

### 1.Product Description:

Long-range diffuse reflection laser distance sensor with effective detection range up to 20m. Key parameters such as resolution and repeatability demonstrate excellent performance throughout the full measuring range. The product features rich output interfaces, ensuring strong adaptability. It is widely used in logistics industry, automatic parking systems, and hoisting equipment.



### 2.Product Features:

- Features a clear OLED display and adjustment buttons.
- Small and sturdy metal casing
- Rich in fieldbus interfaces

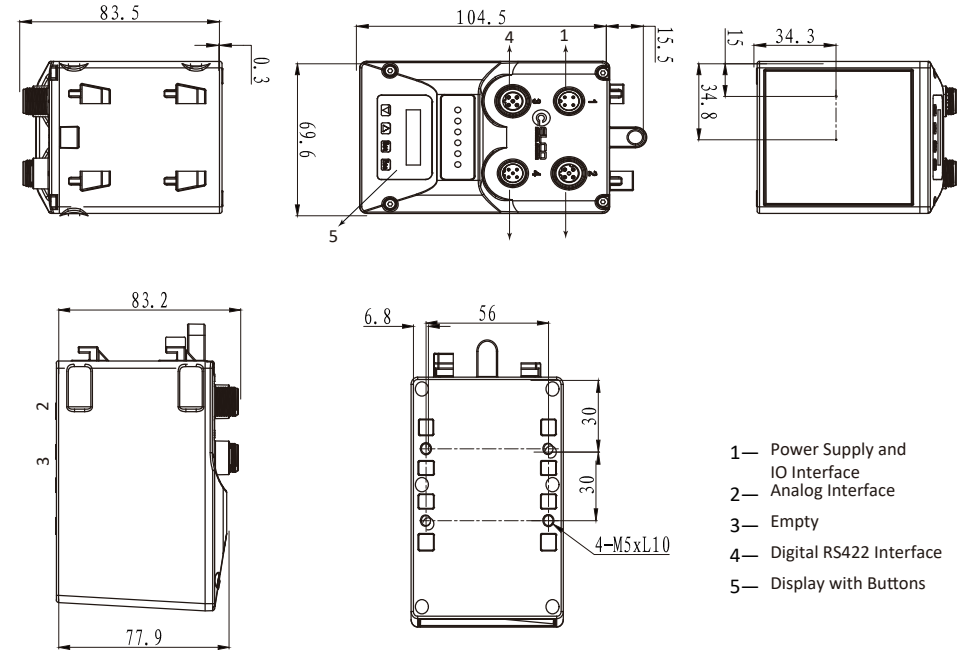
### 3.Product Models:

Type	Detection	Distance	Beam	Interface	Connection
OSM300-KL20S2A422IOQ12	Diffused	0.15...20m	Red laser	IO-Link + analog + digital + RS422	M12 connectors

### 4.Technical Specification

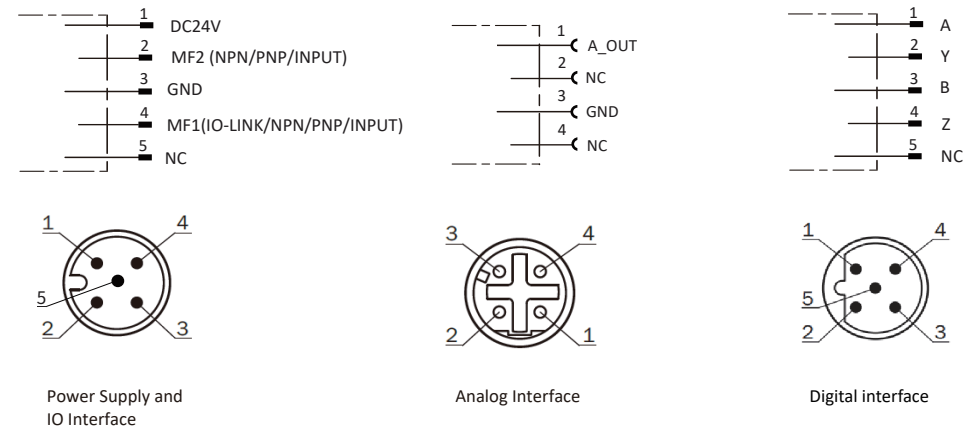
<b>Power supply</b>	DC 10...30V	<b>Measuring range</b>	0.15...20m
<b>Light source</b>	Laser Class, Class 2	<b>Resolution</b>	1mm
<b>Repeatability</b>	±2mm under specific conditions; ; ±3mm(+15°C...+30°C); ±5mm(-10°C...+50°C);	<b>Repeatability</b>	2mm
<b>Power Dissipation</b>	2.8W, <100mA@DC24V	<b>Power Consumption</b>	0.1s on white object surface; 0.033s on highly reflective surface (80%)
<b>Serial Interface</b>	IO-LINK; RS422,max baud rate 115200, Modbus	<b>Ambient Light</b>	Cold LED: 10000Lux; Halogen: 4800Lux; Warm LED: 3700Lux (at 10m measurement distance)
<b>Digital Input</b>	External trigger, 3V...24V	<b>Analog Output</b>	Current: 4...20mA(over 0mA); Voltage: 0...5V(over 5.2V) 0...10V(over 10.2V)
<b>Circuit Switch</b>	Up to 2 channels optional, I load<100mA	<b>Connection Type</b>	M12 Connector
<b>Display type</b>	OLED display screen	<b>Material</b>	Housing: Die-cast aluminum; Window: PMMA
<b>Operating temperature</b>	-10°C...+50°C (no condensation or freezing)	<b>Installation Method</b>	Bracket fixing
<b>Storage temperature</b>	-25°C...+70°C	<b>Dimensions</b>	69.6mmx83.5mmx104.5mm
<b>Protection rating</b>	IP67		

### 5.Dimensions



- 1— Power Supply and IO Interface
- 2— Analog Interface
- 3— Empty
- 4— Digital RS422 Interface
- 5— Display with Buttons

