MESSKO® 数字指示器 D1272AT
MESSKO® DIGITAL INDICATOR D1272AT

操作说明书 / Operating Instructions

BA2082/02/10 ZH-EN

目录

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备注

此处的数据在细节上可能与所交付运行设备中的数据有所不同。

我们保留进行更改的权利，恕不另行通知。

NOTE

Data contained herein may differ in details from the equipment delivered.

We reserve the right to make alterations without notice.

请保留本操作说明书，以供未来参考！

Please keep these operating instructions for future reference!

1 安全

1.1 安全说明

参与本设备的安装、调试或运行的所有人员都必须：

- 具备相应的专业资格并
- 严格遵守本操作说明书。

违规操作或错误使用可能会导致

- 严重或致命的伤害，
- 损坏设备和用户的其他财产
- 降低设备的功能性。

本手册中的安全说明采用以下三种标识来强调重要信息。

警告

此信息表示可能会对生命与健康造成一定危险。忽视此类警告可导致严重或致命的伤害。

小心

该信息表示可能会对本运行设备或用户的其他财产造成一定危险。不排除造成严重或致命伤害的可能。

备注

这些备注将给出有关特定事项的重要信息。

1.2 指定应用

D1272AT 数字指示器用于指示工艺值，例如温度或油位。

调试装置前，务必查阅并遵守标示牌和操作说明中所指示的操作限值。

1.3 关于运行设备运转的重要提示

用户有义务遵守国家的健康与安全法规。

特别要强调的是，在对带电部件（人接触到会发生危险）执行工作时，只有在这些部件已断电或具有直接接触保护的情况下，才可进行。

1 Safety

1.1 Safety instructions

All personnel involved in installation, commissioning or operation of this equipment must:

- be suitably qualified and
- strictly observe these operating instructions.

Improper operation or misuse can lead to

- serious or fatal injury,
- damage to the equipment and other property of the user
- a reduction of equipment functionality.

The safety instructions in this manual are presented in three different forms to emphasize important information.

WARNING

This information indicates particular danger to life and health. Disregarding such a warning can lead to serious or fatal injury.

CAUTION

This information indicates particular danger to the equipment or other property of the user. Serious or fatal injury cannot be excluded.

NOTE

These notes give important information on a certain issue.

1.2 Specified application

The D1272AT digital indicator is used to indicate such process values as temperature or oil level.

It is important to read and observe the limit values for operation indicated on the nameplate and in the operating instructions prior to commissioning the device.

1.3 Important notes on equipment operation

The user is obliged to comply with the national health and safety regulations.

It is especially emphasized that works performed to live, i.e. dangerous-contact components, are permissible only while these components are either de-energized or protected against direct contact.

2 产品规格

D1272AT 数字指示器使用简便，可显示标准 Pt100 或 4-20 mA 信号。

在正常运行期间，测得的值在 4 位 LCD 显示屏上显示。

2 Product Specification

The D1272AT digital indicator is an easy-to-use device for the indication of standard Pt100 or 4-20 mA signals.

During normal operation, the measured value is shown on the 4-digit LCD display.

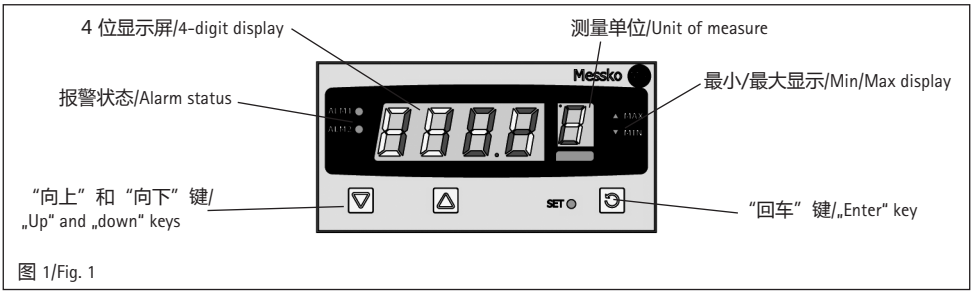


图 1/Fig. 1

2.1 操作

“回车”键可用于在以下菜单之间按顺序跳跃。菜单值约 2 秒之后显示，然后可以更改。要继续下一菜单项目，必须使用“回车”键。

2.1 Operation

The „Enter“ key can be used to jump sequentially between the following menus. The menu values are shown after approx. 2 seconds and then can be changed. The „Enter“ key must be used to proceed to the next menu item.

