

# Profinet 模块 MODULE

## 集成交换机和网络服务器 Integrated switches and network servers

对于高性能应用，考虑采用 Profinet IO-Link 主控单元接口，此接口通过 ERTEC 200 还支持等实时通讯 (IRT)。

此模块包括四个 IO-Link 主端口，这些端口可彼此独立配置和使用。所有 IO-Link 端口都支持 COM1、COM2、COM3 端口（只适用于 3 线）及 SIO 模式。

IO-Link 端口还具有一个通过 2 号针连接的附加输入端口或输入/输出端口。这意味着在 SIO 模式下也可连接辅助常开/常闭和 DESINA 传感器。

可为标准传感器和执行器提供 4 个附加的标准 IO 端口，此端口具有 8 个输入端口或 8 个自由配置的输入/输出端口，最大传输电流达到 2 A。

Profinet 逐渐成为机械和设备工程之间的未来通信工具。在某些领域，它已经逐渐代替 Profibus。Profinet 以以太网为基础，与传统现场总线系统相比通信速度明显加快，传输的数据量更大，并允许应用对时间要求高的驱动技术。此外，Profinet 安装迅速并可轻松集成至现有网络。除了节省大量时间和成本以外，Profinet 还具有易于操作的优势。

当然，即使对于 Profinet 模块，IO-Link 也是必不可少的一部分。带 IO-Link 功能的 Profinet 模块拥有四个或八个 IO-Link 主端口，可彼此独立配置和使用。可为标准传感器和执行器提供 4 个附加的可自由配置的标准 I/O 端口，此端口额外具有 8 个输入/输出能力。

作为一个新的功能，Profinet 提供了一个集成的 2 端口以太网交换机，在无需额外的外部交换机的情况下，可以在系统中安装线性拓扑。

For high-performance applications, consider using the Profinet IO-Link master unit interface, which also supports isochronous real-time communication (IRT) through the ERTEC 200.

This module includes four IO-Link main ports that can be configured and used independently of each other. All IO-Link ports support COM1, COM2, COM3 ports (only for Line 3) and SIO mode.

The IO-Link port also has an additional input port or input/output port connected by a pin number 2. This means that the auxiliary open / closed and DESINA sensors can also be connected in SIO mode.

It can provide 4 additional standard IO ports for standard sensors and actuators. This port has 8 input ports or 8 freely configurable input/output ports with a maximum transmission current of 2A.

