

说明书

User Manual



ZMJ60
密度继电器

ZMJ60
Density Monitor

目录

Catalogue

1. 安全提示

Safety tips

2. 一般性提示

Common tips

3. 报警功能点

Alarm functional points

4. 安装

Installation

5. 使用和维护

Use and maintenance

6. 技术参数

Technical parameters

7. 投诉/更换/修理

Complaint/replacement/repair

8. 订货说明

Order instructions

1. 安全提示 Safety tips



在安装、启动和操作此仪表时，必须遵守相应国际安全规范，所有的工作必须在无电压状态进行。如果不按规程序操作，会造成严重的人身伤害或财产损失。只有经过专业培训的人员可以调装此仪表。

During installation, startup and operation of this instrument, all relevant international safety codes must be obeyed, and all the work must be conducted under the voltage-free status. Failure to comply with specific instructions may cause severe injury or property damage. Only professionally trained personnel can debug or install this instrument.

2. 一般性提示 Common tips

A. 功能原理

Working principle

密度继电器是改型的电接点压力表，密度继电器实现了测量和开关功能的一体化。温度对气体密度的影响由一个补偿系统平衡，气体密度继电器是针对每一个设备特殊设计的(气体的纯度,气体混合比例,校验压力,开关点...)

Density monitor is a modified electric contact pressure gauge, Density monitor integrates measurement and switching functions. The impact of temperature on gas density is balanced by a compensation system. Density monitor is specially designed for each device (gas purity, calibration pressure, switch points ...).

B. 使用前检测

Pre-use inspection

在运输或仓储过程中,可能使气体密度继电器变冷或变热，当温度不等于参考温度(20°C)时指针会动，这种现象是正常的,因为是温度补偿系统在工作。

During transportation or warehousing, gas density monitor may become cold or hot. When the temperature is not equal to reference temperature (20 °C), the pointer will move, which shows the temperature compensation system is working.

为了确定气体密度继电器与周围温度是否适应，必须在温度是 $20 \pm 1^\circ\text{C}$ 环境下，恒温至少 2 个小时，这样指针才能指示到允许的误差范围内。

In order to determine whether gas density monitor adapts to ambient temperature, the temperature of $20 \pm 1^\circ\text{C}$ must be maintained for at least 2 hours so that the pointer can work within the allowable error range.

C. 零位补偿区域

Zero compensation area

密度继电器/远传密度继电器带有零位补偿区域。仪表指针在无压力状态下，因为温度的升高或降低，会在零位补偿区域摆动，例如： 60°C 指针指示在低于零位的零位补偿区域下边缘，从而简单的测量出温度补偿值，当仪表温度降低，指针将移向零位补偿区域的正值区域。

Density monitor /remote density monitor of this model has a zero-compensation area. In the pressure-free state, the pointer swings within the zero-compensation area due to temperature rise or fall. For instance, 60°C pointer stays at the lower edge of zero compensation area below zero position and the temperature compensation value can be calculated in a simple way. When the instrument temperature falls, the pointer will move to a positive value of zero compensation area.

3. 报警功能点 Alarm functional points

磁助式电接点开关也就是辅助电源开关，整个电源回路是通过开关实际值指针带动的触点臂达到预先设定的极限值时断开或接通。

Magnetic snap-action contact is also auxiliary power switch. The entire power circuit is disconnected or connected by activating the contact when the preset limit value is reached through internal mechanical mechanism.

4. 安装 Installation

A. 机械接口

Mechanical interface

一般仪表常用的技术性规范这里也适用(如:En837-2),旋转安装时所用的力不允许直接作用到表壳或接线盒上,而是通过合适的工具作用到扳手面上。

Technical codes (e.g., En837-2) applicable to ordinary instrumentation also apply here. The force applied for rotation installation shall not directly act upon the instrument housing or terminal box but act upon the wrenching face through a suitable tool.



B. 电气接口

Electrical interface

接线必须由经过专业培训的人员操作。接线分布及其功能都在仪表接口处给出。规定供电电线必须考虑仪表的上限电流需求量并符合 IEC227 或 IEC245 标准。

The wirings shall be performed by professionally trained personnel. Wiring distribution and switching functions are displayed on the instrument type plate with terminal binding posts and ground pole also indicated. The specifications of power line must allow for the upper limit current requirement of the instrument and comply with IEC227 or IEC245.

5. 使用和维护 Use and maintenance

密度继电器应垂直安装,用在室外的密度继电器应避免阳光直射到仪表上,考虑在仪表上加装防护罩。

Density monitor shall be installed upright. For a gas density monitor used outdoors, direct exposure to sunlight is not allowed, and it is advisable to use a shield.