正常运行：显示测得的值（过程值）

Normal operation: Indication of the measured value (process value)

显示最大值。要重置，按下“向上”或“向下”键，直至显示屏上出现 4 位数。

Indication of the max. value. To reset keep the „Up“ or „Down“ key pressed until 4-digits appear on the display.

显示最小值。要重置，按下“向上”或“向下”键，直至显示屏上出现 4 位数。

Indication of the Min. value. To reset keep the „Up“ or „Down“ key pressed until 4-digits appear on the display.

开关点报警 1。可用“向上”或“向下”键设置开关点。按“回车”键确认。

Switching point Alarm 1. The switching point can be set with the „Up“ or „Down“ key. To confirm press enter.

开关点报警 2。可用“向上”或“向下”键设置开关点。按“回车”键确认。

Switching point Alarm 2. The switching point can be set with the „Up“ or „Down“ key. To confirm press enter.

如果报警触点激活，将在该菜单上显示。否则，无法选择该菜单。

If an alarm contact is active, it is indicated in this menu. Otherwise, this menu cannot be selected.

偏移调节可用于更改显示值。偏移值通过“向上”或“向下”键调节，并随后用“回车”键确认。相应地修改模拟输出，并用校正的值激活报警触点。

The offset adjustment can be used to change the display value by a certain value. The offset value is adjusted by means of the „Up“ and „Down“ keys and subsequently confirmed using the „Enter“ key. The analog output is modified accordingly and the alarm contacts are activated with the corrected value.

2.2 输入

Pt100 或 4-20 mA 信号可根据设备设计（参考铭牌）与 D1272AT 的输入端连接。

监测输入范围，如果出现错误，显示以下消息：

- 输入传感器故障或者未连接。

- 输入范围降低至（下限）以下。

- 输入范围超出（上限）。

4-20 mA 输入端可与**有源**或**无源**信号结合使用。

有源信号：传感器/信号转换器已经通电，不需要任何额外的外部电源（例如油位显示器 MTO/TT 或温度变送器 TT-PWM60）。

无源信号：传感器/信号转换器需要外部电源（例如指针温度计MT-ST160SK/TT）。

2.3 偏移调节

偏移调节可用于更改显示值（参考章节 2.1）。相应地修改模拟输出，并用校正的值激活报警触点。

2.4 最小/最大内存

上一次重置被存储之后，出现最小和最大测量值。可用正面的键调用。参见章节 2.1。

2.5 报警触点 ALM1 和 ALM2（可选）

可选择为数字指示器 D1272AT 装配双继电器（参考铭牌）。2 个常开触点的开关点可设为不同的限值，并且可用于生成报警消息或类似信息。超出设定限值时，特定的触点关闭（报警 1 或报警 2），并且相关状态 LED（ALM1 和 ALM2）闪烁。继电器在背面连接。参见章节 4.3。

限值可按照章节 2.1 所述进行设置。

返回控制滞后为 1 K。

2.2 Input

A Pt100 or 4-20 mA signal can be connected to the input of the D1272AT in accordance with the device design (refer to nameplate).

The input range is monitored and, in case of error, the following messages are displayed:

- The input sensor is defective or not connected.
- The input range has fallen below (Low).
- The input range has been exceeded (High).

The 4-20 mA input can be used with an **active** or a **passive** signal.

Active signal: The sensor/signal transducer is already powered and does not require any additional external power source (e.g., oil level indicator MTO/TT or temperature transmitter TT-PWM60).

Passive signal: The sensor/signal transducer requires an external power source (e.g., pointer thermometer MT-ST160SK/TT).

2.3 Offset adjustment

The offset adjustment can be used to change the display value by a certain value (refer to chapter 2.1). The analog output is modified accordingly and the alarm contacts are activated with the corrected value.

2.4 Min-/Max-memory

The minimum and maximum measured value occurring since the last reset are stored. They can be called with keys on the front. See chap. 2.1.

2.5 Alarm contacts ALM1 and ALM2 (optional)

The digital indicator D1272AT can be optionally equipped with a double relay (refer to nameplate). The switching points of the 2 N/O contacts can be set to different limit values and can be used to generate an alarm message or similar. When the set limit value is exceeded, the particular contact closes (alarm1 or alarm2) and the related status LED (ALM1 and ALM2) flashes. The relays are connected on the back. See chap. 4.3.

The limit values can be set as described in chap. 2.1.

The return control hysteresis is 1 K.

