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5011693601-RPD1

RTU-PD01

Instruction Sheet

安 裝 說 明

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PROFIBUS DP Slave Communication Module
 PROFIBUS DP 從站通訊模組
 PROFIBUS DP 从站通讯模块

Specifications

PROFIBUS DP Port

| | |
|----------------------|-----------------------------|
| Interface | DB9 connector |
| Transmission method | High-speed RS-485 |
| Transmission cable | Shielded twisted pair cable |
| Electrical isolation | 500VDC |

Communication

| | |
|--|---|
| Message type | Cyclic data exchange |
| Module name | RTU-PD01 |
| GSD document | DELA09B9.GSD |
| Product ID | 09B9(HEX) |
| Serial transmission speed supported (auto-detection) | 9.6kbps; 19.2kbps; 93.75kbps; 187.5kbps; 500kbps; 1.5Mbps; 3Mbps; 6Mbps; 12Mbps (bits per second) |

Electrical Specification

| | |
|----------------------|--------|
| Power supply voltage | 24VDC |
| Insulation voltage | 500VDC |
| Power consumption | 2.5W |
| Weight | 90g |

Environment

| | |
|--------------------------|--|
| Noise immunity | ESD(IEC 61131-2,IEC 61000-4-2): 8kV Air Discharge EFT(IEC 61131-2,IEC 61000-4-4): Power Line:2kV,Digital Input:±2kV Communication I/O: ±2kV Conducted Susceptibility Test (EN61000-4-6, IEC 61131-2 9.10): 150kHz ~ 80MHz,10V/m RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m Operation: 0°C ~ 50°C (temperature); 5 ~ 90% (humidity); pollution degree 2 Storage: -25°C ~ 70°C (temperature); 5 ~ 95% (humidity) |
| Storage/operation | Storage: -25°C ~ 70°C (temperature); 5 ~ 95% (humidity) |
| Shock/vibration immunity | International standards: IEC 61131-2,IEC 68-2-6 (TEST Fc) IEC 61131-2& IEC 68-2-27 (TEST Ea) |

Components

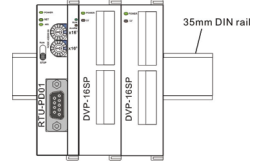
RUN/STOP Switch

| Status | Description |
|------------|---|
| RUN → STOP | 1. Special I/O module switches from RUN to STOP 2. All Y points on digital output module turn OFF. 3. Modbus function switch 4. RUN LED goes off. |
| STOP → RUN | 1. RTU-PD01 re-detects the number of digital I/O points and special I/O modules. 2. Special I/O module switches from STOP to RUN. 3. Enable digital I/O modules. 4. Enable Modbus function. 5. RUN LED goes on. |



Installing RTU-PD01 & I/O Module on DIN Rail

- Use 35mm DIN rail.
- Open the DIN rail clips on RTU-PD01 and I/O module. Insert RTU-PD01 and I/O module on the DIN rail.
- Clip up the DIN rail clips on RTU-PD01 and I/O module to fix them on the DIN rail.



LED Indicator & Trouble-shooting

There are 5 LED indicators on RTU-PD01: POWER, NET, RS-485, RUN and ALARM.

POWER LED

POWER LED displays whether the power supply on RTU-PD01 is working normally.

| LED status | Indication | How to correct |
|----------------|-----------------|--------------------------------------|
| Green light on | Normal | -- |
| Off | No power supply | Check if the power supply is normal. |

NET LED

NET LED displays whether the communication between RTU-PD01 and PROFIBUS DP master is working normally.

| LED status | Indication | How to correct |
|-------------------|--|--|
| Green light on | Normal | -- |
| Red light on | RTU-PD01 is not connected to the master. | 1. Check if RTU-PD01 is connected to PROFIBUS DP bus. 2. Check if the communication cable between RTU-PD01 and PROFIBUS DP master is in normal status. 3. Check if the actual address of RTU-PD01 is consistent with the one set in the master configuration software. |
| Red light flashes | RTU-PD01 setting or configuration error. | 1. Check if the PROFIBUS address of RTU-PD01 is between 1 and 126 (decimal). 2. Check if the I/O modules actually connected to RTU-PD01 and their order are consistent with the software configuration. |

RS-485 LED

RS-485 LED displays whether the RS-485 communication between RTU-PD01 and Modbus device connected is working normally.

| LED status | Indication | How to correct |
|---------------------|---|--|
| Green light on | Normal | -- |
| Green light flashes | The Modbus function has not been enabled, or no Modbus slave is configured | -- |
| Red light on | All Modbus slaves are off-line. | Check if the RS-485 cable is working normally, or the communication format is correct. |
| Red light flashes | The RS-485 communication with part of the Modbus devices connected is abnormal. | Check if the part of the RS-485 devices connected have not responded or responded incorrectly. |

