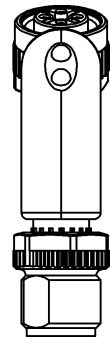
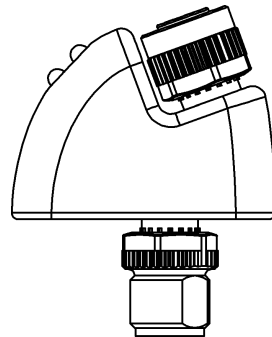




# **FNI IOL-716-000-K023**



## **User's Guide**



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## 1 Notes

<b>1.1. Structure of the guide</b>	The guide is organized so that the sections build on one another. Section 2: Basic safety information. 该指南的组织方式使各部分相互依存。第2节：基本安全信息。 .....														
<b>1.2. Typographical conventions</b>	The following typographical conventions are used in this guide. 本指南中使用以下印刷约定。														
<b>Enumerations</b>	Enumerations are shown in list form with bullet points: 枚举以列表形式显示，并带有项目符号 <ul style="list-style-type: none"> <li>• Entry 1 条目1</li> <li>• Entry 2 条目2</li> <li>•</li> </ul>														
<b>Actions</b>	Action instructions are indicated by a preceding triangle. The result of an action is indicated by an arrow. 操作说明由前面的三角形指示。动作的结果由箭头指示。 <ul style="list-style-type: none"> <li>➤ Action instruction 1 操作指示</li> <li>↪ Action result 操作结果</li> <li>➤ Action instruction 2 操作指示</li> </ul>														
<b>Syntax</b>	Numbers: Decimal numbers are shown without additional indicators (e.g. 123), 显示十进制数时不带附加指示符（如123） Hexadecimal numbers are shown with the additional indicator hex (e.g. 00hex)., 显示十六进制数时带附加指示符十六进制（如00hex）														
<b>Cross references</b>	Cross references indicate where additional information on the topic can be found. 交叉引用指示可以在何处找到有关该主题的其他信息。														
<b>1.3. Symbols</b>	<hr/> <div style="display: flex; align-items: center; border-bottom: 1px solid black; padding-bottom: 5px;"> <div style="margin-right: 10px;"></div> <div> <p><b>Note</b> This symbol indicates general notes. 这个信号表示通常的信号</p> </div> </div> <hr/> <div style="display: flex; align-items: center; border-bottom: 1px solid black; padding-bottom: 5px;"> <div style="margin-right: 10px;"></div> <div> <p><b>Attention!</b> This symbol indicates a security notice which must be observed. 这个信号表明安全指示，需要额外注意观察</p> </div> </div>														
<b>1.4. Abbreviations</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 100px;">FNI</td> <td>FAS Network Interface FAS网络接口</td> </tr> <tr> <td>O-Port</td> <td>Standard output port 标准输出端口</td> </tr> <tr> <td>DPP</td> <td>Direct parameter page (直接参数页)</td> </tr> <tr> <td>IOL</td> <td>IO-Link</td> </tr> <tr> <td>EMC</td> <td>Electromagnetic compatibility 电磁兼容</td> </tr> <tr> <td>FE</td> <td>Function ground 功能接地</td> </tr> <tr> <td>SPDU</td> <td>Service Protocol Data Unit 服务协议数据单元</td> </tr> </table>	FNI	FAS Network Interface FAS网络接口	O-Port	Standard output port 标准输出端口	DPP	Direct parameter page (直接参数页)	IOL	IO-Link	EMC	Electromagnetic compatibility 电磁兼容	FE	Function ground 功能接地	SPDU	Service Protocol Data Unit 服务协议数据单元
FNI	FAS Network Interface FAS网络接口														
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<b>1.5. Deviating views</b>	Product views and illustrations in this user's guide may differ from the actual product. They are intended only as illustrative material. 本用户指南中的产品视图和插图可能与实际产品不同。他们仅用作说明材料。														

