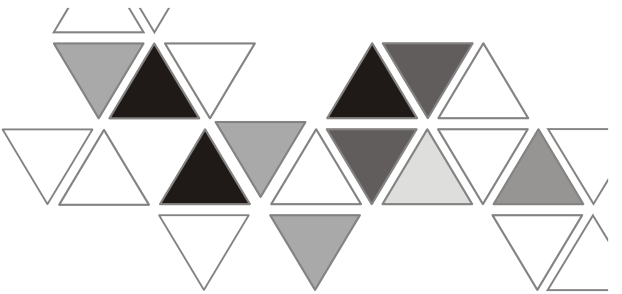
Call 1(800)985-6929 for Sales deltaacdrives.com sales@deltaacdrives.com

2010-11-22
5012606600-MC00

DELTA ELECTRONICS, INC.



DVP-MC

INSTRUCTION SHEET

安裝說明

安装说明

KULLANIM KILAVUZU

- ▲ ***Multi-Axis Motion Controller***
- ▲ 總線式多軸運動控制器
- ▲ 总线式多轴运动控制器
- ▲ ***Çoklu-Eksen Motion Kontrol Ünitesi***



http://www.delta.com.tw/industrialautomation

DVP-1191470-01

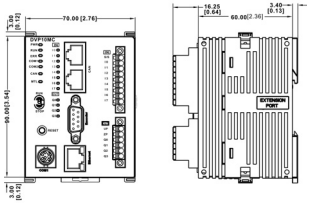
Call 1(800)985-6929 for Sales deltaacdrives.com sales@deltaacdrives.com

■ ENGLISH ■

Thank you for choosing Delta DVP-MC series motion controller. DVP-MCseries is a multi-axis motion controller based on CANopen fieldbus and can be applied in packaging machines, printing machines, taping machines, cutting machines, digital control lathes and automated storage systems.

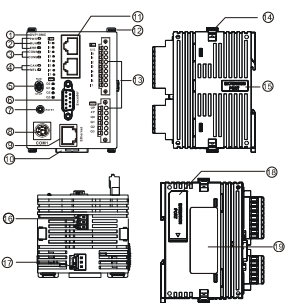
- Please read this instruction sheet carefully using DVP10MC11T and follow the instructions to avoid damages on the product or injuries on staff.
- Switch off the power supply before wiring.
- This instruction sheet offers information on electrical specifications, functions, installation, wiring and trouble-shooting for DVP-MC series. For more details, see the operation manual for DVP10MC11T.
- DVP10MC11T 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.
- DVP-MC series is for controlling the machines or equipment in operation. To avoid damaging it, only qualified staff who knows it well is allowed to install, operate, wiring and maintain it.
- DO NOT connect the input AC power supply to any of the I/O terminals; otherwise series damages may occur. Check all the wirings again before switching on the power.

■ Product Profile & Dimensions



Unit: mm [inch]

[Figure 1]



[Figure 2]

① Model name	⑪ CANopen communication port
② POWER, RUN, ERR indicators	⑫ Extension module fixing clip
③ COM1, COM2 indicators	⑬ I/O terminals
④ CAN, MTL indicators	⑭ Direct mounting hole
⑤ RUN/STOP switch	⑮ Right-side extension port
⑥ Encoder interface	⑯ COM2 port
⑦ RESET button	⑰ 24V power supply port
⑧ COM1 port	⑱ Left-side extension port
⑨ Ethernet port	⑲ Nameplate
⑩ DIN rail clip	

■ Electrical Specifications

◆ Power Supply

Power supply voltage	24 VDC (-15 to +20%)
Power supply fuse	3 A/30 VDC, Polyswitch
Insulation voltage	500 VDC (Secondary-PE)
Power consumption	8 W Max.
Shock/vibration immunity	Standards: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)
Noise immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 kV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 kV, Digital I/O: 1 kV, Analog & Communication I/O: 1 kV Damped-Oscillatory Wave: Power Line: 1 kV, Digital I/O: 1 kV RS (IEC 61131-2, IEC 61000-4-3): 26 MHz ~ 1GHz, 10 V/m
Ambiance	Operation: 0 to 55°C (temperature), 50 to 95% (humidity), pollution degree 2 Storage: -25 to 70°C (temperature), 5 to 95% (humidity)
Weight	Approx. 240g

◆ I/O Specifications

I/O channels	8 input channels, 4 output channels
I/O channel types	8 high-speed digital input channels, 4 high-speed digital output channels
I/O terminals	Input terminals: I0, I1, I2, I3, I4, I5, I6, I7 Output terminals: Q0, Q1, Q2, Q3
Common terminal for input points	Wiring terminal S/S (for connecting to the positive or negative pole of the power supply)
Input types	Sink or Source
I/O delay time	Input: 2.5 μs (OFF→ON), 5 μs (ON→OFF) Output: 2 μs (OFF→ON), 3 μs (ON→OFF)
Input signal current	24 VDC, 5 mA
Max. I/O cable length	Shielded: 500m; Not shielded: 300m
Power supply for output points	24 VDC (-15 to +20%) #1
Max. load	Resistive load: 0.5 A/1 point (2A/ZP) Conductive load: 13 W (30 VDC) Light bulb load: 2.5 W (30 VDC)

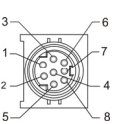
#1: UP and ZP must use external auxiliary 24 VDC power supply (-15 to 20%).

■ COM Ports

◆ COM1 (RS-232)

DVP10MC11T offers one RS-232 port. See the table below for the PIN definitions.

PIN	Signal	Definition
1, 2	+5V	5V power supply (positive pole)
3	GND	Earth
4	Rx	Receiving data
5	Tx	Sending data
6	GND	Earth
7	NC	Reserved
8	GND	Earth



◆ COM2 (RS-485)

DVP10MC11T offers one RS-485 port. See the table below for the PIN definitions.

