






# **Field Bus Branch Protector FSP121**

## **User Manual**

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Symbol Definition	
	<b>WARNING:</b> Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	<b>RISK OF ELECTRICAL SHOCK:</b> Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	<b>ESD HAZARD:</b> Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	<b>ATTENTION:</b> Identifies information that requires special consideration.
	<b>TIP:</b> Identifies advice or hints for the user.

# Table of Contents

<b>Field Bus Branch Protector FSP121 User Manual .....</b>	<b>2</b>
<b>Section 1 Overview .....</b>	<b>2</b>
<b>Section 2 Performance .....</b>	<b>3</b>
<b>Section 3 Usage .....</b>	<b>4</b>
3.1 Structural Diagram .....	4
3.2 Terminal Resistance Illustration .....	5
3.3 Light Indicator Illustration .....	5
3.4 Installation Illustration .....	5
<b>Section 4 Engineering Applications .....</b>	<b>7</b>
4.1 Network Segment Wiring Example .....	7
4.2 Installation Illustration .....	8
4.3 Application Notes .....	8
4.4 Module Fault Troubleshooting .....	8
<b>Section 5 Revision .....</b>	<b>9</b>

# Field Bus Branch Protector FSP121 User Manual

## Section 1 Overview

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Fieldbus branch protector FSP121 is a connection module for Foundation™ fieldbus H1 and Profibus PA . The TRUNK terminal of FSP121 is used to connect the bus trunk cable and has the functions of anti-reverse connection and overvoltage protection. The 4 branch terminals are used to connect to the bus branch cables of the instrument, and each branch has over-current and short-circuit protection functions. Its internal integrated bus terminal resistance can be configured whether to start this terminal resistance through the short-circuit block.

## Section 2 Performance

**Table 2-1 Performance indicators**

Parameter		Specification
Installation requirements		Aluminum alloy shell, screw installation
Cable specification		(0.14 – 2.5 ) mm <sup>2</sup>
Maximum number of devices on a single network segment		Maximum 4 instruments
Power supply		Bus power supply
Input voltage range		(10.4 – 32) V
Maximum current from the trunk input to trunk output		≤ 4.5A
Maximum voltage drop from the trunk input to trunk output		≤ 0.3V@4.5A
Static Current		≤ 8mA
Trunk-to-branch voltage drop		≤ 1.3V
Branch rated current		≤ 38mA
Branch short circuit protection current		50mA
Temperature	Working temperature	( -40 – 75 )° C
	storage temperature	( -45 – 80 )° C

## Section 3 Usage

### 3.1 Structural Diagram

The appearance structure and dimensions of FSP121 are shown in the figure below. Nylon explosion-proof gland is standard, and optional.

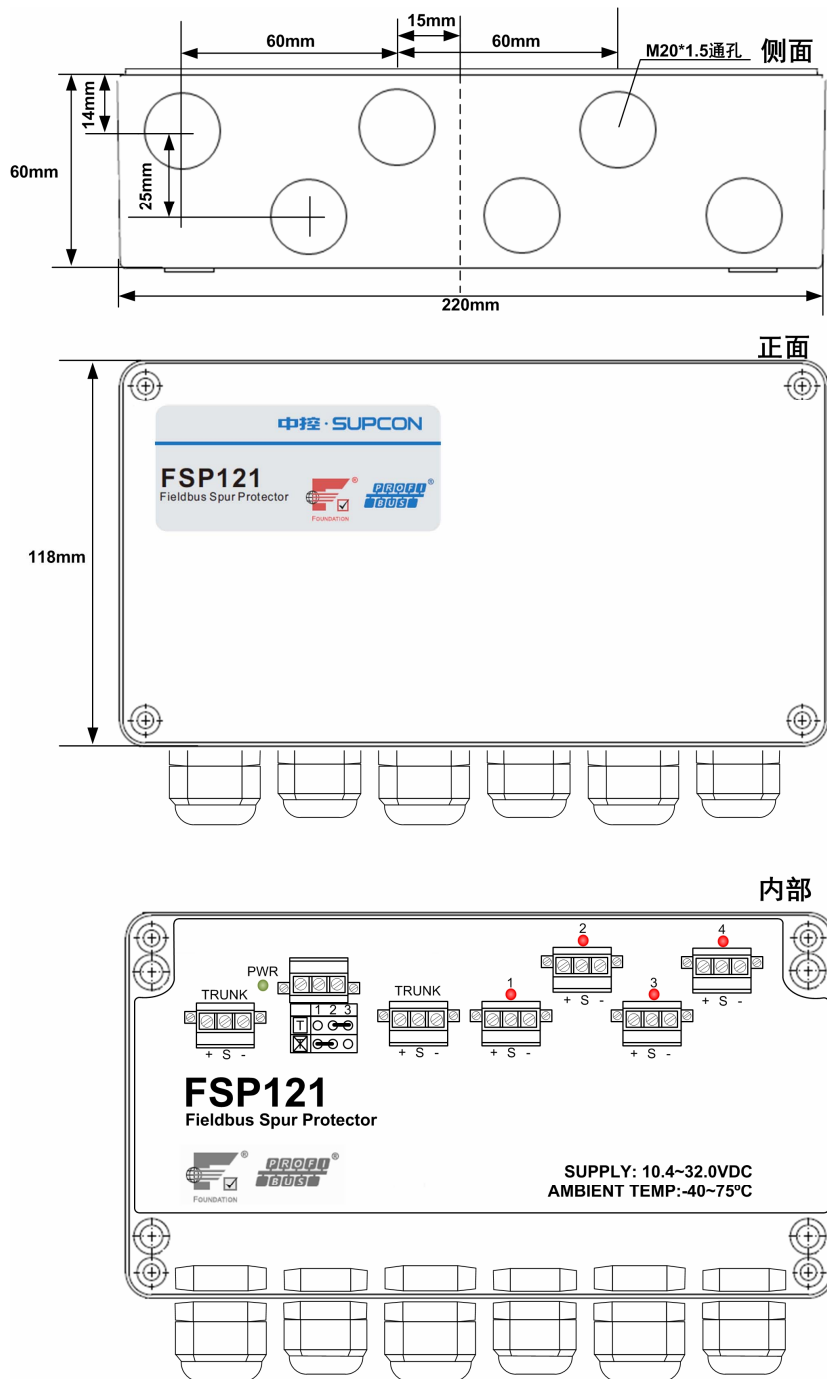
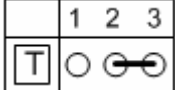
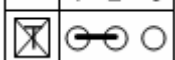


