo tanks of Crude Oil Tanker, Product Oil Tanker, Chemical Carrier for repair and maintenance.

Tech. Spec.

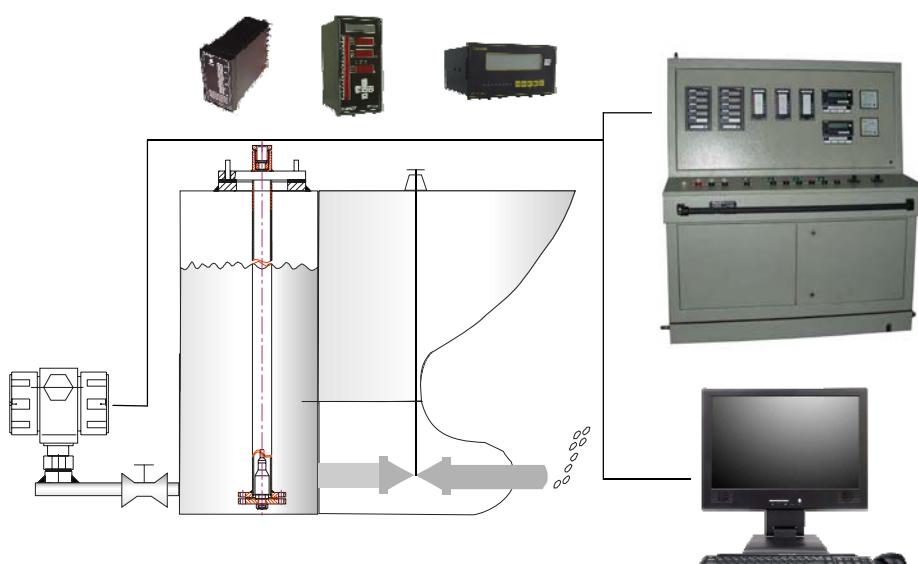
- ※ Power supply: DC24V
- ※ Accuracy: $\pm 0.2\%$ FS (magnetostriiction)
- ※ Blind zone: 100mm
- ※ Range: 0~10m,0~30m
- ※ Ambient temperature: -25°C ~ +80°C
- ※ Connect cable: $2 \times 2.5\text{mm}^2$ (Power)
 $2 \times 1.0\text{mm}^2$ screened cable(Signal)
- ※ Type approval:CCS,GL,NK

Characteristic

- ※ Monitor level, temperature and pressure at one time.
- ※ Output signal : RS485, 4~20mA, resistance
- ※ Simple and firm instruction, full-airproof design
- ※ Anti-temperature, anti high pressure, precision magnetic delicacy, weakly sensitivity for ESD
- ※ Defend fluctuation design, stainless steel jacket
- ※ High reliability with compatible electromagnetic design

RDLM-□□-LP压力式液位测量装置

Pressure Type Tank Level Gauge



概 述

本装置可用于淡水，海水，燃油舱、四角吃水等的液位测量。为了防止海水的腐蚀作用，传感器的材料为防腐蚀性的，从而延长了使用寿命和减少了后期的维修。其工作原理是通过把隔膜感应到的水压力值，转换为一个对应的液位值，再经过传感器内的信号处理器将转换的数字信号送至控制显示装置。

技术参数

- | | |
|----------------------------------|-----------------------------------|
| ※ 电源电压: AC220V/50Hz, 110VAC/60Hz | ※ 通讯接口: RS485 |
| ※ 系统测精度: ±0.1%FS | ※ 工作环境温度: -25°C ~ +80°C |
| ※ 测量盲区: 100mm | ※ 连接电缆: 电源线: 2×2.5mm ² |
| ※ 量程范围: 0~10m, 0~30m | 信号线: 2×1.0mm ² 屏蔽电缆 |
| ※ 功耗: 每测点5W | ※ 型式认可证书: CCS, GL, NK |

