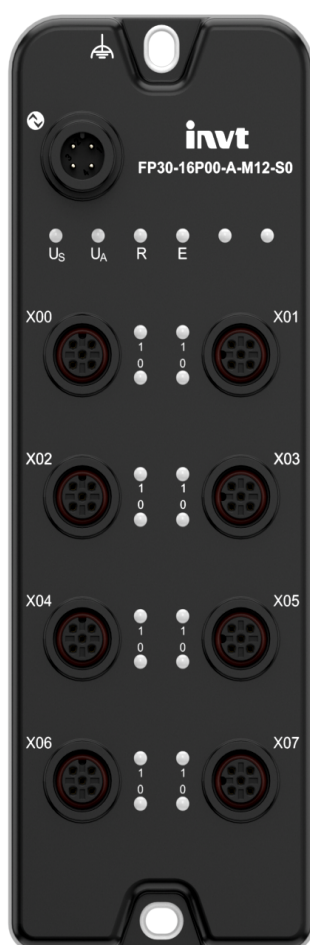


# FP30 Series Hub

## User Manual



# Contents

|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1 Product overview .....</b>                        | <b>1</b>  |
| 1.1 Product introduction .....                         | 1         |
| 1.2 Product features .....                             | 1         |
| <b>2 Model list .....</b>                              | <b>2</b>  |
| 2.1 Model list .....                                   | 2         |
| <b>3 Panel.....</b>                                    | <b>3</b>  |
| 3.1 Hub structure .....                                | 3         |
| 3.2 Indicator light function .....                     | 3         |
| 3.3 IO-Link interface definition.....                  | 4         |
| 3.4 I/O interface definition.....                      | 4         |
| <b>4 Product parameters .....</b>                      | <b>6</b>  |
| 4.1 General parameters .....                           | 6         |
| 4.2 Technical parameters .....                         | 8         |
| <b>5 Wiring instructions .....</b>                     | <b>9</b>  |
| 5.1 Outline dimensions.....                            | 9         |
| 5.2 Wiring instructions .....                          | 9         |
| 5.3 Wiring example.....                                | 9         |
| 5.3.1 PNP type dual input signal .....                 | 9         |
| 5.3.2 PNP type dual output signal .....                | 10        |
| 5.3.3 PNP type configurable input/output signals ..... | 10        |
| 5.3.4 NPN type dual input signal .....                 | 10        |
| 5.3.5 NPN type dual output signal.....                 | 11        |
| 5.3.6 NPN type configurable input/output signals ..... | 11        |
| <b>6 Function description .....</b>                    | <b>12</b> |
| 6.1 Process data mapping .....                         | 12        |
| 6.2 ISDU parameters .....                              | 12        |
| 6.3 System commands.....                               | 13        |
| 6.4 Configuration parameters .....                     | 13        |
| 6.5 Functional parameter mapping .....                 | 13        |
| 6.5.1 Input inversion (0x0041) .....                   | 13        |
| 6.5.2 Port direction configuration (0x0042) .....      | 14        |
| 6.5.3 Short circuit recovery (0x0044).....             | 14        |
| 6.5.4 Output failure protection (0x0045).....          | 15        |
| 6.5.5 Input filter time (0x0049) .....                 | 15        |
| 6.5.6 Input hold time (0x004A).....                    | 16        |

# 1 Product overview

## 1.1 Product introduction

IO-Link is the world's first standardized cross-vendor I/O technology (IEC 61131-9), an open standard serial communication protocol. The FP30 series hub (hereinafter referred to as the "hub") supports IO-Link communication and supports up to 16 digital input channels or 16 digital output channels. As an IO-Link slave, it can connect to any brand of IO-Link master, meeting user needs for process data acquisition, diagnostics, and configuration data transmission.

## 1.2 Product features

- Up to IP67 protection level, suitable for harsh industrial environments
- Simple and fast wiring for both power supply and data transmission
- Designed in compliance with the IO-Link v1.1 specification
- Compatible with IO-Link devices and standard digital signals
- LED status indication, channel protection, and diagnostics

This manual describes the structure, product parameters, and main functions of the FP30 series hubs.