Figure 3-1 FSP121 structure diagram

### 3.2 Terminal Resistance Illustration

Whether to enable the configuration of the three terminals on the most left side is shown in Table 3-1, and the configuration is shown in the table below.

**Table 3-1 Terminal resistance configuration list**

Icon	Definition	Connection instructions
	Enable terminal resistance	Short circuit block connecting 2 with 3
	Disable terminal resistance	Short circuit block connecting 1 with 2

### 3.3 Light Indicator Illustration

**Table 3-2 FSP121 indicator list**

Light	State	Description
PWR	ON (green)	Normal
	OFF	Major fault
1 – 4	ON (red)	Corresponding branch gets short circuit
	OFF	Normal

### 3.4 Installation Illustration

There are three groups of wiring terminals on FSP121:

- One group is used to enable terminal resistance. For details, refer to Terminal Resistance Illustration.
- A group of instruments connected to the field side, identified as 1 to 4, can be connected to up to 4 field instruments.
- A set of cables for connecting the main bus, identified as TRUNK, if two FSP121 are used on the bus, then one TRUNK for cascade.

Terminal wiring description is shown in Table 3-3.

**Table 3-3***Terminal wiring illustration*

Terminal	Terminal Identification	Description
TRUNK	+	Positive pole of fieldbus
	S	Shielding layer of fieldbus
	-	Negative pole of fieldbus
1 – 4	+	Positive pole of fieldbus
	S	Shielding layer of fieldbus
	-	Negative pole of fieldbus



## Section 4 Engineering Applications

### 4.1 Network Segment Wiring Example

As shown in Figure 4-1, take the connection of the FF interface module AM712-P as an example to illustrate the wiring method of the fieldbus branch protector FSP121. This diagram is for reference only.