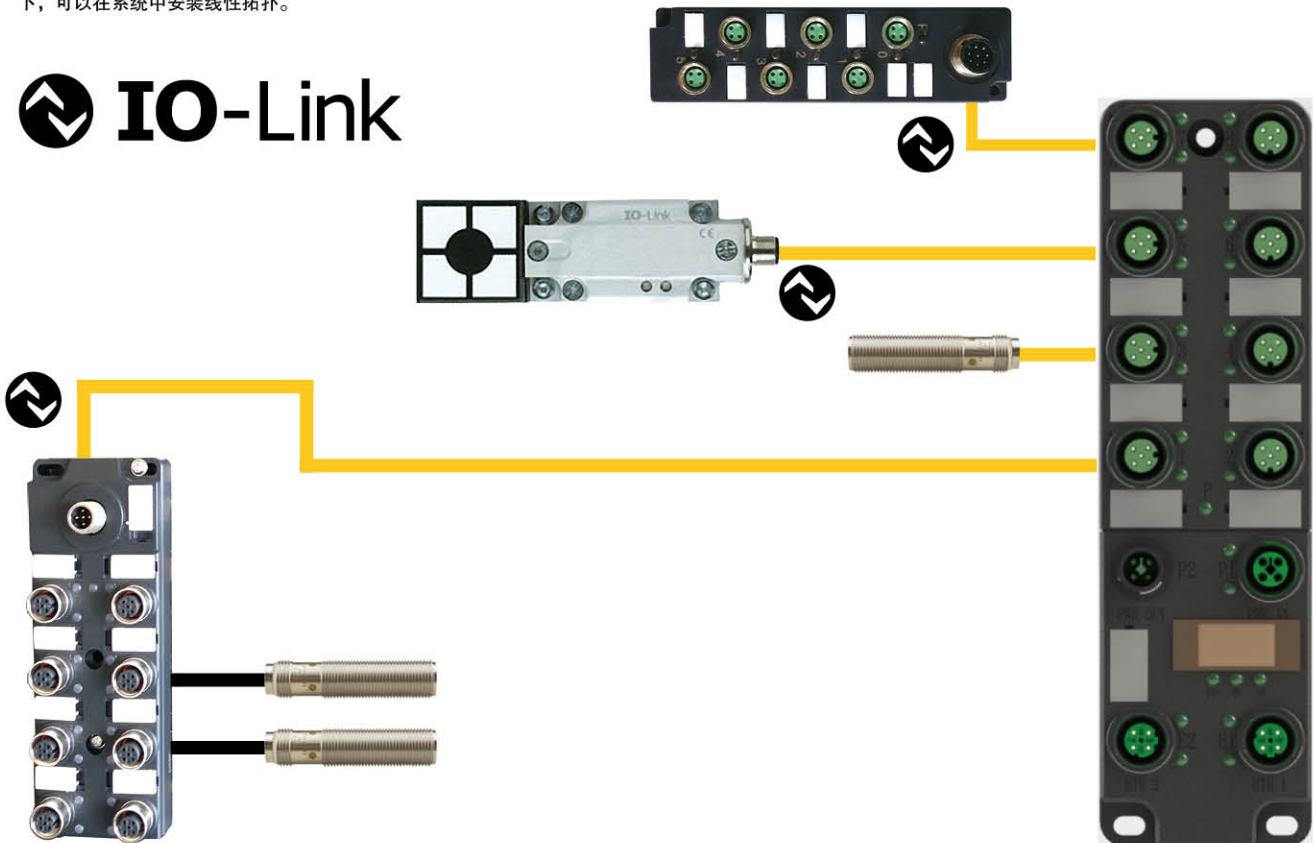
Profinet gradually became a future communication tool between mechanical and equipment engineering. In some areas, it has gradually replaced Profibus. Profinet is based on Ethernet. Compared with traditional fieldbus systems, the communication speed is significantly faster, the amount of data transmitted is greater, and the application of time-sensitive driving technology is allowed. In addition, Profinet is installed quickly and easily integrated into existing networks. In addition to saving a lot of time and costs, Profinet also has the advantage of being easy to operate.

Of course, even for the Profinet module, IO-Link is an essential part. The Profinet module with IO-Link features has four or eight IO-Link main ports that can be configured and used independently of each other. It can provide 4 additional freely configurable standard I/O ports for standard sensors and actuators. This port has an additional 8 input/output capabilities.

As a new feature, Profinet provides an integrated 2-port Ethernet switch that can install a linear topology in the system without additional external switches.



