

2014-07-02



5011692604-CPD4

# **CMC-PD01**

**Instruction Sheet**

**Bilgi Dökümanı**

**安 裝 說 明**

**安 装 说 明**

**PROFIBUS DP Communication Card**

**PROFIBUS DP Haberleşme Kartı**

**PROFIBUS DP 通訊卡**

**PROFIBUS DP 通讯卡**



Smarter. Greener. Together.

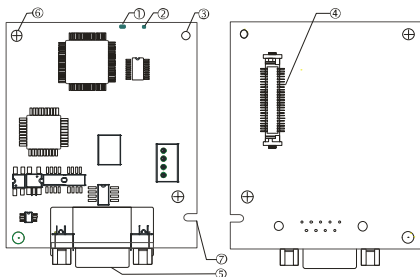
Thank you for choosing Delta CMC-PD01 network communication card. CMC-PD01 is a PROFIBUS DP network communication card for connecting Delta C2000 series, CH2000 series, CP2000, series, CT2000 series, and AFE2000 series AC motor drives to PROFIBUS DP network. No external power supply is required for CMC-PD01. The power will be supplied from the AC motor drive.

- EN ✘ CMC-PD01 is an OPEN-TYPE device. It should be installed in a control cabinet free of airborne dust, humidity, electric shock and vibration. To prevent non-maintenance staff from operating CMC-PD01, or to prevent an accident from damaging CMC-PD01, the control cabinet in which CMC-PD01 is installed should be equipped with a safeguard. For example, the control cabinet in which CMC-PD01 is installed can be unlocked with a special tool or key.
- EN ✘ DO NOT connect AC power to any of I/O terminals, otherwise serious damage may occur. Please check all wiring again before CMC-PD01 is powered up. After CMC-PD01 is disconnected, Do NOT touch any terminals in a minute. Make sure that the ground terminal (⊕) on CMC-PD01 is correctly grounded in order to prevent electromagnetic interference.
- FR ✘ CMC-PD01 est un module OUVERT. Il doit être installé que dans une enceinte protectrice (boîtier, armoire, etc.) saine, dépourvue de poussière, d'humidité, de vibrations et hors d'atteinte des chocs électriques. La protection doit éviter que les personnes non habilitées à la maintenance puissent accéder à l'appareil (par exemple, une clé ou un outil doivent être nécessaire pour ouvrir a protection).
- FR ✘ Ne pas appliquer la tension secteur sur les bornes d'entrées/Sorties, ou l'appareil CMC-PD01 pourra être endommagé. Merci de vérifier encore une fois le câblage avant la mise sous tension du CMC-PD01. Lors de la déconnection de l'appareil, ne pas toucher les connecteurs dans la minute suivante. Vérifier que la terre est bien reliée au connecteur de terre (⊕) afin d'éviter toute interférence électromagnétique.

## ■ Functions

1. Supports PZD control data exchange.
2. Supports PKW polling AC motor drive parameters.
3. Supports user diagnosis function.
4. Auto-detects baud rates; supports Max. 12M bps.

## ■ Product Profile



[Figure 1]

1. NET indicator	5. PROFIBUS DP connection port
2. POWER indicator	6. Screw fixing hole
3. Positioning hole	7. Fool-proof groove
4. AC motor drive connection port	

## ■ Specifications

### ◆ PROFIBUS DP Connector

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

### ◆ Communication

Message type	Cyclic data exchange
Comm. Card name	CMC-PD01
GSD document	DELA08DB.GSD
Company ID	08DB (HEX)
Serial transmission speed supported (auto-detection)	9.6k, 19.2k, 93.75k, 187.5k, 500k, 1.5M, 3M, 6M, 12M bps (bits per second)

### ◆ Electrical Specification

Power supply voltage	5 VDC (supplied by AC motor drive)
Insulation voltage	500 VDC
Power consumption	1 W
Weight	28g

### ◆ Environment

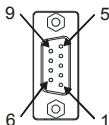
Noise immunity	ESD (IEC 61800-5-1, IEC 6100-4-2) EFT (IEC 61800-5-1, IEC 6100-4-4) Surge Test (IEC 61800-5-1, IEC 6100-4-5) Conducted Susceptibility Test (IEC 61800-5-1, IEC 6100-4-6)
Operation/storage	Operation: -10 to 50°C (temperature), 90% (humidity), pollution degree 2 Storage: -25 to 70°C (temperature), 95% (humidity, non-condensing)
Shock/vibration resistance	International standards: IEC61131-2, IEC68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

## ■ Installation

Note: The contents below are about installing CMC-PD01 on C2000.

### ◆ PROFIBUS DP Connector

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 ground
6	VP	Power voltage – positive
7	-	Not defined
8	Rxd/Txd-N	Sending/receiving data N(A)
9	-	Not defined



### ◆ Connecting CMC-PD01 to C2000

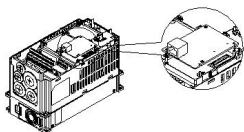
1. Switch off the power of C2000.
2. Open the front cover of C2000.
3. Place the insulation spacer into the positioning pin at Slot 1 (shown in Figure 2), and aim the two holes on the PCB at the positioning pin. Press the pin to clip the holes

with the PCB (see Figure 3).

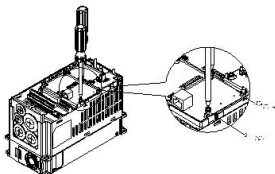
4. Screw up at torque 6 ~8 kg-cm (5.21 ~6.94 in-lbs) after the PCB is clipped with the holes (see Figure 4).