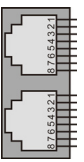
PIN	Signal	Definition
1	+	Signal+
2	_	Signal-
3	SG	--



◆ CANopen Communication Port

DVP10MC11T offers two RJ45 connectors as the interface for motion control. When establishing a network, use standard CAN cables for the CAN bus, e.g. Delta TAP-CB03 or TAP-CB04. You will need termination resistances at the two ends of the bus, e.g. Delta TAP-TR01.

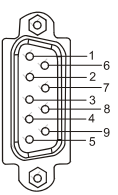
PIN	Signal	Definition
1	CAN_H	Signal+
2	CAN_L	Signal-
3	CAN_GND	0 VDC
4	RESE_1	Reserved
5	RESE_2	Reserved
6	CAN_SHLD	Shielded cable
7	CAN_GND	0 VDC
8	RESE_3	Reserved



◆ Encoder Interface

DVP10MC11T offers one 9-PIN D-SUB encoder interface. See the table bellows for the terminal definitions.

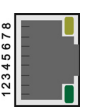
Terminal	Signal	Definition
1	A+	Incremental encoder
2	B+	
3	Z+	
6	A-	
7	B-	
8	Z-	
4	+24VEXT	24V encoder
5	GNDEXT	
9	+5VEXT	+5V encoder



◆ Ethernet Port

DVP10MC11T offers one Ethernet port, supporting Modbus/TCP protocol. See the table below for the terminal definitions.

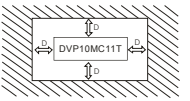
Terminal	Signal	Definition
1	Tx+	Sending data (positive)
2	Tx-	Sending data (negative)
3	Rx+	Receiving data (positive)
4	--	N/C
5	--	N/C
6	Rx-	Receiving data (negative)
7	--	N/C
8	--	N/C



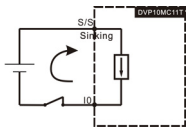
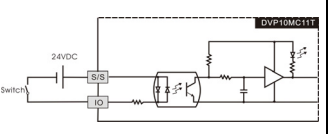
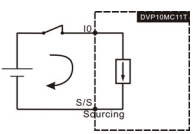
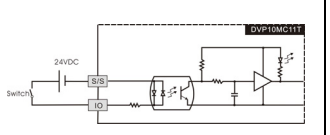
■ Installation & Wiring

◆ Installation

Install DVP10MC11T in an enclosure with sufficient space around it to allow heat dissipation. D > 50mm (See the figure).

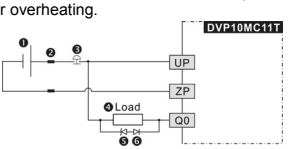


◆ Input Point Wiring

Mode	Simplified model	Wiring loop
Sink		
Source		

◆ Output Point Wiring

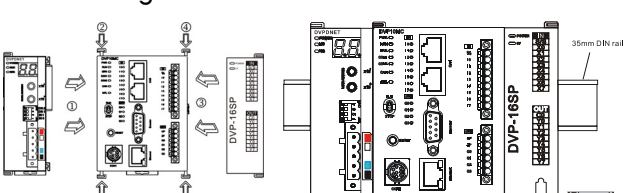
All transistor outputs in DVP10MC11T include zener diode, which is sufficient enough for small-power conductive load and infrequent On/Off applications. However, in big-power or frequent On/Off occasions, follow the method below to connect to suppression circuit to reduce interferences and avoid the transistor output circuit from being damaged due to over-voltage or overheating.



[Figure 3]

❶ 24 VDC power supply	❷ Fuse
❸ Emergency stop button	❹ Load: Switch, conductive load
❺ 9V Zener diode, 5W (Use ❺ and ❻ when in big-power and frequent On/Off occasions)	
❻ Diode or equivalent components for suppression (Use ❻ only when in small-power loads)	

■ Connecting to DVP-S Series Extension Modules



[Figure 4]

■ LED Indicators & Trouble-Shooting

◆ ERR LED

LED status	Indication	How to correct
Off	PLC in normal operation	--
Red light flashing	Syntax errors in the PLC program; devices or commands exceed the allowed range	Find out the cause of error from register D1004 in the PLC and the location of error from D1137. For details, see *"DVP-PLC Application Manual: Programming"*.
Red light quickly flashing	Insufficient power supply for DVP10MC11T	Check if the power supply load for DVP10MC11T is normal.

◆ CAN LED

LED status	Indication	How to correct
Green light single flashing	CANopen network in STOP status	The host controller is downloading the program and waiting for the download to be completed.
Green light flashing	CANopen network in pre-operational status	■ Check if the CANopen network is connected correctly. ■ Check if the slave configured on the network exists. ■ Check if the slave is offline.
Green light constantly on	CANopen network in operational status	--
Red light single flashing	Bus error, exceeding the alarm level	■ Check if the connecting cable for the CANopen bus is standard cable. ■ Check if there are termination resistances at both ends of the CANopen bus. ■ Check if the interferences around the CANopen bus are too big.
Red light constantly on	Bus-off	■ Check if the cable connection in the CANopen network is correct. ■ Check if the baudrate of DVP10MC11T is consistent with its slaves.

◆ MTL LED

LED status	Indication	How to correct
Off	DVP10MC11T is not configured with slaves.	Configure slaves for DVP10MC11T in the CANopen Builder software and download the configuration.
Green light on	DVP10MC11T in operational status; motion control program in executing status.	--
Green light flashing	DVP10MC11T has not been connected with the slave.	■ Check if the CANopen network is connected correctly. ■ Check if the slave configured on the network exists.
Red light constantly on	Hardware error in DVP10MC11T	Send DVP10MC11T back to factory for repair.
Red light flashing	DVP10MC11T is operating in abnormal status.	■ Check if the set synchronous scan period is too short. ■ Check if there is slave offline from the CANopen network. ■ Press the RESET button on DVP10MC11T (Re-enter STOP status after the program is executed.)