### 6.Wiring Diagram



## 1. 产品说明:

长距离漫反型激光测距产品,有效检测距离可达20m。

分辨率和重复精度等关键参数在全量程内表现优秀,丰富的输出接口使产品具备强大的适用性。本产品在物流行业、自动驻车系统、起重设备等具有广泛的应用。

## 2. 产品特性:

- 具有清晰的OLED显示屏和调节按键
- 小型、坚固的金属外壳
- 具有丰富的现场总线接口



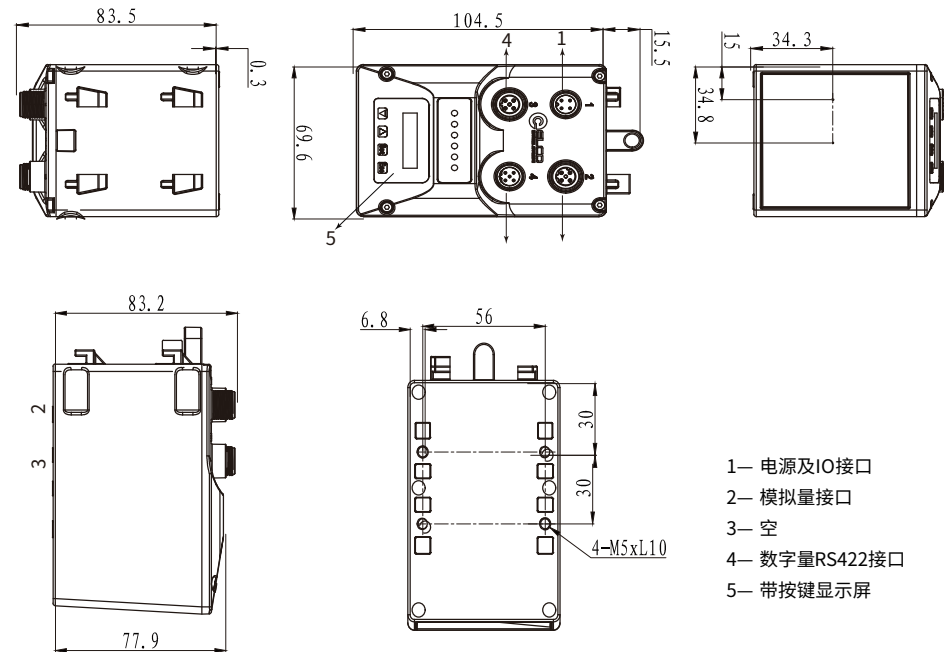
## 3. 产品型号:

型号	检测模式	检测范围	光源类型	接口	接线方式
OSM300-KL20S2A422IOQ12	漫反射型	0.15...20m	红色激光	IO-LINK+模拟量+开关量+RS422	M12连接器

## 4. 技术参数

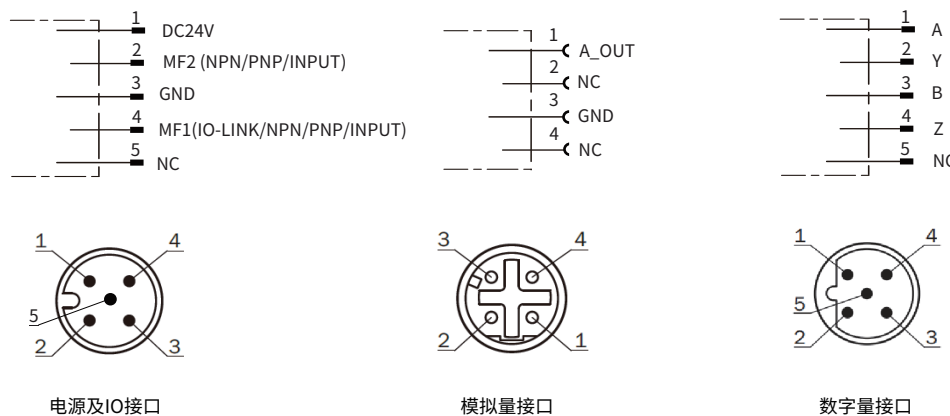
供电电压	DC 10...30V	测量范围	0.15...20m
光源类型	红色激光, Class 2	分辨率	1mm
测量误差	±2mm在特定条件下; ±3mm(+15°C...+30°C); ±5mm(-10°C...+50°C);	重复精度	2mm
功耗	2.8W, <100mA@DC24V	测量时间	0.1s指定在白色物体表面; 0.033s在反射性好的表面上 (80%)
串行接口	IO-LINK; RS422,最大波特率115200, Modbus	环境光	冷色LED灯:10000Lux; 卤素灯:4800Lux; 暖色LED:3700Lux.(测量距离10m)
数字输入	外部触发器, 3V...24V	模拟输出	电流:4...20mA(超出0mA); 0...10V(超出时10.2V)
电路开关	可选最多2路, I load < 100mA	连接类型	M12连接器
显示器	6位OLED显示屏	材质	外壳:压铸铝 窗口:PMMA
工作温度	-10°C...+50°C (注意不可结露、结冰)	安装方式	支架固定
存储温度	-25°C...+70°C	外型尺寸	69.6mmx83.5mmx104.5mm
防护等级	IP67		

## 5. 外形尺寸



- 1— 电源及IO接口
- 2— 模拟量接口
- 3— 空
- 4— 数字量RS422接口
- 5— 带按键显示屏

## 6. 接线图



## 7. Parameter Description

### 7.1 Serial Port Parameters

Parameter	Default	Setting Range
Address	1	1-247
Baud Rate	115200	2400、4800、9600、19200、38400、115200
Check Method	No Parity	No Parity, Even Parity, Odd Parity

### 7.2 Digital Outputs

Note: Settings should be made when the switch enable is turned on.

Parameter	Default	Setting Range	
Electrical level	Low	Low, High	
Function	Distance Limit	Distance Limit, Special Meaning, Laser Off, Preset Offset, Teach Mode	
Distance Limit	Switch Mode	Dark ON	Dark ON, Light ON
	Teach Mode	1P	1P、2P
	Limit 1/Limit	20000	0--30000
	Limit 2	30000	0--30000
	Hysteresis	10	0--500
Special Meaning	Operation	Off	Off, On
	Signal Limit	Off	Off, On
	Temperature	Off	Off, On
	Spot Anomaly	Off	Off, On
	Hardware Fault	Off	Off, On
	Heater	Off	Off, On
Laser Off	Off	Off, On	
Preset Offset	0	-600---+300	
Teach Setting	Off	Off, On	

### 7.3 Offset

Parameter	Default	Setting Range
Offset	0	-600-->+300

### 7.4 Special Functions

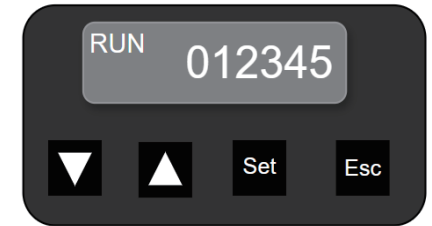
Parameter	Default	Setting Range
Filter Strength	0	0--5
Light source	50ms	5ms、50ms、500ms
Temperature	+30	-10-->+40

### 7.5 Analog Output

Parameter	Default	Setting Range	
Type	Voltage	Voltage, Current	
Voltage	Low Limit	0	0-30000
	High Limit	20000	
Current	Low Limit	0	0-30000
	High Limit	20000	