密度继电器安装部位应能较真实地反映设备内气体的温度。

Density monitor shall be erected at a proper position to reflect the temperature of gas in relevant equipment.

用肥皂水浸湿的擦布清洁仪表,要清洁接线盒或插头时要先把电源断开,再接通电源前确保所有部件不潮湿。

Clean the instrument with a wiping cloth soaked in soap water. Cut off the power supply before cleaning the terminal box or plugs. Make sure that all components are dry before turning on the power again.

6. 技术参数 Technical parameters

A. 一般参数

General parameters

外形尺寸 External dimension	Φ64mm
量程范围 Measuring range	依据用户要求定制 Customized
测量介质 Measuring medium	SF ₆ 、Air、N ₂ 、SF ₆ +N ₂ 等气体 SF ₆ 、Air、N ₂ 、SF ₆ +N ₂ etc.
测量精度 Measuring precision	±1.5%FS (+20±1°C)， 可选 (options) ±1.0%FS (+20±1°C)； ±2.5%FS (-20°C~+60°C) (气态) (gas phase)
抗振性能 Vibration resistance	10m/s ²
抗冲击性能 Shock performance	30g
接点电气参数 Contact capacity	AC380V/DC220V, 30VA 电流1.0A (上限) /Current 1.0A (upper limit)
电接点材料 Material of contact	银镍合金，镀金处理 Silver-nickel, gold-plated
工作环境 Working environment	-20°C~+60°C 相对湿度 (relative humidity) ≤95 %RH 可选 (options) -40°C~+60°C
压力范围 Pressure range	依据用户要求定制 Customized
防护等级 Protection grade	IP65

密封性能 Sealing performance	气路(Measuring system): $\leq 1 \times 10^{-9} \text{Pa} \cdot \text{m}^3/\text{s}$
开关点数量 Quantity of switch points	上限3组 Upper 3 groups
开关动作点 Switch action points	依据用户要求定制 Customized
外壳材质 Casing material	304 不锈钢 SUS304
感压元件 Pressure sensing element	波登管 Bourdon tube
压力接口 Pressure interface	依据用户要求定制 Customized
电气接口 Electrical interface	依据用户要求定制 Customized

B. 电气性能

Electrical properties

绝缘电阻 Insulation resistance	$> 100 \text{M}\Omega$ (DC 500V)
绝缘耐压 Insulation & withstand voltage	2000V, 50/60 Hz 1min 接线端子间耐压 2000V, 50/60 Hz 1min connecting terminal' s withstand voltage 2000V, 50/60 Hz 1min 接线端子对地耐压 connecting terminal' s withstand voltage to earth

7. 投诉/更换/修理 Complaint/replacement/repair

售后服务时请给出生产编号和产品型号,生产编号印在表盘上,产品型号印在标牌上。

At customer service, please provide with the production number and product model. The production number is printed on the dial, while the product model is printed on the nameplate.

密度继电器必须长时间恒温才能达到温度补偿作用(至少两小时)。

Density monitor must be kept in constant temperature for a long time (at least two hours) so as to achieve temperature compensation.

只有厂家可以进行维修,不允许随便打开仪表,否则会使显示和开关点产生误差。

No one other than the manufacturer is allowed to disassemble the instrument for fear that any error may occur to the display and switch point.

8. 订货说明 Order instructions

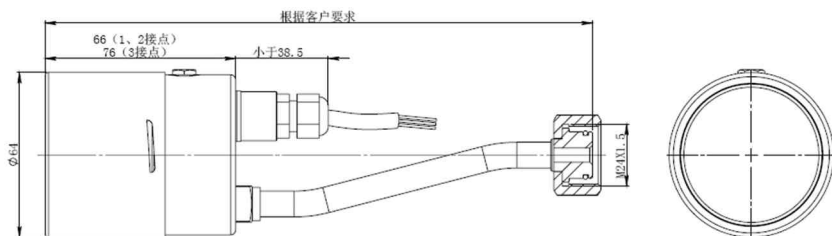
型号/数量/量程/开关动作点/接口尺寸/接口方向/其它特殊事项
Model/quantity/measuring range/switch action point/interface
size/interface direction/other special issues

注：说明书中为基础配置，其余定制化需求见客户图。

Note: Basic type is included in the manual, and other customized requirements are shown in the customer's drawing.

附图一：外形尺寸

Attached Drawing 1: External Dimensions



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