## IO-Link



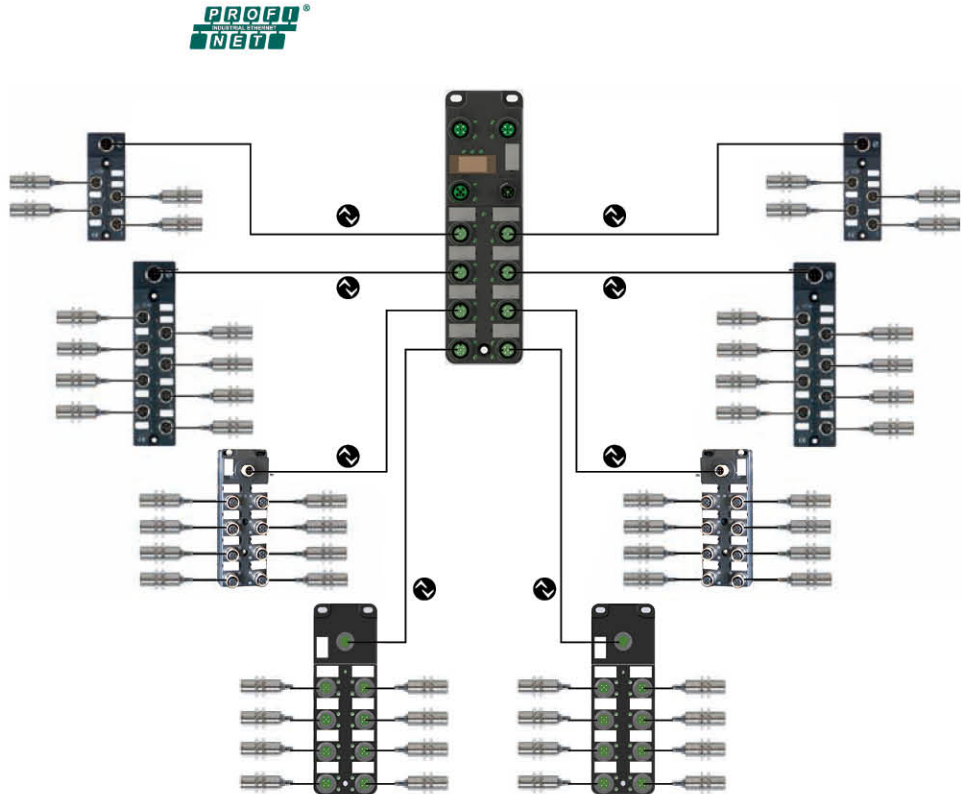
# 带 8 个 IO-Link 端口的 Profinet 现场总线模块

## 1 个模块有 128 个输入 / 输出 兴威联的 IO-Link 解决方案节省了资金

以前必须使用至少 8 个现场总线模块才能够连接 128 个输入 / 输出端。现在一个 Profinet 模块就足够了。

搭配成本极低的兴威联输入 / 输出集线器，现在可以非常高效地处理最多 128 个输入 / 输出信号。这样一来，与标准现场总线模块相比，每个输入端便能节省成本 15% 至 20%。如果再算上省去的现场总线和电源线，整体节约幅度甚至可以提高至 30% 至 40%。使用一根低成本 M12 标准电缆便能接通一个传感器 / 作动器集线器。此外，传感器集线器仅需要一个总线地址，即可在 20m 范围内灵活采集传感器信号。这就保证了极高的效率。

It used to be necessary to use at least 8 fieldbus modules to connect 128 input/output terminals. A Profinet module is enough now. With a very low cost Xingwei input / output hub, up to 128 input/output signals can now be processed very efficiently. This results in cost savings of 15 to 20 per cent per input compared to standard fieldbus modules. If you count the fieldbus and power lines that are omitted, the overall savings can even be increased to 30 % to 40 %. A sensor / actuator hub can be connected using a low-cost M12 standard cable. In addition, the sensor hub requires only one bus address to flexibly collect sensor signals within a range of 20 M. This ensures extremely high efficiency.



## 1000 个任务，1 个模块：带 8 个 IO-Link 端口的 Profinet 模块

无论是位置测量、目标检测、识别、流体检测应用，还是温度和压力测量，通过 IO-Link，Profinet 模块适用于任何一项工作。IO-Link 不仅具有安装标准传感器的优势，还能够通过相同的接口集成智能设备。如此一来，模块就提供了从信号层直至控制层的统一接口。

在现场安装智能设备时往往会产生较高的费用，这是因为在控制系统中使用了屏蔽电缆和模拟量输入卡等智能接口卡。

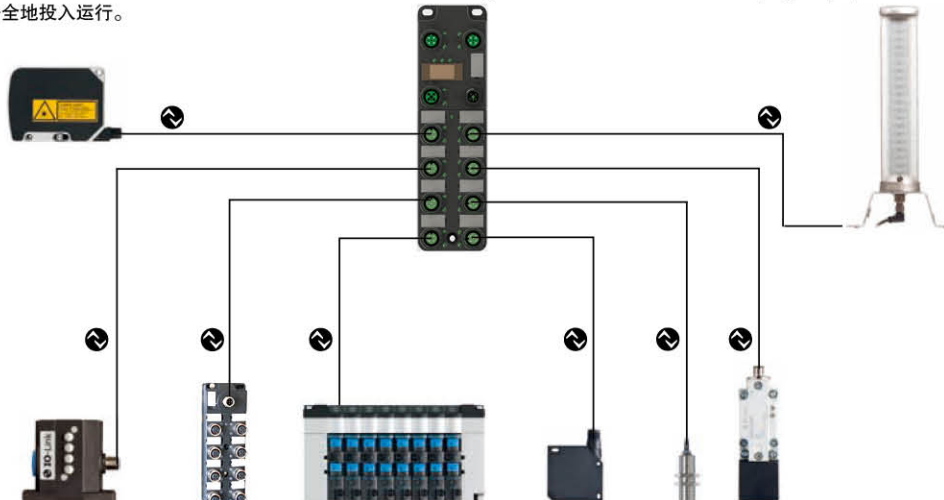
IO-Link 不仅使容易出错的模拟输入端成为多余，还减少了布线、检测和硬件所需费用。通过即插即用低成本的非屏蔽 M12 导线，系统能迅速而安全地投入运行。

Whether it is position measurement, target detection, identification, fluid detection applications, or temperature and pressure measurement, the IO-Link, Profinet module is suitable for any work.