### 7.6 Language

Parameter	Default Value	Setting Range
Language	Chinese	English, Chinese



Schematic Diagram of the Operation

## 8. Operation Instructions

### 8.1 Display and Button Instructions

#### 8.1.1 Display Instructions

Display Content	Instruc-
Run 012345	Measurement Value, unit: mm, e.g., 12345mm
Run [Progress Bar]	Light Source Intensity
Run 123mv	Light Source Intensity (Mv value)
Run 00030C	Device Temperature, unit: °C
Run 00002H	Cumulative Operation Time, unit: hours
Run NoWrn	Warning Messages (No Warning, Timeout Warning, Signal Warning, Temperature Warning, Light Spot Warning). If warnings exist, they will be displayed in sequence; if no warnings, display "No Warning".
Run NoErr	Error Messages (No Error, Operation Timeout, Signal Error, Temperature Limit Exceeded, Light Spot Error). If errors exist, they will be displayed in sequence; if no errors, display "No Error".
Run E1	Hardware Fault Code (displayed only when a hardware fault exists). E1

## 7. 参数说明

### 7.1 串口参数

参数	默认值	整定范围
地址	1	1-247
波特率	115200	2400、4800、9600、19200、38400、115200
检验方式	无校验	无校验、偶校验、奇校验

### 7.2 开关量

说明：需在开关使能打开的情况下设置。

参数	默认值	整定范围
电平	低	低、高
功能	距离超限	距离超限、特殊含义、关激光、预置偏移、设置教导
距离超限	开关模式	暗通 暗通、亮通
	教导模式	1P 1P、2P
	超限1\超限	20000 0--30000
	超限2	30000 0--30000
	回差	10 0--500
特殊含义	运行超时	关 关、开
	信号超限	关 关、开
	温度超限	关 关、开
	光斑异常	关 关、开
	硬件异常	关 关、开
	加热启动	关 关、开
关激光	关 关、开	
预置偏移	0 -600---+300	
设置教导	关 关、开	

### 7.3 偏移量

参数	默认值	整定范围
偏移量	0	-600--+300

### 7.4 特殊功能

参数	默认值	整定范围
滤波强度	0	0--5
光源异常	50ms	5ms、50ms、500ms
加热启动	+30	-10--+40

### 7.5 模拟量

参数	默认值	整定范围
类型	电压	电压、电流
电压	低限	0
	高限	20000
电流	低限	0
	高限	20000

### 7.6 语言

参数	默认值	整定范围
语言	中文	Eng、中文

## 8. 操作说明

### 8.1 显示及按键说明



操作界面示意图

#### 8.1.1 显示说明

显示内容	说明
运行 012345	测距值, 单位mm, 含义12345mm
运行 [柱状图]	光源强度柱形图
运行 123mv	光源强度mv值
运行 00030C	设备温度, 单位摄氏度
运行 00002H	累计运行时间, 单位小时
运行 无警告	警告信息 (无警告、超时警告、信号警告、温度警告、光斑警告), 若有警告信息, 会依次轮询显示, 若无警告信息则显示无警告。
运行 无错误	错误信息, (无错误、运行超时、信号错误、温度超限、光斑错误), 若有错误信息, 会依次轮询显示, 若无错误信息则显示无错误。
运行 E1	硬件故障代码 (只有存在硬件故障时才显示), E1表示IO_LINK硬件故障硬件故

### 8.1.2 Indicator Light Explanations

Indicator	Meaning	Note
PWR	Power Indicator	Green light: System running. Blinks once per second when operational.
MF1	Multi-Function Indicator	IO_Link enabled turns indicator off; when disabled and digital I/O is active, orange lights up for output activation or high-level input, green for reset or low-level/floating input.
MF2	Digital Output 2	Output: orange = active, green = reset; Input: orange = high, green = low/floating.
STA	Operation Indicator/modbus Communication	Red light: Distance measurement anomaly detected. Green light: Modbus communication monitor. Blinks during data exchange.

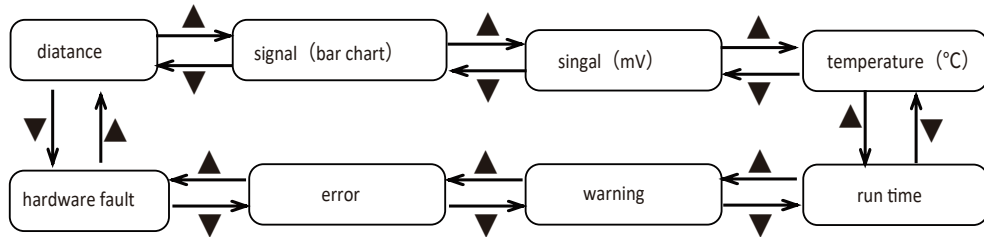
### 8.1.3 Button Instructions

Button	Explanation
	In menu mode, turn to the next page; in edit mode, subtract the number or select the next option.
	In menu mode, turn to the previous page; in edit mode, add the number or select the previous option.
	In menu mode, enter the sub - menu; in edit mode, move the cursor to the right. If the cursor is on the left most side, exit the current edit menu and save the data.
	In menu mode, return to the previous menu; in edit mode, exit the current edit menu without saving the data.

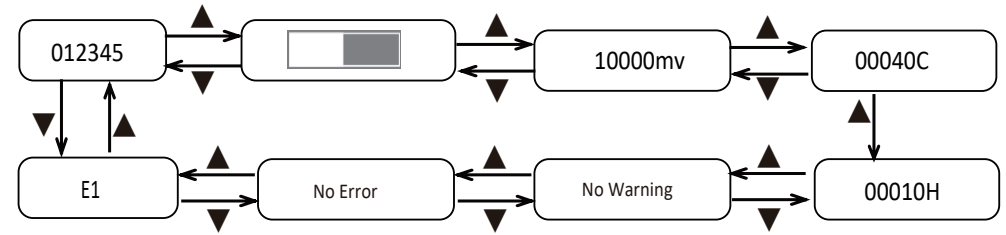
## 8.2 Button Operation Instructions

### 8.2.1 Operation Mode

When the device is powered on, it enters the operation mode and displays the ranging data. In this interface, press the up or down button to display the ranging value, signal intensity (bar graph), signal intensity (mV value), device operating temperature, startup operation time, warning messages, error messages, and hardware fault (displayed only when there is a hardware fault) in sequence, as shown below.