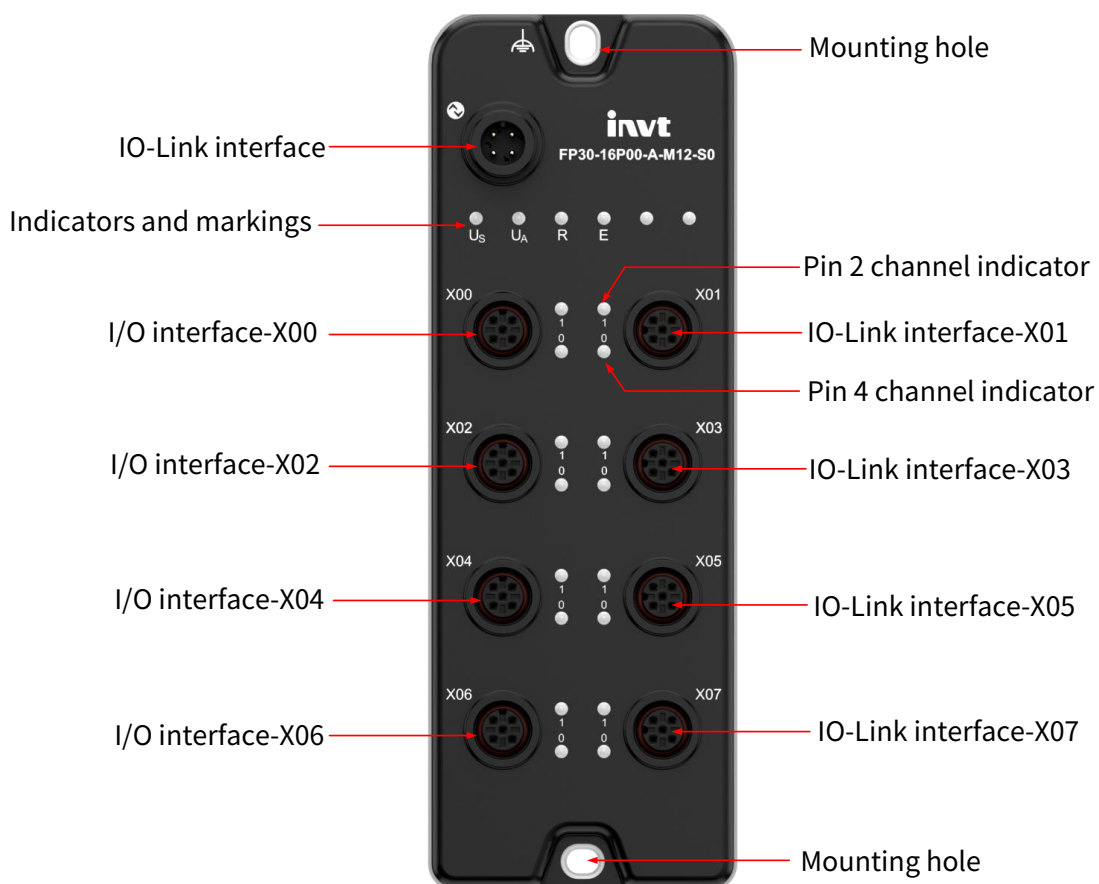
## 2 Model list

### 2.1 Model list

| Model               | Product description                                                   |
|---------------------|-----------------------------------------------------------------------|
| FP30-16P00-A-M12-S0 | 16-channel digital input IO-Link hub, PNP type, IP67                  |
| FP30-0016P-A-M12-S0 | 16-channel digital output IO-Link hub, PNP type, IP67                 |
| FP30-16CP-A-M12-S0  | IO-Link hub with up to 16 input or 16 output channels, PNP type, IP67 |
| FP30-16N00-A-M12-S0 | 16-channel digital input IO-Link hub, NPN type, IP67                  |
| FP30-0016N-A-M12-S0 | 16-channel digital output IO-Link hub, NPN type, IP67                 |
| FP30-16CN-A-M12-S0  | IO-Link hub with up to 16 input or 16 output channels, NPN type, IP67 |

## 3 Panel

### 3.1 Hub structure

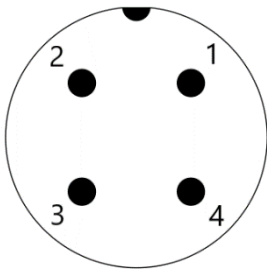


### 3.2 Indicator light function

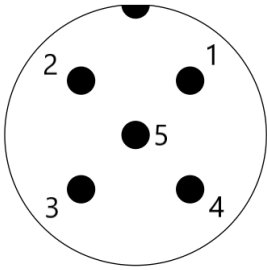
| Logo                         | Color | Status   | Status description                                    |
|------------------------------|-------|----------|-------------------------------------------------------|
| Power indicator<br>US        | Green | ON       | Power supply normal                                   |
|                              |       | Flashing | Undervoltage or overvoltage                           |
|                              |       | OFF      | Power off or abnormal power supply                    |
| Power indicator<br>UA        | Green | ON       | Auxiliary/external power supply normal                |
|                              |       | Flashing | Undervoltage or overvoltage                           |
|                              |       | OFF      | Power off or abnormal auxiliary/external power supply |
| Communication<br>indicator R | Green | ON       | Communication error                                   |
|                              |       | Flashing | Communication normal                                  |
|                              |       | OFF      | Power supply fault                                    |
| Fault indicator E            | Red   | ON       | Device running error                                  |
|                              |       | OFF      | No error                                              |
| Input channel<br>indicator   | Green | ON       | PNP type, channel input high                          |
|                              |       |          | NPN type, channel input low                           |
|                              |       | OFF      | PNP type, channel input low                           |
|                              |       |          | NPN type, channel input high                          |

| Logo                     | Color | Status | Status description            |
|--------------------------|-------|--------|-------------------------------|
| Output channel indicator | Green | ON     | PNP type, channel output high |
|                          |       |        | NPN type, channel output low  |
|                          |       | OFF    | PNP type, channel output low  |
|                          |       |        | NPN type, channel output high |

