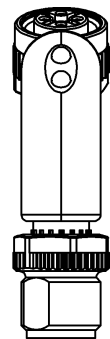
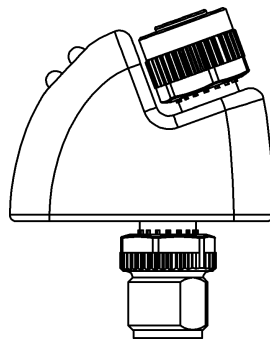


FNI IOL-712-000-K023
FNI IOL-714-000-K023
User's Guide



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1 Notes

- 1.1. Structure of the guide** 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。
.....
- 1.2. Typographical conventions** The following typographical conventions are used in this guide. 本指南中使用以下印刷约定。
- Enumerations** Enumertions are shown in list form with bullet points:
枚举以列表形式显示，并带有项目符号
- Entry •条目1
 - Entry 2点: •参赛作品2
 -
- Actions** 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。
- Action instruction 1 操作指示
 - ↗ Action result 操作结果
 - Action instruction 2 操作指示
- Syntax** 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）
- Cross references** 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。

1.3. Symbols



Note

This symbol indicates general notes. 这个信号表示通常的信号



Attention!

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

1.4. Abbreviations

FNI FAS Network Interface FAS网络内部
I-Port Standard input port 准输入端口
DPP (直接参数页)
Direct parameter page
IOL IO-Link
EMC 电磁兼容 Electromagnetic compatibility
FE 功能接地 Function ground
SPDU 服务协议数据单元
Service Protocol Data Unit 服务协议数据单元

1.5. Deviating views

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-712/714-000-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-712 / 714-000-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 一般注意安排事项

Commissioning and inspection

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. 调试和检查

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

安装和调试只能由经过培训的专业人员进行。

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

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

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. 维修设备之前，请断开所有电源。

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 Getting started

3.1. Connection overview

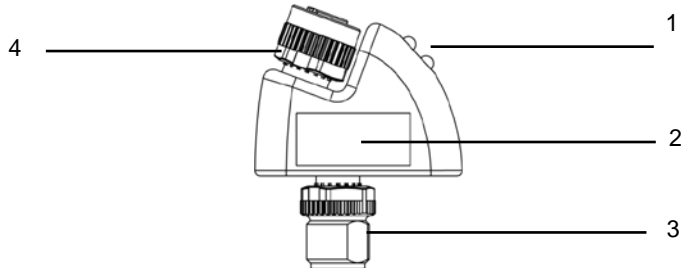


Figure 3-1: FNI IOL-...-K023

- 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 input port 模拟输入端口

3.2. Mechanical connection

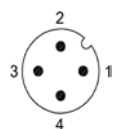
To avoid long, shielded analogue cables, the FNI IOL-712/714-000-K023 modules should be attached to the analogue unit which has to be connected. No further mechanical attachment is required. 为避免较长的屏蔽模拟电缆，应将FNI IOL-712 / 714-000-K023模块连接至必须连接的模拟单元。无需其他机械附件。

3.3. Electrical connection

The FNI IOL-712/714-000-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-712 / 714-000-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 |
| 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.

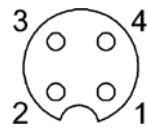
注意：使用屏蔽的4线制传感器电缆连接到模拟执行器

Module versions

| Module versions | Analogue port |
|----------------------|-----------------------|
| FNI IOL-712-000-K023 | Current input(0-20mA) |
| FNI IOL-714-000-K023 | Voltage input (0-10V) |

3.5. Sensor interface

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



| Pin | Signal |
|-----|------------------------------------|
| 1 | +24V, mA* |
| 2 | Voltage input 0-10V ²⁾ |
| 3 | GND |
| 4 | Current input 0-20mA ¹⁾ |

1) Only in case of FNI IOL-712-000-K023 仅在FNI IOL-712-000-K023的情况下

2) Only in case of FNI IOL-714-000-K023 仅在FNI IOL-714-000-K023的情况下

* Depending on the IO-Link master, but max. 2A. 取决于IO-Link主站, 但最大2A。

4 IO-Link interface

4.1. IO-Link data

FNI IOL-712-000-K023

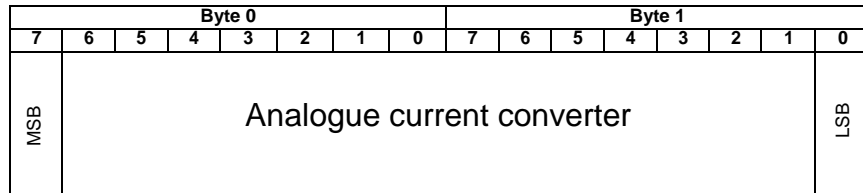
| | |
|------------------------------|-----------------------------|
| Data transmission rate 数据传输率 | COM2 (38,4 kBaud) |
| Frame type 框架类型 | 2.V |
| Minimal cycle time 最段循环时间 | 3 ms |
| Process data cycles 数据循环过程 | 3 ms, at minimal cycle time |
| Prozess data length 数据加长过程 | 2 byte input |