Operation process of operating mode

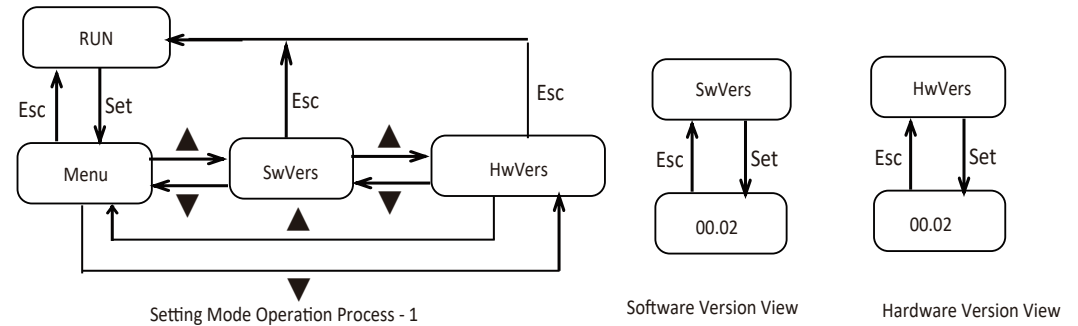


Display information of operating mode

### 8.2.2 Parameter Settings

Press the Set button to enter the lower - level menu, and the Esc button to return to the upper - level menu. Use the up and down buttons to scroll through the pages.

Note: The shaded content is only displayed when the switch enable is turned on. When the io - link function is disabled, the switch 1 content is displayed, and when the io - link function is enabled, the switch 1 content is not displayed.



Setting Mode Operation Process - 1

Software Version View

Hardware Version View

#### 8.2.2.1 Parameter Settings

Press the Set button to enter the lower - level menu, and the Esc button to return to the upper - level menu. Use the up and down buttons to scroll through the pages.

Note: The shaded content is only displayed when the switch enable is turned on. When the io - link function is disabled, the switch 1 content is displayed, and when the io - link function is enabled, the switch 1 content is not displayed.

## 8.1.2指示灯说明

指示灯	含义	备注
PWR	电源指示	绿灯，运行监视，绿色闪烁，每隔1s闪烁一次；
MF1	多功能指示灯	IO_Link功能打开，该灯熄灭状态； IO_Link功能关闭，开关量功能打开，开关量做输出使用，开关量动作，橙色灯亮，开关量复位绿色灯亮； 开关量做输入使用，高电平，橙色灯亮，低电平或悬空，绿色灯亮；
MF2	开关量2状态指示灯	开关量功能打开，开关量做输出使用，开关量动作，橙色灯亮，开关量复位，绿色灯亮； 开关量做输入使用，高电平，橙色灯亮，低电平或悬空，绿色灯亮；
STA	运行指示灯 \modbus通讯监视	红灯：测距数据监视，测距异常时红灯亮； 绿灯：modbus通讯监视，数据交互时，闪烁。

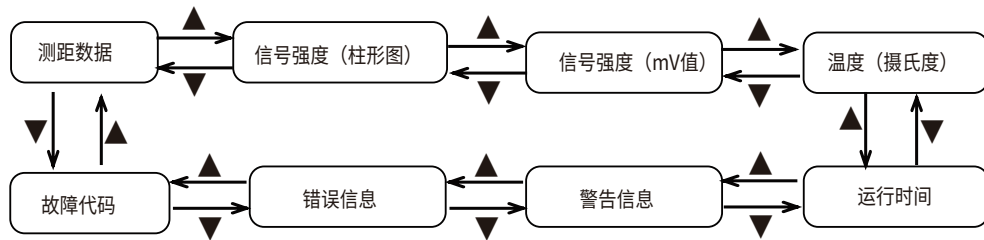
## 8.1.3按键说明

按键	说明
	菜单模式下，向下翻页；编辑模式下，数字减或下一选项。
	菜单模式下，向上翻页；编辑模式下，数字加或上一选项。
	菜单模式下，进入下级菜单； 编辑模式下，光标右移，若光标在最左侧，退出当前编辑菜单并保存数据。
	菜单模式下，返回上一级菜单； 编辑模式下，退出当前编辑菜单，不保存数据。

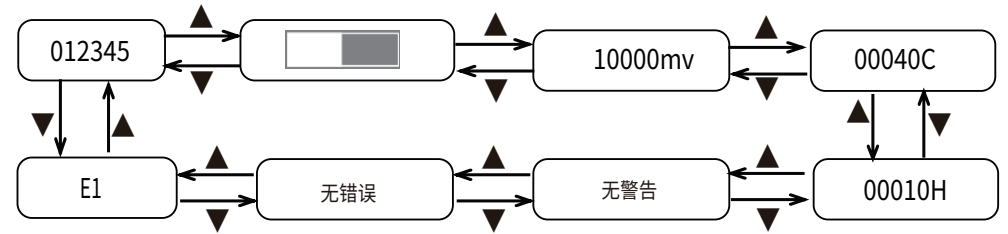
## 8.2按键操作说明

## 8.2.1运行模式

开机进入运行模式，显示测距数据，在该界面下按向上键或向下键依次显示测距值、信号强度（柱形图）、信号强度（毫伏值）、设备运行温度、开机运行时间、告警信息、错误信息、硬件故障（仅有硬件故障时显示），如下图所示。



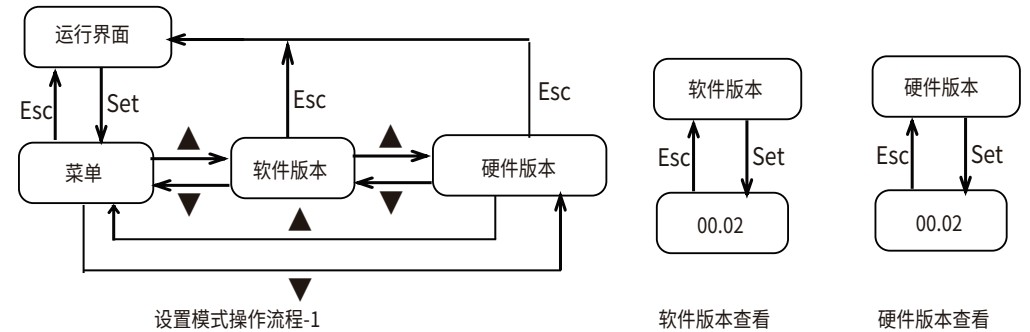
运行模式操作流程



运行模式显示信息

## 8.2.2设置模式

在运行模式下，按Set键进入到设置模式，在该模式下按向上键或向下键依次显示菜单、软件版本、硬件版本，按Esc键退回到运行模式，操作流程如下图。在显示界面下按Set键进入到对应界面。