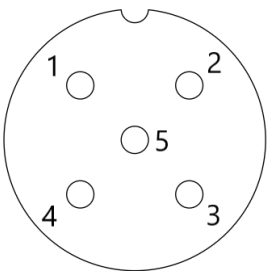
### 3.3 IO-Link interface definition

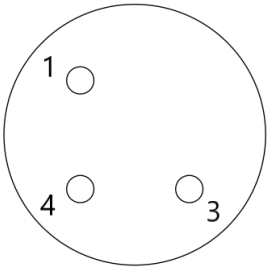
| IO-Link interface connection view<br>(Class-A port, Male)                         | Definitions |                                         |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------|
|  | Pin         | Function                                |
|                                                                                   | 1           | Power supply voltage, +24V              |
|                                                                                   | 2           | NC or P24                               |
|                                                                                   | 3           | 0V, Power supply GND                    |
|                                                                                   | 4           | C/Q, IO-Link data transmission channels |

**Note:** For Class-A interfaces, the master needs to configure Pin2 to output 24V in order to use the output function of the output module normally.

| IO-Link interface connection view<br>(Class-B port, male)                           | Definitions |                                        |
|-------------------------------------------------------------------------------------|-------------|----------------------------------------|
|  | Pin         | Function                               |
|                                                                                     | 1           | Power supply voltage, +24V             |
|                                                                                     | 2           | Auxiliary power supply P24             |
|                                                                                     | 3           | 0V, power supply GND                   |
|                                                                                     | 4           | C/Q, IO-Link data transmission channel |
|                                                                                     | 5           | Auxiliary power supply N24             |

### 3.4 I/O interface definition

| I/O interface connection view (M12, female)                                         | Definitions |                                |
|-------------------------------------------------------------------------------------|-------------|--------------------------------|
|  | Pin         | Function                       |
|                                                                                     | 1           | Power supply voltage, +24V     |
|                                                                                     | 2           | DI/DO 1, signal input/output 1 |
|                                                                                     | 3           | 0V, power supply GND           |
|                                                                                     | 4           | DI/DO 0, signal input/output 0 |
|                                                                                     | 5           | NC                             |

| I/O interface connection view (M8, female)                                        | Definitions |                            |
|-----------------------------------------------------------------------------------|-------------|----------------------------|
|                                                                                   | Pin         | Function                   |
|                                                                                   | 1           | Power supply voltage, +24V |
|                                                                                   | 3           | 0V, power supply GND       |
|  | 4           | DI/DO, signal input/output |
|                                                                                   |             |                            |
|                                                                                   |             |                            |

## 4 Product parameters

### 4.1 General parameters

| Communication parameters                 |                                       |                     |                     |
|------------------------------------------|---------------------------------------|---------------------|---------------------|
| Product model                            | FP30-16P00-A-M12-S0                   | FP30-0016P-A-M12-S0 | FP30-16CP-A-M12-S0  |
| VendorID                                 | 1044 (0x0414)                         |                     |                     |
| VendorName                               | INVT                                  |                     |                     |
| DeviceID                                 | 2401013 (0x24A2F5)                    | 2401014 (0x24A2F6)  | 2401015 (0x24A2F7)  |
| IO-Link version                          | V1.13                                 |                     |                     |
| Communication rate                       | COM3 (230.4kbps)                      |                     |                     |
| Minimum cycle time                       | 1ms                                   |                     |                     |
| Process data length                      | 2-byte input                          | 2-byte output       | 2-byte input/output |
| Interface type                           | M12-A, 4-pin, Male                    |                     |                     |
| Cable length                             | ≤20m (between the hub and the master) |                     |                     |
| Electrical parameters                    |                                       |                     |                     |
| Operating voltage (V)                    | 24 VDC (18V–30V)                      |                     |                     |
| Power consumption (mA)                   | 120mA                                 |                     |                     |
| Configurable inputs and outputs          | No                                    |                     | Yes                 |
| Input/output interfaces                  | M12-A, 5-pin, Female                  |                     |                     |
| Number of input channels                 | 16                                    | -                   | Maximum 16          |
| Input current                            | 4mA                                   | -                   | 4mA                 |
| Input channel type                       | PNP                                   | -                   | PNP                 |
| Input filter                             | Configurable                          | -                   | Configurable        |
| Digital input short-circuit protection   | Yes                                   | -                   | Yes                 |
| Number of output channels                | -                                     | 16                  | Maximum 16          |
| Maximum output current of single channel | -                                     | 0.5A                |                     |
| Total output current                     | -                                     | Maximum 2A          |                     |
| Output channel type                      | -                                     | PNP                 |                     |

