

IFD9503

Instruction Sheet 安裝說明 安装说明

CANopen Slave Communication Module

CANopen 從站通訊模組

CANopen 从站通讯模块



Communication

Message type	PDO, SDO, SYNC (synchronous object), Emergency (emergency object), NMT
Series transmission speed	10k, 20k, 50k, 125k, 250k, 500k, 800k, 1M bps (bits per second)
Equipment type	0 (Non-Profile)
Company ID	477 (Delta Electronics, Inc.)

Electrical Specifications

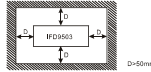
Voltage	11 ~ 25VDC
Current	28mA (typical), 125mA impulse current (24VDC)

Environment

Standards	IEC 61131-2, UL508
Storage/operation	Storage: -25°C ~ 70°C (temperature), 5 ~ 95% (humidity) Operation: 0°C ~ 55°C (temperature), 5 ~ 95% (humidity), pollution degree 2
Shock/vibration immunity	International Standards: IEC 61131-2, IEC 68-2-6 (TEST Fc)/IEC 61131-2 & IEC 68-2-27 (TEST Ea)
Interference immunity	RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1000MHz, 10V/m EFT (IEC 61131-2, IEC 61000-4-4): Analog & Communication I/O: 1KV ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge
Certificates	CE, UL

Installation & Wiring

- Install IFD9503 in an enclosure with sufficient space around it to allow heat dissipation (see the figure).
- DO NOT place the I/O signal wires and power supply wire in the same wiring circuit.



- Use 28-12AWG (1.5mm) single or multiple core wire on I/O wiring terminals. See the figure for its specification.
- The terminal screws shall be tightened to 4.75 kg-cm (4.12 in-lbs).
- Use 60°C /75°C copper wires only.

Components

CANopen Connector

To connector with CANopen, use the connector enclosed with IFD9503 or any connectors you can buy in the store for wiring.

PIN	Signal	Description
1	V-	0VDC
2	CAN_L	Signal-
3	SHIELD	Shielded cable
4	CAN_H	Signal+
5	V+	24VDC



Warning

This instruction only provides introductory information on electrical specifications, functions, wiring, trouble-shooting and peripherals for IFD9503. Details of CANopen protocol are not included in this sheet. For more information on CANopen protocol, please refer to relevant reference or literatures.

IFD9503 is an OPEN-TYPE device and therefore should be installed in an enclosure free of airborne dust, humidity, electric shock and vibrations. 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.

IFD9503 is used for controlling the operating machine and equipment. In order not to damage it, only qualified professional staff familiar with the structure and operation of IFD9503 can install, operate, wire and repair it.

Please read this instruction sheet carefully before use and follow the sheet to operate IFD9503 in order to prevent damages on the device or injuries to staff.

DO NOT connect input AC power supply to any of the I/O terminals, otherwise serious damage may occur. Check all the wiring again before switching on the power and DO NOT touch any terminal when the power is switched on. Make sure the ground terminal is correctly grounded in order to prevent electromagnetic interference.

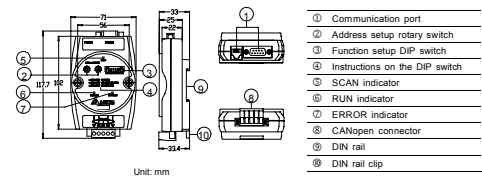
Introduction

Thank you for choosing Delta IFD9503 CANopen slave station communication module. IFD9503 can be applied to the connection between CANopen network and Delta's programmable logic controller, AC motor drive, servo drive, temperature controller and human machine interface. In addition, the customized and one-to-many functions of IFD9503 allow the customized devices with MODBUS protocol to be connected to the CANopen network. The one-to-many function allows max. 15 MODBUS protocol compliant devices to be connected to the CANopen network.

Functions & Services Supported

- CAN2.0A protocol
- Process Data Object (PDO)
- Service Data Object (SDO)
- CANopen DS301 V4.02
- Network Management (NMT)

Product Profile & Outline



- Communication port
- Address setup rotary switch
- Function setup DIP switch
- Instructions on the DIP switch
- SCAN indicator
- RUN indicator
- ERROR indicator
- CANopen connector
- DIN rail
- DIN rail clip

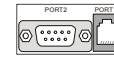
Specifications

CANopen Connector

Transmission method	CAN
Electrical isolation	50VDC
Type	Removable connector (5.08mm)
Transmission cable	2 communication cables, 2 power cables and 1 shielded cable

Communication Ports on IFD9503

The communication ports on IFD9503 are used for the connection with other equipments (Delta PLC, AC motor drive, temperature controller, servo drive, HMI and custom equipments).