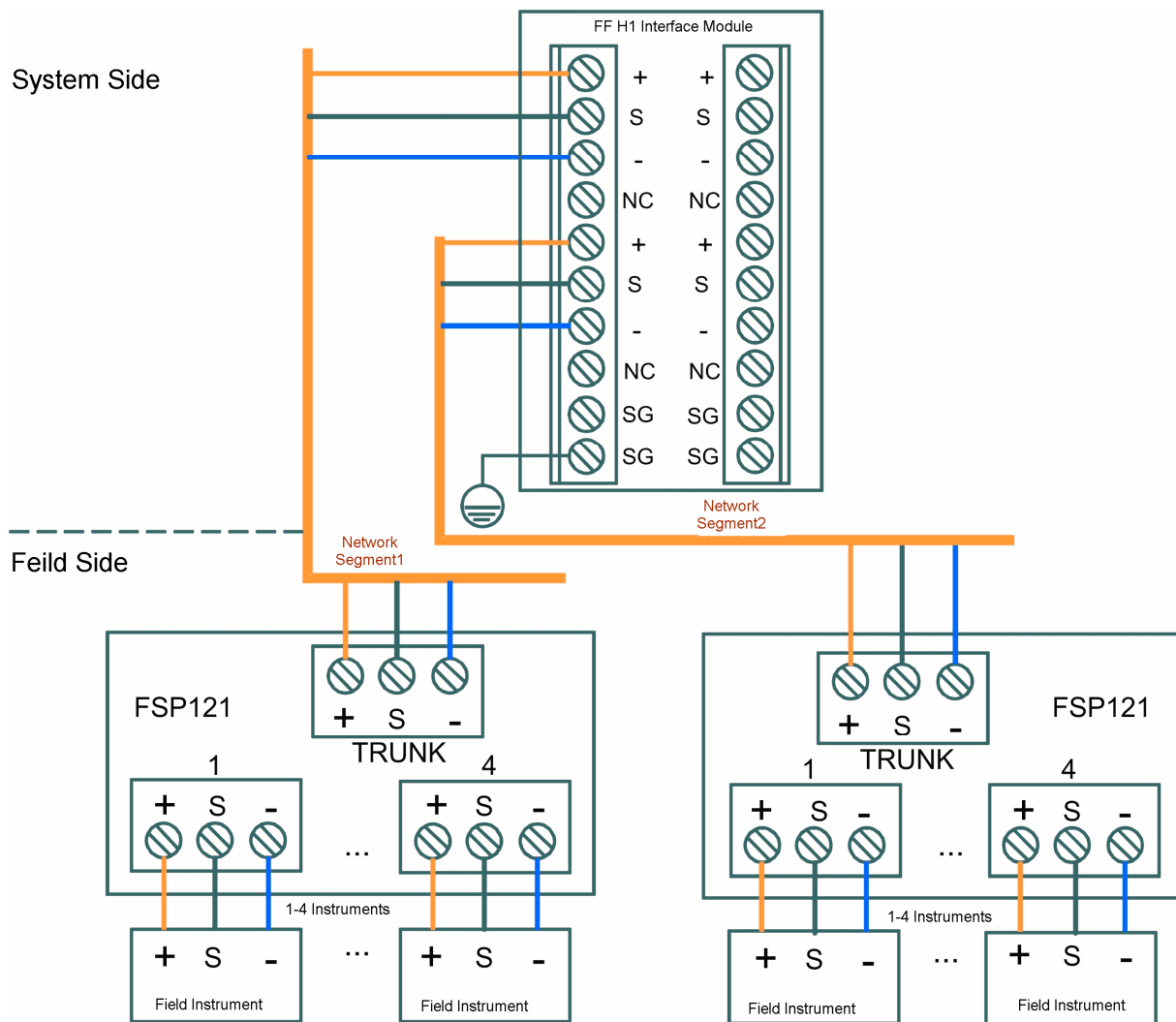


Figure 4-1 Field bus branch protector FSP121 diagram



#### Warning:

Fieldbus instruments cannot be connected to the TRUNK terminal, which does not have over-current, over-voltage, and short-circuit protection.

## 4.2 Installation Illustration

FSP121 adopts screw installation method, and its opening size and schematic diagram are shown in Figure 4-2 and the unit is mm. As shown in the figure, the direction of the accessory can be adjusted to left / right installation or up / down installation according to actual needs.

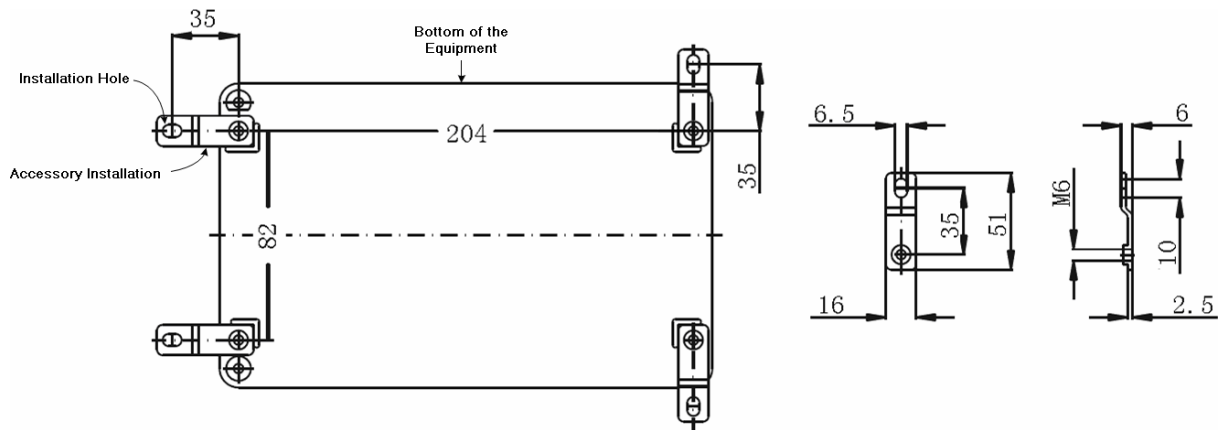


Figure 4-2 Tapping hole dimensions

## 4.3 Application Notes

- Under normal circumstances, the fieldbus branch protector FSP121 is generally installed at the end of the bus, allowing cascaded, and it is not allowed to enable terminal resistance in the cascading case.
- The positive pole of the TRUNK terminal on FSP121 must be connected to the positive pole of the FF power regulator, and the negative pole must be connected to the negative pole of the FF power regulator. Reverse connection is not supported.

## 4.4 Module Fault Troubleshooting

- If all the lights are off, the power supply may be abnormal. Please check whether the power supply and connection are normal.
- If 1 to 4 lights (red) are on, it means that each corresponding branch is short-circuited.

## Section 5 Revision

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*Table 5-1 Retrofit list of the version*

Document Version	Model	Remarks
V1.0 (20211216)	FSP121 V10.00.00	The first edition.