2.6 模拟输出端（可选）

可选择为 D1272AT 数字指示器装配模拟输出端，以供远程传输下列过程值。

- 4 - 20 mA
- 0 - 20 mA
- 0 - 5 V
- 0 - 10 V

如有要求，可通过信号转换器提供其他输出信号。

2.6 Analog output (optional)

The D1272AT digital indicator can be optionally equipped with an analog output for the remote transmission of the process value as shown below.

- 4 - 20 mA
- 0 - 20 mA
- 0 - 5 V
- 0 - 10 V

Upon request other output signals can be provided by means of a signal converter.

3 安装

小心

必须严格满足本安装手册中的安装条件要求。

D1272AT 数字指示器可安装在壁厚达 6 mm 的控制板内。有关控制板切断尺寸，请参见图 2。

3 Installation

CAUTION

The installation conditions demanded by this operating manual must be strictly complied with.

The D1272AT digital indicator can be installed in control panels with a wall thickness of up to 6 mm. For the dimensions of the control panel cutout, see figure 2.

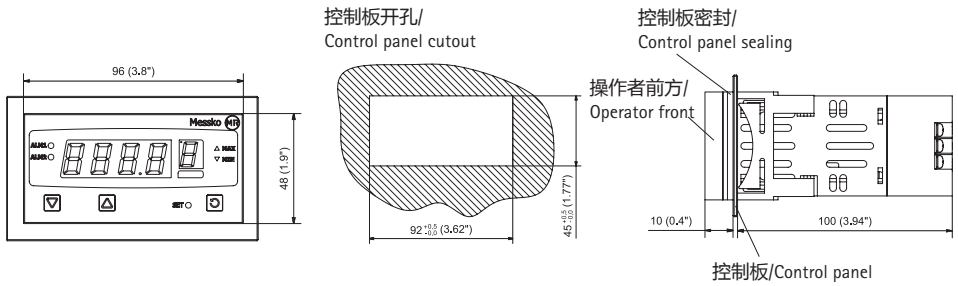


图 2/Fig. 2

按照下列要求继续安装设备：

- 将 D1272AT 数字指示器滑入控制板的切口中，确保指示器的最终位置在正面。然后轻轻地将其按到控制板上。检查确保控制板密封件定位正确。
- 从尾部开始，将支架框滑到设备上，直至其接触控制板的背面。然后支架框顶部和底部的支架齿扣入设备的支架格内。支架框的弹簧必须牢固地按到控制板的背面。

设备安装之后便可进行连接。

Proceed as follows to install the device:

- Slide the D1272AT digital indicator into the control panel cutout so that the final location of the indicator is in front. Then lightly press it against the control panel. Check to make sure that the control panel seal is positioned correctly.
- Starting from the back, slide the holder frame over the device until it touches the back of the control panel. The holder teeth on the top and bottom of the holder frame will then snap into the holder grid of the device. The springs of the holder frame must be pressed firmly against the back of the control panel.

After the device has been installed, it can be connected.

4 电气连接

小心

电气连接只能由合格且经过培训的人员执行，该人员应事先查看相关国家/地区适用的安全法规。

连接 D1272AT 数字指示器时，建议使用开放的电缆终端夹进行 M3 螺纹连接。参照附录中的连接图执行。

4.1 电源

通过连接端 13
和 14 进行连接。电压：100–240 V AC ± 10 %，50/60 Hz；最大 7.5 VA。

4.2 传感器输入

连接输入端信号时，确保设备的测量范围符合电路的最大负荷。

Pt100：

Pt100 输入端设计用于通过三线技术连接 Pt100 传感器。通过端子 1 和 2 进行连接。均压线与端子 3 连接。如果要连接 2 线传感器，端子 2 和 3 必须短路。参见图 3。

4-20 mA，有源传感器：

要连接的 4-20 mA 传感器是有源传感器时（即，不需要其他电源电压），将传感器与端子 1 (-) 和端子 4 (+) 连接。参见图 4。

4-20 mA，无源传感器：

D1272AT 数字指示器装有为传感器/信号转换器供电的模块。无源传感器（例如指针温度计 MT-ST160SK/TT）可用此供电。

端子 10 (-) 和端子 12 (+) 有约 24 VDC 的传感器电源可用。

连接传感器时，电压必须连接。为此，跨接端子 1 和 10，并将输入传感器与端子 4 (-) 和 12 (+) 连接。参见图 5。

4 Electrical Connection

CAUTION

The electrical connection may only be performed by qualified, trained personnel who have been instructed in the applicable safety regulations of the particular country.

For the connection of the D1272AT digital indicator, we recommend using open cable lugs for M3 screw-type connections. Follow the connection diagrams in the appendix.