PORT 1

PORT 1 Sketch	Terminal No.	Description
	1	N.C.
	2	GND
	3	DATA-
	4	DATA+
	5	N.C.
	6	N.C.

Note: PORT 1 supports RS-485 communication mode only.

PORT 2

PORT 2 Sketch	Terminal No.	RS-232	RS-485
	1	N.C.	N.C.
	2	RXD	N.C.
	3	TXD	DATA-
	4	N.C.	N.C.
	5	GND	N.C.
	6	N.C.	N.C.
	7	N.C.	DATA+
	8	N.C.	N.C.
	9	N.C.	N.C.

Note: PORT 2 supports RS-232 and RS-485 communication mode only.

LED Indicators & Troubleshooting

RUN LED

LED Status	Indication	How to deal with it
OFF	No power	Check the power of IFD9503 and make sure the connection is normal.
Green light single flash	Stop	---
Green light blinking	Pre-operation	---
Green light ON	Operating	---
Red light ON	Incorrect node address	Set the node address of IFD9503 to be in the range 1 ~ 127.

ERROR LED

LED Status	Indication	How to deal with it
OFF	No error	IFD9503 operation is normal.
Red light single flash	Bus error and exceeds alarm level	Check if the network connection and the operation environment are normal.

LED Status	Indication	How to deal with it
Red light double flash	Error control event occurs.	Check if the communication between IFD9503 and the master station is normal.
Red light ON	BUS OFF	1. Check if the BUS connection is normal. 2. Re-power IFD9503.

SCAN LED

LED Status	Indication	How to deal with it
OFF	No power	Check the power of IFD9503 and make sure the connection is normal.
Green light flash	The correct information of the equipment connected has not been detected.	Re-connect IFD9503 to the equipment.
Green light ON	The communication with the equipment connected is normal.	---
Red light flash	1. CRC check fails 2. Part of the MODBUS devices connected to IFD9503 is off-line (when IFD9503 in one-to-many mode)	1. Check if the communication cable between IFD9503 and the equipment is correct. 2. Check if there is electromagnetic interference nearby.
Red light ON	1. Connection fails, or no connection 2. Part of the MODBUS devices connected to IFD9503 is off-line (when IFD9503 in one-to-many mode)	1. Check if the communication format of the equipment is correct. 2. Check if IFD9503 and the equipment are correctly connected. 3. Restart the connection and make sure the communication cable meets the specification.

Address Switch

The two rotary address setup switches set up the node addresses on the CANopen network in hexagonal form. Setup range: 01 ~ 7F (00 and 80 ~ FF are forbidden)



Example:

If you need to set the node address of IFD9503 to 26 (16H), simply switch the corresponding rotary switch *16¹ to "1" and the corresponding rotary switch *16² to "A".

Address Setting	Description
01 ~ 7F	Valid CANopen node address
00, 80 ~ FF	Invalid CANopen node address

Note: The changed value on the switch is only valid when IFD9503 is re-powered. When IFD9503 is operating, changing the set value of the communication address will be invalid.

Function Switch

The DIP switch is to be used on the equipment connected to IFD9503, the selection of communication ports and setting up the communication speed of IFD9503 and the master station in CANopen.



Selecting the Equipment Connected to IFD9503

PIN1	PIN2	PIN3	Equipment	PIN1	PIN2	PIN3	Equipment
ON	OFF	OFF	AC motor drive	ON	OFF	ON	Human machine interface
OFF	ON	OFF	PLC	OFF	ON	ON	Custom equipment
ON	ON	OFF	Temperature controller	OFF	OFF	OFF	Many MODBUS devices
OFF	OFF	OFF	Servo drive	ON	ON	ON	For internal system use

Example:

If the equipment connected to IFD9503 is a Delta servo drive, you only need to switch PIN3 of the DIP switch to "ON". PIN1 and PIN2 to "OFF" and re-power IFD9503.

Note: The changed setting of the DIP switch is only valid when IFD9503 is re-powered. When IFD9503 is operating, changing the setting of the DIP switch will be invalid.