[Figure 2]



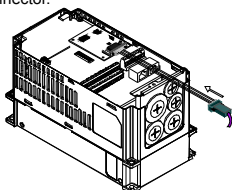
[Figure 3]



[Figure 4]

#### ◆ Connecting to PROFIBUS DP Connector

Insert the connector to the connection port on CMC-PD01 (see Figure 5), and screw up the screws on the connector to ensure tight connection between CMC-PD01 and the PROFIBUS DP connector.



[Figure 5]

#### ◆ Communication Parameters for C2000 Connected to PROFIBUS DP

When C2000 is connected to PROFIBUS DP, please set up the communication parameters for it according to the table below. The PROFIBUS DP master is only able to read/write the frequency word and control word of C2000 after the communication parameters are set.

Parameter	Function	Set value	Explanation
P00-20	Setting up source of frequency command	8	The frequency command is controlled by the communication card.
P00-21	Setting up source of operation command	5	The operation command is controlled by the communication card.
P09-30	Decoding method for communication	0/1	0: The old decoding method for the Delta AC motor drive (20XX). 1: The new decoding method for the Delta AC motor drive (60XX).
P09-70	Address of communication card	User defined	Address of C2000 on PROFIBUS DP network.

**Note:** The value of P09-70 is the address of C2000 in PROFIBUS DP network. The address has to be consistent with the address of C2000 during configuration. Changing the value is P09-70

when C2000 is working will be invalid. After the value in P09-70 is changed, please shut down C2000 and re-power it to make the parameter valid.

## ◆ Controlling and Using the I/O on an AC Motor Drive by a Communication Card

### 1. Controlling the setting by a control card

Multi-function output terminal	Parameter	Setting value
Relay1~Relay3*	02-13~02-15	52
MO1~MO2	02-16~02-17	52
MO10~MO15(RY10~RY15)	02-36~02-41	52
AFM1	03-20	22
AFM2	03-23	22

\*Relay3 is for CP2000. MO1~MO2 are for C2000/CH2000.

### 2. Control addresses

Terminal	Address	R/W	Address length	Description
DI	2600h	R	b15~b0	Digital inputs b15~b0
DO	2640h	RW	b15~b0	Digital outputs b15~b0
AI	2660h	R	b15~b0	Percentage of AVI analog input signals
	2661h	R	b15~b0	Percentage of ACI analog input signals
	2662h	R	b15~b0	Percentage of AUI analog input signals
AO	26A0h	RW	b15~b0	Percentage of AFM1 analog output signals
	26A1h	RW	b15~b0	Percentage of AFM2 analog output signals

#### Correspondence for the address 2600:

Number	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
I/O on the control panel	FWD	REV	MI1	MI2	MI3	MI4	MI5	MI6
EMC-D611A	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	-	-	-

Number	Bit 8	Bit 9	Bit 10	Bit 11	Bit 12	Bit 13	Bit 14	Bit 15
I/O on the control panel	MI7	MI8	-	-	-	-	-	-
EMC-D611A	-	-	MI10	MI11	MI12	MI13	MI14	MI15
EMC-D42A	-	-	MI10	MI11	MI12	MI13	-	-

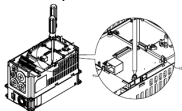
#### Correspondence for the address 2640:

Number	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
I/O on the control panel	RY1	RY2	-	MO1	MO2	-	-	-
EMC-D42A	-	-	-	-	-	MO10	MO11	-
EMC-R6AA	-	-	-	-	-	RY10	RY11	RY12

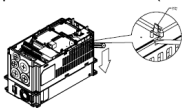
Number	Bit 8	Bit 9	Bit 10	Bit 11	Bit 12	Bit 13	Bit 14	Bit 15
I/O on the control panel	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	-	-	-
EMC-R6AA	RY13	RY14	RY15	-	-	-	-	-

## ◆ Disconnecting CMC-PD01 from C2000

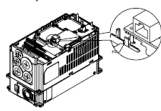
1. Switch off the power supply of C2000.
2. Remove the two screws (see Figure 6).
3. Twist open the card clip and insert the slot type screwdriver to the hollow to prize the PCB off the card clip (see Figure 7).
4. Twist open the other card clip to remove the PCB (see Figure 8).



[Figure 6]



[Figure 7]



[Figure 8]

## ■ LED Indicator & Troubleshooting

There are 2 LED indicators on CMC-PD01. POWER LED displays the status of the working power. NET LED displays the connection status of the communication.

### ◆ POWER LED

LED status	Indication	How to correct
Green light on	Power supply in normal status.	--
Off	No power	Check if the connection between CMC-PD01 and C2000 is normal.

### ◆ NET LED

LED status	Indication	How to correct
Green light on	Normal status	--
Red light on	CMC-PD01 is not connected to PROFIBUS DP master.	<ol style="list-style-type: none"><li>1. Check if the configuration address of CMC-PD01 is consistent with the actual address.</li><li>2. Check if CMC-PD01 is normally connected to PROFIBUS DP bus.</li><li>3. Check if the communication cable between CMC-PD01 and PROFIBUS DP master is working normally.</li></ol>
Red light flashes	Invalid PROFIBUS communication address	Set the PROFIBUS address of CMC-PD01 between 1 ~ 125 (decimal)
Orange light flashes	CMC-PD01 fails to communication with C2000.	Switch off the power and check whether CMC-PD01 is correctly and normally connected to C2000.