RUN LED

RUN LED displays whether RTU-PD01 is operating or in stop status.

| RUN status | Indication |
|----------------|-----------------------------|
| Green light on | RTU-PD01 is operating. |
| Off | RTU-PD01 is in stop status. |

ALARM LED

ALARM LED displays whether the right-side special I/O module is working normally and the power supply is sufficient.

| LED status | Indication | How to correct |
|---|----------------------------------|--|
| Off | Normal | -- |
| Red light on | DC24V power supply is sufficient | Check if the power supply is overload |
| Red light slowly flashes (on 0.5s and off 0.5s) | Error in special I/O module | Please refer to the explanations on error registers for special I/O module in "DVP-PLC Application Manual - Special Modules" |
| Red light fast flashes (on 0.3s and off 0.3s) | Special I/O module is off-line | 1. Check if the power supply on special I/O module is normal. 2. Check if the connection between RTU-PD01 and special module is working normally. |

注意事項

- 此安裝手冊僅提供電氣規格、一般規格、安裝及配線等說明。
- 本機為開放式 (OPEN TYPE) 機殼，因此使用者使用本機時，必須將之安裝於具防塵、防潮及免於電擊 / 衝擊意外之屏蔽配線箱內，另外，必須具備保護措施 (如：將機之工具或鑰匙才可打開)，防止非維護人員操作或意外衝擊本體，造成危險及損壞。
- 配線時請務必先關閉電源，且於上電前再次確認電源配線，並請勿在上電時觸摸任何端子。
- 輸入電源切斷後，在一分鐘之內，請勿觸摸內部電路。
- 交流輸入電源不可連接於輸入 / 輸出信號端，否則可能造成嚴重損壞。
- 本體上的接地端子 ❸ 務必正確的接地，以提高產品抗干擾能力。

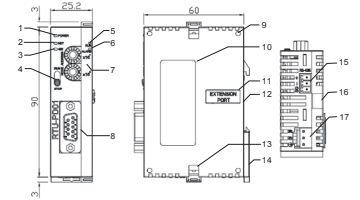
產品簡介

感謝您使用台達 RTU-PD01 網路通訊模組。RTU-PD01 定義為 PROFIBUS DP 從站通訊模組，由直流 24V 電源供電。RTU-PD01 右側可連接 Slim 系列特殊輸入輸出模塊，其 RS-485 通訊埠可連接標準的 Modbus 從站。

功能特色

- 支持 PROFIBUS DP 週期性資料傳輸
- 自動偵測通訊速率，最高通訊速率支援 12Mbps。
- 自診斷功能
- RTU-PD01 右側最多可接 8 台 Slim 系列特殊輸入 / 輸出模塊，及 32 台數位輸入輸出模塊 (數位輸入和輸出點最多可達 256 點)。
- RTU-PD01 的 RS-485 通訊口最多可以接 16 台標準的 Modbus 從站
- I/O 資料最大支援 100 個位元組輸出和 100 個位元組輸入。

產品外觀



- 1. POWER 指示燈
- 2. NET 指示燈
- 3. RS-485 指示燈
- 4. RUN/STOP 開關
- 5. RUN 指示燈
- 6. ALARM 指示燈
- 7. 位址設定開關
- 8. PROFIBUS DP 通訊連接埠
- 9. I/O 模組定位孔
- 10. 銘牌說明
- 11. I/O 模組連接埠
- 12. DIN 導軌槽 (35mm)

- 13. I/O 模組固定扣
- 14. DIN 導軌固定扣
- 15. RS-485 通訊口
- 16. I/O 模組固定槽
- 17. DC24V 電源介面

功能規格

PROFIBUS DP 通訊連接埠

| | |
|------|------------|
| 接頭 | DB9 接頭 |
| 傳輸方式 | 高速的 RS-485 |
| 傳輸電纜 | 屏蔽雙絞線 |
| 電氣隔離 | 500VDC |

通訊

| | |
|-----------------|--|
| 資訊類型 | 週期性資料交換 |
| 模組名稱 | RTU-PD01 |
| GSD 文件 | DELA09B9.GSD |
| 產品 ID | 09B9 (HEX) |
| 支援串列傳輸速度 (自動偵測) | 支持 9.6kbps; 19.2kbps; 93.75kbps; 187.5kbps; 500kbps; 1.5Mbps; 3Mbps; 6Mbps; 12Mbps (位 / 秒) |

電氣規格

| | |
|------|--------|
| 電源電壓 | 24VDC |
| 絕緣電壓 | 500VDC |
| 消耗電力 | 2.5W |
| 重量 | 90g |