IO-Link not only has the advantage of installing standard sensors, but also integrates smart devices through the same interface. In this way, the module provides a unified interface from the signal layer to the control layer.

Smart interface cards, such as shielded cables and analog input cards, are often used in control systems for higher costs when installing smart devices on site.

IO-Link not only makes the error-prone analog input redundant, but also reduces the cost of wiring, detection, and hardware. The system can be put into operation quickly and safely by using the low-cost unshielded M12 wire for plug and play.



# Profinet 模块 MODULES



型号 Type Part No.	PNL16DK 508105015	PNL16DN 502105015	PNL16DP 302102015	PNL16DI 104105015	PNL16DO 202105015	PNL16DM 305105015
类型	8 × IO-Link, 16 × DI/DO	4 × IO-Link, 16 × DI/DO	16 × DI / DO, 可配置	16 DI	16 DO	8 DI/8 DO
额定工作电压 $U_B$	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC	18...30 V DC
功能指示灯	BUS/RUN	BUS/RUN	BUS/RUN	BUS/RUN	BUS/RUN	BUS/RUN
模块状态指示灯: Mod LED	有	有	有	有	有	有
网络状态指示灯: Net LED	有	有	有	有	有	有
端口状态指示灯	黑色, 红色, 黄色	黑色, 红色, 黄色	黑色, 红色, 黄色	黑色, 红色, 黄色	黑色, 红色, 黄色	黑色, 红色, 黄色
连接: 现场总线	M12, D-coded, 母头	M12, D-coded, 母头	M12, D-coded, 母头	M12, D-coded, 母头	M12, D-coded, 母头	M12, D-coded, 母头
连接: AUX 电源	M12, T-Coded, 4 针	M12, T-Coded, 4 针	M12, T-Coded, 4 针	M12, T-Coded, 4 针	M12, T-Coded, 4 针	M12, T-Coded, 4 针
连接: I/O 端口	M12, A 编码, 母头	M12, A 编码, 母头	M12, A 编码, 母头	M12, A 编码, 母头	M12, A 编码, 母头	M12, A 编码, 母头
I/O 端口数目	8	8	8	8	8	8
输入数量	最多 16 个 PNP 输入	最多 16 个 PNP 输入	最多 16 个 PNP 输入	16 个 PNP 输入	/	8 个 PNP 输入
输出数量	最多 16 个 PNP 输出	最多 16 个 PNP 输出	最多 16 个 PNP 输出	/	16 个 PNP 输出	8 个 PNP 输出
输入 / 输出可配置	是	是	是	否	否	否
最大负载电流, 传感器 / 信道	200 mA	200 mA	200 mA	200 mA	/	200 mA
最大输出负载电流	1.2 A/2 A	/	1.6 A/2 A	/	2 A	2 A
端口状态指示灯 (信号状态)	黄色 LED 指示灯	黄色 LED 指示灯	黄色 LED 指示灯	黄色 LED 指示灯	黄色 LED 指示灯	黄色 LED 指示灯
端口诊断指示灯 (过载)	红色 LED 指示灯	红色 LED 指示灯	红色 LED 指示灯	红色 LED 指示灯	红色 LED 指示灯	红色 LED 指示灯
总电流 $I_{执行器}$	≤ 9 A	≤ 9 A	≤ 9 A	/	≤ 9 A	≤ 9 A
总电流 $I_{传感器}$	≤ 9 A	≤ 9 A	≤ 9 A	≤ 9 A	/	≤ 9 A
防护等级符合 IEC 60529	IP 67 (正确连接时)	IP 67 (正确连接时)	IP 67 (正确连接时)	IP 67 (正确连接时)	IP 67 (正确连接时)	IP 67 (正确连接时)
工作温度 $T_a$	-5...+70 °C	-5...+70 °C	-5...+70 °C	-5...+70 °C	-5...+70 °C	-5...+70 °C
存储温度	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C	-25...+70 °C
紧固件	3 个安装孔	3 个安装孔	3 个安装孔	3 个安装孔	3 个安装孔	3 个安装孔
尺寸 (长 × 宽 × 高)	182 × 60 × 32 mm	182 × 60 × 32 mm	182 × 60 × 32 mm	182 × 60 × 32 mm	182 × 60 × 32 mm	182 × 60 × 32 mm
外壳材质	PC	PC	PC	PC	PC	PC
IO-Link 1.1						
IO-Link 主端口数目	8 × master	4 × master				
工作模式 (3 线)	SIO, COM 1, COM 2, COM 3	SIO, COM 1, COM 2, COM 3				
指示灯 通信	绿色 LED 指示灯	绿色 LED 指示灯				
错误	红色 LED 指示灯	红色 LED 指示灯				
IO-Link 设备的最大负载电流	1.2 A	1.2 A				