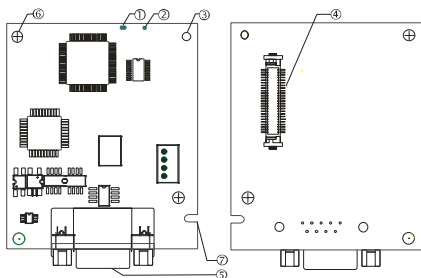
感謝您使用台達 CMC-PD01 網路通訊卡。CMC-PD01 定義為 PROFIBUS DP 網路通訊卡，用於將台達 C2000、CH2000、CP2000、CT2000 及 AFE2000 系列交流馬達驅動器接入 PROFIBUS DP 網路，CMC-PD01 無需外接電源，由交流馬達驅動器提供。

- ✧ 此安裝手冊只提供電氣規格、一般規格、安裝及配線等。
- ✧ 配線時請務必關閉電源，請勿在上電時觸摸任何端子。
- ✧ 本機為開放型 (OPEN TYPE) 機殼，因此使用者使用本機時，必須將之安裝於具防塵、防潮及免於電擊 / 衝擊意外之外殼配線箱內。另必須具備保護措施 (如：特殊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。
- ✧ 輸入電源切斷後，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。請在上電前再次確認電源配線，且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，以提高產品抗干擾能力。

## ■ 功能特色

1. 支援 PZD 控制資料交換
2. 支援 PKW 訪問交流馬達驅動器參數
3. 支援用戶診斷功能
4. 自動偵測通訊速率，最高通訊速率支援 12M bps。

## ■ 產品外觀部位介紹



【圖一】

- |               |                      |           |
|---------------|----------------------|-----------|
| 1. NET 指示燈    | 2. POWER 指示燈         | 3. 通訊卡定位孔 |
| 4. 交流馬達驅動器連接埠 | 5. PROFIBUS DP 通訊連接埠 | 6. 螺絲固定孔  |
| 7. 通訊卡防呆溝槽    |                      |           |

## ■ 功能規格

### ◆ PROFIBUS DP 通訊連接器

接頭	DB9 接頭
傳輸方式	高速的 RS-485
傳輸電纜	遮罩雙絞線
電氣隔離	500 VDC

## ◆ 通訊

資訊類型	週期性資料交換
通訊卡名稱	CMC-PD01
GSD 文件	DELA08DB.GSD
產品 ID	08DB (HEX)
支援串列傳輸速度 (自動偵測)	支援 9.6k、19.2k、93.75k、187.5k、500k、1.5M、3M、6M、12M bps (位 / 秒)

## ◆ 電氣規格

電源電壓	5 VDC (由交流馬達驅動器提供)
絕緣電壓	500 VDC
消耗電力	1 W
重量	28g

## ◆ 環境規格

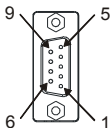
雜訊免疫力	ESD (IEC 61800-5-1, IEC 6100-4-2) EFT (IEC 61800-5-1, IEC 6100-4-4) Surge Test (IEC 61800-5-1, IEC 6100-4-5) Conducted Susceptibility Test (IEC 61800-5-1, IEC 6100-4-6)
操作 / 儲存環境	操作：-10 ~ 50°C (溫度)，90% (濕度) 儲存：-25 ~ 70°C (溫度)，95% (濕度)
耐震動 / 衝擊	國際標準規範 IEC61131-2, IEC68-2-6 (TEST Fc) / IEC61131-2 & IEC 68-2-27 (TEST Ea)

## ■ 安裝

註：以下內容僅以 C2000 示意。

### ◆ PROFIBUS DP 通訊連接器腳位定義

腳位	名稱	敘述
1	-	未指定
2	-	未指定
3	Rxd/Txd-P	接收/發送資料 P(B)
4	-	未指定
5	DGND	資料參考接地
6	VP	電源電壓-正壓
7	-	未指定
8	Rxd/Txd-N	接收/發送資料 N(A)
9	-	未指定



### ◆ CMC-PD01 安裝於 C2000 系列交流馬達驅動器上

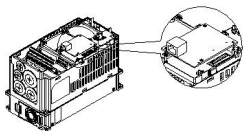
1. 關閉交流馬達驅動器電源。
2. 打開交流馬達驅動器上蓋。



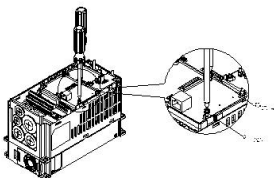
3. 於【圖二】顯示的 Slot1 處，先將絕緣片放入定位柱後，再將 PCB 上兩個圓孔對準定位柱後，下壓讓兩個卡勾卡住 PCB，如【圖三】所示。
4. 確認 PCB 上兩個卡勾確實卡住 PCB 後，將螺絲鎖上，扭力為 6~8 kg-cm (5.21~6.94 in-lbs)，如【圖四】所示。



【圖二】



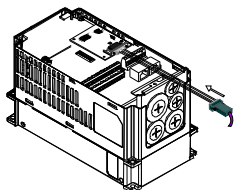
【圖三】



【圖四】

#### ◆ 連接 PROFIBUS DP 通訊連接器

將 PROFIBUS DP 匯流排連接器依照【圖五】箭頭所示的方向插入 CMC-PD01 通訊連接面，旋緊 PROFIBUS DP 匯流排連接器上的螺絲，以確保 CMC-PD01 與 PROFIBUS DP 匯流排的穩固連接。



【圖五】

#### ◆ C2000 Driver 連接 PROFIBUS DP 網路時的通訊參數設定

台達 C2000 Driver 連接 PROFIBUS DP 網路時，須根據表格設定交流馬達驅動器的通訊參數。設置通訊參數後，PROFIBUS DP 主站才可以對台達 C2000 Driver 的頻率字元組和控制字元組進行讀寫操作。