## 2 Safety

### 2.1. Intended use

This guide describes the FAS Network Interface FNI IOL-716-000-K023 for the application as peripheral output module to connect analogue sensors. Hereby it is about an IO-Link device which communicates by means of IO-Link protocol with the superordinate IO-Link master assembly. 本指南介绍了FAS网络接口FNI IOL-716-000-K023，该应用程序用作连接模拟传感器的外围输出模块。此处是有关IO-Link设备的信息，该设备通过IO-Link协议与上级IO-Link主组件进行通信

### 2.2. Installation and startup



#### Attention!

Installation and startup are to be performed only by trained specialists. Qualified personnel are persons who are familiar with the installation and operation of the product, and who fulfills the qualifications required for this activity. Any damage resulting from unauthorized manipulation or improper use voids the manufacturer's guarantee and warranty. The Operator is responsible for ensuring that applicable of safety and accident prevention regulations are complied with. !

安装和启动只能由经过培训的人员进行。有资质的人员是熟悉设备安装和操作的人员。产品以及符合此活动要求的资格的人。任何由未经授权的操作导致损坏或不当使用所造成的后果将使制造商的保证和担保无效。运营人有职责确保遵守安全和事故预防规定符合。注意 非专业人士不要安装

### 2.3. General safety notes

#### Commissioning and inspection 调试和检查

Before commissioning, carefully read the operating manual.

The system must not be used in applications in which the safety of persons is dependent on the function of the device.

调试之前，请仔细阅读操作手册。

该系统不得用在人员安全取决于设备功能的应用中。

#### Authorized Personnel 权威人员

Installation and commissioning may only be performed by trained specialist personnel.

安装和调试只能由经过培训的专业人员进行。

#### Intended use 有可能的使用

通过以下方式使将对制造商的保修和责任索赔无效：

Warranty and liability claims against the manufacturer are rendered void by:

- Unauthorized tampering 未经授权篡改
- Improper use 使用不当
- Use, installation or handling contrary to the instructions provided in this operating manual 违反本说明的操作

#### Obligations of the Operating Company

The device is a piece of equipment from EMC Class A. Such equipment may generate RF noise. The operator must take appropriate precautionary measures. The device may only be used with an approved power supply. Only approved cables may be used.

该设备是EMC Class A的设备。此类设备可能会产生RF噪声。操作人员必须采取适当的预防措施。该设备只能与认可的电源一起使用。只能使用认可的电缆。

#### Malfunctions 故障

In the event of defects and device malfunctions that cannot be rectified, the device must be taken out of operation and protected against unauthorized use.

Intended use is ensured only when the housing is fully installed.

如果出现缺陷和无法修复的设备故障，则必须使设备停止运行，并防止未经授权的使用。仅在完全安装外壳后才能确保按规定使用。

### 2.4. Resistance to aggressive substances



#### Attention! 注意!

The FNI modules generally have a good chemical and oil resistance. When used in aggressive media (eg chemicals, oils, lubricants and coolants each in high concentration (ie, low water content)) must be checked prior application-related material compatibility. In the event of failure or damage to the FNI modules due to such aggressive media are no claims for defects. FNI

模块通常具有良好的耐化学性和耐油性。当用于腐蚀性介质（例如化学药品，机油，润滑剂和冷却液）时，高浓度（即低水含量）必须在使用前检查相关材料的兼容性。如果FNI发生故障或损坏，由于此类侵蚀性介质而造成的模块损坏概不负责。

**Hazardous  
voltage**



**Attention! 注意**

Disconnect all power before servicing equipment.

---



**Note 注意**

In the interest of product improvement, the FAS reserves the right to change the specifications of the product and the contents of this manual at any time without notice.