4.1 Voltage supply

The connection is performed via the connection terminals 13 and 14. Voltage: 100 – 240 V AC ± 10 %, 50/60 Hz; max. 7.5 VA.

4.2 Sensor input

When connecting the input signal, make sure that the measuring ranges of the devices conform to the maximum load of the circuit.

Pt100:

The Pt100 input is designed for connection of a Pt100 sensor by means of a 3-wire technology. The connection is made via the terminals 1 and 2. The equalizing line is connected to terminal 3. If a 2-wire sensor is to be connected, terminals 2 and 3 must be short-circuited. See figure 3.

4–20 mA, active sensor:

When the 4-20 mA sensor to be connected is active (i.e., no further supply voltage is needed), connect the sensor to terminal 1 (-) and terminal 4 (+). See figure 4.

4–20 mA, passive sensor:

The D1272AT digital indicator is equipped with a module for powering a sensor/signal transducer. A passive sensor (e.g., pointer thermometer MT-ST160SK/TT) can be powered with this.

The sensor power of approx. 24 VDC is available on terminal 10 (-) and terminal 12 (+).

The voltage must be looped in when the sensor is connected. For this, jumper terminals 1 and 10 and connect the input sensor to terminals 4 (-) and 12 (+). See figure 5.

4.3 继电器输出报警 1 和报警 2（可选）

继电器输出被设计为双继电器（即两个常开触点通过端子 23 具有相同电势）。

将继电器连接到端子 22 和 23 或连接到 24 和 23，依具体应用而定。

4.4 模拟输出端（可选）

模拟输出端连接至端子 21 (+) 和 19 (-)。

确保连接的设备的测量范围相同，并且遵守容许的电路负荷。

小心

本操作说明书中的信息适用于标准设备。使用专用设备时，请遵守铭牌和订单上的信息。

5 技术数据

一般数据：

尺寸：	深度：110 mm，用户面板：96 mm x 48 mm (1/8 DIN)
安装：	面板安装有锁紧机制、控制板切口 92 mm x 45 mm
端子：	螺旋式端子用于电缆接线端 M3
重量：	最大 0.25 kg
防护等级：	正面 IP 66 背面 IP 20 （面板安装后）
绝缘电压：	500 VDC，所有输入端和输出端均进行电流隔离

操作条件：

环境温度：	0 °C - +55 °C（操作） -20 °C - +80 °C（储存）
相对湿度：	20 % - 95 %
显示范围：	例如 0.0 °C – 160.0 °C （参考铭牌）
分辨率：	0.1°C
准确度：	< 显示范围 ± 0.25 % ± 1 位 （20 °C、60-70 % 相对湿度） （测量范围为 160°C 时 < ±0.5 °C）

4.3 Relay outputs alarm1 and alarm2 (optional)

The relay outputs are designed as double relay (i.e., the two N/O contacts have a common potential on terminal 23).

Connect the relay to terminals 22 and 23 or 24 and 23 depending on the application.

4.4 Analog output (optional)

The analog output is connected to terminal 21 (+) and 19 (-).

Make sure that the measuring range of the connected devices is the same and the permissible load of the circuit is adhered to.

CAUTION

The information in these operating instructions applies to standard devices. When special devices are used, adhere to the information on the nameplate and the order.

5 Technical Data

General data:

Dimensions:	depth: 110 mm, user panel: 96 mm x 48 mm (1/8 DIN)
Installation:	panel mounting with lock mechanism, control panel cutout 92 mm x 45 mm
Terminals:	screw terminals for cable lugs M3
Weight:	0.25 kg max.
Degree of protection:	IP 66 at the front IP 20 at the back (after panel mounting)
Insulation voltage:	500 VDC, all inputs and outputs are galvanic isolated

Operating conditons:

Ambient temp.	0 °C - +55 °C (operation) -20 °C - +80 °C (storage)
Relative humidity:	20 % - 95 %
Display range:	e.g. 0.0 °C – 160.0 °C (refer to nameplate)
Resolution:	0.1 °C
Accuracy:	<±0.25 % of the display range ± 1 digit (at 20 °C, 60-70 % RH) (<±0.5 °C at a measuring range of 160°C)

环境温度的影响：	环境温度每更改 1 °C，显示范围±0.01 %
相对湿度的影响：	可忽略
电源电压的影响：	可忽略

电源电压：

电压范围：	100–240 V AC ± 10 %，50/60 Hz
功率消耗：	最大 5VA

传感器输入概述：

绝缘：	所有输入端电流隔离达 250 V AC
取样速率：	每秒 4 次
输入端滤波器：	2.0 秒
输入端分辨率：	14 位，至少比显示屏的分辨率高 4 倍
实际值偏移：	可通过用户面板调节，± 显示范围
传感器故障：	2 秒内发出错误消息，断开输出端