◆ Ethernet LED

LED	LED status	Indication
Orange light	On	The baudrate for Ethernet communication is 100 Mbps.
	Off	The baudrate for Ethernet communication is 10 Mbps, or DVP10MC11T has not been connected to the Ethernet.
Green light	Flashing	The Ethernet port on DVP10MC11T is sending or receiving data.
	Off	The Ethernet port on DVP10MC11T is not sending or receiving data.

感謝您採用台達 DVP-MC 系列運動控制器。DVP-MC 系列是基於 CANopen 現場匯流排的多軸運動控制器，可廣泛應用於包裝機、印刷機、封裝機、切割機、數控機床和自動化倉儲等眾多運動控制領域。

- 使用前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人員受傷。
- 配線時請務必關閉電源。
- 本手冊主要提供 DVP-MC 系列 PLC 之電氣規格、功能規格、安裝配線、故障排除說明。若讀者想瞭解更多的使用說明，請參閱 DVP10MC11T 之應用技術手冊。
- 本機爲開放型機殼，因此使用本機時，請務必將其安裝於具防塵、防潮及免於電擊/衝擊以外的外殼配線箱內。另必須具備保措施（如：特殊之工具或鑰匙才可打開），防止非修護人員操作或意外衝擊本體，造成危險及損壞。
- 本產品用來控制運轉中的機械及設備，爲避免損壞本產品，只有合格且熟悉本產品結構和操作的專業人員才可進行本產品的安裝、操作、配線及維護。
- 交流輸入電源不可連接與輸入輸出信號端，否則將造成嚴重的損壞，請在上電之前再次確認電源配線。

■ 產品外觀及部位介紹

- 詳細外觀尺寸圖，請參閱英文版頁碼 1 之 [Figure 1] 及 [Figure 2]。

① 機種名稱	⑪ CANopen 通訊埠
② POWER、RUN、ERR 指示燈	⑫ 擴充模組固定扣
③ COM1、COM2 通訊指示燈	⑬ 輸入 / 輸出端子
④ CAN、MTL 指示燈	⑭ 直接固定口
⑤ RUN/STOP 開關	⑮ 右側擴充模組接口
⑥ 編碼器接口	⑯ COM2 通訊埠
⑦ RESET 按鈕	⑰ 24V 電源接口
⑧ COM1 通訊埠	⑱ 左側擴充模組接口
⑨ Ethernet 通訊埠	⑲ 銘牌
⑩ DIN 軌固定扣	

■ 電氣規格

◆ 電源規格

電源電壓	24 VDC (-15 ~ +20%)
電源保險絲容量	3 A/30 VDC，可恢復式 (Polyswitch)
隔離電壓	500 VDC (Secondary-PE)
消耗電力	8 W Max.
耐振動 / 衝擊	標準：IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)
雜訊免疫力	ESD (IEC 61131-2, IEC 61000-4-2): 8 kV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 kV, Digital I/O: 1 kV, Analog & Communication I/O: 1 kV Damped-Oscillatory Wave: Power Line: 1 kV, Digital I/O: 1 kV RS (IEC 61131-2, IEC 61000-4-3): 26 MHz ~ 1GHz, 10 V/m
環境要求	操作：0 ~ 55°C（溫度），50 ~ 95%（濕度），污染等級 2 儲存：-25 ~ 70°C（溫度），5 ~ 95%（濕度）
重量	約 240g

◆ 輸入 / 輸出規格

輸入 / 出通道數	輸入 8 通道；輸出 4 通道
輸入 / 出通道類型	8 通道爲高速數位輸入型；4 通道爲高速數位輸出型

輸入 / 出接線端子	輸入接線端子 I0、I1、I2、I3、I4、I5、I6、I7 輸出接線端子 Q0，Q1，Q2，Q3
輸入點公共端	接線端子 S/S（用於連接供電電源的正極或負極）
輸入類型	Sink 或 Source
輸入 / 出延遲時間	輸入：2.5 μs (OFF→ON)，5 μs (ON→OFF) 輸出：2 μs (OFF→ON)，3 μs (ON→OFF)
輸入信號電流	24 VDC, 5 mA
輸入 / 出電纜最大長度	有遮罩：500m；無遮罩：300m
輸出點供電電壓	24 VDC (-15 ~ +20%) #1
最大負載	負載爲電阻型：0.5 A/1 點 (2A/ZP) 負載爲電感型：13 W (30 VDC) 負載爲燈泡型：2.5 W (30 VDC)

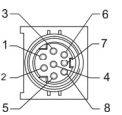
#1: UP、ZP 必須外加輔助電源 24 VDC (-15 ~20%)

■ 通訊埠介紹

◆ COM1（RS-232）通訊埠

DVP10MC11T 提供一個 RS-232 通訊埠，各腳位定義如下：

腳位	信號	敍述
1、2	+5V	5V 電源正極
3	GND	接地線
4	Rx	接收收據
5	Tx	發送資料
6	GND	接地線
7	NC	保留
8	GND	接地線



◆ COM2（RS-485）通訊埠

DVP10MC11T 提供一個 RS-485 通訊埠，各腳位定義如下：

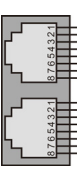
腳位	信號	敍述
1	+	Signal+
2	_	Signal-
3	SG	--



◆ CANopen 總線接口

DVP10MC11T 提供兩個 RJ45 接座作爲運動控制介面，在建立網路時，CAN 匯流排請使用標準的 CAN 通訊電纜，如台達標準 CAN 通訊電纜 TAP-CB03 或 TAP-CB04。在匯流排的兩端需另接終端電阻，如台達標準終端電阻模組 TAP-TR01。