为了改善产品，FAS保留以下权利：随时更改产品规格和本手册内容 时间不另行通知。

---

3.1. Connection overview

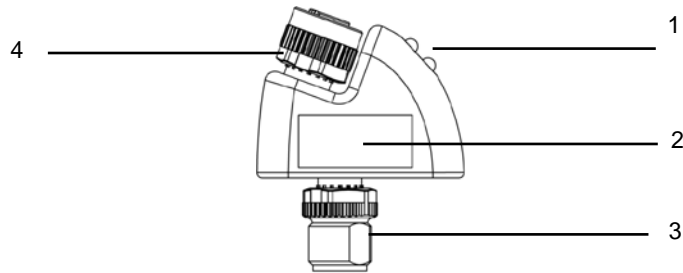


Figure 3-1: FNI IOL-...-K023

- 1 Status LED: Supply, Communication 状态LED: 电源, 通信
- 2 Label 标签
- 3 IO-Link interface IO-Link 接口
- 4 Analogue output port 模拟输出端口

3.2. Mechanical connection

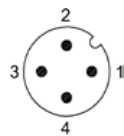
To avoid long, shielded analogue cables, the FNI IOL-716-000-K023 modules should be attached to the analogue unit which has to be connected. No further mechanical attachment is required. 为避免较长的屏蔽模拟电缆，应将FNI IOL-716-000-K023模块连接至必须连接的模拟单元。无需其他机械附件。

3.3. Electrical connection

The FNI IOL-716-000-K023 modules require no separate supply voltage connection. Power is provided through the IO-Link interface by the superordinate IO-Link Master Assembly. FNI IOL-716-000-K023模块不需要单独的电源连接。上级IO-Link主站通过IO-Link接口提供电源。

3.4. IO-Link interface

IO-Link (M12, A-coded, male)



Pin	Signal 信号
1	Supply voltage, +24V 供电24v
2	-
3	GND, reference potential GND, 参考电位
4	C/Q, IO-Link Data transmission channel C/Q, IO-Link 数据传输通道

Connecting the module

- Connect the FNI IOL-...-K023 either to an IO-Link Master directly or to an analogue sensor. 将FNI IOL-...-K023直接连接到IO-Link主站或模拟传感器。
- Connect the male plugs unconnected by using cables. 使用电缆连接未连接的公插头



Note

A standard 3 wire sensor cable is used for connection to the host IO-Link master .  
注意：使用标准的3线传感器电缆连接到主机IO-Link主站。



Note

A shielded 4 wire sensor cable is used for connection to the analog actuator.  
注意：使用屏蔽的4线制传感器电缆连接到模拟执行器。

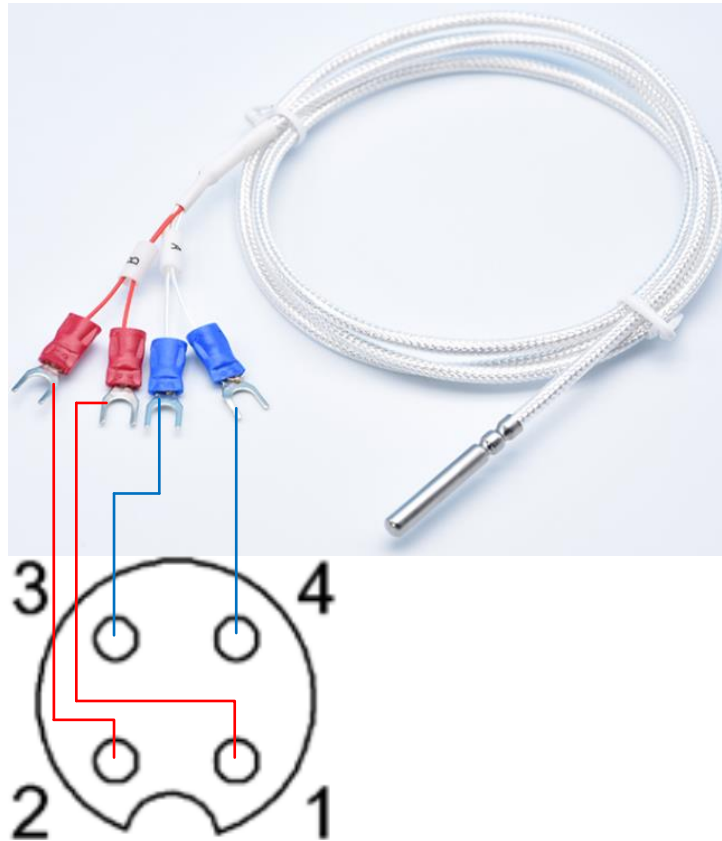
### 3 Getting started

#### Module versions

Module versions	Analogue port
FNI IOL-716-000-K023	PT100 input

#### 3.5. Sensor interface

Analogue input port (M12, A-coded, female)