## ◆ 安装简化 Installation Simplification

- 将传感器放置在需要的地方 Place sensors where needed
- 通过控制器对 IO-Link 设备进行过程监测、配置和错误分析  
Process monitoring, configuration and error analysis of IO-Link devices by controller
- 快速、高效的数据传送 Fast and efficient data transmission
- 时间优化的设备流程 Time-optimized equipment flow
- 通过采用数字通信，抗干扰能力强，具有高安全性  
High security and anti-interference ability through digital communication
- 由于同时使用二进制、模拟量和 IO-Link 传感器，选择最适合特别应用的传感器  
Select the sensor that is best suited for a particular application due to the simultaneous use of binary, analog and IO-Link sensors



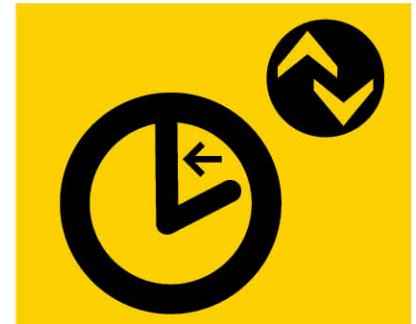
## ◆ 需求导向型维护 Demand-driven maintenance

- 持续监测 Ongoing monitoring
- 通过控制器自动重新调节 Automatically readjusted by controller
- 预测性错误检测 Predictive error detection
- 维护间隔更长 Longer maintenance intervals



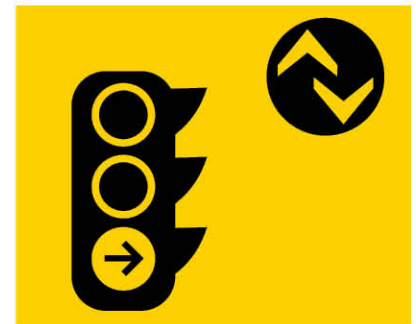
## ◆ 运行更高效 Run more efficiently

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Select the sensor that is best suited for a particular application due to the simultaneous use of binary, analog and IO-Link sensors



## ◆ 最高的设备可用率 Highest equipment availability

- 更快、无误地更换传感器并即时调试  
Replace sensors more quickly and correctly and debug them immediately
- 自动配置 IO-Link 传感器 Automatic configuration of IO-Link sensor
- 通过控制器以集中形式即时更改格式和组件  
Immediately change formats and components in centralized form through the controller
- 可清晰识别的 IO-Link 设备提供额外的安全性 Explicit IO-Link devices provide additional security

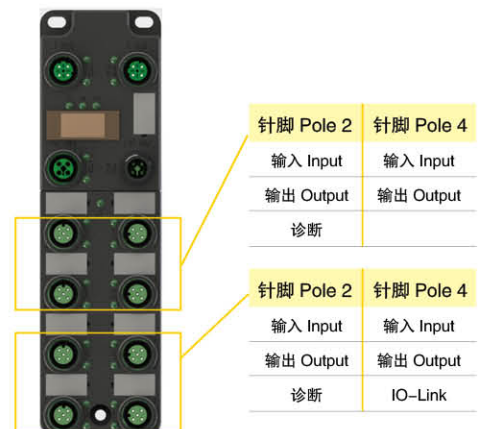
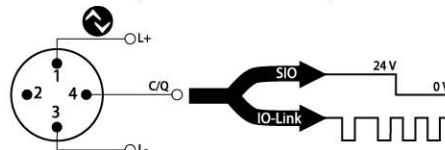