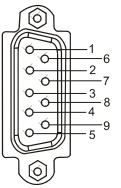
腳位	信號	敍述
1	CAN_H	Signal+
2	CAN_L	Signal-
3	CAN_GND	0 VDC
4	RESE_1	保留
5	RESE_2	保留
6	CAN_SHLD	遮罩線
7	CAN_GND	0 VDC
8	RESE_3	保留



◆ 編碼器接口

DVP10MC11T 提供一個 9 針的 D-SUB 編碼器介面，各端子定義如下：

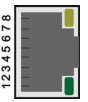
端子	定義	說明
1	A+	增量型編碼器
2	B+	
3	Z+	
6	A-	
7	B-	
8	Z-	
4	+24VEXT	24V 編碼器
5	GNDEXT	
9	+5VEXT	+5V 編碼器



◆ **Ethernet 通訊埠**

DVP10MC11T 提供一個 Ethernet 介面，此介面支援 Modbus/TCP 協定，各端子定義如下：

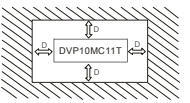
端子	定義	說明
1	Tx+	傳輸資料正極
2	Tx-	傳輸資料負極
3	Rx+	接收資料正極
4	--	N/C
5	--	N/C
6	Rx-	接收資料負極
7	--	N/C
8	--	N/C



■ 安裝與配線

◆ **盤內安裝**

請將 DVP10MC11T 安裝於封閉式的控制箱內，且周圍保持一定的空間，以確保散熱功能正常（如右圖所示），D > 50mm



◆ **輸入點配線**

配線圖見英文版頁碼 4 之 Input Point Wiring 一節。

◆ **輸出點配線**

DVP10MC11T 的電晶體輸出均已包含反電勢保護二極體，對於小功率電感性負載，且 On/Off 頻率不高的應用已經足夠，但在大功率或 On/Off 頻繁的場合，請依下列方法另接抑制電路，以降低干擾及防止過電壓或過熱而損壞電晶體輸出電路。

- 配線圖見英文版頁碼 4 之 [Figure 3]

❶ 24V 直流電源	❷ 電路回路保護用保險絲
❸ 緊急停止按鈕	❹ 負載：開關、電感類負載
❺ 9V Zener 二極體，5W（負載爲大功率且 On/Off 頻繁時，❺和❻一起使用）	
❻ 二極體或等效組件，用於二極體抑制（負載功率較小時只需使用❻，❺無需使用）	

■ 與左側擴充模組和 DVP-S 系列擴充模組連接

連接圖見英文版頁碼 4 之 [Figure 4]

■ LED 燈指示說明及故障排除

◆ ERR LED 燈顯示說明

LED 狀態	顯示說明	處理方法
燈滅	PLC 模組處於正常狀態	無需處理
紅色閃爍	用戶寫入 PLC 內的程式存在語法錯誤或 PLC 的裝置、指令超過允許範圍	根據 PLC 特殊暫存器 D1004 的內容值判斷錯誤原因，再根據 D1137 的內容值判斷程式錯誤位置。詳細內容請參閱《DVP-PLC 應用技術手冊》。
紅色快速閃爍	DVP10MC11T 電源供電不足	檢查 DVP10MC11T 之供電電源是否正常

◆ CAN LED 燈顯示說明

LED 狀態	顯示說明	處理方法
綠色單閃	CANopen 網路處於停止狀態	上位機正在下載程式，等待下載完成。
綠色閃爍	CANopen 網路處於預運行狀態	■ 檢查 CANopen 網路接線是否正確 ■ 檢查網路配置的從站是否存在 ■ 檢查從站是否離線
綠色常亮	CANopen 網路處於運行狀態	無需處理
紅色單閃	匯流排錯誤，超出警戒水準	■ 檢查 CANopen 匯流排連接線纜是否爲標準線纜 ■ 檢查 CANopen 匯流排兩端是否有接終端電阻 ■ 檢查 CANopen 匯流排線纜周圍是否干擾過大
紅色常亮	匯流排脫離（Bus-off）	■ 檢查 CANopen 網路中線纜接線是否正確 ■ 檢查 DVP10MC11T 和其從站的串列傳輸速率是否一致

◆ MTL LED 燈顯示說明

LED 狀態	顯示說明	處理方法
燈滅	DVP10MC11T 沒有配置從站	DVP10MC11T 在 CANopen Builder 軟體內配置從站並下載配置
綠色常亮	DVP10MC11T 處於運行狀態，運動控制程序處於執行狀態	無需處理
綠色閃爍	DVP10MC11T 未與從站建立連接	■ 檢查 CANopen 網路接線是否正確 ■ 檢查軟體中配置的從站是否存在
紅色常亮	DVP10MC11T 硬體錯誤	返廠維修
紅色閃爍	DVP10MC11T 運行異常	■ 查看掃描同步週期是否設定太短 ■ 查看 CANopen 網路中是否有從站離線 ■ 按 DVP10MC11T RESET 鍵（程式執行後重新進入 STOP 狀態）

◆ Ethernet LED 燈顯示說明

LED 燈	LED 燈狀態	顯示說明
橙色燈	燈亮	Ethernet 通訊速度爲 100 Mbps
	燈滅	Ethernet 通訊速度爲 10 Mbps，或 DVP10MC11T 未接入 Ethernet
綠色燈	閃爍	DVP10MC11T 之 Ethernet 通訊埠有發送或接收資料
	燈滅	DVP10MC11T 之 Ethernet 通訊埠無發送或接收資料

感谢您采用台达 DVP-MC 系列运动控制器，它是基于 CANopen 现场总线的多轴运动控制器，可广泛用于包装、印刷、封装，切割，数控机床，自动化仓储等众多运动控制领域。