## 4 IO-Link interface

### 4.1. IO-Link data

#### FNI IOL-716-000-K023

Data transmission rate 数据传输率	COM2 (38,4 kBaud)
Frame type 框架类型	2.V
Minimal cycle time 最小循环时间	3 ms
Prozess data length 数据长度	2 Byte input

### 4.2. Process data / input data- output data

#### Input data

Byte0								Byte1							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
PT100 input value (only in case of FNI IOL-716-000-K023)								LSB		MSB		Flag			

#### Output data

Byte0								Byte1							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

#### Note



The flag: 0: Positive temperature

1: Negative temperature

eg: The value is 0x1795, so the temperature is -30.18°C

The value is 0x2710, so the temperature is 100°C。



#### 4.3. Parameter data/ Request data

	DPP	SPDU		对象名称	长度	范围	默认值
	索引	索引	子索引				
识别数据				供应商ID	2	只读	0x0454
				设备ID	3		0x099BE5
		0x10	0	供应商名称	19		FAS (Fujian) Co., LTD
		0x11	0	供应商文本	16		<a href="http://www.fas-elec.com">www.fas-elec.com</a>
		0x12	0	产品名称	20		FNI IOL-716-000-K023
		0x13	0	产品ID	6		0AC041
		0x14	0	产品文本	22		PT100
		0x16	0	硬件版本	3		1.0
参数数据				固件版本	3		1.0

#### 4.4. Errors

错误代码	附加代码
设备应用错误 0x80	索引不可用 0x11
	子索引不可用 0x12
	值超出范围 0x30

#### 4.5. Events

类/限定符			代码（高位+低位）			
模式	类型	实例	设备硬件	供电	供电低压	U2=供电+24V
出现	错误	AL	设备硬件	供电	供电低压	U2=供电+24V
0xC0	0x30	0x03	0x5000	0x0100	0x0010	0x0002
0xF3			0x5112			
消失	错误	AL	设备硬件	供电	供电低压	U2=供电+24V
0x80	0x30	0x03	0x5000	0x0100	0x0010	0x0002
0xB3			0x5112			
出现	错误	AL	设备硬件	供电	外设供电	
0xC0	0x30	0x03	0x5000	0x0100	0x0060	
0xF3			0x5160			
消失	错误	AL	设备硬件	供电	外设供电	
0x80	0x30	0x03	0x5000	0x0100	0x0060	
0xB3			0x5160			

## 5 Technical data

### 5.1. Dimensions

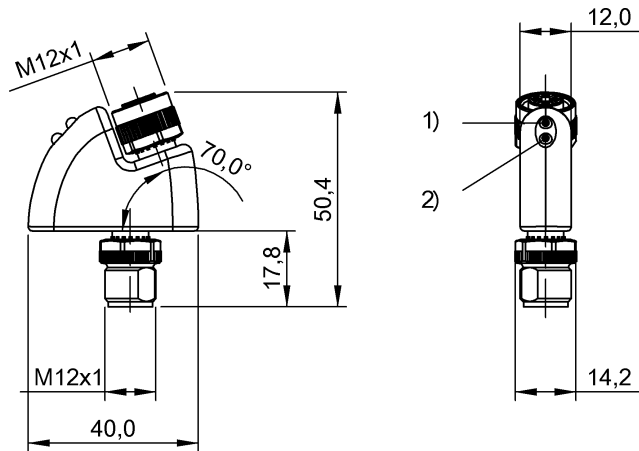


Figure 5-1: Dimensions FNI IOL-...-K023

### 5.2. Mechanical data

Housing materials	Plastic, Macromelt 6208
IO-Link port	M12, A-coded, male
I-port	M12, A-coded, female
Enclosure rating per IEC 60529	IP 67 (only when plugged in and threaded in)
Dimensions (W x H x D in mm)	40 x 50.4 x 14.2
Weight	ca. 50 g