Selecting IFD9503 Communication Mode

PIN4	PIN5	Communication Mode	PIN4	PIN5	Communication Mode
OFF	OFF	RS-485	ON	OFF	Incorrect setting
ON	ON	RS-232	OFF	ON	Incorrect setting

Note: The changed setting of the communication mode is only valid when IFD9503 is re-powered. When IFD9503 is operating, changing the setting of the communication mode will be invalid.

Setting up Baud Rate

PIN6	PIN7	PIN8	Baud Rate	PIN6	PIN7	PIN8	Baud Rate
OFF	OFF	OFF	10kbps	ON	OFF	ON	250kbps
ON	OFF	OFF	20kbps	ON	OFF	ON	500kbps
OFF	ON	OFF	50kbps	OFF	ON	ON	800kbps
ON	ON	OFF	125kbps	ON	ON	ON	1Mbps

Note: The changed setting of the baud rate of CANopen is only valid when IFD9503 is re-powered. When IFD9503 is operating, changing the baud rate will be invalid.

注意事項

本使用說明書僅提供電線規格、功能規格、安裝配線、故障排除及周邊裝置的說明，請手冊作為 IFD9503 操作指南入門參考。CANopen 協定的詳細內容並未介紹，若想要瞭解更多關於 CANopen 協定的內容，請參閱相關專業文章或書籍資料。

本機為開放型 (OPEN TYPE) 機殼，因此使用者使用本機時，必須將之安裝於其防塵、防潮及免受電擊、衝擊意外之外觀配箱內，另必須具備保護措施 (如：特殊的工具或鑰匙才可打開) 防止非專業人員操作或造成對衝擊本體，造成危險及損壞。

本產品用來控制運轉中的機械及設備，為了避免損壞本產品，只有合格且熟悉本產品的結構及操作的專業人員才可以安裝、操作、配線及維修本產品。

請務必仔細閱讀本使用手冊，並依照本手冊指示進行操作，以免造成產品受損，或導致人員受傷。

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，請在上電之前再次確認電源配線，請勿在上電時觸摸任何端子，本體上的接地端子務必正確的接地，可提高產品抗幹擾能力。

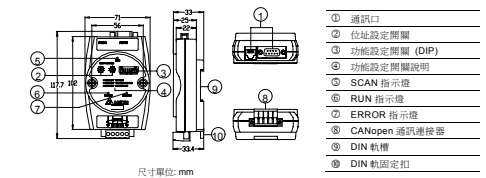
產品簡介

謝謝您使用台灣 DELTA IFD9503 模組，IFD9503 定義為 CANopen 從站通訊模組，用於將台達可程式控制器、台達變頻器、台達伺服驅動器、台達溫控制器以及台達人機介面接入 CANopen 網路；此外，IFD9503 還提供自定義功能和一對多功能，自定義功能用於符合 MODBUS 協定的自定義設備接入 CANopen 網路，一對多功能用於將最多 15 個符合 MODBUS 協定的設備接入 CANopen 網路。

支援的功能與服務

- CAN2.0A 協定
- 處理資料物件 (PDO)
- 服務資料物件 (SDO)
- CANopen DS301 V4.02
- 網路管理物件 (NMT)

產品外觀及各部介紹



- 通訊口
- 位址設定開關
- 功能設定開關 (DIP)
- 功能設定開關說明
- SCAN 指示燈
- RUN 指示燈
- ERROR 指示燈
- CANopen 通訊連接器
- DIN 軌槽
- DIN 軌固定扣

功能規格

CANopen 連接器

傳輸方式	CAN
電氣隔離	50VDC
接口	可插拔式連接器 (5.08mm)
傳輸電纜	2 條通訊線、2 條電源線和 1 條屏蔽線

通訊

資訊類型	PDO、SDO、SYNC (同步物件)、Emergency (緊急物件)、NMT
串列傳輸速率	支援 10k、20k、50k、125k、250k、500k、800k、1M bps (位元/秒)
設備類型	0 (Non-Profile)
廠商 ID	477 (台達電子)

電氣規格

電壓規格	11 ~ 25VDC
電流規格	28mA (典型值)、125mA 衝擊電流 (24VDC)