| Communication parameters                 |                                       |                     |                     |
|------------------------------------------|---------------------------------------|---------------------|---------------------|
| Product model                            | FP30-16N00-A-M12-S0                   | FP30-0016N-A-M12-S0 | FP30-16CN-A-M12-S0  |
| VendorID                                 | 1044 (0x0414)                         |                     |                     |
| VendorName                               | INVT                                  |                     |                     |
| DeviceID                                 | 2401010 (0x24A2F2)                    | 2401011 (0x24A2F3)  | 2401012 (0x24A2F4)  |
| IO-Link version                          | V1.13                                 |                     |                     |
| Communication rate                       | COM3 (230.4kbps)                      |                     |                     |
| Minimum cycle time                       | 1ms                                   |                     |                     |
| Process data length                      | 2-byte input                          | 2-byte output       | 2-byte input/output |
| Interface type                           | M12-A, 4-pin, Male                    |                     |                     |
| Cable length                             | ≤20m (between the hub and the master) |                     |                     |
| Electrical parameters                    |                                       |                     |                     |
| Operating voltage (V)                    | 24 VDC (18V-30V)                      |                     |                     |
| Power consumption (mA)                   | 120mA                                 |                     |                     |
| Configurable inputs and outputs          | No                                    |                     | Yes                 |
| Input/output interfaces                  | M12-A, 5-pin, Female                  |                     |                     |
| Number of input channels                 | 16                                    | -                   | Maximum 16          |
| Input current                            | 4mA                                   | -                   | 4mA                 |
| Input channel type                       | NPN                                   | -                   | NPN                 |
| Input filter                             | Configurable                          | -                   | Configurable        |
| Digital input short-circuit protection   | Yes                                   | -                   | Yes                 |
| Number of output channels                | -                                     | 16                  | Maximum 16          |
| Maximum output current of single channel | -                                     | 0.5A                |                     |
| Total output current                     | -                                     | Maximum 2A          |                     |
| Output channel type                      | -                                     | NPN                 |                     |

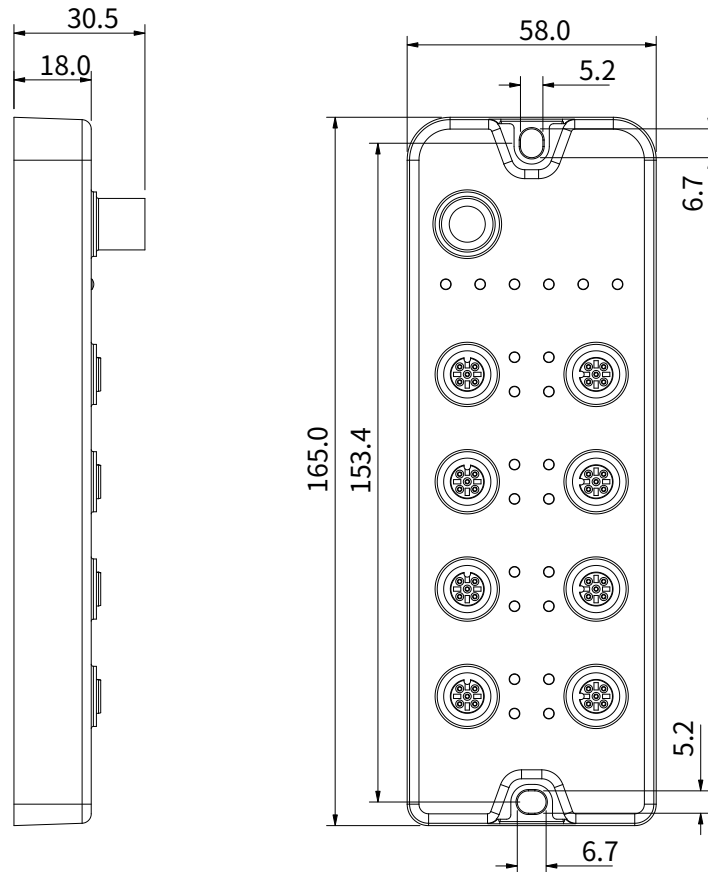
## 4.2 Technical parameters

| Diagnostics                           |                      |
|---------------------------------------|----------------------|
| Communication status                  | LED indicator        |
| Supply voltage monitoring             | Yes                  |
| Short circuit and overload protection | Yes                  |
| Operating environment                 |                      |
| Dimensions                            | 165 × 58 × 30.5 mm   |
| Weight                                | 365g                 |
| Operating temperature                 | -25°C~+70°C          |
| Storage temperature                   | -40°C~+85°C          |
| Relative humidity                     | 95%, no condensation |
| Protection level                      | IP67                 |
| Other                                 |                      |
| Firmware upgrade                      | Yes                  |
| Data storage                          | Yes                  |

# 5 Wiring instructions

## 5.1 Outline dimensions

Figure 5-1 Outline dimensions (unit: mm)



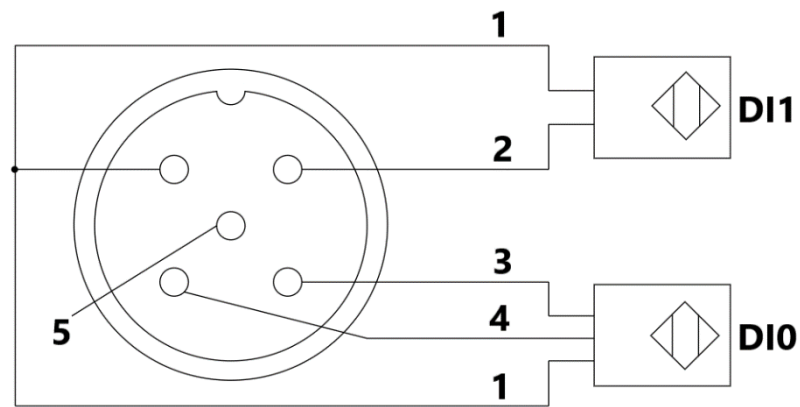
## 5.2 Wiring instructions

- For personal and equipment safety, it is recommended to disconnect the power supply when performing wiring operations.
- IO-Link master interface: connect the IO-Link hub to any IO-Link master using a standard three-core or four-core cable.
- I/O interface: connect the IO-Link hub to sensors or other devices using a standard five-core cable.