特 点

- ※ 设有高低位和限高低位报警功能，能自动发出声光报警信号。
- ※ 压力变送器具有的外壳防护等级有IP56, Ip68，满足不同场所的需要。
- ※ 具有被测介质比重修正功能
- ※ 设有RS485串行通讯接口
- ※ RDLY型压力传感器测量精度高，并获得CCS, CMC证书
- ※ 设有内部故障及传感器故障自检功能

Application

The device is designed for use in fresh water, sea water and fuel tanks, and as a draft gauge. Protecting from sea corrosive, its sensor's material is corrosion-resistant in order to prolong the useful life and reduce the maintenance requirement. Converting the water pressure to digital single through sensor, send the signal to the display unit.

Tech. Spec.

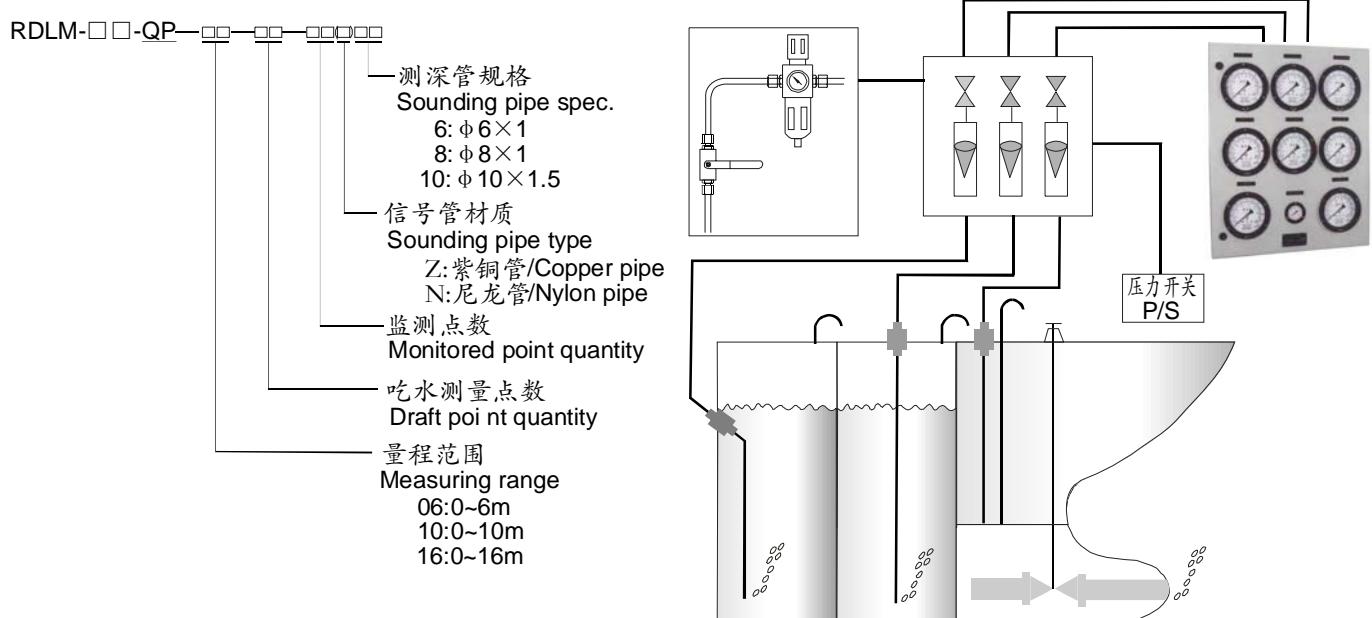
- | | |
|--|---|
| ※ Power supply: AC220V/50Hz, AC110V/60Hz | ※ RS485 communication interface |
| ※ System accuracy : ±0.1%FS | ※ Ambient temperature: -25°C ~ +80°C |
| ※ Blind zone: 100mm | ※ Connect cable: 2×2.5mm ² (Power) |
| ※ Range:: 0~10m, 0~30m | 2×1.0mm ² screened cable(Signal) |
| ※ Consumption: 5w per channel | ※ Type approval:CCS, GL, NK |