參數	參數說明	參數設定值	參數設定值說明
P00-20	頻率命令來源設定	8	頻率命令由通訊卡控制
P00-21	運轉命令來源設定	5	運轉命令由通訊卡控制
P09-30	通訊解碼方式選擇	0/1	0：台達交流馬達驅動器舊的解碼方式 (20XX) 1：台達交流馬達驅動器新的解碼方式 (60XX)
P09-70	通訊卡位址	自行設定	C2000 在 PROFIBUS DP 網路中的位址

備註：P09-70 的參數值為台達 C2000 交流馬達驅動器在 PROFIBUS DP 網路中的位址，此位址必須與組態配置時 C2000 的位址一致。C2000 在工作時更改 P09-70 的參數值無效；當更改 P09-70 的參數值後，C2000 須斷電後再重新上電才有效。

## ◆ 透過通訊卡控制和使用變頻器 I/O

### 1. 提供控制卡控制設定

多功能輸出端子	參數	設定值
Relay1~Relay3*	02-13~02-15	52
MO1~MO2	02-16~02-17	52
MO10~MO15(RY10~RY15)	02-36~02-41	52
AFM1	03-20	22
AFM2	03-23	22

\*Relay3 for CP2000 ; MO1~MO2 for C2000/CH2000

### 2. 控制位址

端子	位址	R/W	位址長度	說明
DI	2600h	R	b15~b0	數位輸入 b15~b0
DO	2640h	RW	b15~b0	數位輸出 b15~b0
AI	2660h	R	b15~b0	類比輸入訊號 AVI 百分比
	2661h	R	b15~b0	類比輸入訊號 ACI 百分比
	2662h	R	b15~b0	類比輸入訊號 AUI 百分比
AO	26A0h	RW	b15~b0	類比輸出訊號 AFM1 百分比
	26A1h	RW	b15~b0	類比輸出訊號 AFM2 百分比

位址 2600 對應關係如下：

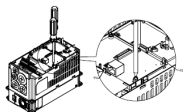
編號	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
控制板 I/O	FWD	REV	MI1	MI2	MI3	MI4	MI5	MI6	MI7	MI8	-	-	-	-	-	-
EMC-D611A	-	-	-	-	-	-	-	-	-	-	MI10	MI11	MI12	MI13	MI14	MI15
EMC-D42A	-	-	-	-	-	-	-	-	-	-	MI10	MI11	MI12	MI13	-	-

位址 2640 對應關係如下：

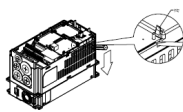
編號	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
控制板 I/O	RY1	RY2	-	MO1	MO2	-	-	-	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	MO10	MO11	-	-	-	-	-	-	-	-	-
EMC-R6AA	-	-	-	-	-	RY10	RY11	RY12	RY13	RY14	RY15	-	-	-	-	-

## ◆ CMC-PD01 從 C2000 系列交流馬達驅動器上卸除

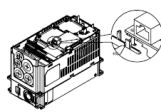
1. 關閉 C2000 交流馬達驅動器電源。
2. 將兩顆螺絲拆下，如【圖六】所示。
3. 將卡勾扳開後，將一字起子斜插入凹陷處，將 PCB 撬開脫離卡勾，如【圖七】所示。
4. 再將另一卡勾扳開後，將 PCB 取出，如【圖八】所示。



【圖六】



【圖七】



【圖八】

## ■ LED 燈指示說明及故障排除

CMC-PD01 有兩個 LED 指示燈：POWER LED 和 NET LED。POWER LED 用來顯示

CMC-PD01 的工作電源是否正常，NET LED 用來顯示 CMC-PD01 的通訊連接狀態是否正常。

#### ◆ POWER LED 燈顯示說明

LED 狀態	顯示說明	處理方法
綠燈亮	電源正常	無需處理
燈滅	無電源	檢查 CMC-PD01 與 C2000 連接是否正常

#### ◆ NET LED 燈顯示說明

LED 燈狀態	顯示說明	處理方法
綠燈亮	正常	無需處理
紅燈亮	CMC-PD01 未和 PROFIBUS DP 主站建立連接	<ol style="list-style-type: none"> <li>1. 檢查 CMC-PD01 組態時，配置位址和其實際位址是否一致</li> <li>2. 檢查 CMC-PD01 和 PROFIBUS DP 匯流排連接是否正常</li> <li>3. 檢查 CMC-PD01 和 PROFIBUS DP 主站之間的通訊線是否正常</li> </ol>
紅燈閃爍	無效的 PROFIBUS 通訊位址	設置 CMC-PD01 的 PROFIBUS 位址在 1 ~ 125 (十進位) 之間
橙色閃爍	CMC-PD01 和 C2000 無法通訊	請斷電檢查 CMC-PD01 與 C2000 是否正確安裝，連接是否正常。

感谢您使用台达 CMC-PD01 网络通讯卡。CMC-PD01 定义为 PROFIBUS DP 网络通讯卡，用于将台达 C2000、CH2000、CP2000、CT2000 及 AFE2000 系列交流电机驱动器接入 PROFIBUS DP 网络，CMC-PD01 无需外接电源，由交流电机驱动器提供。

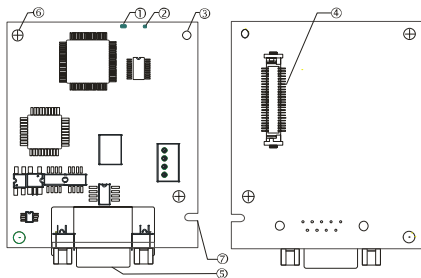
此安装手册只提供电气规格、一般规格、安装及配线等。

- ✦ 配线时请务必关闭电源，请勿在上电时触摸任何端子。
- ✦ 本机为开放型 (OPEN TYPE) 机壳，因此使用者使用本机时，必须将之安装于具防尘、防潮及免于电击 / 冲击意外之外壳配线箱内。另必须具备保护措施（如：特殊之工具或钥匙才可打开），防止非维护人员操作或意外冲击本体，造成危险及损坏。
- ✦ 输入电源切断后，一分钟之内，请勿触摸内部电路。
- ✦ 交流输入电源不可连接于输入 / 输出信号端，否则可能造成严重损坏。请在上电前再次确认电源配线，且请勿在上电时触摸任何端子。本体上的接地端子 ⊕ 务必正确的接地，以提高产品抗干扰能力。

