

### 1.Product description:

The ODC300 Optical Data Transmission System facilitates wireless data transmission without the need for physical wiring. This device allows for simple, cost-effective, and rapid data transfer to terminal devices. Utilizing a protocol-free fast Ethernet connection, it ensures high-speed broadband communication with a maximum transmission rate of 100 Mbit/s.



### 2.Product features:

- No need for line connection, quick and low-cost optical alignment installation.
- Protocol-free rapid data transparent transmission.
- Parallel light axis operation ,No reflection surface interference.

### 3.Product Models:

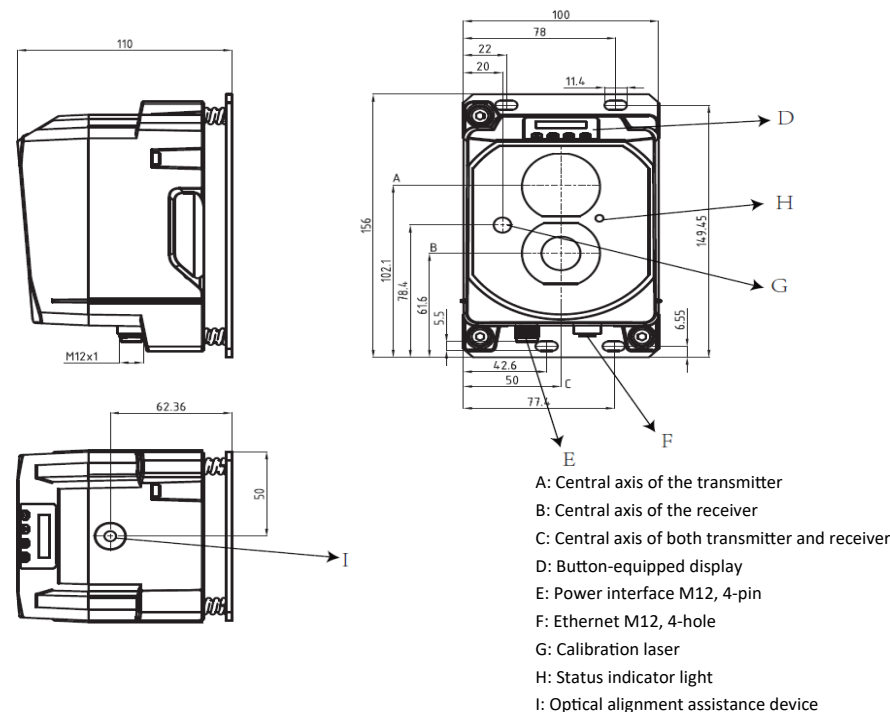
Type	Transmission Range	Light source	Output	Interface	Connection
ODC300-T120 (A+B)	0.3...120m	Red laser + Infrared laser	PNP/NPN	Ethernet	M12 connectors
ODC300-120ACBEN6Q12	0.3...120m	Red laser	PNP/NPN	Ethernet	M12 connectors
ODC300-120BCBEN6Q12	0.3...120m	Infrared laser	PNP/NPN	Ethernet	M12 connectors

### 4.Technical Specification

Power supply	DC 18 ... 30 V
Light source	Red laser (660nm), Infrared laser (780nm)
Laser Class	1M
Aperture Angle	1°(Transmitter) ,1.5°(Receiver)
Spot Size	1.75 m (at 100 m)
Input	1 digital switch input      Uv:Transmitter disabled
Output	1 digital switch output, PNP/NPN, manually settable (out puts critical warning information,manually, selectable)
Interface	Main type: PROFINET
Transmission Protocol	EtherCAT, PROFINsafe, TCP/IP
Common Types	Ethernet TCP/IP, PROFINET
Transmission Speed	100 Mbit/s

Number of Interfaces	2 (M12 connectors)
Display Type	OLED display screen
Input Operation	4 buttons
Material	Aluminum alloy housing; Glass window
Storage Temperature	-35 ... 70°C
Operating Temperature	-20 ... 50°C
Protection Rating	IP65
Dimensions	100 mm x 156 mm x 110 mm
Precautions	A preheating period (typically 10 minutes) is required below -10°C. Humidity must be less than 90% without condensation. Outdoor use may limit functionality due to weather conditions such as precipitation, fog, and sunlight.

### 5.Dimensions



## 1. 产品说明:

光学数据传输无需线路连接,能够简单、低成本、快速灵活地将数据传输至终端设备,不含协议快速以太网能毫无问题地进行高速宽带传输,传输速度可达到100Mbit/s。

## 2. 产品特点:

- 无需线路连接,快速、低成本光学对准安装
- 不含通讯协议快速透传
- 平行光轴运行,无反射面干扰



## 3. 产品型号

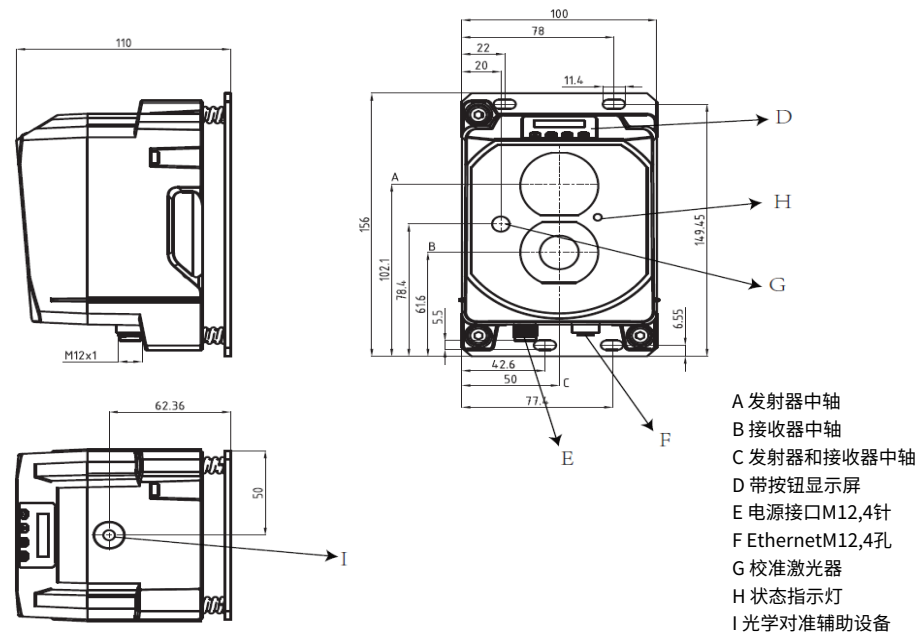
型号	通讯距离	光源类型	输出	接口	接线方式
ODC300-T120 (A+B)	0.3...120m	红色激光+红外激光	PNP/NPN	Ethernet	M12连接器
ODC300-120ACBEN6Q12	0.3...120m	红色激光	PNP/NPN	Ethernet	M12连接器
ODC300-120BCBEN6Q12	0.3...120m	红外激光	PNP/NPN	Ethernet	M12连接器