传感器输入 Pt100：

测量电阻：	Pt100 根据 IEC751，3 线技术
输入范围：	-128.8 °C 至 +526.9 °C
电线电阻：	每根导线最大 50 欧
50 欧电线电阻时影响小于显示范围的 0.5 %：	电线电阻
补偿：	自动
测量电流：	约 150 µA

传感器输入 4-20 mA：

输入范围：	-20 °C - +140 °C，0 °C - +160 °C，其他要求的值
输入电阻：	4.7 欧

变送器电源（可选）：

输入：	20-28 V DC（24 V DC 标称）
负载：	最小 910 欧（20 V DC 时为 22 mA）

双继电器（可选）：

触点类型：	2 个常开开关，共用中心连接
触头负载：	在 240 VDC 时最大 2 A 电阻负载
开关功能：	数值不断增加，自动复位
滞后：	1 K

Influence of ambient temp.:	±0.01 % of the display range per °C of the change of ambient temperature
Influence of relative humidity:	negligible
Influence of the supply voltage:	negligible

Supply voltage:

Voltage range:	100–240 V AC ± 10 %, 50/60 Hz
Power consumption:	5 VA max.

Sensor inputs general:

Insulation:	galvanic isolation of all inputs up to 250 V AC
Sample rate:	4 samples per second
Input filter:	2.0 seconds
Input resolution:	14 bit, at least 4x better than the resolution of the dislay
Actual value offset:	adjustable via user panel, ± display range
Sensor malfunction:	Error message within 2 seconds, outputs are disconnected

Sensor input Pt100:

Measur. resistance:	Pt100 acc. to IEC751, 3-wire technology
Input range:	-128.8 °C to +526.9 °C
Wire resistance:	50 Ohm max. per conductor
Influence of wire resistance:	< 0.5 % of the display range at 50 Ohm wire resistance
Compensation:	automatic
Measurment current:	approx. 150 µA

Sensor input 4–20 mA:

Input range:	-20 °C - +140 °C, 0 °C - +160 °C, other on request
Input resistance:	4.7 Ohm

Transmitter supply (optional):

Input:	20-28 V DC (24 V DC nominal)
Load:	910 Ohm min. (22 mA at 20 V DC)

Double relay (optional):

Contact type:	2x NO switch with common throw
Contact load:	max. 2 A ohmic load at 240 V AC
Switching function:	at increasing values, self-resetting
Hysteresis:	1 K

使用寿命：	在标称负荷下，> 500,000 周期运行
最小开关电流：	> 20 mA

模拟输出端：

直流电压信号：	0-10 V 或 0-5 V， 负荷 1000 欧（最小值）
直流电流信号：	4-20 mA 或 0-20 mA， 负荷 500 欧（最大值）
输出范围：	与显示范围一致
残余波纹：	最大 10 %

测试：

EMC 发射干扰：	EN 50081-2（工业领域）
EMC 抗干扰力：	EN 50082-2（工业领域）
防护等级：	IP65，根据 IEC 60529 （仅针对正面板）
保护类：	II，与 IEC 61010-1 视同
认证：	CE、UL、ULC

Service life:	> 500,000 cycles of operation at nominal load
Min. switch current:	> 20 mA

Analog output:

DC-voltage signal:	0-10 V resp. 0-5 V, Load 1000 Ohm min.
DC-current signal:	4-20 mA resp. 0-20 mA, Load 500 Ohm max.
Output range:	corresponding to display range
Residual ripple:	10 % max.

Tests:

EMC-emitted interference:	EN 50081-2 (Industrial sector)
EMC-interference resistance:	EN 50082-2 (Industrial sector)
Degree of protection:	IP65 acc. to IEC 60529 (only for front-panel)
Protection class:	II, equivalent to IEC 61010-1
Approvals:	CE, UL, ULC