Characteristic

- ※ High/low alarm and ultimate high/low alarm, with audio-visual alarm
- ※ Protection class of our pressure transmitter is IP56 or IP68.
- ※ Revise the fault of measured specific gravity
- ※ RS485 communication interface
- ※ RDLY Pressure Transmitter is high accuracy and with certificate of CCS,CMC
- ※ Self-checking, sensor failure function

RDLM-□□-QP气泡式液位测量装置

Air-purge Type Tank Level Gauge



工作原理

基于液体静力学测量原理，如果有连续不断的空气进入位于液货舱底部的探测器（通常称为测深管）中，当少量的空气由位于液货舱底部的排放口溢出时，一个相关于液体液位的压力将在测深管建立起来。

如果液体的密度已知，而测深管中的压力也已被测知，则我们可以相应计算出测深管开口处与液面之间的距离。该数值能够以深度，容积或液货舱百分比的任选形式在表中显示出来。

技术参数

- 量程范围: 0~6m, 0~10m, 0~25m
- 测量精度: $\pm 1.5\%FS$
- 测量盲区: 100mm
- 气源压力: 0.6~0.7MPa
- 工作压力: 0.3MPa
- 气耗量: 每测点10L/h
- 工作环境温度: -25°C ~ +60°C
- 控制箱安装方式: 挂壁式
- 测深管: $\Phi 6 \times 1$, $\Phi 8 \times 1$, $\Phi 10 \times 1.5$

特点

- 连续显示各舱液位的瞬时值
- 具有测深管冲洗功能
- 结构简单、价格低廉、使用方便
- 液位表采用专用的低量程波登管式指示
- 现场测量，可用在危险区

Working principle

Based on measuring the hydrostatic head of the liquid by providing constant air into a probe (called as sounding pipe) which opens at the tank bottom. When a light quantity of air(supplied from flow regulator) is discharged through the purge mouth at the tank bottom. An air pressure corresponding to the liquid level will be built up in the sounding pipe.

If the specific gravity of the liquid is known and a pressure in the sounding pipe is measured, it is possible to calculate the distance from the pipe opening to the surface by means of the above expression. The pressure is read on the indicator graduated scale in meters or volume or percent of full tank.

Tech. Spec.

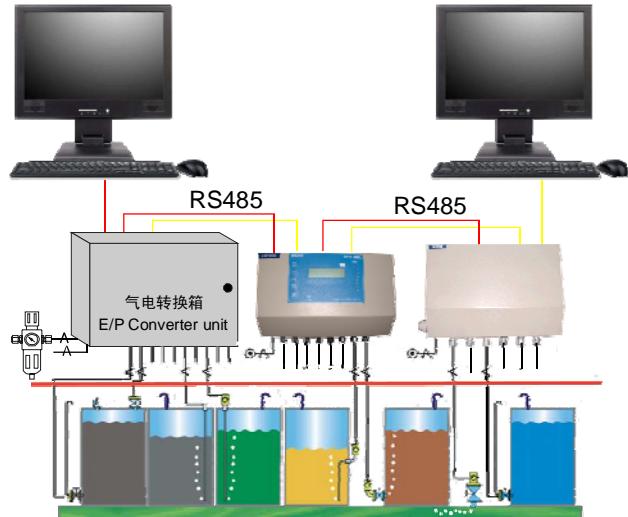
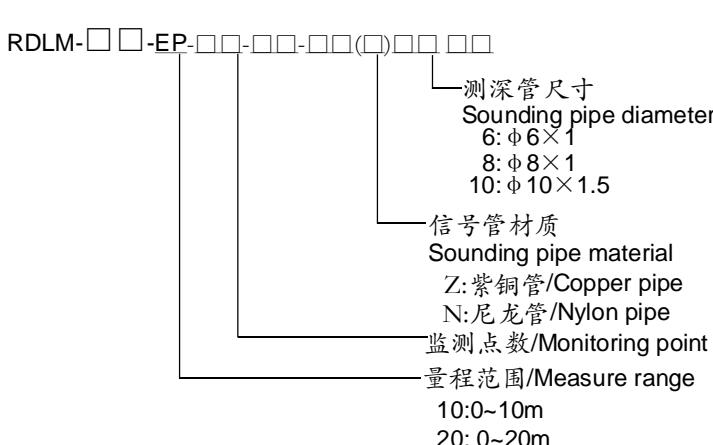
- Range: 0~6m, 0~10m, 0~25m
- Accuracy: $\pm 1.5\%FS$
- Blind zone: 100mm
- Air source pressure: 0.6~0.7MPa
- Working pressure: 0.3MPa
- Gas consumption: 10L/H each point
- Ambient temperature: -25°C ~ +60°C
- Control box mounting: wall mounting type
- Sounding pipe: $\Phi 6 \times 1$, $\Phi 8 \times 1$, $\Phi 10 \times 1.5$