FNI IOL-714-000-K023

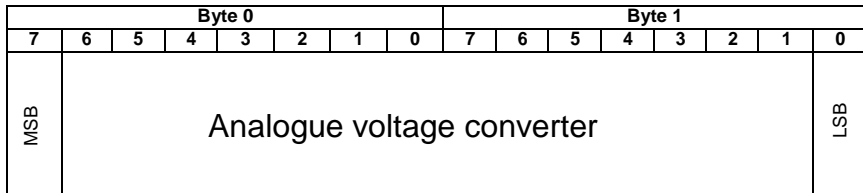
| | |
|------------------------|-----------------------------|
| Data transmission rate | COM2 (38,4 kBaud) |
| Frame type | 2.V |
| Minimal cycle time | 3 ms |
| Process data cycles | 3 ms, at minimal cycle time |
| Prozess data length | 2 byte input |

4.2. Process data / input data

FNI IOL-712-000-K023



FNI IOL-714-000-K023



Note



The measuring range from 0 – 20 mA (for FNI IOL-712-000-K023) will be shown in 65535 steps.

Note



The measuring range from 0 - 10 Volt (for FNI IOL-714-000-K023) will be shown in 65535 steps.

4.3. Parameter data/ Request data

| | DPP | SPDU | | Object name | Length | Range | Default value |
|-----------------------------|-------|-------------------|--------------|-------------|--|-----------|----------------------|
| | Index | Index | Sub-Index | | | | |
| Identification Data 识别数据 | 0x07 | | | Vendor ID | 2 Byte | read only | 0x0454 |
| | 0x08 | | | Device ID | 3 Byte | | 0x099BE2 0x099BE1 |
| | 0x09 | | | | | | |
| | 0x0A | | | | | | |
| | 0x0B | | | | | | |
| | 0x10 | 0 | Vendor name | | | | |
| | 0x11 | 0 | Vendor text | 16 Byte | www.fas-elec.com | | |
| | 0x12 | 0 | Product name | 19 Byte | FNI IOL-712-000-K023 FNI IOL-714-000-K023 | | |
| | 0x13 | 0 | Product ID | 7 Byte | 0AC021 0AC001 | | |
| | 0x14 | 0 | Product text | 18 Byte | IO-Link 1AI 0...20mA IO-Link 1AI 0...10V | | |
| 0x16 | 0 | Hardware Revision | 1 Byte | 1.0 | | | |
| 0x17 | 0 | Firmware Revision | 23 Byte | 1.0 | | | |
| Parameter Data | | | | | | | |

4.4. Errors

| Error Code | Additional Code |
|----------------------------------|--------------------------------|
| Device application error 0x80 | Index not available 0x11 |
| Device application error 0x80 | Subindex not available 0x12 |
| Device application error 0x80 | Value out of range 0x30 |

4.5. Events

| Class / Qualifier | | | Code (high + low) | | | |
|-------------------|-------|----------|--------------------|--------|--------------------|-------------------|
| Mode | Type | Instance | | | | |
| Appears | Error | AL | Device Hardware | Supply | Supply low voltage | U2 = Supply + 24V |
| 0xC0 | 0x30 | 0x03 | 0x5000 | 0x0100 | 0x0010 | 0x0002 |
| 0xF3 | | | 0x5112 | | | |
| Disappears | Error | AL | Device Hardware | Supply | Supply low voltage | U2 = Supply + 24V |
| 0x80 | 0x30 | 0x03 | 0x5000 | 0x0100 | 0x0010 | 0x0002 |
| 0xB3 | | | 0x5112 | | | |