- 使用前请务必仔细阅读本使用手册，并依照本手册指示进行操作，以免造成产品受损或人员受伤。
- 配线时请务必关闭电源。
- 本手册主要提供 DVP-MC 系列 PLC 的电气规格、功能规格、安装配线、故障排除说明，若果读者想了解更多的使用说明，请参阅 DVP10MC11T 应用技术手册。
- 本机为开放型机壳，因此使用本机时，请务必将其安装于具防尘、防潮及免于电击/冲击以外的外壳配线箱内。另必须具备保措施（如：特殊之工具或钥匙才可打开），防止非修护人员操作或意外冲击本体，造成危险及损坏。
- 本产品用来控制运转中的机械及设备，为避免损坏本产品，只有合格且熟悉本产品结构和操作的专业人员才可进行本产品的安装、操作、配线及维护。
- 交流输入电源不可连接与输入输出信号端，否则将造成严重的损坏，请在上电之前再次确认电源配线。

■ 产品外观与部位介绍

- 详细外观尺寸图，请参阅英文版页码 1 之 [Figure 1] 及 [Figure 2]。

① 机种名称	⑪ CANopen 通讯口
② POWER、RUN、ERR 指示灯	⑫ 扩展模块固定扣
③ COM1、COM2 通讯指示灯	⑬ 输入 / 输出端子
④ CAN、MTL 指示灯	⑭ 直接固定口
⑤ RUN/STOP 开关	⑮ 右侧扩展口
⑥ 编码器接口	⑯ COM2 通讯口
⑦ RESET 按钮	⑰ 24V 电源接口
⑧ COM1 通讯口	⑱ 左侧扩展接口
⑨ Ethernet 通讯口	⑲ 铭牌
⑩ DIN 轨固定扣	

■ 电气规格

◆ 电源规格

电源电压	24 VDC (-15 ~ +20%)
电源保险丝容量	3 A/30 VDC，可恢复式 (Polyswitch)
隔离电压	500 VDC (Secondary-PE)
消耗电力	8 W Max.
耐振动 / 冲击	标准：IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)
噪声免疫力	ESD (IEC 61131-2, IEC 61000-4-2): 8 kV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 kV, Digital I/O: 1 kV Analog & Communication I/O: 1 kV Damped-Oscillatory Wave: Power Line: 1 kV, Digital I/O: 1 kV RS (IEC 61131-2, IEC 61000-4-3): 26MHz ~ 1GHz, 10V/m
环境要求	工作：0 ~ 55°C（温度），50 ~ 95%（湿度），污染等级 2 储存：-25 ~ 70°C（温度），5 ~ 95%（湿度）
重量	约 240g

◆ 输入/输出规格

输入 / 出通道数	输入 8 通道；输出 4 通道
输入 / 出通道类型	8 通道为高速数字输入型；4 通道为高速数字输出型
输入 / 出接线端子	输入接线端子 I0、I1、I2、I3、I4、I5、I6、I7 输出接线端子 Q0、Q1、Q2、Q3
输入点公共端	接线端子 S/S（用于连接供电电源的正极或负极）
输入类型	漏型模式（Sink）或者源型模式（Source）
输入 / 出延迟时间	输入：2.5 μs (OFF→ON), 5 μs (ON→OFF) 输出：2 μs (OFF→ON), 3 μs (ON→OFF)
输入信号电流	24 VDC, 5 mA
输入 / 出电缆最大长度	有屏蔽：500m；无屏蔽：300m
输出点供电电压	24 VDC (-15 ~ +20%)#1
最大负载	负载为电阻型：0.5 A/1 点 (2A/ZP) 负载为电感型：13 W (30 VDC) 负载为灯泡型：2.5 W (30 VDC)

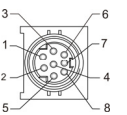
#1: UP、ZP 必须外加辅助电源 24 VDC (-15 ~ 20%)

■ 各通讯口介绍

◆ COM1（RS-232）通讯口

DVP10MC11T 提供一个 RS-232 通讯口，各引脚定义如下：

引脚	信号	叙述
1、2	+5V	5V 电源正极
3	GND	接地线
4	Rx	接收收据
5	Tx	发送数据
6	GND	接地线
7	NC	保留
8	GND	接地线



◆ COM1（RS-485）通讯口

DVP10MC11T 提供一个 RS-485 通讯端口，各引脚定义如下：

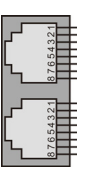
引脚	信号	叙述
1	+	Signal+
2	-	Signal-
3	SG	--



◆ CANopen 总线接口

DVP10MC11T 提供两个 RJ45 接座作为运动控制接口，CAN 总线在组网时，请使用标准的 CAN 通讯电缆，如台达提供的标准的 CAN 通讯电缆 TAP-CB03 或 TAP-CB04；另需在总线的两端加终端电阻，如台达提供的标准终端电阻模块 TAP-TR01。

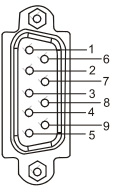
引脚	信号	叙述
1	CAN_H	Signal+
2	CAN_L	Signal-
3	CAN_GND	0 VDC
4	RESE_1	保留
5	RESE_2	保留
6	CAN_SHLD	屏蔽线
7	CAN_GND	0 VDC
8	RESE_3	保留



◆ 编码器接口

DVP10MC11T 提供一个 9 针的 D-SUB 编码器接口，引脚定义如下：

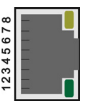
端子	定义	说明
1	A+	增量型编码器
2	B+	
3	Z+	
6	A-	
7	B-	
8	Z-	
4	+24VEXT	24V 编码器
5	GNDEXT	
9	+5VEXT	+5V 编码器