Characteristic

- Continuous measuring tank level
- Sounding pipe flushing
- Simple structure, excellent price, easy to use
- Indicate with special low range bourdon tube
- Install in hazardous area without power

RDLM-□□-EP气电式液位测量装置

Electro-pneumatic Type Tank Level Gauge



工作原理

其工作原理是基于与吹泡式液位测量装置同样的原理，通过此装置的电子显示装置以及压力/电流转换器，将气输入信号转换为4-20 mA电流信号，然后将此信号传送自动监测单元，计算液位值或吃水值。

技术参数

- 电源电压: AC220V/50Hz, AC110V/60Hz
- 功耗: 每测点5W
- 气源: 0.4~0.7MPa
- 气耗量: 每测点10L/h
- 最大工作压力: 0.3MPa
- 工作环境温度: 0°C ~ +60°C
- 输出信号: RS485, 4~20mA
- 测深管: $\Phi 6 \times 1, \Phi 8 \times 1, \Phi 10 \times 1.5$ 无缝钢管
- 信号管路: $\Phi 6(\text{或} \Phi 8) \times 1$ 紫铜管
- 量程范围: 0~20m
- 系统测量精度: $\pm 1\% \text{FS}$
- 测量盲区: 100mm
- 型式认可证书: CCS, GL, NK

特 点

- 技术先进，系统有内部故障及传感器故障自检功能
- 气电转换器采用本公司生产的RDLY型压力变送器，测量精度高、工作稳定
- 通过RS485通讯接口与电脑连接，以人性化的图案显示各种数据
- 设有高低位和极限高低位报警功能，当液位达到报警设定值时，能自动发出声光报警信号
- 具有被测介质比重修正功能
- 具有测深管冲洗功能

Working principle

The operating principle is basically same as air-purge type level gauge and convert pneumatic pressrue to 4~20mA through electric indicator and E/P converter. The 4~20mA signal is sent to automation system, where the calculations for levels or drafts are done.

Tech. Spec.

- Power supply: AC220V/50Hz, AC110V/60Hz
- Power consumption: 5W/point
- Air source pressure: 0.4 ~ 0.7MPa
- Air consumption: 10L/channel
- Working pressure: 0.3MPa
- Ambient temperature: 0 ~ +60°C
- Output signal: 4~20mA, Rs485
- Sounding pipe: $\Phi 6 \times 1, \Phi 8 \times 1, \Phi 10 \times 1$ seamless steel pipe
- Signal pipe: $\Phi 6(\text{or} \Phi 8) \times 1$ copper pipe
- Measurement range: 0 ~ 20m
- System accuracy: $\pm 1\% \text{FS}$
- Blind zone: 100mm
- Type approval: CCS, GL, NK