设置模式操作流程-1

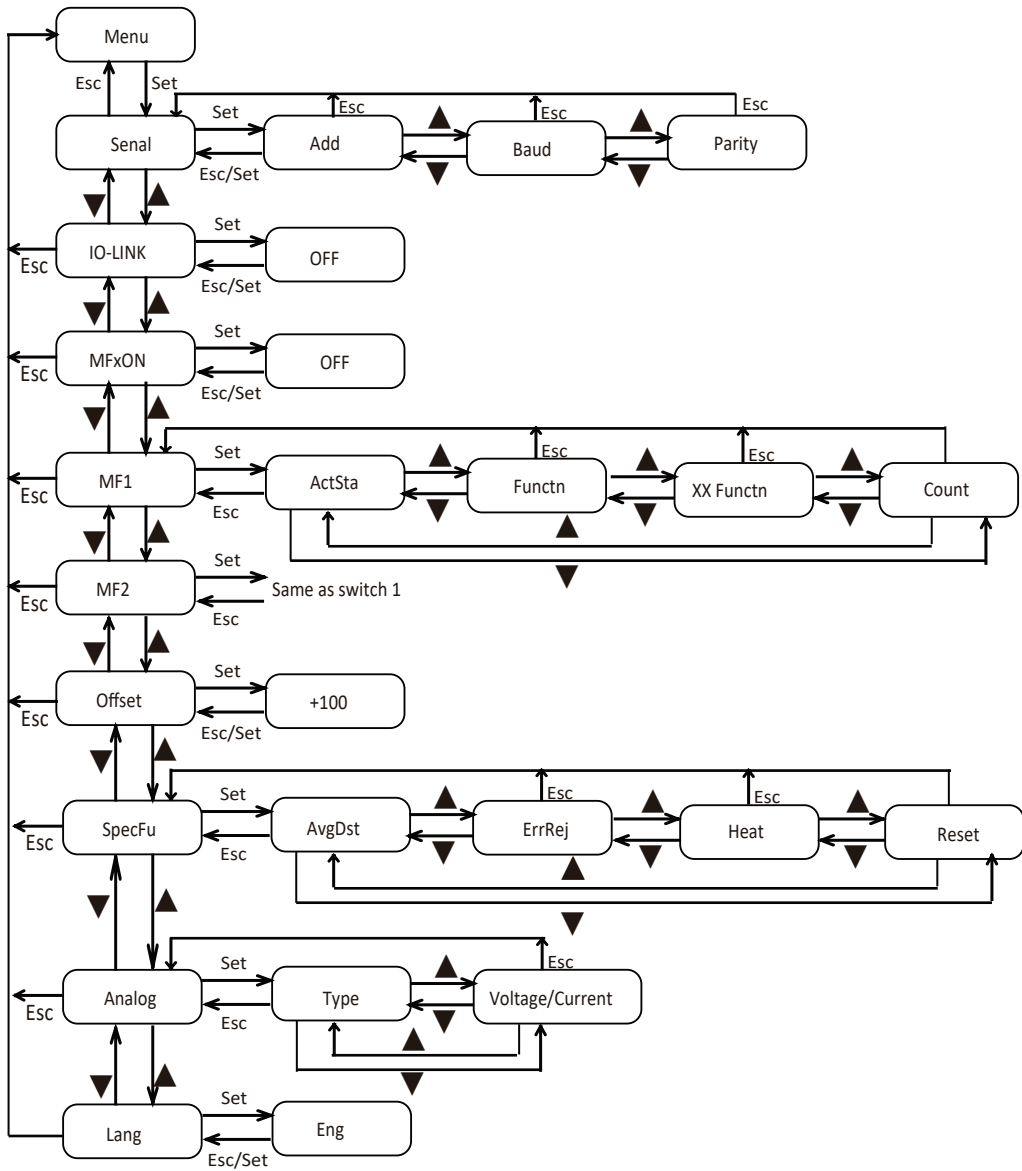
软件版本查看

硬件版本查看

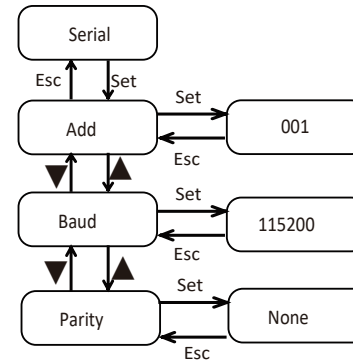
## 8.2.2.1参数设置

按Set键进入到下级菜单，Esc键返回上一层菜单，向上向下键翻页。

说明：只有在开关使能打开的情况下显示阴影部分内容，io-link功能关闭的情况下显示开关1内容，io-link功能打开的情况下不显示开关1内容。



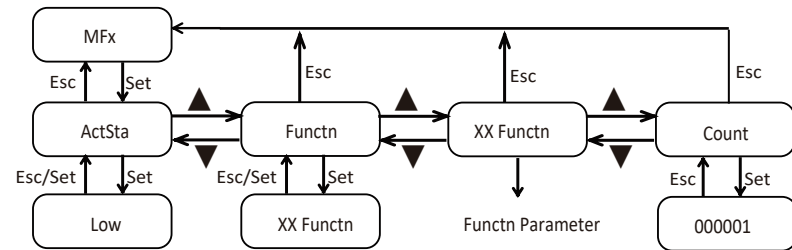
### 8.2.2.2 Serial Port Parameter Settings



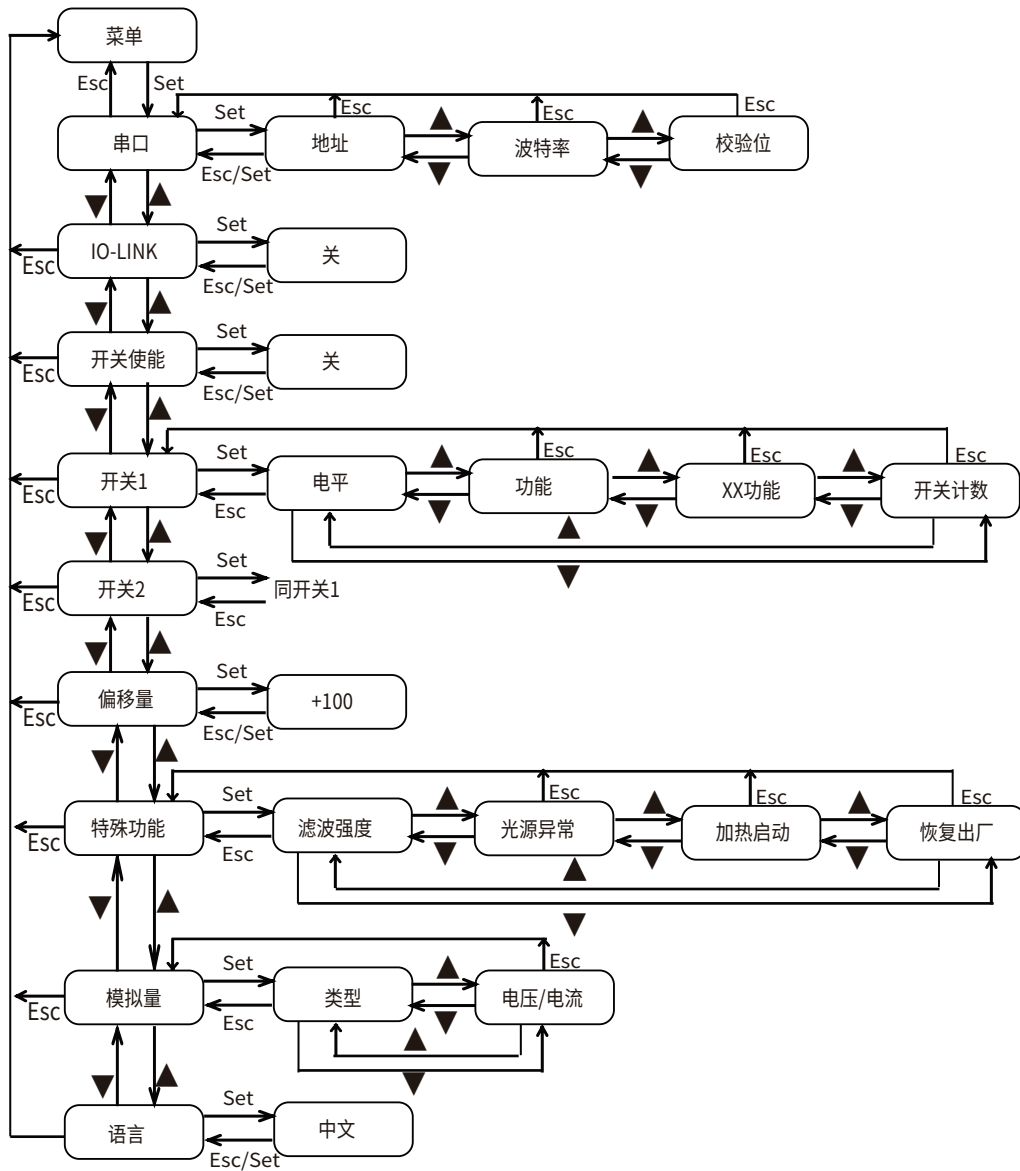
### 8.2.2.3 Digital Output Function Parameter Settings