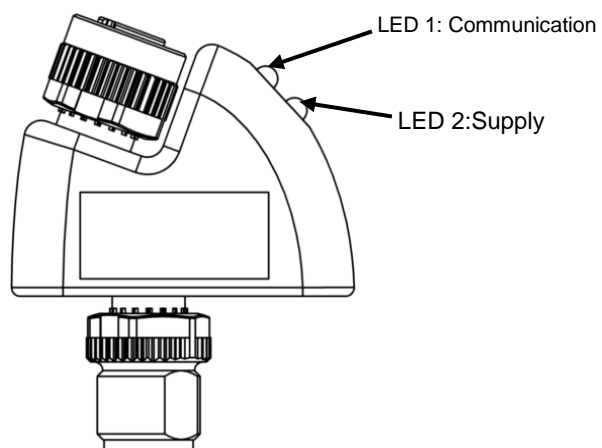
### 5.3. Electrical data

Operating voltage	18. 30.2 V DC, per EN 61131-2
Ripple	< 1%
Current draw without load	<= 30 mA
Resolution	15bit

### 5.4. Operating Conditions

Operating temperature	-5 °C ... 70 °C
Storage temperature	-25 C ... 70 °C

## 5.5. LED indicators



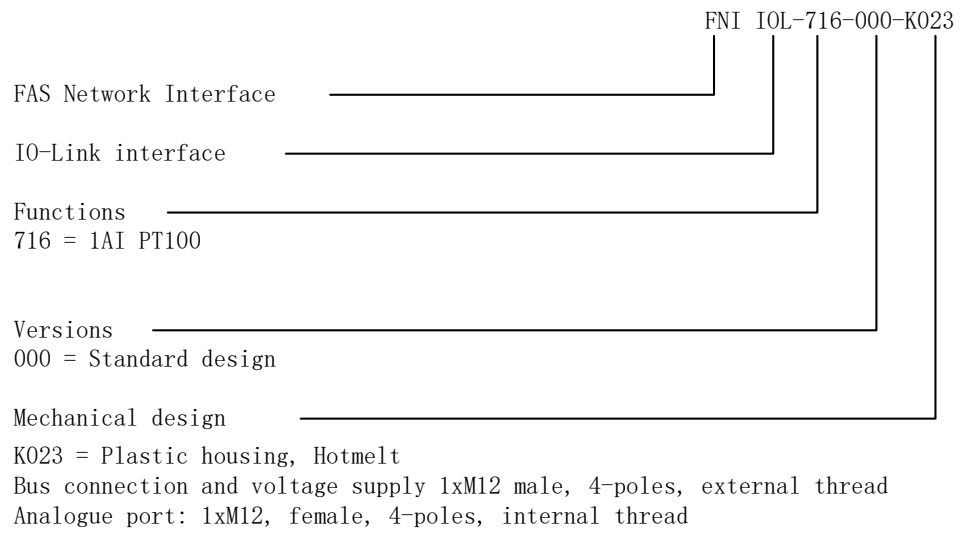
### Status LED

### FNI IOL-716-000-K023

LED	Indicator 指示	Function 功能
LED 1	Green / Green flashing 灯亮/灯闪	Communication error / Communication ok 通信错误/ 通信正常
LED 2	Green	Supply sensor 传感器供电

## 6 Appendix

### 6.1. Product ordering code



### 6.2. Scope of delivery

FNI IOL-...-K023 consists of the following components:

- IO-Link module
- User's guide

**www.fas-elec.com**

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