## 4. 技术参数

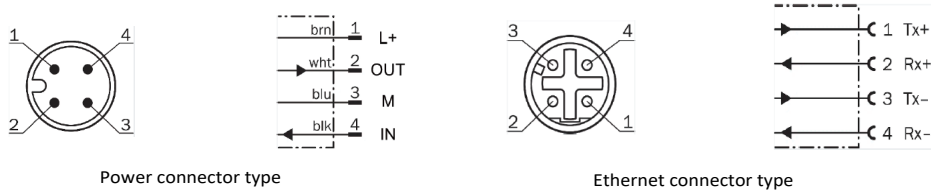
供电电压	DC 18 ... 30 V
光源类型	红色激光 (660nm)、红外激光 (780nm)
激光等级	1M
发散角度	1°(发射器), 1.5°(接收器)
光斑尺寸	1.75 m (在 100 m)
输入	数字开关量输入数 1 个, Uv: 发射器已禁用
输出	数字开关量输出数 1 个, PNP/NPN, 可手动设置(输出部分关键警告信息, 可手动选择)
接口	主要类型 PROFINET
传输协议	EtherCAT、PROFIsafe、TCP/IP
常用类型	Ethernet TCP/IP, PROFINET
传输速率	100 Mbit/s

接口数量	2个,M12连接器
显示类型	OLED屏
输入操作	4个按键
材质	外壳: 铝合金;窗口: 玻璃
存储温度	-35 ... 70°C
工作温度	-20 ... 50°C
防护等级	IP65
外形尺寸	100 mm x 156 mm x 110 mm
注意事项	在低于-10°C的温度下,需要一段预热时间(通常为10分钟)。空气湿度小于90%,无冷凝。在室外区域,预计天气条件(降水、雾、光辐射等)会对设备功能造成限制。

## 5. 机械尺寸



## 6. Interface Definition



The ODC300 automatically enters Normal mode upon startup. When the device is initially installed or its installation position has changed, manual calibration is required. Press the SET button to exit Normal mode. After completing calibration, press the ESC button to restore Normal mode.

## 7. Product Description

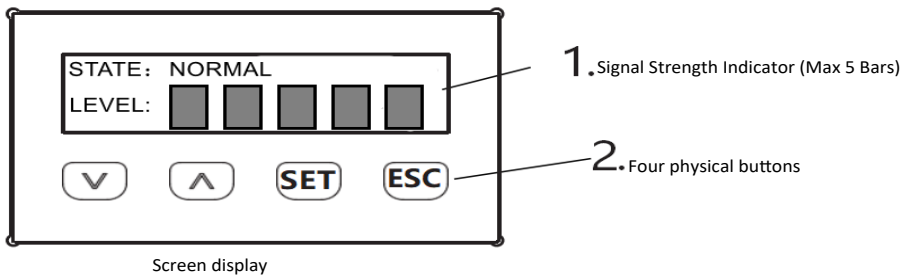
### 7.1 Product Function Description

The ODC300 optical data transmission consists of two optically aligned devices, one of which functions as a sender and the other as a receiver. The devices communicate over long distances and support wireless data transmission. A pair of devices is needed to establish a data transmission path, with one device operating at frequency F1 (ODC300-xxxA) and the other at frequency F2 (ODC300-xxxB). Both devices monitor the received signal level which can be displayed on a level indicator. If the received level drops below a certain value, e.g. due to increasing contamination of the optics, a warning is issued via switching output. All work on the device (mounting, connecting, aligning, configuration) can be easily performed from indicator lights, the screen, and button operations.

### 7.2 Status display

Green Receiver Indicator Light State	Display Screen State	Description
Constantly Lit	Signal Strength Progress Bar with 5 Bars	Connection available; receiver is receiving strong light signals.
Off	Signal Strength Progress Bar with 3 Bars	Warning: Receiver is only receiving weak light signals.
Off	Signal Strength Progress Bar with 1 Bar	Error: Receiver is not receiving any light signals.
Off	No Display	Check power supply

### 7.3 Display Screen and Button Control



Mode status	Description
Running (NORMAL)	Signal strength indicator explanation: 5 bars: The device is operating normally. The Ethernet link is active and capable of normal data transmission. 3 bars: The device is functioning, but the receiver is detecting weak optical signals. Data transmission may be unstable or intermittent. 1 bar: The device is not operating properly. The device fails or the optical path between the equipment is not smooth.

Working Mode

	<ul style="list-style-type: none"> <li>Down, Select menu, parameter, or option.</li> </ul>
	<ul style="list-style-type: none"> <li>Up, Select menu, parameter, or option.</li> </ul>
	<ul style="list-style-type: none"> <li>Switch to the next-lowest menu level.</li> <li>Save parameter change.</li> <li>Confirm selection.</li> </ul>
	<ul style="list-style-type: none"> <li>Return to the previous menu.</li> </ul>

buttons

## 8. Installation

### 8.1 Choosing an Installation Location

The two devices of the ODC300 series optical Data transmission should be installed on opposite parallel surfaces, ensuring a clear line of sight to the opposing device.

Installation Instructions for Ensuring Fault-Free device operation:

- The installation site must comply with technical specifications such as transmission ranges.
- At low ambient temperatures ( e.g. in deep-freeze warehouses ), the data transmission system should have integrated heating.
- Protect the data transmission system from direct sunlight exposure.
- Prevent condensation, rain, snow, or fog from covering the optical components of the device.
- Avoid exposing the data transmission system to environments with rapid temperature fluctuations.
- Maintain sufficient installation distance (generally at least 0.5-0.6 meters) between the device and other optical measurement devices/data transmission systems.
- Ensure the mounting surface is flat and free from conditions that may cause devices movement, vibrations, or tilting.