#### Parameter Description

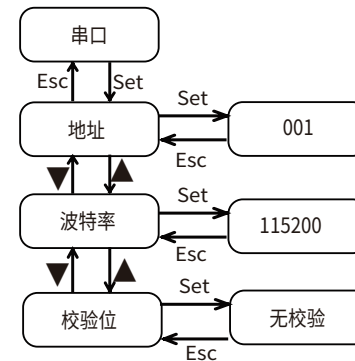
Menu Item	Meaning
Electric al Level	Low: When used as output, the digital output is N - type; when used as input, the falling edge is the valid input. High: When used as output, the digital output is P - type; when used as input, the rising edge is the valid input.
Function	Set the digital output: Distance Limit: Used as output, it outputs a signal when the distance exceeds ; Special Meaning: Used as output, it outputs a signal when special conditions are met; Laser Off: Used as input, an external input signal controls the laser to turn off; Preset Offset: Used as input, an external input signal controls the recalculation of the compensation amount. offset = Preset set - current measured distance, and the current measured distance becomes the Preset set value. For example, if the Preset set value is 10 meters and the current distance is 1 meter, when an input signal is given, offset = 10 - 1 = 9 meters, and the displayed distance will change from 1 meter to 10 meters (1 + 9); Teach Setting: Used as input, an external input signal sets the teach value.
Switch	The number of times the switch is closed.



Switch Function Settings

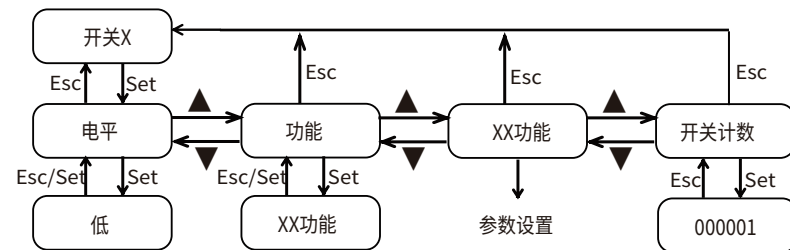


### 8.2.2.2串口参数设置



### 8.2.2.3开关量功能参数设置

菜单项	含义
电平	低: 开关量做输出用N输出 开关量做输入用下降沿为有效输入 高: 开关量做输出用P输出 开关量做输入用上升沿为有效输入
功能	设置开关量输出含义: 距离超限: 做输出使用, 距离超过设定值后输出信号; 特殊含义: 做输出使用, 满足特殊定义条件时输出信号; 关光源: 做输入使用, 外部输入信号控制关光源; 预置偏移: 做输入使用, 外部输入信号控制重新计算补偿量 offset= Preset设定值-当前实测距离,将此时的实测距离变成Preset设定值 如: Preset设定值=10米 当前距离在1米, 此时给一个输入信号, 则offset=10-1=9米, 则此时显示距离会从1米变为10米 (1+9) 设置教导: 做输入使用, 外部输入信号设置教导值;
开关计数	开关闭合次数



开关功能设置

8.2.2.3.1 Switch Function Parameter Explanation

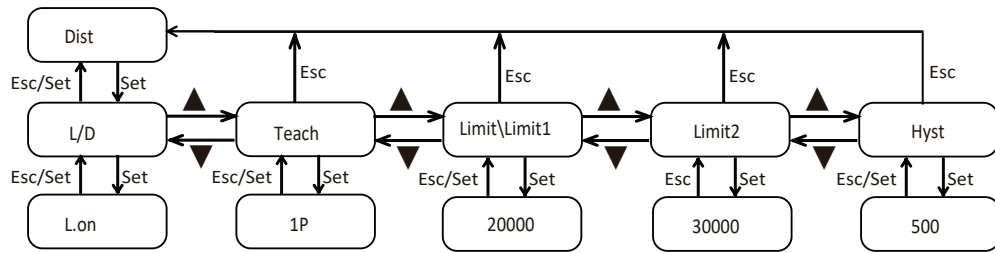
8.2.2.3.1.1 Distance Limit Parameters

Menu Item	Meaning
Switch Mode	Set the light - on/dark - on mode
Teach Mode	Set the 1 - point/2 - point teach mode
Limit	Set the action distance value of the digital output
Hysteresis	Set the distance hysteresis value of the digital output