6 附录

6.1 Pt100 传感器的连接图

6 Appendix

6.1 Connection diagram of Pt100 Sensor

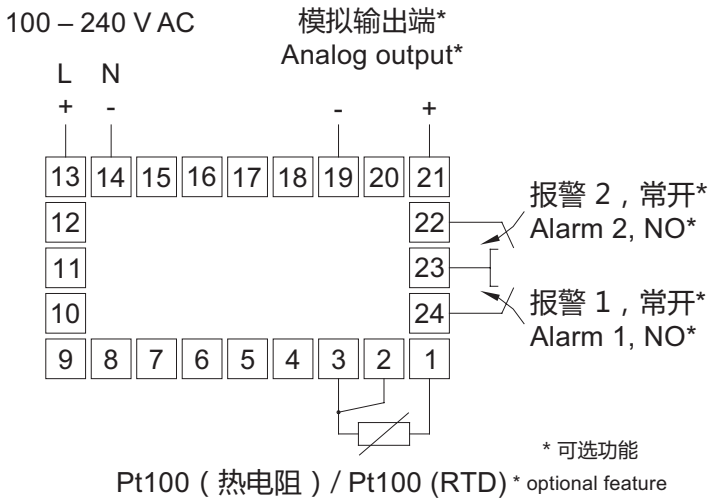


图 3/Fig. 3

6.2 有源 4-20mA 传感器的连接图

6.2 Connection diagram of active 4-20mA sensor