## ■ 功能特色

1. 支持 PZD 控制数据交换
2. 支持 PKW 访问交流电机驱动器参数
3. 支持用户诊断功能
4. 自动侦测通讯速率，最高通讯速率支持 12M bps。

## ■ 產品外觀部位介紹



【图一】

- |               |                      |           |
|---------------|----------------------|-----------|
| 1. NET 指示灯    | 2. POWER 指示灯         | 3. 通讯卡定位孔 |
| 4. 交流电机驱动器连接口 | 5. PROFIBUS DP 通讯连接口 | 6. 螺丝固定孔  |
| 7. 通讯卡防呆沟槽    |                      |           |

## ■ 功能规格

### ◆ PROFIBUS DP 通訊連接口

接头	DB9 接头
传输方式	高速的 RS-485
传输电缆	屏蔽双绞线
电气隔离	500 VDC

### ◆ 通訊

信息类型	周期性数据交换
通讯卡名称	CMC-PD01
GSD 文件	DELA08DB.GSD
产品 ID	08DB (HEX)
支持串行传输速度 (自动侦测)	支持 9.6k、19.2k、93.75k、187.5k、500k、1.5M、3M、6M、12M bps (位/秒)

#### ◆ 電氣規格

电源电压	5 VDC (由交流电机驱动器提供)
绝缘电压	500 VDC
消耗电力	1 W
重量	28g

#### ◆ 環境規格

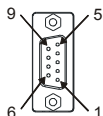
干扰免疫力	ESD (IEC 61800-5-1, IEC 6100-4-2) EFT (IEC 61800-5-1, IEC 6100-4-4) Surge Test (IEC 61800-5-1, IEC 6100-4-5) Conducted Susceptibility Test (IEC 61800-5-1, IEC 6100-4-6)
操作 / 储存环境	操作: -10 ~ 50°C (温度), 90% (湿度) 储存: -25 ~ 70°C (温度), 95% (湿度)
耐振动 / 冲击	国际标准规范: IEC 61800-5-1, IEC 60068-2-6 / IEC 61800-5-1, IEC 60068-2-27

#### ■ 安裝

注: 以下内容仅以 C2000 示意。

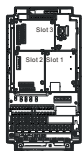
#### ◆ PROFIBUS DP 通訊連接口引腳定義

引腳	名称	叙述
1	-	未指定
2	-	未指定
3	Rxd/Txd-P	接收/发送数据资料 P(B)
4	-	未指定
5	DGND	数据参考接地
6	VP	电源电压-正压
7	-	未指定
8	Rxd/Txd-N	接收/发送数据资料 N(A)
9	-	未指定

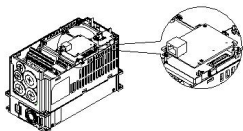


#### ◆ CMC- PD01 安裝於 C2000 系列交流電機驅動器上

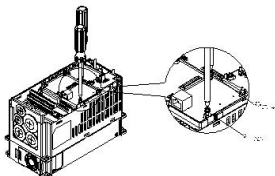
1. 关闭 C2000 交流电机驱动器电源。
2. 打开 C2000 交流电机驱动器上盖。
3. 于【图二】显示的 Slot1 处, 先将绝缘片放入定位柱后, 再将 PCB 上两个圆孔对准定位柱后, 下压, 让两个卡勾卡住 PCB, 如【图三】所示。
4. 确认 PCB 上两个卡勾确实卡住 PCB 后, 将螺丝锁上, 扭力为 6~8 kg-cm (5.21~6.94 in-lbs), 如【图四】所示。



【图二】



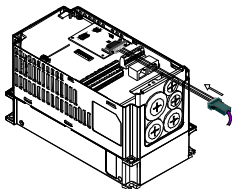
【图三】



【图四】

#### ◆ 连接 PROFIBUS DP 通讯连接器

将 PROFIBUS DP 总线连接器按【图五】箭头所示的方向插入 CMC-PD01 通讯接口，旋紧 PROFIBUS DP 总线连接器上的螺丝，以保证 CMC-PD01 与 PROFIBUS DP 总线可靠连接。



【图五】

#### ◆ C2000 系列交流电机驱动器接入 PROFIBUS DP 网络时的通讯参数设置

台达 C2000 交流电机驱动器接入 PROFIBUS DP 网络时，须根据表格设置交流电机驱动器的通讯参数。设置通讯参数后，PROFIBUS DP 主站才可以对 C2000 的频率字和控制字进行读写操作。

参数	参数说明	参数设定值	参数设定值含义
P00-20	频率命令来源设置	8	频率命令由通讯卡控制
P00-21	运转命令来源设置	5	运转命令由通讯卡控制
P09-30	通讯解码方式选择	0/1	0：台达交流电机驱动器旧的解码方式 (20XX) 1：台达交流电机驱动器新的解码方式 (60XX)
P09-70	通讯卡地址	自行设置	C2000 在 PROFIBUS DP 网络中的地址

备注：P09-70 的参数值为 C2000 交流电机驱动器在 PROFIBUS DP 网络中的地址，此地址须与组态时配置 C2000 的地址相一致。C2000 在工作时更改 P09-70 的参数值无效。当更改 P09-70 的参数值后，C2000 须断电后再重新加电才有效。