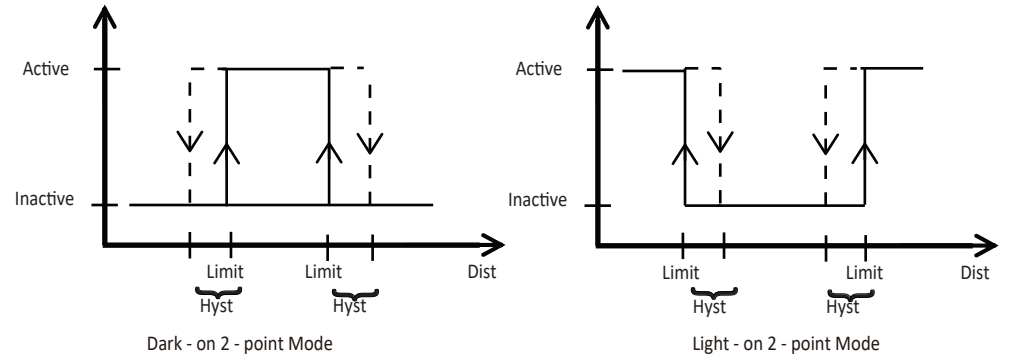
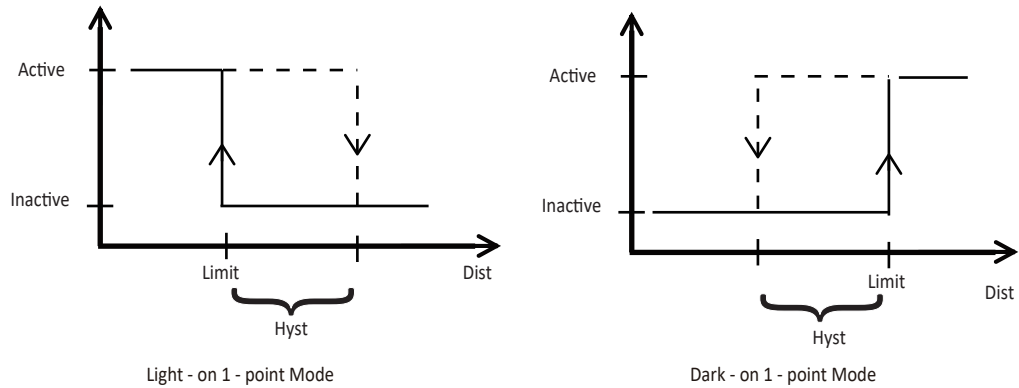
Note: In the 1 - point teach mode, there is only one limit parameter of Limit; in the 2 - point teach mode, there are two limit parameters of Limit 1 and Limit 2.

Teach Mode	Limit Value
1P	Limit
2P	Limit1
	Limit2

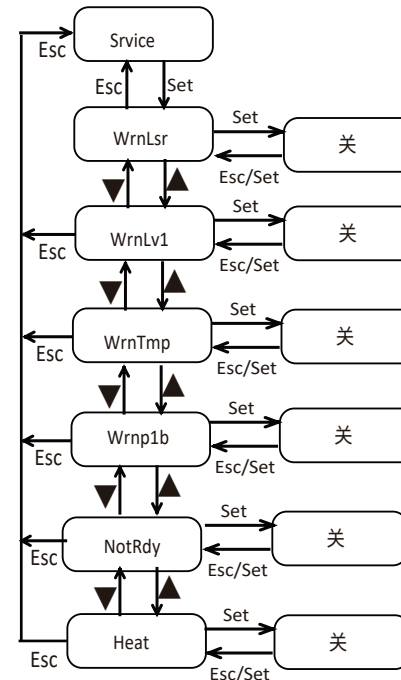
Limit Value Parameters



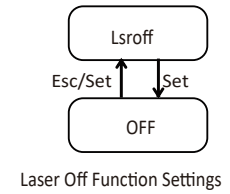
Function setting for distance over-limit



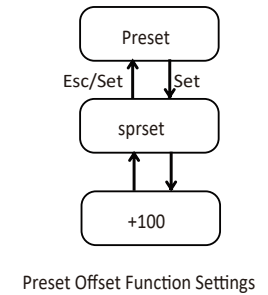
8.2.2.3.1.2 Special Meaning Parameters



8.2.2.3.1.3 Laser Off Enable



8.2.2.3.1.4 Preset Offset Parameters



### 8.2.2.3.1 开关功能参数说明

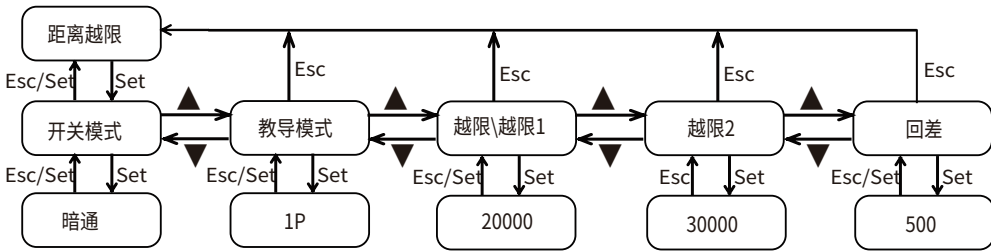
#### 8.2.2.3.1.1 距离超限参数

菜单项	含义
开关模式	设置亮、暗通模式
教导模式	设置1点、2点教导模式
超限	设定开关量的动作距离值
回差	设定开关量距离回差值

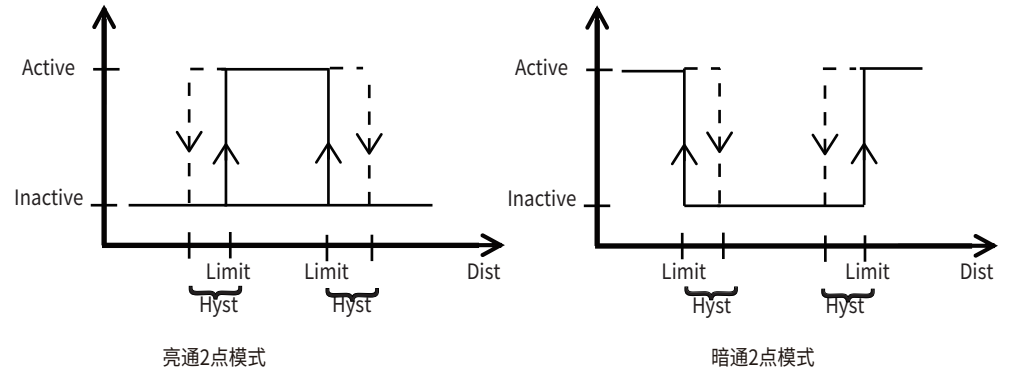
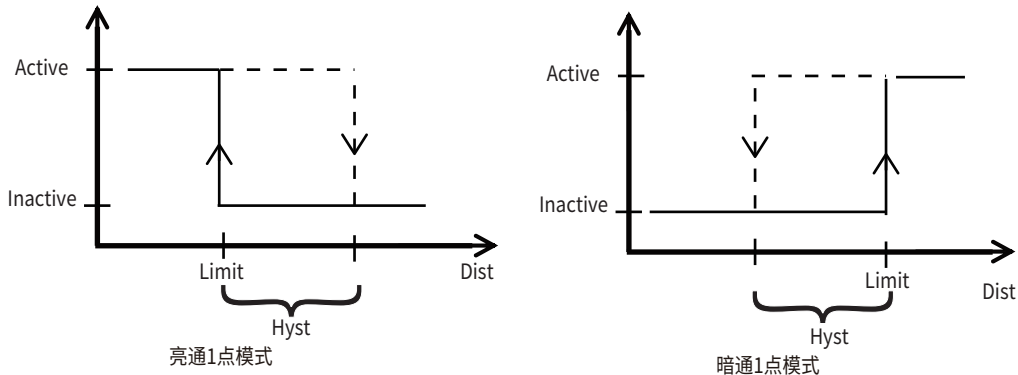
说明：1点教导模式，超限参数只有一个，即超限；2点教导模式，超限参数有两个，即超限1、超限2。