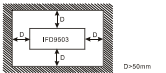
環境規格

標準	IEC 61131-2, UL508 標準
操作 / 儲存環境	儲存：-25°C ~ 70°C (溫度)、5 ~ 95% (濕度) 操作：0°C ~ 55°C (溫度)、5 ~ 95% (濕度)、污染等級 2
耐振動 / 衝擊	國際標準規範 IEC 61131-2, IEC 68-2-6 (TEST Fc)/IEC 61131-2 & IEC 68-2-27 (TEST Ea)
雜訊免疫力	RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1000MHz, 10V/m EFT (IEC 61131-2, IEC 61000-4-4): Analog & Communication I/O: 1KV ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge
認證項目	CE 認證、UL 認證

盤內安裝及配線

IFD9503 在安裝時，請裝配於封閉式之控制箱內，其周圍應保持一定之空間 (如右圖所示)，以確保 IFD9503 散熱功能正常。

在配線時請將輸入點信號線與輸出點或電源等動力線配置於同一線槽內。

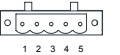


各部元件介紹

CANopen 通訊連接器

與 CANopen 傳感線連接，可使用 IFD9503 隨機附帶的連接器或者市售的連接器進行配線。

接腳	信號	線色
1	V-	0VDC
2	CAN_L	Signal-
3	SHIELD	屏蔽線
4	CAN_H	Signal+
5	V+	24VDC



■ 位址設定開關

兩個旋轉式位址設定開關以 16 位元形式設定 CANopen 網路上的節點地址。...



範例：用戶需要將 IFD9503 的節點地址設置為 26 (H1A)。...

Table with 3 columns: 地址設定, 說明, 01 ~ 7F (有效的 CANopen 通訊地址), etc.

注意：位址設定開關的設定值變化後，只有等 IFD9503 重新上電後才會生效...

■ 功能設定開關(DIP)

功能設定開關用於設置 IFD9503 所連接的下位設備類型、通訊口的選擇...



▶ IFD9503 連接設備的選擇

Table with 4 columns: 接腳 1, 接腳 2, 接腳 3, 下位設備, ON/OFF settings for 變頻器, 可程式控制器, 溫控制器, 伺服驅動器等。

範例：IFD9503 連接的下位設備為伺服驅動器，只需將功能設定開關的接腳 3 撥至 ON 位置...

注意：IFD9503 的功能設定開關設定值變化後，只有等 IFD9503 重新上電後才會生效...

▶ IFD9503 通訊模式的選擇

Table with 3 columns: 接腳 4, 接腳 5, 通訊模式, ON/OFF settings for RS-485, RS-232.

注意：通訊模式的設定值變化後，只有等 IFD9503 重新上電後才會生效...

▶ 通訊速率的設定

Table with 4 columns: 接腳 6, 接腳 7, 接腳 8, 通訊速率, ON/OFF settings for 10kbps, 20kbps, 50kbps, 125kbps, 1Mbps.

注意：CANopen 通訊速率的設定值變化後，只有等 IFD9503 重新上電後才會生效...

■ IFD9503 通訊埠

IFD9503 的通訊埠用於與下位設備(台灣可程式控制器、台灣变频器、台灣溫...



▶ 通訊埠 PORT 1

Table with 3 columns: PORT 1 示意圖, 端子 No., 說明, showing pin connections for DB9 male.

注意：該通訊埠只支援 RS-485 通訊模式，不支援其他通訊模式。

▶ 通訊埠 PORT 2

Table with 4 columns: PORT 2 示意圖, 端子 No., RS-232, RS-485, showing pin connections for DB9 male.

注意：該通訊埠支援 RS-232 通訊方式和 RS-485 通訊模式，不支援其他通訊模式。

LED 燈指示說明及故障排除

IFD9503 有三個 LED 指示燈，RUN LED、ERROR LED 和 SCAN LED，用來顯示 IFD9503 的通訊連接狀態。

■ RUN LED 燈顯示說明

Table with 4 columns: LED 燈狀態, 顯示說明, 處理方法, 燈滅, 綠燈閃爍, 綠燈閃爍, 綠燈亮, 紅燈亮.

■ ERROR LED 燈顯示說明

Table with 4 columns: LED 燈狀態, 顯示說明, 處理方法, 燈滅, 紅燈常閃.

Table with 4 columns: LED 燈狀態, 顯示說明, 處理方法, 紅燈雙閃, 紅燈亮.

■ SCAN LED 燈顯示說明

Table with 4 columns: LED 燈狀態, 顯示說明, 處理方法, 燈滅, 紅燈閃爍, 紅燈亮.