## ◆ 透過通訊卡控制和使用變頻器 I/O

### 1. 提供控制卡控制設定

多功能輸出端子	參數	設定值
Relay1~Relay3*	02-13~02-15	52
MO1~MO2	02-16~02-17	52
MO10~MO15(RY10~RY15)	02-36~02-41	52
AFM1	03-20	22
AFM2	03-23	22

\*Relay3 for CP2000; MO1~MO2 for C2000/CH2000

### 2. 控制地址

端子	地址	R/W	地址長度	說明
DI	2600h	R	b15~b0	數字輸入 b15~b0
DO	2640h	RW	b15~b0	數字輸出 b15~b0
AI	2660h	R	b15~b0	模擬輸入訊號 AVI 百分比
	2661h	R	b15~b0	模擬輸入訊號 ACI 百分比
	2662h	R	b15~b0	模擬輸入訊號 AUI 百分比
AO	26A0h	RW	b15~b0	模擬輸出訊號 AFM1 百分比
	26A1h	RW	b15~b0	模擬輸出訊號 AFM2 百分比

地址 2600 對應關係如下：

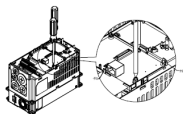
編號	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
控制板 I/O	FWD	REV	MI1	MI2	MI3	MI4	MI5	MI6	MI7	MI8	-	-	-	-	-	-
EMC-D611A	-	-	-	-	-	-	-	-	-	-	MI10	MI11	MI12	MI13	MI14	MI15
EMC-D42A	-	-	-	-	-	-	-	-	-	-	MI10	MI11	MI12	MI13	-	-

地址 2640 對應關係如下：

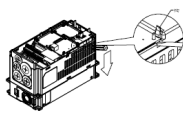
編號	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Bit9	Bit10	Bit11	Bit12	Bit13	Bit14	Bit15
控制板 I/O	RY1	RY2	-	MO1	MO2	-	-	-	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	MO10	MO11	-	-	-	-	-	-	-	-	-
EMC-R6AA	-	-	-	-	-	RY10	RY11	RY12	RY13	RY14	RY15	-	-	-	-	-

## ◆ CMC-PD01 從 C2000 系列交流電機驅動器上卸除

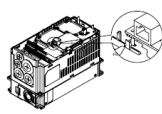
1. 關閉交流馬達驅動器電源。
2. 將兩顆螺絲拆下，如【圖六】所示。
3. 將卡勾扳開後，將一字起子斜插入凹陷處，將 PCB 撬開脫離卡勾，如【圖七】所示。
4. 再將另一卡勾扳開後，將 PCB 取出，如【圖八】所示。



【圖六】



【圖七】



【圖八】

## ■ LED 燈指示說明及故障排除

CMC-PD01 有两个 LED 指示灯：POWER LED 和 NET LED。POWER LED 用来显示 CMC-PD01 的工作电源是否正常，NET LED 用来显示 CMC-PD01 的通讯连接状态是否正常。

### ◆ POWER LED 燈顯示說明

LED 状态	显示说明	处理方法
绿灯亮	电源正常	无需处理
灯灭	无电源	检查 CMC-PD01 与 C2000 连接是否正常

### ◆ NET LED 燈顯示說明

LED 灯状态	显示说明	处理方法
绿灯亮	正常	无需处理
红灯亮	CMC-PD01 未和 PROFIBUS DP 主站建立连接	<ol style="list-style-type: none"><li>1. 检查 CMC-PD01 组态时，配置地址和实际地址是否一致</li><li>2. 检查 CMC-PD01 和 PROFIBUS DP 总线连接是否正常</li><li>3. 检查 CMC-PD01 和 PROFIBUS DP 主站之间的通讯线是否正常</li></ol>
红灯闪烁	无效的 PROFIBUS 通讯地址	设置 CMC-PD01 的 PROFIBUS 地址在 1 ~ 125 (十进制) 之间
橙色闪烁	CMC-PD01 和 C2000 不能通讯	请断电检查 CMC-PD01 与 C2000 是否正确安装，连接是否正常。



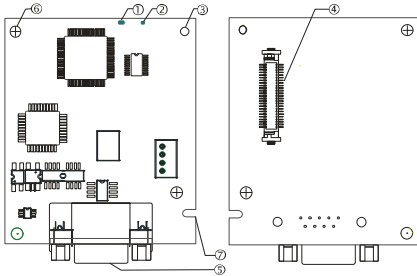
Delta'nın CMC-PD01 network haberleşme kartını seçtiğiniz için teşekkürler. CMC-PD01 bir PROFIBUS DP network haberleşme kartıdır ve Delta C2000 serisi, CH2000 serisi, CP2000 serisi, CT2000 serisi ve AFE2000 serisi AC motor sürücülerini PROFIBUS DP haberleşme ağına bağlamak için kullanılır. CMC-PD01 için harici bir güç kaynağı gerektirmez. Güç AC motor sürücüsü tarafından sağlanır.