◆ Ethernet 通讯口

DVP10MC11T 提供一个 Ethernet 接口 此接口支持 Modbus/TCP 协议 各引脚定义如下：

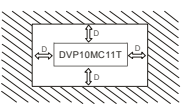
端子	定义	说明
1	Tx+	传输数据正极
2	Tx-	传输数据负极
3	Rx+	接收数据正极
4	--	N/C
5	--	N/C
6	Rx-	接收数据负极
7	--	N/C
8	--	N/C



■ 安装及配线

◆ 盘内安装

DVP10MC11T 在安装时，请配与封闭式的控制箱内，其周围应保持一定的空间，以确保其散热功能正常，(如右图所示) D > 50mm



◆ 输入节点配线

配线图见英文版页码 4 之 Input Point Wiring 一节。

◆ 输出节点配线

DVP10MC11T 晶体管输出均已包含反电势保护二极管 对于小功率电感性负载 ,且 On/Off 频率不高的应用已经足够，但在大功率或 On/Off 频繁的场合，请依下列方法另接抑制电路以降低干扰及防止过电压或过热而损坏晶体管输出电路。

- 配线图见英文版页码 4 之 [Figure 3]

❶ 24V 直流电源	❷ 电路回路保护用保险丝
❸ 急停按钮	❹ 负载：开关、电感类负载等
❺ 9V 齐纳二极管，5W：(负载为大功率且 On/Off 频繁时，❺和❻一起使用。)	
❻ 二极管或等效组件，用于二极管抑制。(负载功率较小时只需使用❻，❺无需使用)	

■ 与左侧扩充模块 DVP-S 系列扩充模块连接

连接图见英文版页码 4 之 [Figure 4]

■ LED 灯指示说明及故障排除

◆ ERR LED 灯显示说明

LED 状态	显示说明	处理方法
灯灭	PLC 模块处于正常状态	无需处理
红色闪烁	用户写入 PLC 模块内的程序存在语法错误或 PLC 的装置、指令超过允许范围	根据 PLC 模块特殊缓存器 D1004 的内容值判断错误原因，，再根据 D1137 的内容值判断程序错误位置。详细内容请参阅《DVP-PLC 应用技术手册》。
红色快速闪烁	DVP10MC11T 电源供电不足	检查 DVP10MC11T 之供电电源是否正常

◆ CAN LED 灯显示说明

LED 状态	显示说明	处理方法
绿色单闪	CANopen 网络处于停止状态	上位机正在下载程序，等待下载完成。
绿色闪烁	CANopen 网络处于预运行状态	■ 检查 CANopen 网络接线是否正确 ■ 检查网络配置的从站是否存在 ■ 检查从站是否掉线
绿色常亮	CANopen 网络处于运行状态	无需处理
红色单闪	总线错误，超出警戒水平	■ 检查 CANopen 总线连接线缆是否为标准线缆 ■ 检查 CANopen 总线两端是否有接终端电阻 ■ 检查 CANopen 总线线缆周围是否干扰过大
红色常亮	总线脱离（Bus-off）	■ 检查 CANopen 网络中线缆接线是否正确 ■ 检查 DVP10MC11T 和其从站的波特率是否一致

◆ MTL LED 灯显示说明

LED 状态	显示说明	处理方法
灯灭	DVP10MC11T 没有配置从站	DVP10MC11T 在 CANopen Builder 软件内配置从站并下载配置
绿色常亮	DVP10MC11T 处于运行状态 ,运动控制程序处于执行状态	无需处理
绿色闪烁	DVP10MC11T 未和从站建立连接	■ 检查 CANopen 网络接线是否正确 ■ 检查软件中配置的从站是否存在
红色常亮	DVP10MC11T 硬件错误	返厂维修
红色闪烁	DVP10MC11T 运行异常	■ 查看扫描同步周期是否设置太短 ■ 查看 CANopen 网络中是否有从站掉线 ■ 按 DVP10MC11T RESET 键（程序执行后重新进入 STOP 状态）

◆ Ethernet LED 灯显示说明

LED 灯	LED 灯状态	显示说明
橙色灯	灯亮	Ethernet 通讯速度为 100 Mbps
	灯灭	Ethernet 通讯速度为 10 Mbps，或 DVP10MC11T 未接入 Ethernet
绿色灯	闪烁	DVP10MC11T 之 Ethernet 通讯端口有发送或接收数据
	灯灭	DVP10MC11T 之 Ethernet 通讯端口无发送或接收数据

Delta DVP-MC serisi motion kontrol ünitelerini seçtiğiniz için teşekkürler. DVP-MC serisi ürünler CANopen fieldbus tabanlı motion kontrol üniteleri olup paketleme makinaları, baskı makinaları, kılavuz çekme makinaları, kesme makinaları, dijital kontrol tornalar ve otomatik depolama sistemlerinde kullanılabilir.

- DVP10MC11T ürününü kullanırken lütfen bu bilgi dökümanını tamamen okuyunuz ve ürünün veya personelin zarar görmesini önlemek için uyarılara dikkat ediniz.
- Bağlantı yapmadan önce ürünün enerjisini kesiniz.
- Bu bilgi dökümanı DVP-MC serisinin elektriksel özellikleri, fonksiyonları, kurulumu, bağlantısı ve arıza teşhisi ile ilgili bilgiler sağlar. DVP10MC11T ile ilgili detaylı bilgi için lütfen operation manualini inceleyiniz.
- DVP10MC11T ürünü AÇIK TİP bir ünite olup, kurulumu toz, rutubet, elektrik şoku ve titreşimden uzak kapalı yerlere yapılmalıdır. Ayrıca tehlike ve zararların önlenmesi için ürüne yetkili olmayan kişilerin müdahalesini engelleyecek koruyucu önlemler alınmalıdır. (Örneğin ürünün bulunduğu panoya kilit konulması gibi).
- DVP-MC serisi çalışan makina veya donanımları kontrol etmek için kullanılır. Zarar görmesini önlemek için kurulumu, çalışması, bağlantısı ve bakımı sadece ürünü iyi bilen yetkili kişiler tarafından yapılmalıdır.
- I/O terminallerine AC besleme girişi bağlamayınız. Aksi halde ciddi zararlar meydana gelebilir. Enerji vermeden önce tüm bağlantıları tekrar kontrol ediniz.