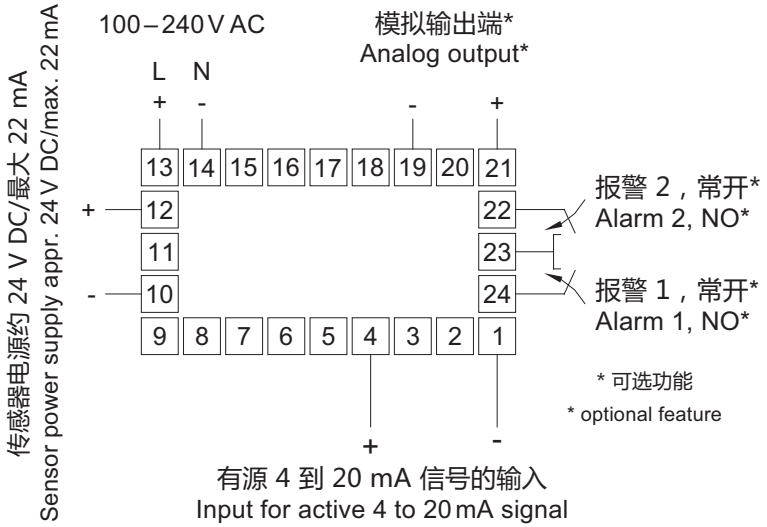


图 4/Fig. 4

6.3 无源 4-20mA 传感器的连接图

6.3 Connection diagram of passive 4-20mA sensor

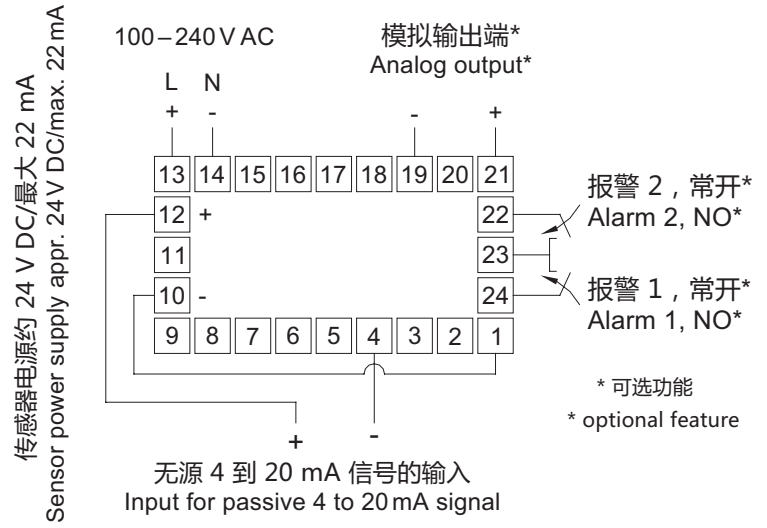
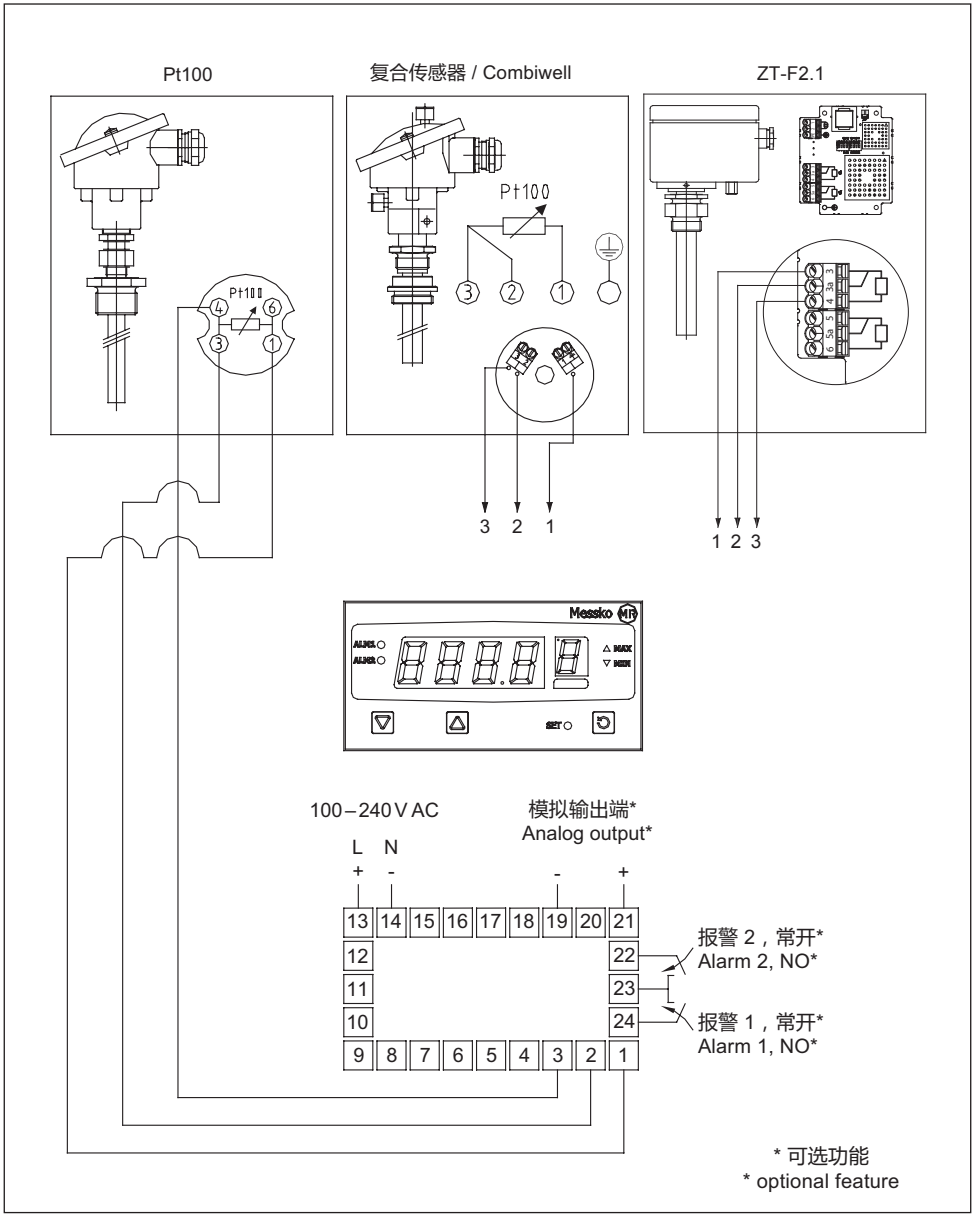