Characteristic

- Advanced technology, self-checking for sensor and system
- E/P converter is RDLY Presssure transmitter which is high accuracyt and stable performance
- RS485 connect with PC and show various data with visual pattern
- High/ low level alarm and ultimate high/low alarm, with audio-visual alarm
- Revise the fault of measured specific gravity
- Has flush sounding pipe function

RDLM-04-LS货舱高位/溢出报警系统

Cargo Hold High Level/overfill Alarm System

概 述

该装置主要由浮球式液位传感器和报警面板组成。在液位上升和下降的过程中，浮球也跟着上升和下降。当浮球到达设定的报警点高度，浮球内的磁钢将簧开关激活，发出报警信号给控制单元。

适用范围

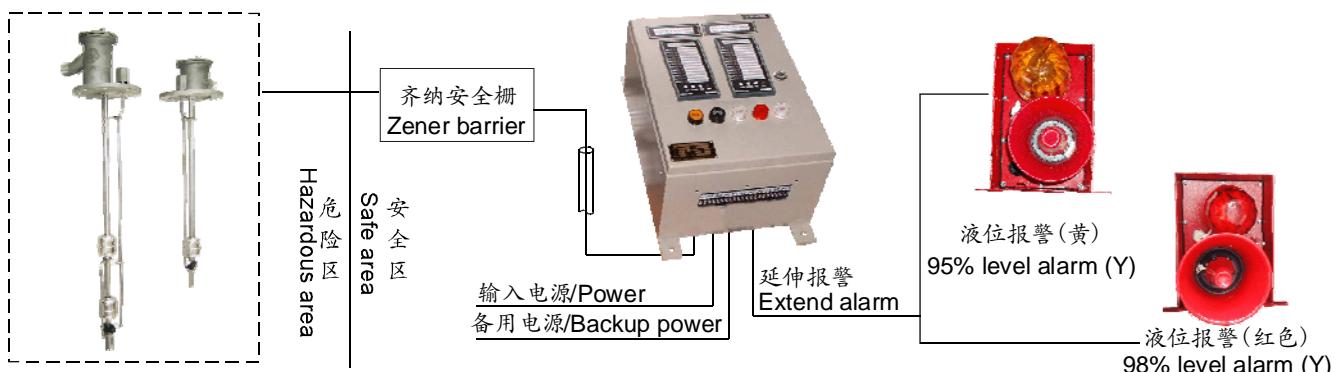
适用于监测各种罐、塔、水箱的液位及油船、化学品船、LPG等船的液货舱液位高位/高高位报警。

技术参数

- ※ 电源电压: AC220V/50Hz, AC110V/60Hz
- ※ 介质密度: >0.5g/cm³
- ※ 防爆等级: Exia II CT6
- ※ 使用温度: -10°C ~ +90°C
- ※ 防护等级: IP56
- ※ 型式认可证书: CCS, GL, NK

特 点

- ※ 技术先进，系统有内部故障及传感器故障自检功能
- ※ 通过液位传感器的拉杆，可模拟液位越限的位置



Summary

The system is designed using the magnetic float switch principle which has been proven very effective. Each system consists of the float switch and alarming panel. Reed switches inside the stem are activated by the permanent magnetic inside the float which rises and falls with the changes of liquid level. Once the reed switch is activated, it sends an alarm signal to the indicating unit in the control room.

Application

Monitor liquid level for various tank, cabinet and water tank. Also, be used in cargo high alarm/overfill alarm for oil tank, chemical tanker, LPG and so on.

Tech. Spec.

- ※ Power supply: AC220V/50Hz, AC110V/60Hz
- ※ Medium density: >0.5g/cm³
- ※ Ex marking: Exia II CT6
- ※ Operating temperature: -10°C ~ +90°C
- ※ Protection degree: IP56
- ※ Type approval: CCS, GL, NK

Characteristic

- ※ Simulate the position of over liquid level through the pull rod of level sensor
- ※ Advanced technology, self-checking, loop failure monitoring