### 8.2 Installation of Mounting Brackets and Devices

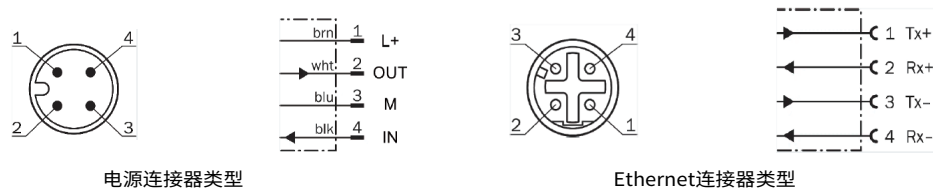
1. Installation Requirements:

It is recommended to install the two devices in a horizontal alignment. As shown in the diagram below, ensure both device are installed at the same height, with a horizontal offset of 6.4 mm after being rotated 180° around the horizontal axis to achieve the required positional relationship.

2. Installation Method:

Each machine's bracket assembly is equipped with four oblong mounting holes. Simply use M5 specification screws to securely fasten the brackets to the device plane, there by completing the installation process.

## 6. 接口定义



## 7. 产品描述

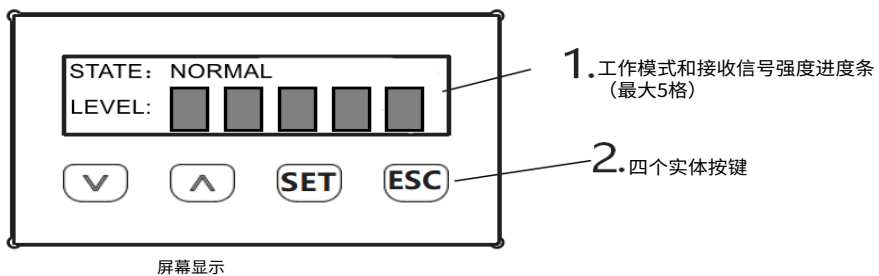
### 7.1 设备功能描述

ODC300光学数据传输器由两个光学对准的设备构成，其中一个用作光发送器，另一个用作光接收器。这些设备可以远距离通信，并支持无线数据传输。其中，建立数据传输路径需要一对设备，其中一个设备的工作频率为F1（ODC300-xxxA），而另一个设备的工作频率为F2（ODC300-xxxB）。这两个设备都可以通过显示屏上的信号强度指示器表征传输光信号强度。如果接收信号强度下降到某个值以下（例如设备光学器件被污染或遮挡），设备可以通过开关输出发出警告信息。设备上的所有工作（安装、连接、校准、配置）都可以通过指示灯、屏幕和按键操作等轻松完成。

### 7.2 状态显示

绿色接收指示灯状态	显示屏状态	描述
长亮	信号强度进度条5格	连接可用;接收器能够接收强的光信号。
关闭	信号强度进度条3格	警告:接收器只能接收微弱的光信号。
关闭	信号强度进度条1格	错误:接收器未接收到光信号。
关闭	无显示	检查供电情况。

### 7.3 屏幕显示及按键控制



ODC300开机会自动进入运行模式（NORMAL）。当设备初次安装或安装位置发生变化时，需要手动校准设备，按下SET按键可以退出运行模式，完成校准后按下ESC按键恢复运行模式。

模式状态	描述
运行（NORMAL）	<p>屏幕显示信号强度进度条：</p> <ul style="list-style-type: none"> <li>5格：设备正在正常运行，以太网链路处于活动状态，可以进行正常的数据传输。</li> <li>3格：设备正在正常运行，但接收器只能接收微弱的光信号，可能无法正常的进行数据传输。</li> <li>1格：设备尚未正常运行（设备发生故障或设备之间光路不畅通）。</li> </ul>

#### 工作模式

⏴	• 向下选择菜单、参数或选项。
⏵	• 向上选择菜单、参数或选项。
Set	<ul style="list-style-type: none"> <li>• 进入下一个菜单。</li> <li>• 保存参数更改。</li> <li>• 确认选择。</li> </ul>
Esc	• 返回上级菜单。

#### 按键

## 8. 安装

### 8.1 选择安装位置

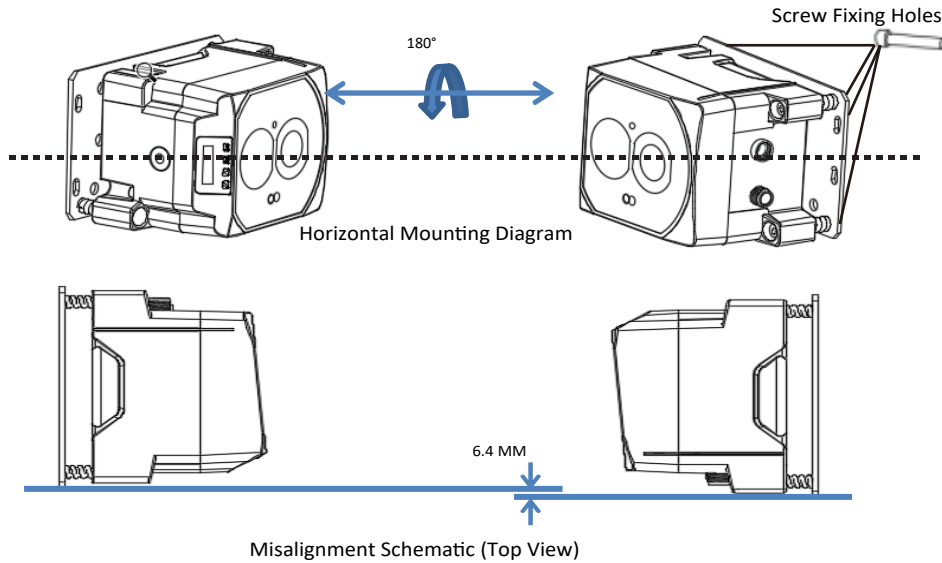
ODC300系列光学数据传输器的两台设备需要安装在两个相对的平行面上，确保可以清楚地看到对面的设备。

