

# Ci-PP21

## Profibus DP Bus

### Link Redundant Module

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## Summary

This series is designed for industrial grade Profibus DP Link Redundant Module, support Profibus DP protocol. The link redundancy module realizes the mutual conversion between single bus (M port) and dual redundant bus (A, B port), either converting the single cable bus to a redundant Profibus DP bus, or the redundant Profibus DP bus to a single cable bus. The data received from the M port is broadcast to the A, B port, but the A or B port data is forwarded to the M port in the first selection principle, so as to establish a working path at any time, monitoring the state of communication equipments in real-time. When the receiver at the port of the operation detects a bus fault, switch to the redundant port, and vice versa. The device can be directly placed after the Profibus DP master, the single cable bus into a redundant bus; can also be placed on the slave bus to convert the redundant bus to non-redundant cable, with optocoupler isolation, reduce interference and other performance, The rate set by the DIP switch or select the rate of adaptive settings. The product is Industrial grade designed, Casing: IP40 protection, wave grain aluminum reinforce case option, DIN rail mounting, DC(9~36V) power input, support Fieldbus ports error Relay alarm output, dual redundant power input and isolation protection. -40~75 °C Operating Temperature, can meet various Industrial situation.

## Characteristic

- Support 3 Profibus DP bus, according to Profibus DP Protocol
- Realizes the mutual conversion between single bus (M port) and dual redundant bus (A, B port)
- Support Dial switch for setting communication rate (all ports baud rate must be same)
- Support 3Chs photon coupled isolation ports, Isolated Voltage 1000V, and 4000V Anti-thunder protection
- Support 4 dual colors LED Indicator, Fieldbus ports error Relay alarm output
- DC (9~36V) dual redundant power input, With DC1500V voltage isolation and reverse connect

## More Reliable Connection, More Intelligent Life

protection

- IP40 protection, Metal case (wave grain aluminum reinforce case option), 35mmDIN-Rail Installation
- Operating Temperature: -40°C to 75°C suitable to various Industrial work situation

## Specification

### Bus data interface

- Interface type: standard 9 pin type D Profibus DP fieldbus cable interface, conform to Profibus DP protocol standard.
- Support Profibus DP bus standard
- Baud Rates: 9.6Kbps、19.2 Kbps、45.45Kbps、93.75Kbps、187.5Kbps、500Kbps、1.5Mbps、6Mbps、12Mbps
- Signal Delay (electrical interface): ≤4Bit
- Isolated voltage 1000V, 4000V Anti-thunder protection
- Resistor: without terminal resistor, connect external when necessary

### Power

- DC (9~36V) dual redundant power input, industrial standard voltage DC24V, consumption is less than 4W, With DC1500V voltage isolation and reverse connect protection, adopt 5 cores 5.08mm industrial terminal port (please use industrial standard power, otherwise it will occur unit error or damage).

### Protection

- Relay: Fieldbus ports error Relay alarm output
- Contact rating: 1A @24V DC, Industrial Terminal port

### Mechanical

- Dimensions (H×D×W): 136mm×104.8mm×52.8mm
- Weight: 800g
- Casing: IP40 protection, wave grain aluminum reinforce case option
- Installation: Wall mounting or DIN rail mounting

### Environmental

- Operating Temperature: -40 °C ~75 °C (-40 °C ~85 °C optional)
- Storage Temperature: -40°C~85°C
- Ambient Relative Humidity: 5%~95%(non-condensing)