- ✓ Bu bilgi dökümanı sadece elektriksel özellikler, genel özellikler, kurulum ve bağlantı hakkında bilgiler sağlar.
- ✓ Bağlantı yapmadan önce ürünün enerjisini kesiniz. Ürüne enerji verdikten sonra terminallere dokunmayınız.
- ✓ CMC-PD01 ürünü AÇIK-TİP bir cihazdır. Bundan dolayı ürünün kurulumu toz, rutubet, elektrik şoku ve titreşimden uzak yerlere yapılmalıdır. Ayrıca ürüne yetkili olmayan kişilerin müdahale etmesini önleyecek koruyucu önlemler alınmalıdır. (Örneğin ürünün bulunduğu panoya kilit konulması..vb). Aksi halde tehlike ve zararlar meydana gelebilir.
- ✓ Giriş beslemesi kesildikten sonra 1 dakika boyunca ürünün iç devrelerine dokunmayınız.
- ✓ Ürünün I/O terminallerine AC besleme girişi bağlamayınız; aksi halde ciddi zararlar meydana gelebilir. Ürüne enerji vermeden önce tüm bağlantıların doğru olduğunu tekrar kontrol ediniz ve ürüne enerji verdikten sonra terminallerine dokunmayınız. Elektromanyetik gürültüyü önlemek için ürünün toprak terminalinden ⊕ düzgün topraklandırıldığına emin olunuz

## ■ Fonksiyonlar

1. PZD kontrol veri alışverişini destekler.
2. AC motor sürücü parametreleri PKW polling destekler.
3. Kullanıcı teşhis fonksiyonu destekler.
4. Baud rate otomatik algılama; Maksimum 12M bps destekler.

## ■ Ürün Görünüşü



[Şekil 1]

1. NET gösterge	5. PROFIBUS DP bağlantı portu
2. POWER gösterge	6. Sabitleme deliği vidası
3. Pozisyonlama deliği	7. Montaj yuvası
4. AC motor sürücü bağlantı portu	

## ■ Özellikler

### ◆ PROFIBUS DP Konnektör

Arabirim	DB9 konnektör
İletim metodu	Yüksek-hızlı RS-485
İletim kablosu	Çift ekranlı sarmal kablo
Elektriksel İzolasyon	500 VDC

### ◆ Haberleşme

Mesaj Tipi	Cyclic data alışverişi
Haberleşme Kartı Adı	CMC-PD01

GSD döküman	DELA08DB.GSD
Firma ID	08DB (HEX)
Desteklenen seri iletişim hızları (oto-algılama)	9.6k, 19.2k, 93.75k, 187.5k, 500k, 1.5M, 3M, 6M, 12M bps (bits/second)

### ◆ Elektriksel Özellikler

Besleme voltajı	5 VDC (C2000'den beslenir)
Izolasyon Voltajı	500 VDC
Güç Tüketimi	1 W
Ağırlık	28g

### ◆ Çalışma Ortamı

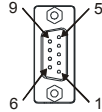
Ses Bağışıklığı	ESD (IEC 61800-5-1, IEC 6100-4-2) EFT (IEC 61800-5-1, IEC 6100-4-4) Dalgalanma Başlık (IEC 61800-5-1, IEC 6100-4-5) İletim Duyarlılık Test (IEC 61800-5-1, IEC 6100-4-6)
Çalışma/saklama	Çalışma: -10 ~ 50°C (sıcaklık), 90% (rutubet), kirlenme derecesi 2 Saklama: -25 ~ 70°C (sıcaklık), 95% (rutubet, yoğunlaşmaz)
Şok/titreşim direnci	Uluslararası standartlar: IEC61131-2, IEC68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

## ■ Kurulum

Not: Aşağıdaki içerik CMC-PD01'in C2000 sürücüyü kurulumu hakkındadır.

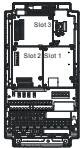
### ◆ PROFIBUS DP Konnektör

PIN	PIN adı	Açıklama
1	-	Tanımlı değil
2	-	Tanımlı değil
3	Rxd/Txd-P	Data gönderme/alma P(B)
4	-	Tanımlı değil
5	DGND	Data referans toprak
6	VP	Güç voltajı – pozitif
7	-	Tanımlı değil
8	Rxd/Txd-N	Data gönderme/alma N(A)
9	-	Tanımlı değil

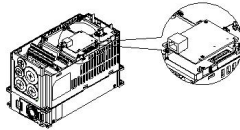


### ◆ CMC-PD01 Ürünü C2000'e Bağlama

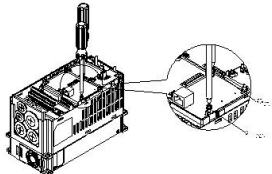
1. C2000'in enerjisini kesiniz.
2. C2000'in ön kapağını açınız.
3. Slot 1 pozisyonlama pini içine izolasyon pulunu yerleştiriniz (Şekil 2). Pini PCB ile birlikte deliklere bastırınız. (Şekil 3).
4. PCB deliklere takıldıktan sonra ürünü 6 ~ 8 kg-cm (5.21 ~ 6.94 in-lbs) tork oranında sıkınız. (Şekil 4).



[Şekil 2]



[Şekil 3]

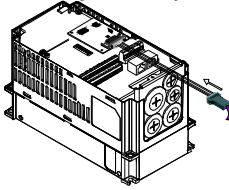


[Şekil 4]

### ◆ PROFIBUS DP Konnektör Bağlantısı

CMC-PD01 üzerindeki bağlantı portunu konnektöre takınız (Şekil 5) ve PROFIBUS DP

ile CMC-PD01 bağlantısının sağlam olması için konnektör üzerindeki vidaları sıkınız.



[Şekil 5]

## ◆ PROFIBUS DP'ye bağlı C2000 için Haberleşme Parametreleri

PROFIBUS DP'ye C2000 bağlandığı zaman, lütfen haberleşme parametrelerini aşağıdaki tabloya göre yapınız. PROFIBUS DP master haberleşme parametreleri ayarlandıktan sonra C2000'nin sadece frekans datasına ve kontrol datasına okuma/yazma yapabilir.