为确保设备无故障运行，请遵循以下安装说明：

- 1) 安装场合要符合测量范围等技术数据。
- 2) 在较低的环境温度下，例如在深度冷冻仓库中，数据传输系统应具有集成加热功能。
- 3) 防止数据传输系统受到阳光直射。
- 4) 避免冷凝水、雨、雪、雾等覆盖设备的光学器件。
- 5) 数据传输系统避免暴露在温度快速变化的环境中。
- 6) 确保系统与其他光学测量设备和数据传输系统有足够的安装距离（一般至少0.5~0.6m即可）。
- 7) 安装平面要平坦且不会出现导致移动设备晃动、振动或倾斜的情况。

### 8.2 安装定位支架和设备

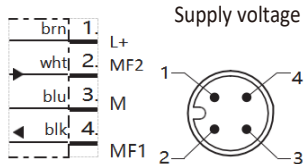
1. 安装要求：两台设备以水平状态进行安装为佳。如下图所示，确保二者安装高度一致，并沿水平轴旋转180°后，水平方向错位6.4mm的相对位置关系进行安装布局。
2. 安装方式：在每台机器的支架部件上，均配备有四个长圆形的固定孔位，仅需采用M5规格的螺丝将其紧密锁固于设备平面之上，便可完成相应安装操作。



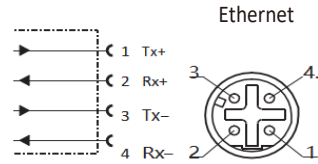
### 8.3 Electrical connection

- ※ Incorrect supply voltage may cause device damage, therefore:  
The devices must only be operated within the operating voltage range.
- ※ Working with live parts may cause unpredictable operations, therefore:  
Only carry out wiring work when the power is off.  
Only connect and disconnect cable connections when the power is off.
- ※ Incorrect wiring may cause operation malfunctions. Therefore:  
Strictly follow the wiring instructions  
recommend using original cable with an M12 circular connector

#### Connection Instructions



ODC300 connection diagram, M12 male connector, 4-pin, A-coded



ODC300 connection diagram, M12 female connector, 4-pin, D-coded

Wiring	Definition	Wire color	Description
1.	L1	Brown	Supply Voltage:18~30V
2.	MF2	White	Multi-functional output
3.	M	Blue	Supply Voltage: 0V
4.	MF1	Black	Multi-functional input

Description of supply voltage male connector

Wiring	Definition	Description
1.	TX+	Send data signal, not inverted
2.	Rx+	Receive data signal, not inverted
3.	Tx-	Send data signal, inverted
4.	Rx-	Receive data signal, inverted

Description of Ethernet Female Connector

#### Connection steps:

- 1.Ensure the cable is not powered.
- 2.Connect the devices according to the wiring diagram.

### 8.4 Optical Path Calibration of Devices

To ensure performance of the ODC300 series optical data transmission, optical path calibration must be performed on both devices after installation. This product series supports two calibration methods, Using a calibration laser during installation, Utilizing an optical alignment auxiliary device (hereinafter referred to as the optical eyepiece) for installation. Users may select the appropriate calibration method according to their specific installation scenario requirements.

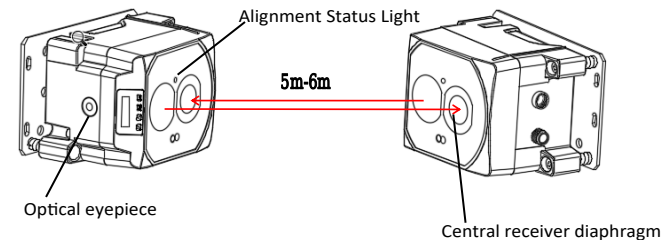
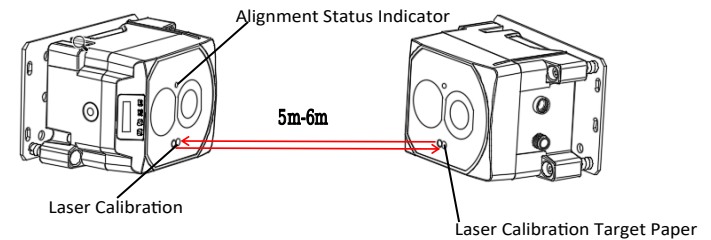
#### 1. Calibration Using the Calibration Laser

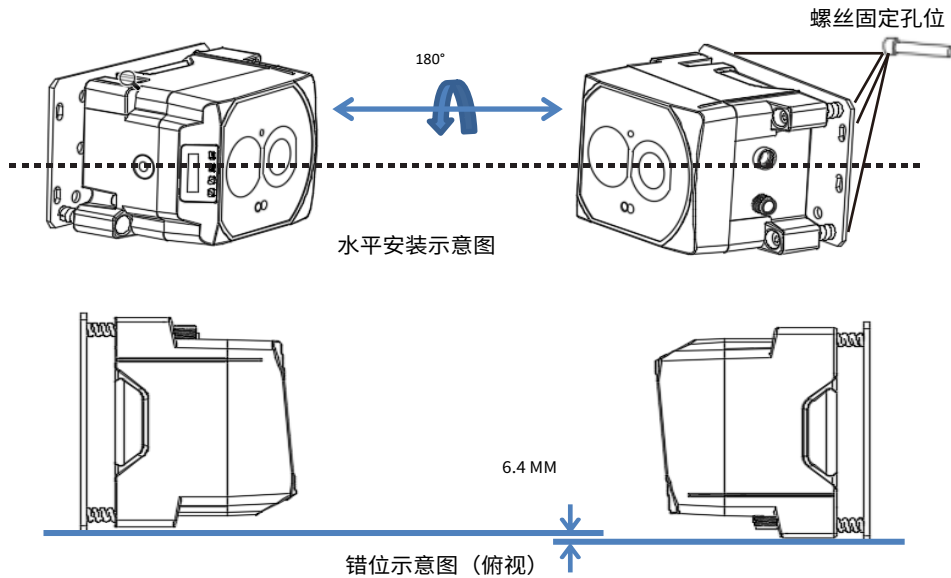
- 1)Keep wired device F1 and device F2 at a distance of 5~6m (recommended optimal calibration distance).
- 2)Power on both devices; they will automatically enter operational mode upon startup.
- 3)In operational mode, press the SET button on device F1. The screen will display “MENU1: ManualFun is Close”, indicating the device has exited operational mode.
- 4)Press the SET button again on device F1. The screen will display “MENU1: ManualFun is Open”, activating the calibration laser on device F1.
- 5)Observe the position of the red visible calibration laser emitted from device F1 onto device F2.
- 6)Adjust the three spring-loaded fastening screws on the positioning bracket to align the laser spot from device F1 precisely within the white circular target (located next to the calibration laser port) on device F2.
- 7)Press the SET button again on device F1 to display “MENU1: ManualFun is Close”, deactivating the laser (ensure it is turned off to avoid interference with normal communication). Then press the ESC button of device F1 to resume its operation mode.
- 8)Repeat steps 3-7 on device F2 to complete its calibration and restore operational mode.
- 9)If both devices show steady illumination of status indicators and full signal strength indicator bars (5 bars), calibration is successful. Otherwise, recalibration of the device may be necessary.