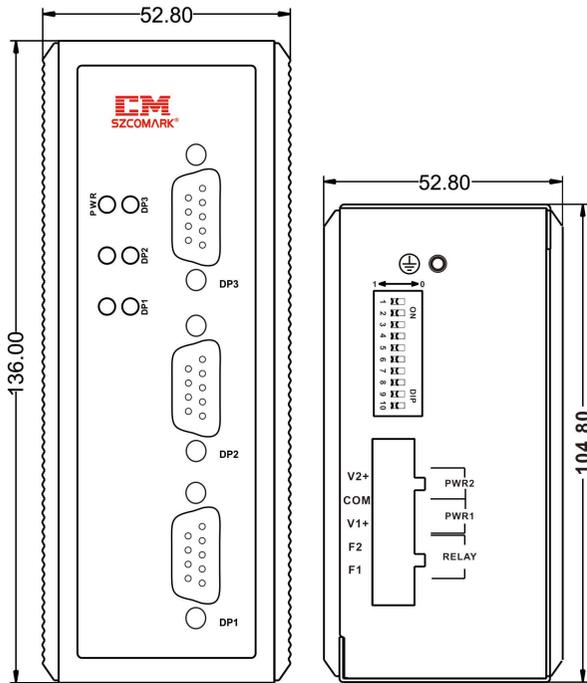
### Warranty

- Warranty Period: 5 years

**Certifications**

- IEC61000-4-2(ESD): Power ±2KV Contact, ±15KV Air; Relay ±2KV Contact, ±15KV Air; Data Cable ±15KV Air
- IEC61000-4-4(EFT):Power ±4KV, Data Cable ±4KV
- IEC61000-4-5(Surge):Power ±2KV CM/ ±1KV DM, Relay±2KV CM/ ±1KV DM
- IEC60068-2-27(Shock)
- IEC60068-2-32(Free Fall)
- IEC61000-6-2(General Industrial Standard)
- EN50121-4 (rail transit)

**Overall Dimension**



Front view

Top view

**LED Indicators**

LED	state	Description	Alarm
PWR	off	Non-connect or error	No
	Green light	Power is ok	No

	Red light	Power Error	No
DP1-3	off	Fieldbus is closed	No
	Red light	The following conditions are called copper link failure: 1. No data received within 2 seconds on corresponding electric port. 2. Wrong setted.	Yes
	Red shine	Electric port fault but has data sending	Yes
	Green light	Copper port is normal	No
	Green shine	Copper port is normal, can received data	No

**Terminal Resistor**

Resistor is to eliminate the effect of the signal reflected in communication cable, in Actual configuration, the Terminal resistors of the two ends of line should be on the state of "ON", the ones of intermediate node should be on the state of "OFF", otherwise, it may make communication error. Suggest to use Profibus-DP standard connector and line.

**Connection**

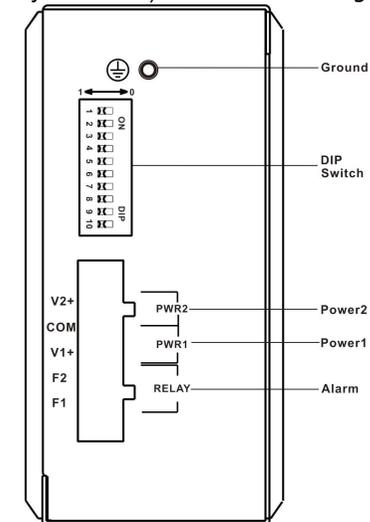
1. Bus cable wiring methods: electrical interface is a 9-pin Sub-D socket connector; the connector has a lock for fixing. Pin definition conforms to Profibus-DP standard, using Profibus-DP dedicated fast connector plug for connecting to this interface here suggested, please don't connect the opened and unused cable to bus.

Profile	Subscript	Signal type	Definition
	1	Shield	Shield or protected area
	2	-	-
	3	RxD/TxD-P	Data line B
	4	-	-
	5	Ground	Data reference potential(ground)

			d)
6	+5V Output		Supply voltage (+5V)
7	-		-
8	RxD/TxD-N		Data line A
9	-		-

2. Power and Relay alarm output connection:

- this device supports dual redundant input, V1 +, V2 + respectively connect the anode of power supply (DC9~36V), COM with cathode (double power sharing).
- Relay alarm output connection: F1, F2 in normal open. When the alarm is closed, make F1, F2 both contacted in series with external alarm circuit (e.g., buzzer, etc.).(When there is no electricity on device, the relay is closed.) As shown in the figure below.

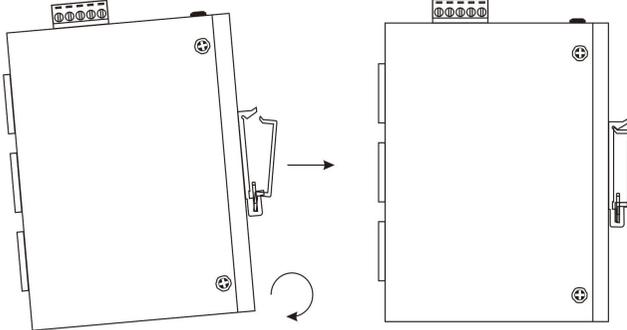


**DIN-Rail Installation**

In order to use in industrial environments expediently, Ci-PP21 adopt 35mm DIN-Rail installation, the installation steps as follows:

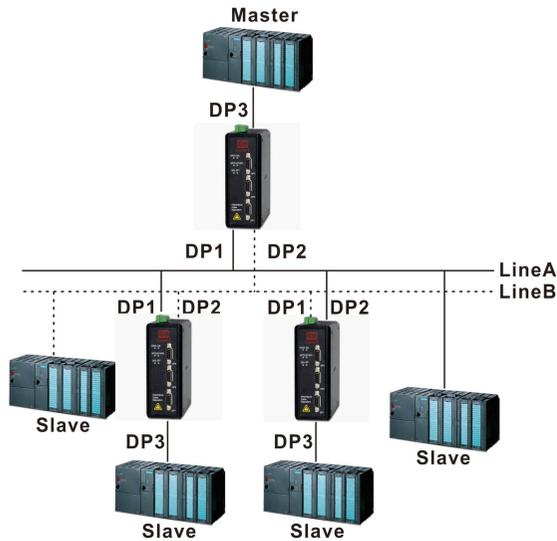
- Step 1: Examine the DIN-Rail attachment
- Step 2: Examine DIN Rail whether be firm and the position is suitability or not.
- Step 3: insert the bottom of the DIN-RAIL into the slot, then insert the top of the DIN-RAIL into the slot.
- Step 4: after insert the DIN-RAIL into the slot, check the

device is installed into the slot firmly.

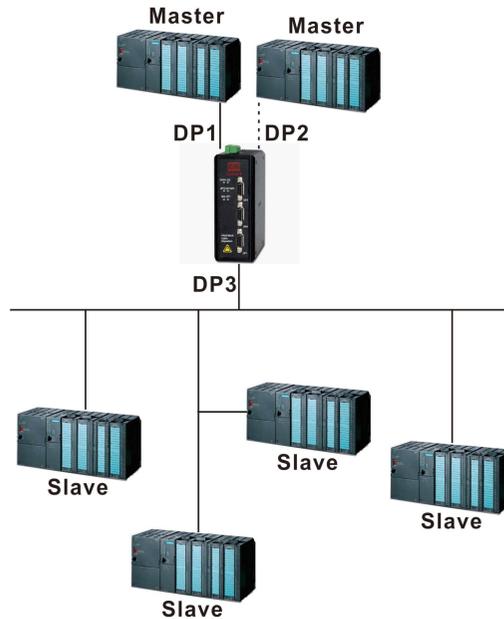


### Typical Application

Convert the simple and non-redundant Profibus bus into two corresponding redundant buses



Redes the dual master station into a single bus structure



### Troubleshooting

Fault Symptoms	What to Do
PWR off	Check and ensure the power supply meets the requirement, and terminal wiring is correct or not.
PWR Red light	Device working error
DP1~3 Off	Check received data conform to transmit data from bus or not.
DP1~3 Red shine	Check received data conform to transmit data from bus or not.
LED Normal, can't communicate	Check the systems time delay spec meet the fieldbus standard, please note the unit time delay addition effect, please modify PLC parameter.

### Package Checklist

Please check accessories completely when open the box.

Packing list is as follows:

- Profibus-DP Link Redundant Module(with industrial terminal block for power equipment)

- Product specification
- Product warranty card

### Cautions

- Please use DC24V Industrial standard power. Please use 0.75mm<sup>2</sup> above quality copper line.
- When relay alarm output, the voltage and current can exceed the rated one(1A@24VDC), otherwise, it will damage the unit.
- This device is precision communication instruction, please insure its ground connection well, the device ground connection is via the landing screw on the sideboard, please use the professional landing line, which is less than 2.5 mm<sup>2</sup>, and landing resistor is less than 50hms.

### Order Information

Part No.	Product series	Description
Ci-PP21	3*copper	Profibus bus link redundancy module, 1 M port (DP3), 2 redundant bus A (DP1), B (DP2) port, DIP switch setting rate or rate adaptive option.

Attached List (Ci-PP21 series Baud rate switch set)

SW	Function
S1	=1(default) enable DP1 Fieldbus alarm output
	=0 disable DP1 Fieldbus error alarm output
S2	=1(default) enable DP2 Fieldbus alarm output
	=0 disable DP2 Fieldbus error alarm output
S3	=1(default) enable DP3 Fieldbus alarm output
	=0 disable DP3 Fieldbus error alarm output

S4...S7	=0000 set DP bus rate as 9.6Kbps =0001 set DP bus rate as 19.2Kbps =0010 set DP bus rate as 45.45Kbps =0011 set DP bus rate as 93.75Kbps =0100 set DP bus rate as 187.5Kbps =0101 set DP bus rate as 500Kbps =0110 set DP bus rate as 1.5Mbps =0111 set DP bus rate as 3Mbps =1000 set DP bus rate as 6Mbps =1001 set DP bus rate as 12Mbps =1111 set DP rate adaptive
S8...S10	Unused

备注: Electrical interface rate set by DIP switch SW [4...7], Recommend to choose fixed rate. It has to set a fixed rate on slave station.