■ 通訊

Table with 2 columns: 信息類型, 值, PDO, SDO, SYNC, Emergency, NMT, 串行傳輸速率, 設備類型, 廠商 ID.

■ 电气规格

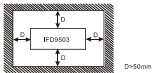
Table with 2 columns: 电压规格, 11 ~ 25VDC, 电流规格, 28mA (典型值), 125mA 冲击电流 (24VDC).

■ 环境规格

Table with 2 columns: 标准, IEC 61131-2, UL508 标准, 操作/储存环境, 耐冲击/振动, 噪声免疫度, 认证项目.

● 盘内安装及布线

- IFD9503 在安装时，请配合封闭式控制箱内，其周围应保持一定空间... IFD9503 端子螺丝扭力为 4.75 kg-cm...



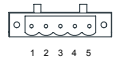
- 输出/入配线端请适用 28-12AWG (1.5mm) 单芯裸线或多芯线... IFD9503 端子螺丝扭力为 4.75 kg-cm (4.12 in-lbs).

● 各组件介绍

■ CANopen 通讯连接器

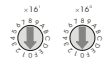
与 CANopen 总线连接。可使用 IFD9503 随机附带的连接器或者市售的连接器进行配线。

Table with 3 columns: 接脚, 信号, 叙述, showing connections for CAN_L, SHIELD, CAN_H, V+.



■ 地址设定开关

两个旋转式地址设定开关以 16 进制形式设定 CANopen 网络上的节点地址。...



范例：用戶需要將 IFD9503 的节点地址設置為 26 (H1A)。...

Table with 3 columns: 地址設定, 說明, 01 ~ 7F, 00, 80 ~ FF.

注意：地址设定开关的设定值变化后，只有等 IFD9503 重新上电启动后才会生效...

■ 功能设定开关(DIP)

功能设定开关用于设置 IFD9503 所连接的下位设备类型、通讯口的选择以及 IFD9503 与 CANopen 主站通讯速率的设定。



▶ IFD9503 连接设备的選擇

Table with 4 columns: 接腳 1, 接腳 2, 接腳 3, 下位設備, ON/OFF settings for 變頻器, 可程式控制器, 溫控制器, 伺服驅動器等。

范例：IFD9503 連接的下位設備為伺服驅動器，只需將功能设定开关的接腳 3 撥至 ON 位置...

注意：IFD9503 的功能设定开关设定值变化后，只有等 IFD9503 重新上电启动后才会生效...

■ IFD9503 通讯模式的選擇

Table with 3 columns: 接腳 4, 接腳 5, 通訊模式, ON/OFF settings for RS-485, RS-232.

注意：通訊模式的設定值變化後，只有等 IFD9503 重新上電啟動後才會生效...

▶ 通訊速率的設定

Table with 4 columns: 接腳 6, 接腳 7, 接腳 8, 通訊速率, ON/OFF settings for 10kbps, 20kbps, 50kbps, 125kbps, 1Mbps.

注意：CANopen 通訊速率的設定值變化後，只有等 IFD9503 重新上電啟動後才會生效...

⚠ 注意事項

- 本使用说明书仅提供供电线路、功能规格、安装配线、故障排除及用途设置等的说明。... 本柜体为开放式 (OPEN TYPE) 柜壳。... 本产品由未控制运转中的机械及设备。...

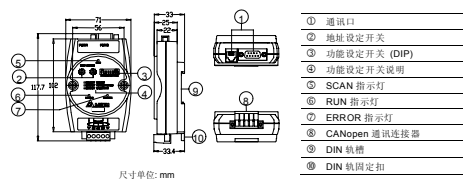
● 产品简介

感谢您使用台湾 IFD9503 模块。IFD9503 定义为 CANopen 从站通讯模块，用于将台湾可编程控制器、台湾变频器、台湾伺服驱动器、台湾温控器以及台达人机界面接入 CANopen 网络。

■ 支持的功能和服务

- CAN2.0A 协议, 处理数据对象 (PDO), 服务数据对象 (SDO), CANopen DS3014 V.02, 网络管理对象 (NMT).

■ 产品外观及各部介绍



● 功能规格

■ CANopen 连接器

Table with 2 columns: 传输方式, CAN, 电气隔离, 500VDC, 接头, 可插拔式连接器 (5.08mm), 传输电缆, 2 条通讯线、2 条电源线及 1 条屏蔽线.