#### 2. Calibration Using optical alignment assistive devices (optical eyepieces):

- 1)Place the wired devices F1 and F2 at a distance of 5-6 meters (recommended optimal calibration point).
- 2)Keep both devices powered off temporarily.
- 3)Observe the position of the opposing device within the optical eyepiece's field of view. Sequentially adjust the three spring-loaded fastening screws on the positioning bracket for each device. Ensure the crosshair center mark in the eyepiece aligns precisely with the receiver's central aperture (black circular spot) of the opposing device.
- 4)Power on both devices and allow them to enter automatic operational mode. Successful calibration is confirmed when:

- Status indicators on both devices remain steadily lit.
  - Signal strength indicator bars on screens are fully filled (5 bars).
- Otherwise, recalibration of the device may be necessary.

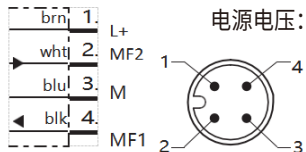




### 8.3 进行电气连接

- ※ 电源电压不正确会导致设备损坏，因此
  - ※ 使用带电部件可能会导致不可预测的操作，因此
  - ※ 接线不正确可能导致操作故障，因此
- 设备只能在标识的工作电源电压范围内工作。
  - 只有在电源关闭时才能进行接线工作。
  - 仅在电源关闭时连接和断开电缆连接。
  - 严格遵循接线说明
  - 推荐使用带有M12圆形连接器的原装线缆。

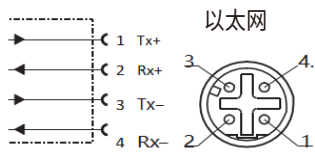
接线说明：



ODC300连接图，M12公接头，4针，A编码

接线	定义	电线颜色	描述
1.	L1	棕色	电源电压:18~30V
2.	MF2	白色	多功能输出
3.	M	蓝色	电源电压: 0V
4.	MF1	黑色	多功能输入

电源电压公接头说明



ODC300连接图，M12母接头，4针，D编码

接线	定义	描述
1.	Tx+	发送数据信号，正相
2.	Rx+	接收数据信号，正相
3.	Tx-	发送数据信号，反相
4.	Rx-	接收数据信号，反相

以太网母接头说明

连接步骤：

- 1)确保线缆没有供电
- 2)根据接线图连接设备

### 8.4 设备光路校准

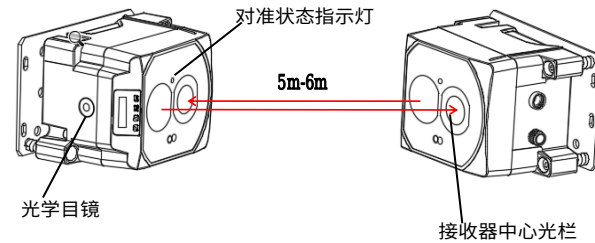
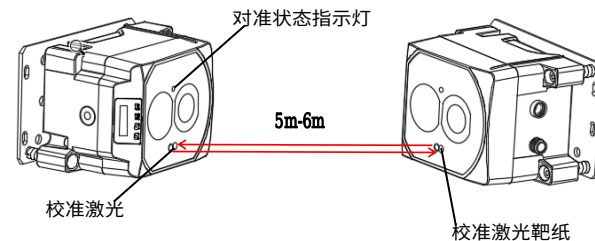
为了保证ODC300系列光学数据传输器的数据传输达到最佳效果，在安装完成后需要对这两台设备进行光路校准。该系列产品可以通过两种方式进行光路校准：使用校准激光器进行安装和使用光学对准辅助设备（后续简称光学目镜）进行安装。用户可根据实际安装场景选择合适的方式进行校准安装。

#### 1.使用校准激光器进行安装

- 1)使连接的设备F1和F2保持在距离5~6m处（该处为推荐的最佳校准点）。
- 2)两台设备上电，开机后均自动进入运行模式。
- 3)在运行模式下单击设备F1的SET按键，屏幕显示“MENU1:ManualFun is Close”，表明设备退出运行模式。
- 4)再次单击设备F1的SET按键，屏幕显示“MENU1:ManualFun is Open”，设备F1的校准激光器打开。
- 5)观察设备F1的校准激光（红色可视激光）投射到设备F2上的位置。
- 6)依次分别通过调节定位支架上的三颗带弹簧紧固螺丝使设备F1的校准激光能准确照射到设备F2的校准激光靶点（设备F2的校准激光旁白色圆环内）上。
- 7)再次单击设备F1的SET按键，屏幕显示“MENU1:ManualFun is Close”，关闭设备F1的校准激光（切记关闭，防止干扰后续正常通信）。然后单击设备F1的ESC按键，设备F1恢复运行模式。
- 8)在设备F2上执行上述对设备F1的同样操作，完成设备F2的手动校准并让其恢复运行模式。
- 9)若此时两台设备上的状态指示灯均长亮并且屏幕上的接收信号强度指示进度条均满格（5个格），则表明校准完成，否则可根据情况再次校准设备。

#### 2.使用光学对准辅助设备（后续简称光学目镜）进行安装

- 1)使连接的设备F1和F2保持在距离5~6m处（该处为推荐的最佳校准点）。
- 2)两台设备暂不上电。
- 3)通过两台设备的光学目镜可以观察到对向设备在观察视野内的位置，依次分别通过调节定位支架上的三颗带弹簧紧固螺丝确保光学目镜内的十字中心刻度与对向设备的接收器中心光栏（黑色圆斑）重合。
- 4)两台设备上电，开机后均自动进入运行模式。若此时两台设备上的状态指示灯均长亮并且屏幕上的接收信号强度指示进度条均满格（5个格），则表明校准完成，否则可根据情况再次校准设备。



## 9. Operating the device

### Precautions:

Improper handling of the pushbuttons can damage them; therefore:

- Only operate the pushbuttons with your fingers .
- Do not operate the pushbuttons using sharp or hard objects .