## 5.3 Wiring example

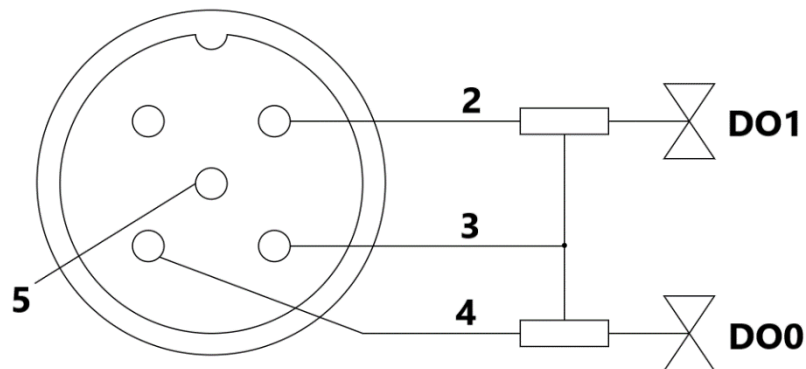
### 5.3.1 PNP type dual input signal

One connector connects two digital input signals.



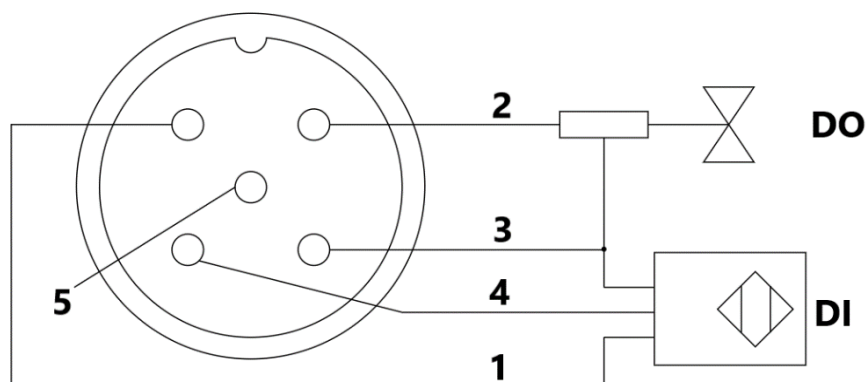
### 5.3.2 PNP type dual output signal

One connector connects two digital output signals.



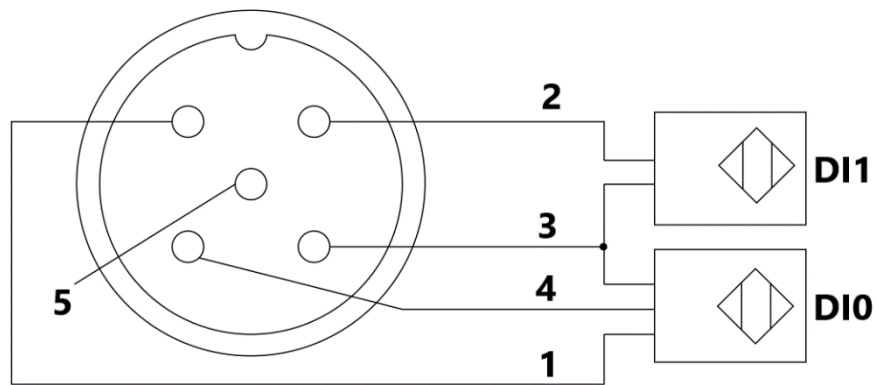
### 5.3.3 PNP type configurable input/output signals

One connector can be configured to connect one digital input and one digital output signal, two digital input signals, or two digital output signals.



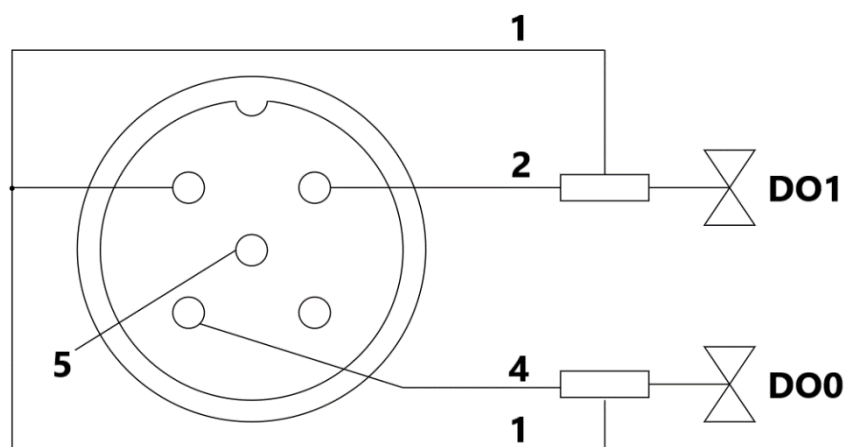
### 5.3.4 NPN type dual input signal

One connector connects two digital input signals.