5 Technical data

5.1. Dimensions

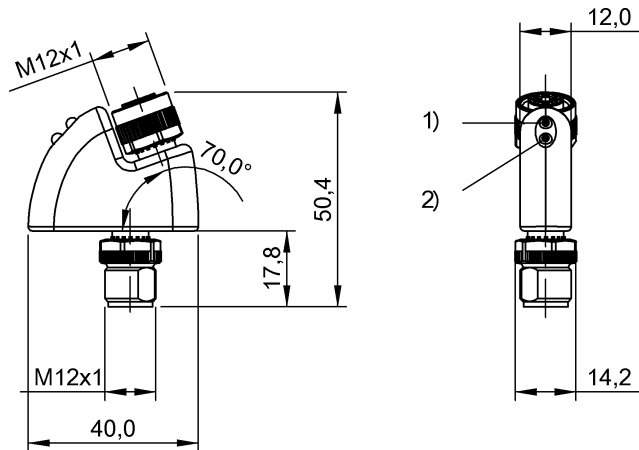


Figure 5-1: Dimensions FNI IOL-...-K023

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 重量 | ca. 50 g |

5.3. Electrical data

| | |
|---------------------------|-------------------------------|
| Operating voltage 操作电压 | 18. 30.2 V DC, per EN 61131-2 |
| Ripple 波纹 | < 1% |
| Current draw without load | <= 30 mA |
| Resolution | 12bit |
| Sampling rate | 3ms |

5.4. Operating Conditions

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

5 Technical data

5.5. LED indicators

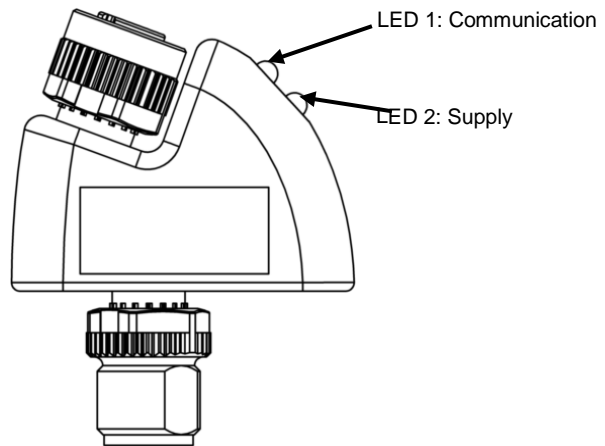


Figure 5-2: LED indicators

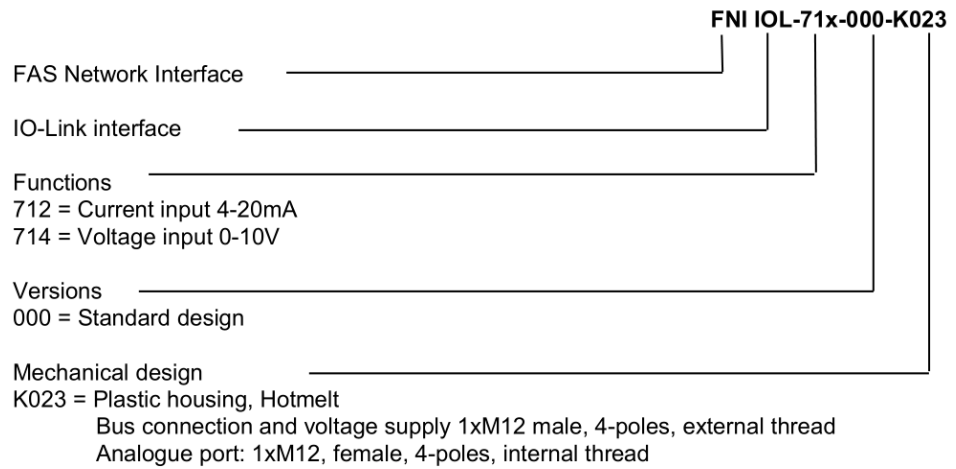
Status LED

FNI IOL-71x-000-K023

| LED | Indicator 指示 | Function |
|-------|-----------------------------------|---|
| LED 1 | Green / Green flashing 绿灯亮/绿灯闪 | Communication error / Communication ok 通信错误/通信正常 |
| LED 2 | Green / Green flashing | Supply sensor & module ok / Undervoltage |

6 Appendix

6.1. Product ordering code



6.2. Order information 订货信息

| Order code 订货号 | Material number 料号 | Product ordering code 产品订货号 | Label color 标签颜色 | Printing IN or OUT |
|-------------------|-----------------------|--------------------------------|---------------------|-----------------------|
| 0AC021 | 213978 | FNI IOL-712-000-K023 | Red (RAL5015) | I |
| 0AC001 | 213979 | FNI IOL-714-000-K023 | Blue (RAL3020) | I |

6.3. Scope of delivery 供货范围


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

FNI IOL-...-K023包含以下组件

- IO-Link module IO-Link模块
- User's guide 用户手册

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