After power-on initialization, the product automatically enters the runtime interface, which displays the current system status and received signal strength. Users can access other interfaces via button operations to perform product debugging and configuration (refer to Chapter 12 for the flowchart).

Menu1-Menu3: Accessible to end-users.

These interfaces allow users to configure system settings and optimize product functionality, ensuring proper and comprehensive utilization of the product.

Menu4-Menu5: Reserved for maintenance developers.

Developers can review information logs documenting operational issues encountered during product usage.

Menu6 Displays the current software version details. Reference Guide For specific menu contents, see the table below:

Menu list	Menu Function	Detailed Function Explanation
Menu1	Manual calibration function	The manual calibration function is essentially a switching mechanism for calibrating the laser. Users can turn the laser on/off by clicking the set button, with the screen displaying the operational status as 'open' or 'close'.
Menu2	Product generates warning message (Generally recoverable)	This item uses warning codes to inform users of the current status of the product. 0: No warning Warn1: The temperature environment for product usage has deviated from normal conditions.
Menu3	The product has generated an error message. (Unrecoverable)	This item uses error codes to inform users of the current status of the product. 0: No errors Err1: Abnormal transmission power Err2: Reception exception Err3: Abnormal internal voltage of the product
Menu4	Switch signal	Currently only available to developers
Menu5	Event count	Currently only available to developers
Menu6	SwVers/HwVers	Version record maintenance

## 10. Troubleshooting

The table lists potential faults and solutions. If issues persist, contact the manufacturer.

### 10.1 Warning message

Content	Meaning / Possible reasons	Troubleshoot
No Fault	No fault detected	—
Warning code Warn1	The internal temperature of the device is closed to the limit of the allowable range	<ul style="list-style-type: none"> <li>• Check the ambient temperature. Provide better ventilation if necessary</li> <li>• Protect the equipment from radiant heat effects, such as avoiding direct sunlight</li> <li>• Use heating systems for warming in lower ambient temperatures.</li> <li>• Employ cooling enclosures under high ambient temperature conditions</li> </ul>

## 10.2 Possible errors of the status indicator light

Content	Meaning/Possible Cause	Troubleshooting
The status indicator light is unstable or off, and the signal strength received by the screen is insufficient, with the progress bar of the signal reception being less than 5 bars.	The two devices have the same frequency (F1/F1 or F2/F2) No power supply / Hardware failure	Install devices of different frequencies (F1/F2) Check the connection. Replace the equipment.
	Received signal strength is unstable	Check whether there are any obstructions in the optical path or whether the optical components are dirty. Check whether the optical path has undergone any movement changes. If so, recalibrate or replace the equipment

## 11. Danger Warning and Operational Safety

For your own safety, please read and observe the following notes:

### Laser beam

Risk of injury from laser radiation!



WARNING

The accessible radiation of the ODC300 transmitter is harmless under reasonably foreseeable conditions, as long as the beam cross-section is not made smaller by optical instruments such as telescopes or monoculars. The use of controls or adjusting devices or the carrying out of work other than specified here can result in dangerous radiation exposure.

- Do not look into the laser beam with an optical device.
- Comply with the latest version of the applicable provisions on laser protection.
- Only carry out work as described here.

Class 1M FSOCS sender element



CAUTION

This is a class 1M FSOCS sender element (FSOCS: Freespace optical communication system). It can be installed in locations with unrestricted, restricted, or controlled access in accordance with IEC 60825-12:2004. When the device is installed in an area with unrestricted access, please note the following:

- Monoculars or binoculars must not be used to view the transmission beam within a range of < 6 m.
- At distances > 6 m, the limit values for laser class 1 are not exceeded even when using monoculars with an aperture angle of any size for viewing purposes.



NOTE

The integrated optical alignment aid features a beam attenuator which ensures that the limit values for laser class 1 are not exceeded.

## 9.设备操作

注意事项:

按钮操作不当可能会损坏按钮, 因此:

- 只能用手指操作设备
- 不要使用尖锐或坚硬的物体操作按钮。

产品上电初始化后自动进入运行界面, 初始界面显示当前产品状态和接收信号强度。用户可以通过按键操作进入其它界面进行产品的调试和配置(流程图见第12章节)。其中, Menu1-Menu3界面对用户开放, 用户可以通过相应的界面显示对产品进行系统设置, 以帮助用户正确充分地使用本产品。Menu4-Menu5对设备维护开发人员开放, 开发人员可查阅用于记录产品使用过程中发生的问题信息日志。Menu6为产品当前软件版本信息。具体菜单内容参见下方表格:

菜单列表	菜单功能	功能详解
Menu1	手动校准功能	手动校准功能本质上是校准激光的开关。可以通过单击set按键开启/关闭激光, 同时屏幕上显示激光运行状态open/close。
Menu2	产品产生警告信息 (一般可恢复)	该项用警告码提示用户当前产品状态 0: 无警告 Warn1: 产品使用温度环境发生异常
Menu3	产品产生错误信息 (不可恢复)	该项用错误码提示用户当前产品状态 0: 无错误 Err1: 发射功率异常 Err2: 接收异常 Err3: 产品内部电压异常
Menu4	开关量信号	目前仅对开发人员开放
Menu5	事件计数	目前仅对开发人员开放
Menu6	软硬件版本号	版本记录维护

## 10.故障排除

下表描述了可能的故障和纠正措施。如果使用以下信息无法纠正故障, 请联系制造商。

### 10.1 警告消息

内容	含义/可能的原因	故障排除
无故障	没有故障	—
警告码 Warn1	设备的内部温度接近允许范围的极限。	<ul style="list-style-type: none"> <li>• 检查环境温度。如有必要, 提供更好的通风。</li> <li>• 保护设备免受辐射热的影响, 例如避免太阳直射。</li> <li>• 在较低的环境温度下, 使用加热系统进行加热。</li> <li>• 在高环境温度下, 使用冷却外壳。</li> </ul>

## 10.2 状态指示灯可能的错误

问题	可能的原因	故障排除
状态指示灯不稳定或者熄灭, 屏幕接收强度信号进度条不足5格	两台设备具有相同频率(F1/F1或F2/F2)	安装不同频率的设备(F1/F2)
	无电源/硬件故障	检查连接。更换设备。
	接收信号强度不稳定	检查光路是否出现遮挡物或光学器件污损检查光路是否发生移动变化, 可重新校准或更换设备

## 11.危险警告和操作安全

为了您自身的安全, 请阅读并遵守以下注意事项:

### 激光束

激光辐射有造成人身伤害的风险!