■ Ürün Profili & Ölçüler

- İngilizce (English) bölümde Şekil 1 [Figure 1] ve Şekil 2 [Figure 2]'ye bakınız.

① Model adı	⑪ CANopen haberleşme portu
② POWER, RUN, ERR indikatörleri	⑫ İlave modül sabitleme klipsi
③ COM1, COM2 indikatörleri	⑬ I/O terminalleri
④ CAN, MTL indikatörleri	⑭ Doğrudan montaj deliği
⑤ RUN/STOP anahtarı	⑮ Sağ-kenar ilave port
⑥ Enkoder arabirim	⑯ COM2 port
⑦ RESET buton	⑰ 24V power supply port
⑧ COM1 port	⑱ Sol-kenar ilave port
⑨ Ethernet port	⑲ Etiket
⑩ DIN ray klipsi	

■ Elektriksel Özellikler

◆ Güç Beslemesi

Besleme voltajı	24 VDC (-15 - +20%)
Besleme sigortası	3 A/30 VDC, Polyswitch
İzolasyon voltajı	500 VDC (İkincil-PE)
Güç tüketimi	8 W Maksimum
Şok / Titreşim bağışıklığı	Standartlar: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)
Ses bağışıklığı	ESD (IEC 61131-2, IEC 61000-4-2): 8 kV Hava Deşarj EFT (IEC 61131-2, IEC 61000-4-4): Güç hattı: 2 kV, Dijital I/O: 1 kV, Analog & Haberleşme I/O: 1 kV Sönümlü-Salınımlı Dalga: Güç Hattı: 1 kV, Dijital I/O: 1 kV RS (IEC 61131-2, IEC 61000-4-3): 26 MHz ~ 1GHz, 10 V/m
Çalışma Ortamı	Çalışma: 0 - 55°C (sıcaklık), 50 - 95% (rutubet), kirlenme derece 2 Saklama: -25 - 70°C (sıcaklık), 5 - 95% (rutubet)
Ağırlık	Yaklaşık 240g

◆ I/O Özellikler

I/O kanallar	8 giriş kanalı, 4 çıkış kanalı
I/O kanal tipleri	8 yüksek-hızlı dijital giriş kanalı, 4 yüksek-hızlı dijital çıkış kanalı
I/O terminalleri	Giriş terminalleri: I0, I1, I2, I3, I4, I5, I6, I7 Çıkış terminalleri: Q0, Q1, Q2, Q3
Giriş noktaları için ortak terminal	S/S bağlantı terminali (Besleme negatif veya pozitif uç bağlantısı için)
Giriş tipleri	Sink veya Source
I/O gecikme zamanı	Giriş: 2.5 µs (OFF→ON), 5 µs (ON→OFF) Çıkış: 2 µs (OFF→ON), 3 µs (ON→OFF)
Giriş sinyal akımı	24 VDC, 5 mA
Maksimum I/O kablo uzunluğu	Ekranlı: 500m; Ekransız: 300m
Çıkış noktaları için güç kaynağı	24 VDC (-15 - +20%) #1
Maksimum yük	Rezistif yük: 0.5 A/1 nokta (2A/ZP); Kondüktif yük: 13 W (30 VDC) Işık lamba yükü: 2.5 W (30 VDC)

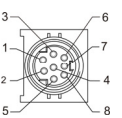
#1: UP ve ZP harici yardımcı 24 VDC besleme (-15 to 20%) kullanmalıdır.

■ COM Portlar

◆ COM1 (RS-232)

DVP10MC11T bir RS-232 port sunar. PIN açıklamaları için aşağıdaki tabloya bakınız.

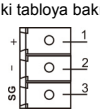
PIN	Sinyal	Açıklama
1, 2	+5V	5V besleme (pozitif kutup)
3	GND	Toprak
4	Rx	Receiving data (RD)
5	Tx	Sending data (SD)
6	GND	Toprak
7	NC	Rezerve
8	GND	Toprak



◆ COM2 (RS-485)

DVP10MC11T bir RS-485 port sunar. PIN açıklamaları için aşağıdaki tabloya bakınız.

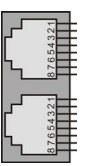
PIN	Sinyal	Açıklama
1	+	Sinyal+
2	_	Sinyal-
3	SG	--



◆ CANopen Bus Port

DVP10MC11T motion control için iki RJ45 konnektör sunar. Network oluşturulacağı zaman, CAN bus için Delta TAP-CB03 veya TAP-CB04 standart CAN kabloları kullanılır. Hattın her iki ucuna sonlandırma direnci gereklidir. Ör: Delta TAP-TR01.

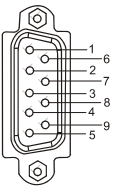
PIN	Sinyal	Açıklama
1	CAN_H	Sinyal+
2	CAN_L	Sinyal-
3	CAN_GND	0 VDC
4	RESE_1	Rezerve
5	RESE_2	Rezerve
6	CAN_SHLD	Kablo ekranı
7	CAN_GND	0 VDC
8	RESE_3	Rezerve



◆ Enkoder Arabirimi

DVP10MC11T 9-PIN D-SUB enkoder arabirimi sunar. Terminal açıklamaları için aşağıdaki tabloya bakınız.

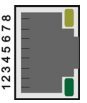
Terminal	Sinyal	Açıklama
1	A+	Incremental enkoder
2	B+	
3	Z+	
6	A-	
7	B-	
8	Z-	
4	+24VEXT	24V enkoder
5	GNDEXT	
9	+5VEXT	+5V enkoder



◆ Ethernet Port

DVP10MC11T Modbus/TCP protocol destekleyen bir Ethernet port sunar. Terminal açıklamaları için aşağıdaki tabloya bakınız.