環境規格

| | |
|-----------|---|
| 體積免疫力 | ESD(IEC 61131-2,IEC 61000-4-2): 8kV Air Discharge EFT(IEC 61131-2,IEC 61000-4-4): Power Line: ±2kV,Digital Input: ±2kV Communication I/O: ±2kV Conducted Susceptibility Test (EN61000-4-6, IEC 61131-2 9.10): 150kHz ~ 80MHz,10V/m RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m |
| 操作 / 儲存環境 | 操作: 0°C ~ 50°C (溫度); 5 ~ 90% (濕度); 污染等級 2 儲存: -25°C ~ 70°C (溫度); 5 ~ 95% (濕度) |
| 耐振動 / 衝擊 | 國際標準規格: IEC 61131-2, IEC 68-2-6 (TEST Fc) IEC 61131-2& IEC 68-2-27 (TEST Ea) |

各部份元件介紹

RUN/STOP 開關

| 狀態 | 說明 |
|-------------|--|
| RUN 燈至 STOP | 1. 特殊輸入 / 輸出模組由 RUN 切换到 STOP 狀態 2. 數位輸出模組的 Y 點全部變為 OFF 狀態 |

Warning

- This instruction sheet only provides introductory information on electrical specification, functions, installation and wiring.
- RTU-PD01 is an OPEN-TYPE device and therefore should be installed in an enclosure free of airborne dust, humidity, electric shock and vibration. The enclosure should prevent non-maintenance staff from operating the device (e.g. key or specific tools are required to open the enclosure) in case danger and damage on the device may occur.
- Switch off the power before wiring. Check all the wiring again before switching on the power. DO NOT touch any terminal when the power is switched on.
- DO NOT touch the internal circuit in one minute after the power is switched off.
- DO NOT connect input AC power supply to any of the I/O terminals; otherwise serious damage may occur.
- Make sure the ground terminal ❸ is correctly grounded in order to prevent electromagnetic interference.

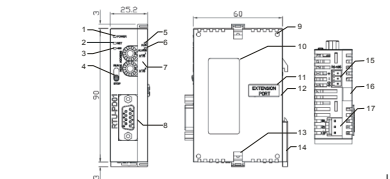
Introduction

Thank you for choosing Delta RTU-PD01 PROFIBUS DP Slave Communication Module. The power is supplied by the DC 24V power supply. The right side of RTU-PD01 is connectable with DVP-Slim series digital and analog I/O modules, and the RS-485 COM port is connectable to standard Modbus slave station.

Features

- Supports PROFIBUS DP cyclic data transmission.
- Auto-detects baud rates; supports Max 12Mbps.
- Self-diagnosis
- Able to connect to max. 8 DVP-Slim type special I/O modules and 32 digital I/O modules (max. 256 points) at right side.
- The RS-485 COM port is able to connect to max. 16 standard Modbus slave stations.
- Supports max. 100 bytes of data input and 100 bytes of data output.

Product Profile & Outline



- 1. POWER indicator
- 2. NET indicator
- 3. RS-485 indicator
- 4. RUN/STOP switch
- 5. RUN indicator
- 6. ALARM indicator
- 7. Address setup switch
- 8. PROFIBUS DP COM port
- 9. I/O module positioning hole
- 10. Nameplate
- 11. I/O module connection port
- 12. DIN rail (35mm)
- 13. I/O module fixing clip
- 14. DIN rail fixing clip
- 15. RS-485 COM port
- 16. I/O module fixing notch
- 17. DC24V power supply interface

Address Setup Switch

The two rotary address setup switches, x16² and x16¹, set up the node address of RTU-PD01 on PROFIBUS DP network in hex form. The range for rotation is 0 ~ F (see below more details).

| Address | Definition |
|-----------------|--|
| H1 ~ H7D | Valid PROFIBUS address |
| H0 or H7E ~ HFF | Invalid PROFIBUS address. NET LED will flash in red color if the node address falls within this range. |



Example: If you need to set the node address of RTU-PD01 to 26 (decimal), simply switch x16² switch to "1" and x16¹ to "A". 26 (decimal) = 1A (hex) = 1x16² + 1x16¹.

- Note:**
- Please switch off the power supply before setting up the node address of RTU-PD01. Re-power the module after the setup is completed.
 - Changing the value on the switch during the operation of RTU-PD01 is invalid.
 - Use slot type screwdriver to set up the switch. Be careful not to scratch the module.

Installation

Definition of PROFIBUS DP Port

| PIN | PIN name | Definition |
|-----|-----------|-----------------------------|
| 1 | - | Not defined |
| 2 | - | Not defined |
| 3 | Rxd/Txd-P | Sending/receiving data P(B) |
| 4 | - | Not defined |
| 5 | DGND | Data reference potential |
| 6 | VP | Power voltage - positive |
| 7 | - | Not defined |
| 8 | Rxd/Txd-N | Sending/receiving data N(A) |
| 9 | - | Not defined |



Connecting to PROFIBUS DP Port

Insert the PROFIBUS DP bus connector into the PROFIBUS DP port on RTU-PD01. Screw it tight to ensure RTU-PD01 and the PROFIBUS DP are properly connected.