图 5/Fig. 5

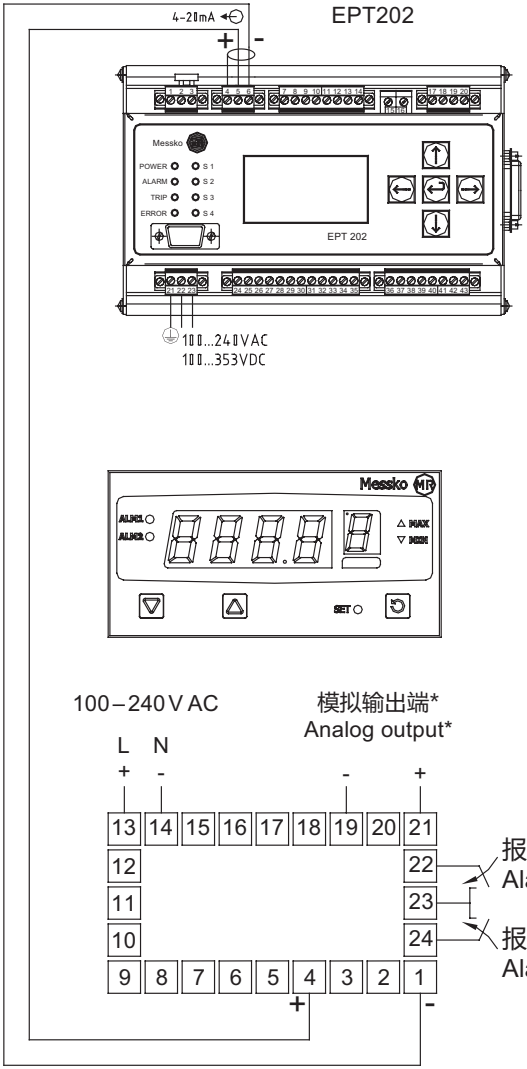
6.4 Pt100 传感器示例

6.4 Example Pt100-sensor



6.5 有源 4-20 mA 传感器示例

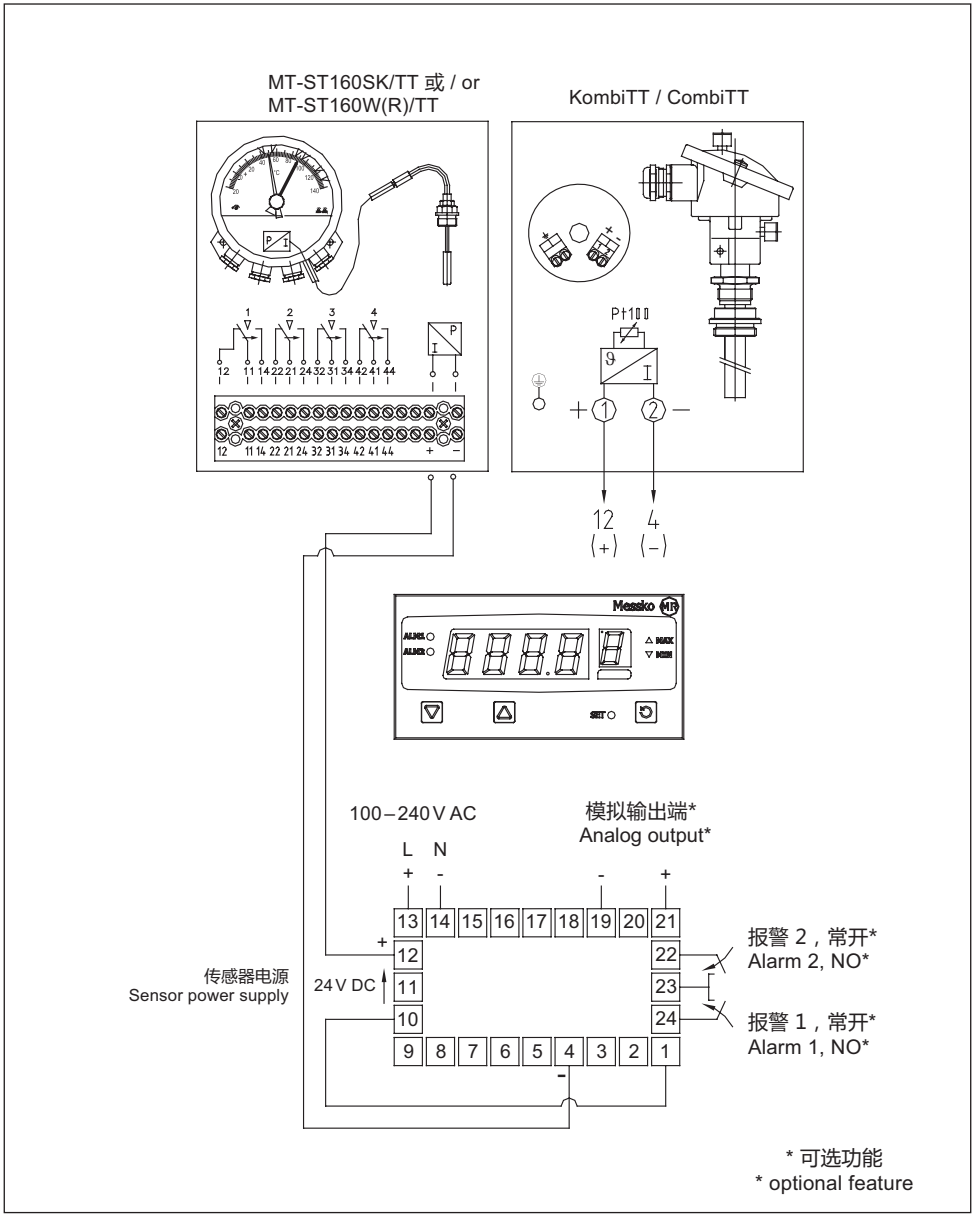
6.5 Example of an active 4–20 mA sensor



* 可选功能
* optional feature

6.6 无源 4-20 mA 传感器示例

6.6 Example of a passive 4–20 mA sensor



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