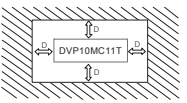
Terminal	Sinyal	Açıklama
1	Tx+	Sending data (pozitif)
2	Tx-	Sending data (negatif)
3	Rx+	Receiving data (pozitif)
4	--	N/C
5	--	N/C
6	Rx-	Receiving data (negatif)
7	--	N/C
8	--	N/C



■ Kurulum & Bağlantı

◆ Kurulum

Isı dağılımının sağlanabilmesi için DVP10MC11T'nin çevresinde gerekli boşluğu bırakınız. D > 50mm (Şekli inceleyiniz).



◆ Giriş Bağlantıları

İngilizce (English) bölümde "Input Point Wiring" başlığına bakınız.

◆ Çıkış Bağlantıları

DVP10MC11T ünitesi tüm transistör çıkışlar zener diyot içerir ve düşük güçteki iletken yükler ve sık On/Off gerekmeyen uygulamalar için yeterlidir. Ayrıca büyük güç ve sık On/Off gerektiren uygulamalar için gürültüyü azaltmak ve aşırı voltaj veya aşırı ısınma gibi durumlardan dolayı transistör çıkışının zarar görmesini önlemek için aşağıda gösterilen bastırma devresi metodunu izleyiniz.

İngilizce (English) bölümde Şekil 3'e [Figure 3] bakınız.

❶ 24 VDC besleme	❷ Sigorta
❸ Acil stop butonu	❹ Yük: Switch, iletken yük
❺ 9V Zener diyot, 5W (Büyük güç ve sık On/Off durumlarında ❸ ve ❻ kullanınız)	
❻ Bastırma için diyot ve eşdeğer komponentler (Düşük güç yük için sadece ❻ kullanınız)	

■ DVP-S Serisi İlave Modüllere Bağlantısı

İngilizce (English) bölümde Şekil 4'e [Figure 4] bakınız.

■ LED Indikatörler & Arıza Teşhisi

◆ ERR LED

LED durumu	Anlamı	Yapılması Gerekenler
Off	PLC normal çalışıyor	--
Kırmızı ışık flash yapıyor	PLC program yazılım (syntax) hatası; data veya komutlar izin verilen aralığın dışında	Hatanın ne olduğunu PLC'nin içindeki D1004 registerinden ve programın neresinde olduğunu da D1137 registerinden bakınız. Detaylı bilgi için *"DVP-PLC Application Manual: Programming"* bakınız.
Kırmızı ışık hızlı flash yapıyor	DVP10MC11T için yetersiz besleme	DVP10MC11T için güç kaynağı yükünün normal olduğunu kontrol ediniz.

◆ CAN LED

LED durumu	Anlamı	Yapılması Gerekenler
Yeşil ışık tek flash	CANopen network STOP durumu	Host kontrol ünitesi program yüklüyor ve yüklemenin tamamlanması için bekliyor.
Yeşil ışık flash yapıyor	CANopen network Ön-RUN durumu	■ CANopen network'ün doğru bağlandığını kontrol ediniz. ■ Ayarları yapılan slave ünitenin network üzerinde mevcut olduğunu kontrol ediniz. ■ Slave ünitenin offline olduğunu kontrol ediniz.
Yeşil ışık sürekli on	CANopen network RUN durumu	--
Kırmızı ışık tek flash	Bus hatası, alarm seviyesini aşıyor	■ CANopen bus için bağlantı kablosunun standart kablo olduğunu kontrol ediniz. ■ CANopen bus'ın her iki ucunda da sonlandırma direnci olduğunu kontrol ediniz. ■ CANopen bus çevresinde gürültü olup olmadığını kontrol ediniz.
Kırmızı ışık sürekli on	Bus-off	■ CANopen network kablo bağlantısının doğru olduğunu kontrol ediniz. ■ DVP10MC11T'nin baudrate hızının slave üniteler ile aynı olduğunu kontrol ediniz.

◆ MTL LED

LED durumu	Anlamı	Yapılması Gerekenler
Off	DVP10MC11T slave ürünler ile konfigure edilemiyor.	Slave ürünleri DVP10MC11T için CANopen Builder yazılımında ayarlayın ve konfigurasyonu yükleyin.
Yeşil ışık on	DVP10MC11T hazır konumda; motion kontrol program çalışma durumunda.	--
Yeşil ışık flash yapıyor	DVP10MC11T slave ile bağlanamadı.	■ CANopen network'ün doğru bağlandığını kontrol ediniz. ■ Ayarları yapılan slave ünitenin network üzerinde mevcut olduğunu kontrol ediniz.
Kırmızı ışık sürekli on	DVP10MC11T donanım hatası	Teknik servisimizle bağlantıya geçiniz.
Kırmızı ışık flash yapıyor	DVP10MC11T çalışması anormal durumda.	■ Eş zamanlı tarama peryotu çok kısa olup olmadığını kontrol ediniz. ■ CANopen network'te offline slave olup olmadığını kontrol ediniz. ■ DVP10MC11T üzerindeki RESET butonuna basınız. (Programı çalıştırdıktan sonra STOP durumunu tekrar giriniz.)

◆ Ethernet LED

LED	LED durumu	Anlamı
Turuncu ışık	On	Ethernet haberleşme baudrate 100 Mbps.
	Off	Ethernet haberleşme baudrate 10 Mbps, veya DVP10MC11T Ethernete bağlanmadı.
Yeşil ışık	Flash yapıyor	DVP10MC11T Ethernet portu data gönderiyor veya alıyor.
	Off	DVP10MC11T Ethernet portu data gönderemiyor veya almıyor.