## ◆ 通过 IO-Link 灵活安装 Profinet

- 快速 Fast
- 通过采用价格优惠的部件和标准电缆降低成本  
Cost reductions through the introduction of affordable components and standard cables
- 安装、维护和操作期间停机时间更短  
Shorter downtime during installation, maintenance and operation

根据模块类型的不同，兴威联 IO-Link 分配器模块的端口可配置为（诊断的）输入、输出或 IO-Link 端口。对于每个端口，针脚 2 或针脚 4 可用作输入端口和输出端口，或用于诊断。  
使用 IO-Link 符号标记 IO-Link 端口。

Depending on the type of module, the port of the Xingwei IO-Link distributor module can be configured as(diagnostic) input, output, or IO-Link port. For each port, pin 2 or pin 4 can be used as an input port and output port, or for diagnosis.  
Use the IO-Link symbol to mark the IO-Link port.



# IO-Link 模块 MODULE

## IO-Link 传感器集线器节省资金

安装 IO-Link 传感器集线器会为您节省一大笔资金：与 Profibus 和 Profinet 相比，每个输入端便能节省成本 15 至 20%。如果再算上省去的 Profibus 和电源线，整体节约幅度甚至可以提高至 30 至 40%。使用一根合适的 M12 标准电缆便能接通。此外，传感器集线器仅需要一个总线地址，即可在 20 m 范围内灵活采集传感器信号。