Parametre	Fonksiyon	Set değeri	Açıklama
P00-20	Frekans komutu kaynağı ayarı	8	Frekans komutu haberleşme kartından kontrol edilir.
P00-21	Çalışma komutu kaynağı ayarı	5	Çalışma komutu haberleşme kartından kontrol edilir.
P09-30	Haberleşme için şifre çözme metodu	0/1	0: Delta AC motor sürücüsü için eski kod çözme metodu (20XX). 1: Delta AC motor sürücüsü için yeni kod çözme metodu (60XX).
P09-70	Haberleşme kartı adresi	Kullanıcı tanımlı	C2000'in PROFIBUS DP network üzerindeki adresi.

Not: P09-70 değeri C2000'in PROFIBUS DP network içindeki adresidir. C2000 adresi konfigürasyon için uygun bir adres olmalıdır. C2000 çalışıyor iken P09-70 değeri değişimi geçersizdir. P09-70 değerini değiştirdikten sonra ayarın geçerli olması için C2000'nin enerjisini kesiniz ve tekrar veriniz.

## ◆ Haberleşme Kartı ile bir AC Motor Sürücüsü üzerindeki I/O'ların Kullanımı ve Kontrolü

### 1. Kontrol kartı üzerindeki ayarlar

Çok fonksiyonlu çıkış terminali	Parametre	Ayar değeri
Röle1~Röle3*	02-13~02-15	52
MO1~MO2	02-16~02-17	52
MO10~MO15(RY10~RY15)	02-36~02-41	52
AFM1	03-20	22
AFM2	03-23	22

\*Röle3 CP2000 içindir. MO1~MO2 C2000/CH2000 içindir.

### 2. Kontrol adresleri

Terminal	Adres	R/W	Adres uzunluğu	Açıklama
DI	2600h	R	b15~b0	Dijital girişler b15~b0
DO	2640h	RW	b15~b0	Dijital çıkışlar b15~b0
AI	2660h	R	b15~b0	AVI analog giriş sinyali yüzdesi
	2661h	R	b15~b0	ACI analog giriş sinyali yüzdesi
	2662h	R	b15~b0	AUI analog giriş sinyali yüzdesi
AO	26A0h	RW	b15~b0	AFM1 analog çıkış sinyali yüzdesi
	26A1h	RW	b15~b0	AFM2 analog çıkış sinyali yüzdesi

Adres 2600 Karşılıkları:

Numara	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
Kontrol kartı üzerindeki I/O	FWD	REV	MI1	MI2	MI3	MI4	MI5	MI6
EMC-D611A	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	-	-	-

Numara	Bit 8	Bit 9	Bit 10	Bit 11	Bit 12	Bit 13	Bit 14	Bit15
Kontrol kartı üzerindeki I/O	MI7	MI8	-	-	-	-	-	-
EMC-D611A	-	-	MI10	MI11	MI12	MI13	MI14	MI15
EMC-D42A	-	-	MI10	MI11	MI12	MI13	-	-

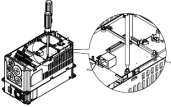
Adres 2640 Karşılıkları:

Numara	Bit 0	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7
Kontrol kartı üzerindeki I/O	RY1	RY2	-	MO1	MO2	-	-	-
EMC-D42A	-	-	-	-	-	MO10	MO11	-
EMC-R6AA	-	-	-	-	-	RY10	RY11	RY12

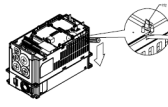
Numara	Bit 8	Bit 9	Bit 10	Bit 11	Bit 12	Bit 13	Bit 14	Bit15
Kontrol kartı üzerindeki I/O	-	-	-	-	-	-	-	-
EMC-D42A	-	-	-	-	-	-	-	-
EMC-R6AA	RY13	RY14	RY15	-	-	-	-	-

### ◆ CMC-PD01 Ürünü C2000'den Çıkartma

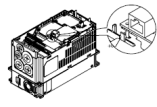
1. C2000'nin beslemesini kesiniz.
2. 2 vidayı sökünüz. (Şekil 6).
3. Düz toravida yardımıyla PCB'yi ayırınız. (Şekil 7).
4. PCB'yi sökmek için diğer kart klipslerini açınız. (Şekil 8).



[Şekil 6]



[Şekil 7]



[Şekil 8]

### ■ LED İndikatör & Arıza Teşhisi

CMC-PD01 üzerinde 2 LED gösterge vardır. POWER LED çalışma gücü beslemesi durumunu ve NET LED haberleşme bağlantı durumunu gösterir.

#### ◆ POWER LED

LED durumu	Anlamı	Yapılması gerekenler
Yeşil Işık ON	Besleme normal durumda.	--
OFF	Besleme yok	CMC-PD01 ve C2000 arasındaki bağlantının normal olduğunu kontrol ediniz.

#### ◆ NET LED

LED durumu	Anlamı	Yapılması gerekenler
Yeşil Işık ON	Normal durumda	--
Kırmızı Işık ON	CMC-PD01 ürünü PROFIBUS DP master ile bağlı değil.	1. CMC-PD01 konfigürasyon adresinin gerçek adres ile uyumlu olduğunu kontrol ediniz. 2. CMC-PD01 ürününün PROFIBUS DP bus ile bağlı olduğunu kontrol ediniz. 3. CMC-PD01 ve PROFIBUS DP master arasındaki haberleşme kablosunun normal olduğunu kontrol ediniz.
Kırmızı Işık FLASH	Geçersiz PROFIBUS haberleşme adresi	CMC-PD01 PROFIBUS adresi ayarını 1 ~ 125 (decimal) arasında yapınız.
Turuncu Işık FLASH	CMC-PD01'nin C2000 ile haberleşmesi başarısız	Enerjiyi kesiniz ve CMC-PD01 ürününün C2000'e doğru ve normal bağlı olduğunu kontrol ediniz.

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