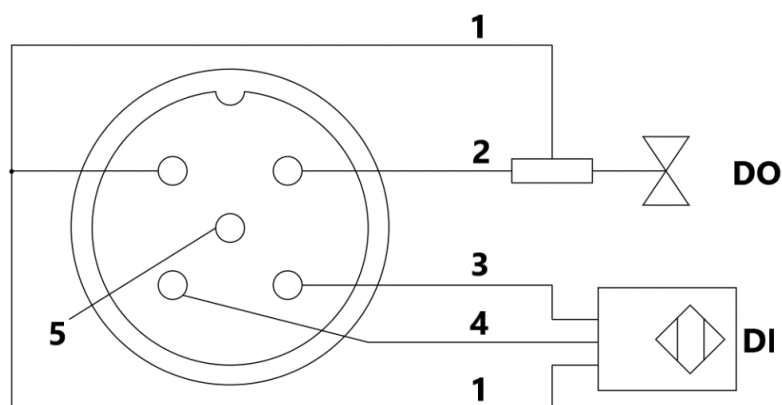
### 5.3.5 NPN type dual output signal

One connector connects two digital output signals.



### 5.3.6 NPN type configurable input/output signals

One connector can be configured to connect one digital input and one digital output signal, two digital input signals, or two digital output signals.



## 6 Function description

### 6.1 Process data mapping

Input data:

| Byte       | 0        |          |          |          |          |          |          |          | 1        |          |          |          |          |          |          |          |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Bit        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
| Sub-index  | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 16       | 15       | 14       | 13       | 12       | 11       | 10       | 9        |
| Offset bit | 15       | 14       | 13       | 12       | 11       | 10       | 9        | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
| Pin        | X03-Pin2 | X03-Pin4 | X02-Pin2 | X02-Pin4 | X01-Pin2 | X01-Pin4 | X00-Pin2 | X00-Pin4 | X07-Pin2 | X07-Pin4 | X06-Pin2 | X06-Pin4 | X05-Pin2 | X05-Pin4 | X04-Pin2 | X04-Pin4 |

Output data:

| Byte       | 0        |          |          |          |          |          |          |          | 1        |          |          |          |          |          |          |          |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Bit        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
| Sub-index  | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 16       | 15       | 14       | 13       | 12       | 11       | 10       | 9        |
| Offset bit | 15       | 14       | 13       | 12       | 11       | 10       | 9        | 8        | 7        | 6        | 5        | 4        | 3        | 2        | 1        | 0        |
| Pin        | X03-Pin2 | X03-Pin4 | X02-Pin2 | X02-Pin4 | X01-Pin2 | X01-Pin4 | X00-Pin2 | X00-Pin4 | X07-Pin2 | X07-Pin4 | X06-Pin2 | X06-Pin4 | X05-Pin2 | X05-Pin4 | X04-Pin2 | X04-Pin4 |

### 6.2 ISDU parameters

| ISDU   |           | Name                   | Access | Data type               | Description                      |
|--------|-----------|------------------------|--------|-------------------------|----------------------------------|
| Index  | Sub-index |                        |        |                         |                                  |
| 0x0010 | 0x00      | Vendor name            | R      | 64 String               | Vendor: INVT                     |
| 0x0011 | 0x00      | Vendor information     | R      | 64 String               | www.invt.com.cn                  |
| 0x0012 | 0x00      | Product name           | R      | 64 String               | e.g., INVT-FP30-16P00-A-M12-S0   |
| 0x0013 | 0x00      | Product ID             | R      | 64 String               | e.g., FP30-16P00-A-M12-S0        |
| 0x0014 | 0x00      | Product information    | R      | 64 String               | I/O-HUB                          |
| 0x0015 | 0x00      | Serial number          | R      | 64 String               | -                                |
| 0x0016 | 0x00      | Hardware version       | R      | 64 String               | -                                |
| 0x0017 | 0x00      | Firmware version       | R      | 64 String               | -                                |
| 0x0018 | 0x00      | Application identifier | R/W    | 32 String               | Application tag: ***             |
| 0x0019 | 0x00      | Function tag           | R/W    | 32 String               | Function tag: ***                |
| 0x001A | 0x00      | Device location tag    | R/W    | 32 String               | Device location description: *** |
| 0x0024 | 0x00      | Device status          | R      | 1 UIntegerT             | Note 1                           |
| 0x0025 | 0x00      | Detailed device status | R      | ArrayT of OctetStringT3 | Note 2                           |

**Note1:** Device status definition, 0: Device OK; 1: Maintenance required; 2: Out of specification; 3: Functional check required; 4: Device failure, default: 0

**Note2:** Default: 8 × 3 bytes; initial values: 0x00, 0x00, and 0x00.

## 6.3 System commands

| Index  | Value     | Function                           | Description                                                          |
|--------|-----------|------------------------------------|----------------------------------------------------------------------|
| 0x0002 | 0x7E(126) | Locator start                      | Start positioning function                                           |
|        | 0x7F(127) | Locator stop                       | Stop positioning function                                            |
|        | 0x80(128) | Device reset                       | Execute device reset                                                 |
|        | 0x81(129) | Application reset                  | Execute application reset                                            |
|        | 0x82(130) | Restore factory settings           | Restore factory settings, all parameters are reset to default values |
|        | 0x83(131) | Restore original delivery settings | Restore parameters to original delivery values                       |