这就保证了极高的效率。

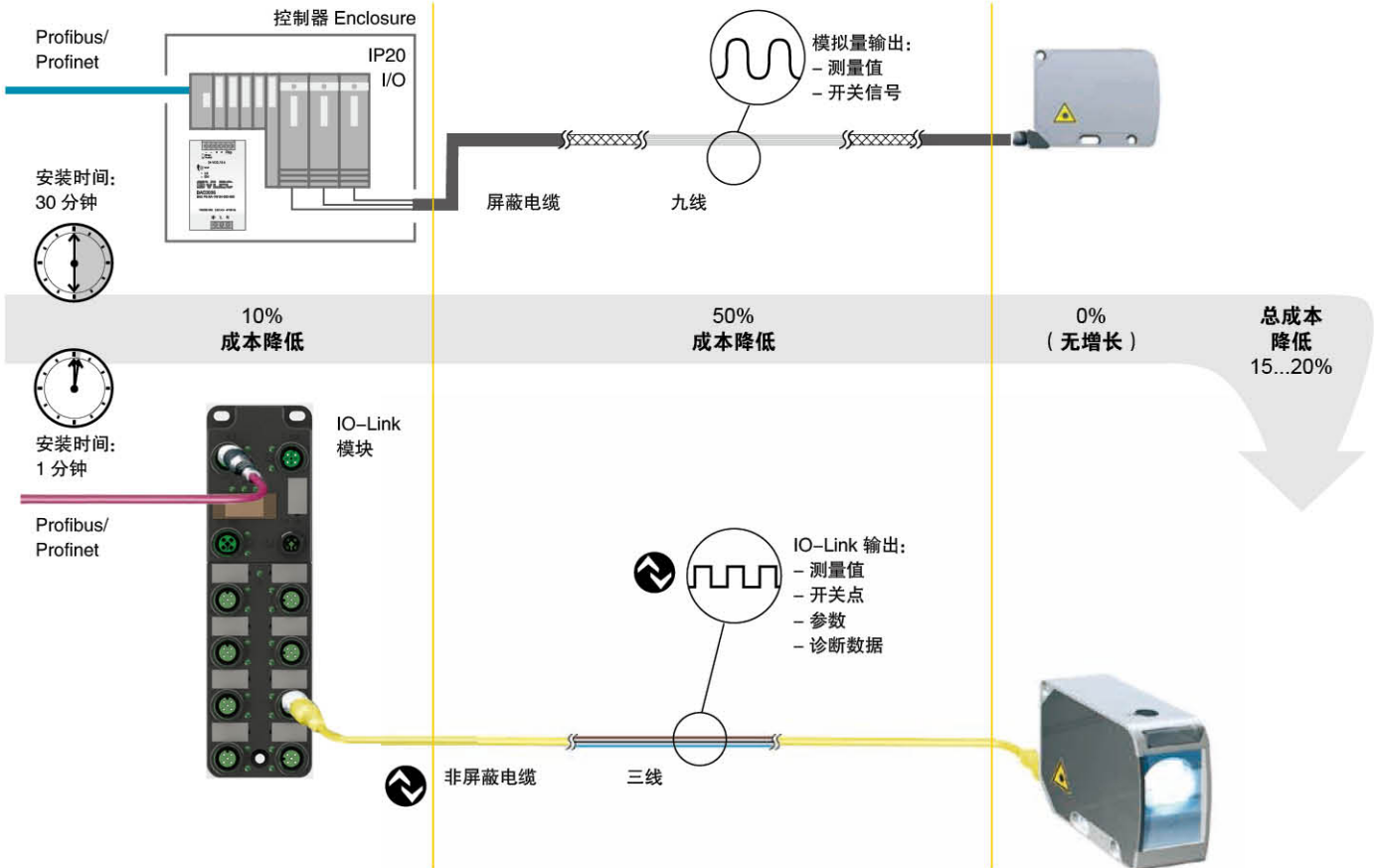
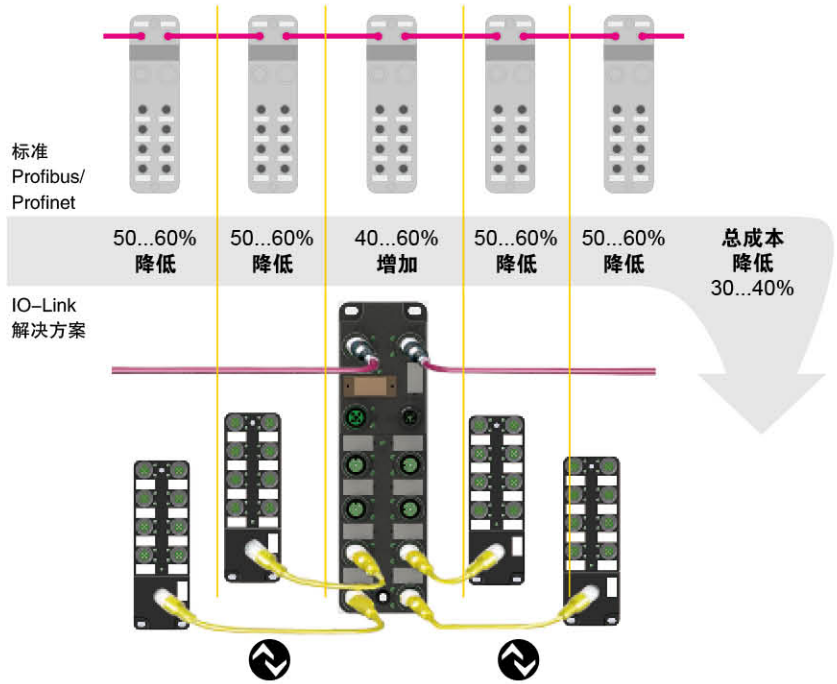
Installing the IO-Link sensor hub will save you a lot of money: it will save you 15-20 % per input compared to Profibus and Proinet. If you add in the saved Profibus and power lines, the overall savings can even be increased to 30 to 40 %. It can be connected using a suitable M12 standard cable. In addition, the sensor hub requires only one bus address to flexibly collect sensor signals within a range of 20 M.

This ensures extremely high efficiency.

## 具有高性能性的低成本安装

现场安装的成本高昂是由于采用屏蔽电缆和模拟量输入卡。IO-Link 传感器集线器不仅解决了模拟量输入容易出现故障的问题，还降低了布线、测试和硬件成本。凭借简单的即插即用式非屏蔽低成本 M12 电缆，您只需一分钟便可设置系统，而无需使用螺丝刀等工具。对于标准连接，您将需要大约 30 分钟。IO-Link 的优势不言而喻，让您一目了然。

The high cost of on-site installation is due to the use of shielded cables and analog input cards. The IO-Link sensor hub not only solves the problem that analog input is prone to failure, but also reduces the cost of wiring, testing, and hardware. With a simple plug-and-play, unshielded low-cost M12 cable, you can set up the system in just one minute without using tools such as a screwdriver. For a standard connection, you will need about 30 minutes. The advantage of IO-Link is self-evident, so you can see it at a glance.



IO-Link 模块