教导模式	超限值参数
1P	超限
2P	超限1
	超限2

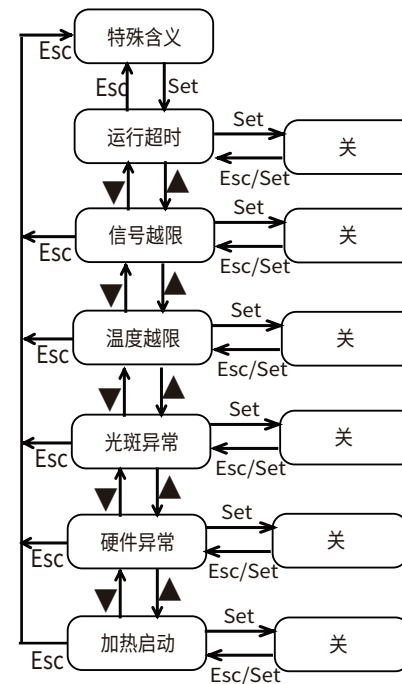
超限值参数



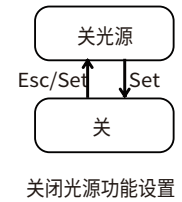
距离超限功能设置



#### 8.2.2.3.1.2 特殊含义参数

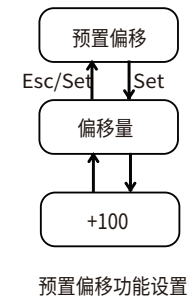


#### 8.2.2.3.1.3 关光源使能



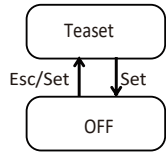
关闭光源功能设置

#### 8.2.2.3.1.4 预置偏移参数



预置偏移功能设置

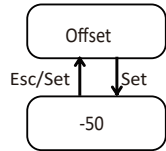
8.2.2.3.1.5 Teach Setting Enable



Teach Value Setting Function Settings

8.2.2.4 Offset Parameter Settings

Set the zero - point offset distance value.  
The displayed value = true value + offset.

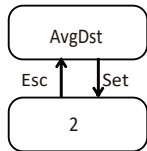


8.2.2.5 Special Function Parameters

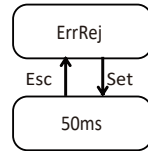
Parameter

	Explanation
Filter Strength	Filter strength
Light Source Anomaly	Delay alarm for light source anomaly
Heating Start	Heating start set value
Restore Factory Settings	Restore parameters to

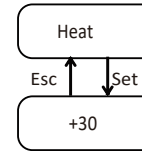
8.2.2.5.1 Filter Strength  
Parameter Settings



8.2.2.5.2 Light Source Anomaly  
Parameter Settings

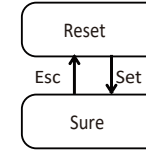


8.2.2.5.3 Heating Start  
Parameter Settings



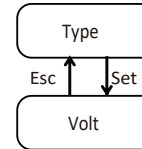
8.2.2.5.4 Restore Factory Settings

Press the Esc button to return,  
press the Set button to restore the parameters.

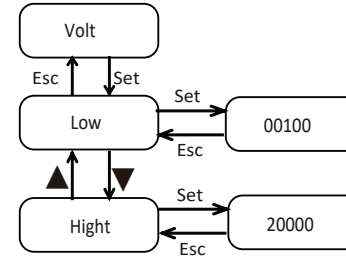


8.2.2.6 Analog Output

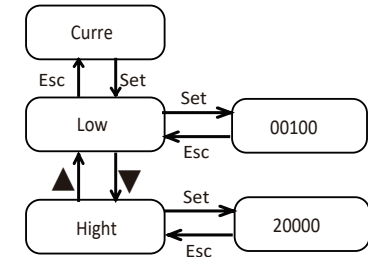
Select the output type (voltage/current) of the analog channel.



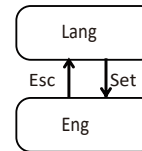
Set the distance values corresponding to  
the high and low limits of voltage output (0V/10V)



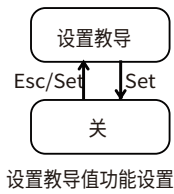
Set the distance values corresponding to  
the high and low limits of current output (4mA/20mA)



8.2.2.7 Language Selection

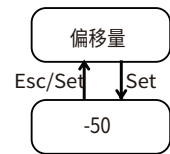


## 8.2.2.3.1.5设置教导使能



## 8.2.2.4偏移量参数设置

设置零点偏移距离值，显示值=真实值+偏移量

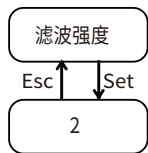


## 8.2.2.5特殊功能

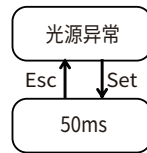
参数

参数	说明
滤波强度	滤波强度
光源异常	光源异常延时报警
加热启动	加热启动定值
恢复出厂	参数恢复出厂值

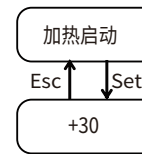
## 8.2.2.5.1滤波强度参数设置



## 8.2.2.5.2光源异常参数设置



## 8.2.2.5.3加热启动参数设置



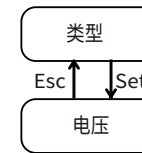
## 8.2.2.5.4恢复出厂

按Esc键返回，按Set键参数恢复为出厂参数

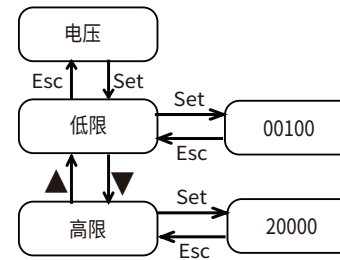


## 8.2.2.6模拟量

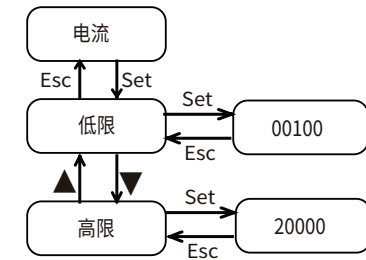
模拟量通道输出类型选择（电压\电流）



电压输出高低限（0V\10V）对应距离值设定



电流输出高低限(4mA\20mA)对应距离值设定



## 8.2.2.7语言选择