警告

ODC300发送器的激光辐射在合理可预见的条件下是无害的, 除光束横截面被望远镜或单眼等光学仪器缩小。使用控制装置或调节装置或进行此处规定以外的工作可能会导致危险的激光辐射暴露。

- 不要用光学设备观察激光束。
- 遵守最新版本的激光防护适用规定。
- 仅执行此处所述的工作。



注意安全

### 1M级FSOCS发送器元件

这是一个1M级FSOCS发送器元件(FSOCS: 自由空间光通信系统)。根据IEC 60825-12:2004, 它可以安装在不受限制、受限或受控访问的位置。当设备安装在不受限制的区域时, 请注意以下内容:

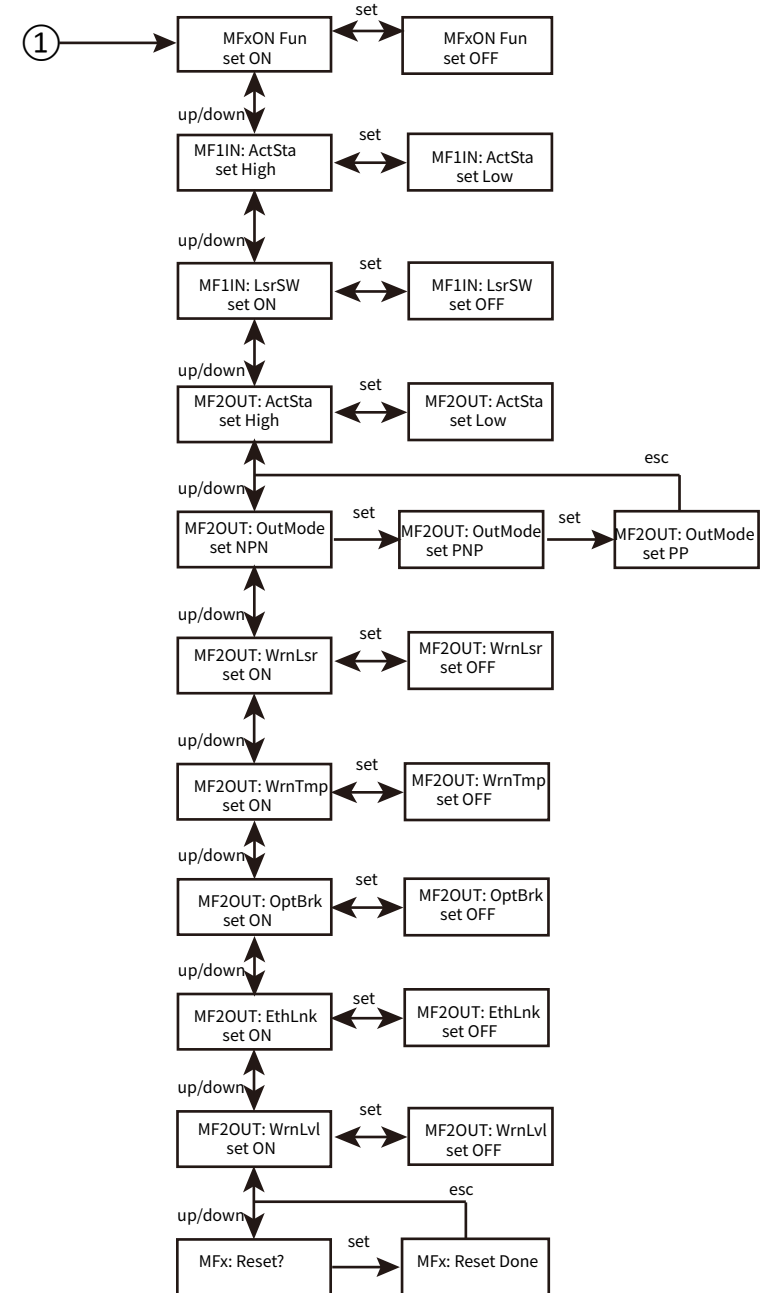
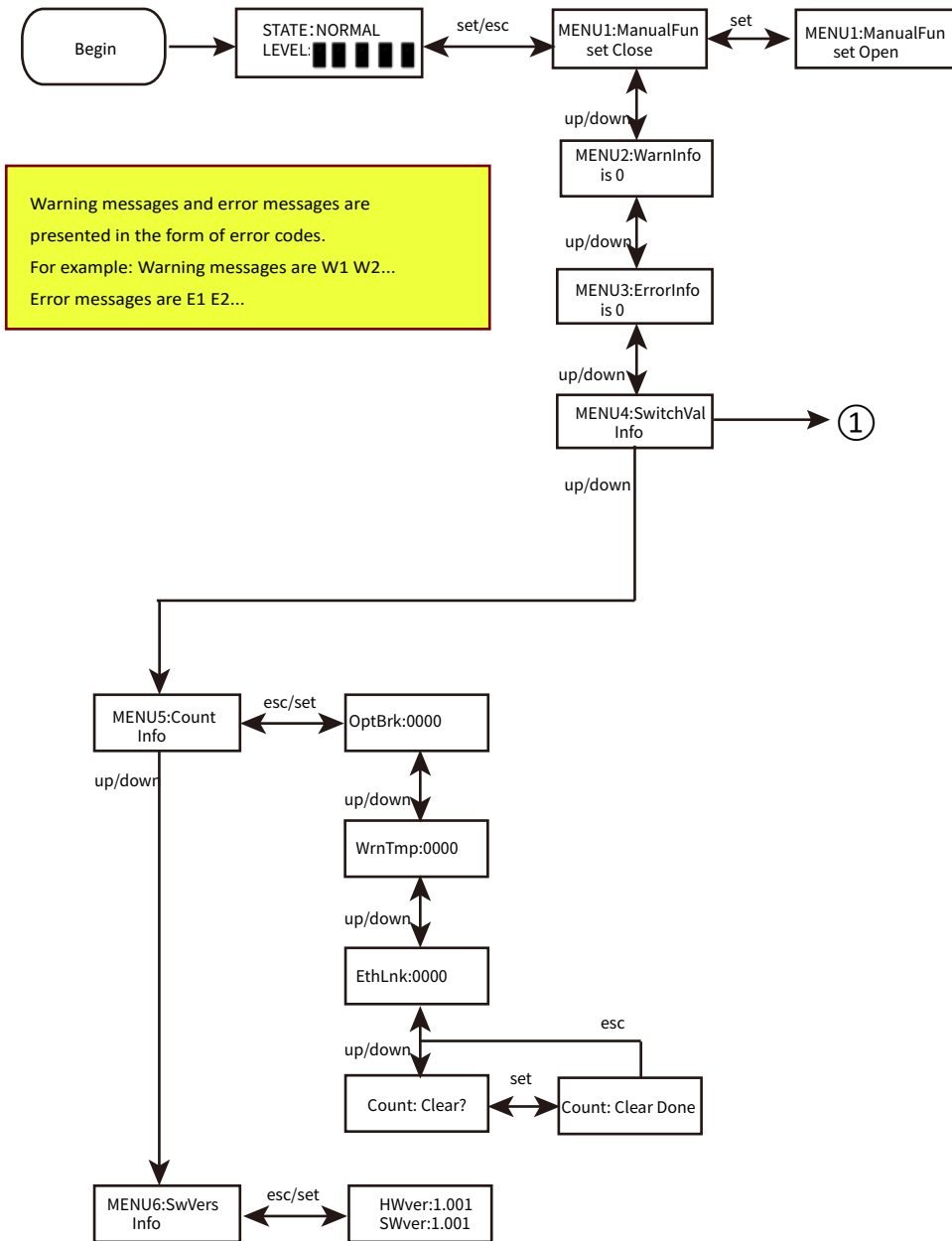
- 不得使用单筒望远镜或双筒望远镜观察<6 m范围内的透射光束。
- 在距离>6米的情况下, 即使使用孔径角为任何尺寸的单眼进行观察, 也不会超过1级激光的极限值。