## 6.4 Configuration parameters

| Index  | Configuration function name  | Access | Data type   | Description                                                                     |
|--------|------------------------------|--------|-------------|---------------------------------------------------------------------------------|
| 0x0041 | Input inversion              | R/W    | 2 Unsigned  | 0: Not inverted; 1: Inverted; default: 0x0000                                   |
| 0x0042 | Port direction configuration | R/W    | 2 Unsigned  | 0: Input; 1: Output; default: 0xFFFF (auto-adaptive, no configuration required) |
| 0x0044 | Short circuit recovery       | R/W    | 2 Unsigned  | 0: Automatic recovery; 1: Manual reset recovery; default: 0x0000                |
| 0x0045 | Output failure protection    | R/W    | 16 Unsigned | 0: Output 0V; 1: Output 24V; 2: Keep previous state; default: all 0             |
| 0x0049 | Input filter time            | R/W    | 16 Unsigned | Refer to section 6.5.5                                                          |
| 0x004A | Input hold time              | R/W    | 16 Unsigned | Refer to section 6.5.6                                                          |

## 6.5 Functional parameter mapping

### 6.5.1 Input inversion (0x0041)

| Sub-index | Pin      | Bit offset | Range                                     |
|-----------|----------|------------|-------------------------------------------|
| 0x01      | X00-Pin4 | 8          | 0: Not inverted (default);<br>1: Inverted |
| 0x02      | X00-Pin2 | 9          |                                           |
| 0x03      | X01-Pin4 | 10         |                                           |
| 0x04      | X01-Pin2 | 11         |                                           |
| 0x05      | X02-Pin4 | 12         |                                           |
| 0x06      | X02-Pin2 | 13         |                                           |
| 0x07      | X03-Pin4 | 14         |                                           |
| 0x08      | X03-Pin2 | 15         |                                           |
| 0x09      | X04-Pin4 | 0          |                                           |
| 0x0A      | X04-Pin2 | 1          |                                           |
| 0x0B      | X05-Pin4 | 2          |                                           |

| Sub-index | Pin      | Bit offset | Range |
|-----------|----------|------------|-------|
| 0x0C      | X05-Pin2 | 3          |       |
| 0x0D      | X06-Pin4 | 4          |       |
| 0x0E      | X06-Pin2 | 5          |       |
| 0x0F      | X07-Pin4 | 6          |       |
| 0x10      | X07-Pin2 | 7          |       |

### 6.5.2 Port direction configuration (0x0042)

| Sub-index | Pin      | Bit offset | Range                                |
|-----------|----------|------------|--------------------------------------|
| 0x01      | X00-Pin4 | 8          | 0: Input<br>1: Output, default value |
| 0x02      | X00-Pin2 | 9          |                                      |
| 0x03      | X01-Pin4 | 10         |                                      |
| 0x04      | X01-Pin2 | 11         |                                      |
| 0x05      | X02-Pin4 | 12         |                                      |
| 0x06      | X02-Pin2 | 13         |                                      |
| 0x07      | X03-Pin4 | 14         |                                      |
| 0x08      | X03-Pin2 | 15         |                                      |
| 0x09      | X04-Pin4 | 0          |                                      |
| 0x0A      | X04-Pin2 | 1          |                                      |
| 0x0B      | X05-Pin4 | 2          |                                      |
| 0x0C      | X05-Pin2 | 3          |                                      |
| 0x0D      | X06-Pin4 | 4          |                                      |
| 0x0E      | X06-Pin2 | 5          |                                      |
| 0x0F      | X07-Pin4 | 6          |                                      |
| 0x10      | X07-Pin2 | 7          |                                      |

### 6.5.3 Short circuit recovery (0x0044)

| Sub-index | Pin      | Bit offset | Range                                                               |
|-----------|----------|------------|---------------------------------------------------------------------|
| 0x01      | X00-Pin4 | 8          | 0: Automatic recovery,<br>default value<br>1: Manual reset recovery |
| 0x02      | X00-Pin2 | 9          |                                                                     |
| 0x03      | X01-Pin4 | 10         |                                                                     |
| 0x04      | X01-Pin2 | 11         |                                                                     |
| 0x05      | X02-Pin4 | 12         |                                                                     |
| 0x06      | X02-Pin2 | 13         |                                                                     |
| 0x07      | X03-Pin4 | 14         |                                                                     |
| 0x08      | X03-Pin2 | 15         |                                                                     |
| 0x09      | X04-Pin4 | 0          |                                                                     |
| 0x0A      | X04-Pin2 | 1          |                                                                     |
| 0x0B      | X05-Pin4 | 2          |                                                                     |
| 0x0C      | X05-Pin2 | 3          |                                                                     |
| 0x0D      | X06-Pin4 | 4          |                                                                     |
| 0x0E      | X06-Pin2 | 5          |                                                                     |
| 0x0F      | X07-Pin4 | 6          |                                                                     |

| Sub-index | Pin      | Bit offset | Range |
|-----------|----------|------------|-------|
| 0x10      | X07-Pin2 | 7          |       |