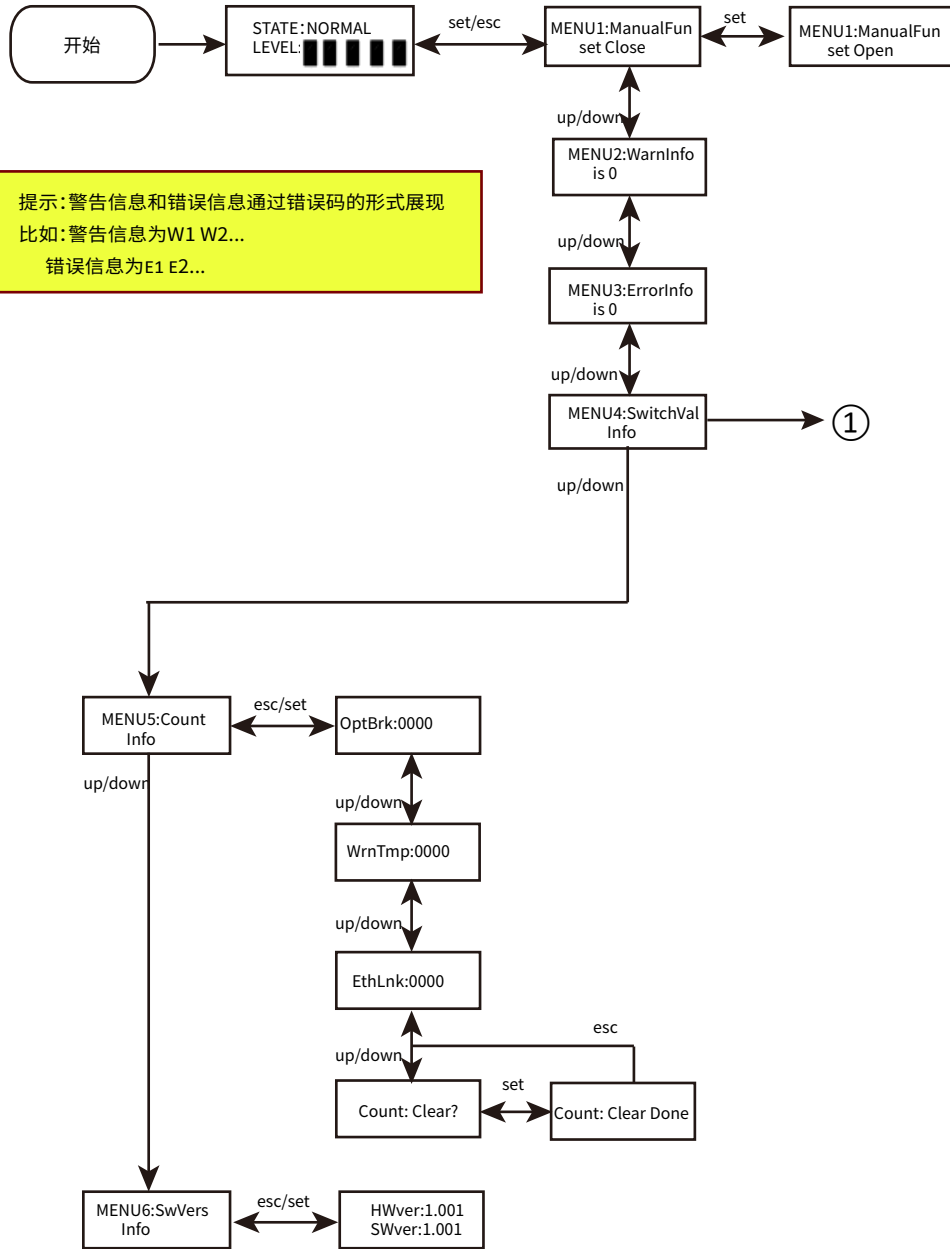
注释

集成光学对准辅助装置具有光束衰减器, 可确保不超过1级激光的极限值。

## 12. Structure menu



## 12. 结构菜单



提示:警告信息和错误信息通过错误码的形式展现  
比如:警告信息为W1 W2...  
错误信息为E1 E2...