#### 6.5.4 Output failure protection (0x0045)

| Sub-index | Pin      | Bit offset | Range                                                                                                                                                                                     |
|-----------|----------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x01      | X00-Pin4 | 64         | 0: Output 0V low level upon communication failure, default value.<br>1: Output 24V high level upon communication failure<br>2: Hold the previous output state upon communication failure. |
| 0x02      | X00-Pin2 | 72         |                                                                                                                                                                                           |
| 0x03      | X01-Pin4 | 80         |                                                                                                                                                                                           |
| 0x04      | X01-Pin2 | 88         |                                                                                                                                                                                           |
| 0x05      | X02-Pin4 | 96         |                                                                                                                                                                                           |
| 0x06      | X02-Pin2 | 104        |                                                                                                                                                                                           |
| 0x07      | X03-Pin4 | 112        |                                                                                                                                                                                           |
| 0x08      | X03-Pin2 | 120        |                                                                                                                                                                                           |
| 0x09      | X04-Pin4 | 0          |                                                                                                                                                                                           |
| 0x0A      | X04-Pin2 | 8          |                                                                                                                                                                                           |
| 0x0B      | X05-Pin4 | 16         |                                                                                                                                                                                           |
| 0x0C      | X05-Pin2 | 24         |                                                                                                                                                                                           |
| 0x0D      | X06-Pin4 | 32         |                                                                                                                                                                                           |
| 0x0E      | X06-Pin2 | 40         |                                                                                                                                                                                           |
| 0x0F      | X07-Pin4 | 48         |                                                                                                                                                                                           |
| 0x10      | X07-Pin2 | 56         |                                                                                                                                                                                           |

#### 6.5.5 Input filter time (0x0049)

| Sub-index | Pin      | Bit offset | Range                                                                                            |
|-----------|----------|------------|--------------------------------------------------------------------------------------------------|
| 0x01      | X00-Pin4 | 64         | Input filter time setting value: 0–25 (corresponding to 0–50 ms, in 2 ms units); default 0: off. |
| 0x02      | X00-Pin2 | 72         |                                                                                                  |
| 0x03      | X01-Pin4 | 80         |                                                                                                  |
| 0x04      | X01-Pin2 | 88         |                                                                                                  |
| 0x05      | X02-Pin4 | 96         |                                                                                                  |
| 0x06      | X02-Pin2 | 104        |                                                                                                  |
| 0x07      | X03-Pin4 | 112        |                                                                                                  |
| 0x08      | X03-Pin2 | 120        |                                                                                                  |
| 0x09      | X04-Pin4 | 0          |                                                                                                  |
| 0x0A      | X04-Pin2 | 8          |                                                                                                  |
| 0x0B      | X05-Pin4 | 16         |                                                                                                  |
| 0x0C      | X05-Pin2 | 24         |                                                                                                  |
| 0x0D      | X06-Pin4 | 32         |                                                                                                  |
| 0x0E      | X06-Pin2 | 40         |                                                                                                  |
| 0x0F      | X07-Pin4 | 48         |                                                                                                  |
| 0x10      | X07-Pin2 | 56         |                                                                                                  |

### 6.5.6 Input hold time (0x004A)

| Sub-index | Pin      | Bit offset | Range                                                                                                 |
|-----------|----------|------------|-------------------------------------------------------------------------------------------------------|
| 0x01      | X00-Pin4 | 64         | Input hold time setting<br>value: 0–25<br>(corresponding to 0–50<br>ms, in 2 ms units); default<br>0. |
| 0x02      | X00-Pin2 | 72         |                                                                                                       |
| 0x03      | X01-Pin4 | 80         |                                                                                                       |
| 0x04      | X01-Pin2 | 88         |                                                                                                       |
| 0x05      | X02-Pin4 | 96         |                                                                                                       |
| 0x06      | X02-Pin2 | 104        |                                                                                                       |
| 0x07      | X03-Pin4 | 112        |                                                                                                       |
| 0x08      | X03-Pin2 | 120        |                                                                                                       |
| 0x09      | X04-Pin4 | 0          |                                                                                                       |
| 0x0A      | X04-Pin2 | 8          |                                                                                                       |
| 0x0B      | X05-Pin4 | 16         |                                                                                                       |
| 0x0C      | X05-Pin2 | 24         |                                                                                                       |
| 0x0D      | X06-Pin4 | 32         |                                                                                                       |
| 0x0E      | X06-Pin2 | 40         |                                                                                                       |
| 0x0F      | X07-Pin4 | 48         |                                                                                                       |
| 0x10      | X07-Pin2 | 56         |                                                                                                       |

 **Note:** The byte position of a parameter can be determined by the offset, with the high-order bits first. For example, for index 0x45, if sub-index 0x08 has an offset of 120, the first byte of index 0x45 corresponds to sub-index 0x08, and the last byte corresponds to sub-index 0x09 with an offset of 0;

For example, index 0x41 consists of two bytes: the highest bit of the first byte corresponds to sub-index 0x08 with an offset of 15, and the lowest bit of the second byte corresponds to sub-index 0x09 with an offset of 0.

*Your Trusted Industry Automation Solution Provider*



**Shenzhen INVT Electric Co., Ltd.**

Address: INVT Guangming Technology Building, Songbai Road, Matian,  
Guangming District, Shenzhen, China

**INVT Power Electronics (Suzhou) Co., Ltd.**

Address: No. 1 Kunlunshan Road, Science & Technology Town,  
Suzhou New District, Jiangsu, China

**Website: [www.invt.com](http://www.invt.com)**



INVT mobile website



INVT e-manual



66001-01721