

# Industrial Ethernet

## DVS series Instruction Sheet

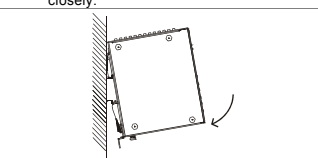
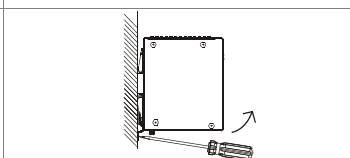
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安 裝 說 明



Managed Industrial Ethernet Switches  
工業級網管型乙太網路交換器  
网管型工业以太网交换机

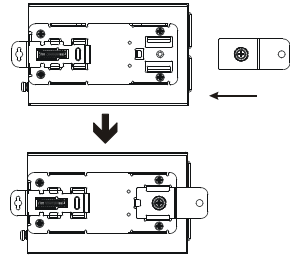
### 4 Installation

#### ■ DIN-Rail Mounting

|  |  |
|--|--|
| <p>◆ <b>Mounting</b><br/>Step 1: Hook the upper end of the DIN clip of the DVS series switch on the DIN-Rail.<br/>Step 2: Lightly push the DVS series switch toward the DIN-Rail until they contact each other closely.</p>  | <p>◆ <b>Removal</b><br/>Step 1: Insert the flat-blade screwdriver into the DIN clip and pull the DIN clip downward.<br/>Step 2: Pull the DVS series switch, and you can remove it from the DIN-Rail.</p>  |
|--|--|

#### ■ Wall Mounting

Step 1: Insert the wall mounting bracket into the slot on the rear panel of the DVS series switch, and tighten the screw on it, as shown in the diagram below.  
Step 2: Place the wall mounting bracket in an appropriate position, and tighten the two screws on the bracket and the DIN clip.

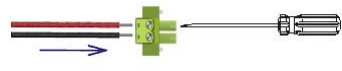


### 5 Wiring the Redundant Power Input

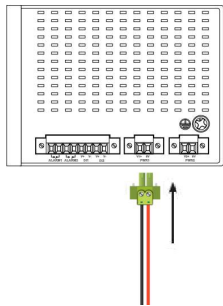
The DVS series switches are equipped with one to two sets of DC input (PWR1 / PWR2). Both sets of DC input can be connected to a wide range of power sources (12 to 48VDC). If one power source fails, the other live source can work as a backup to ensure that the machine operates normally.

Step 1: Insert the negative and positive DC wires into the terminal block, and make sure that the positive DC wire is connected to V1+ or V2+, and that the negative DC wire is connected to 0V.

Step 2: To prevent the loose DC wires, tighten the wire clamp screws on the terminal block connector with the flat-blade screwdriver.



NOTE: Please use copper wire 60/75°C, conductor 16 to 24 AWG; screw up at torque 2.2kgf-cm(1.91 in-lbs)  
Step 3: Insert the plastic terminal block connector into the terminal block receptor on the DVS series switch.

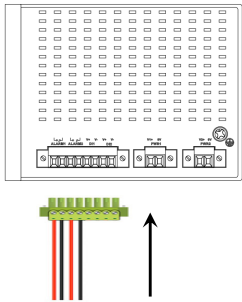


NOTE: Grounding the ground terminal on the DVS series switch can avoid the noise effect due to the electromagnetic interference (EMI).

|  |   |
|--|---|
|  | Please use Class 2 power sources.   |
|  | The devices are designed for operation with a LPS power supply of "12 to 48VDC, 1A power rating" in accordance with EN 60950-1 ed.2.<br>The devices is intended to be operated under altitude up to 10,000ft(3048m), the DC power supply source comply with the requirement of 10,000ft(3048m) of clearance is multiplied by the altitude correction factor(1.15), specified in table A.2 of IEC 60664-1, 1992+A1:2000. |

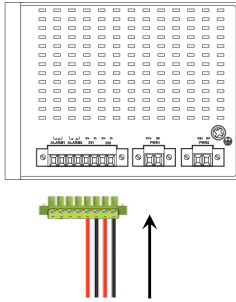
### 6 Wiring the Alarm Contact

The DVS series switches are equipped with one to two sets of alarm (Alarm1 / Alarm2).The alarm contact is a dry relay. If one of the two power sources fails, one of digital input is triggered or the communication is interrupted, the contact will turns from an "OPEN" circuit to a "CLOSED" circuit. The relay can be connected to a 5A/24VDC power source.



### 7 Wiring the Digital Input

The DVS series switches are equipped with one to two sets of digital input (DI1 / DI2). If the power source between 0 to 5V, the state of DI is OFF. If the power source between 11 to 30V, the state of DI is ON. The maximum input current is 6mA.



The electrical circuit of DI1 and DI2 are independent, so you don't need to care about NPN type or PNP type of DI. If the electrodes positive and electrodes negative of DI has been reversed when you plug the cable, DI still can work properly.

### 8 LED Indicators

#### ■ DVS-108W02-2SFP / 109W02-1GE / 110W02-3SFP

| LED                   | Color  | Status | Description   |   |
|-----------------------|--------|--------|---|---|
| ALARM                 | Red    | ON     | The communication is interrupted, there is a power failure, or alarm event which has been configured happened.            |   |
|                       |        | OFF    | The communication is not interrupted, there is no power failure, or alarm event which has been configured doesn't happen. |   |
| PWR1/ PWR2            | Green  | ON     | The power is supplied normally.   |   |
|                       |        | OFF    | The power is not supplied.  |   |
| DI1/DI2               | Green  | ON     | The DI is triggered.  |   |
|                       |        | OFF    | The DI is not triggered.  |   |
| 10/100M (RJ45)        | Orange | ON     | The port is connected at a speed of 10 or 100 Mbps.   |   |
|                       |        | OFF    | The port is disconnected.   |   |
| 10/100/1000M (RJ45)   | Green  | ON     | The port is connected at a speed of 1000 Mbps.  |   |
|                       |        | Orange | ON  | The port is connected at a speed of 10 or 100 Mbps. |
|                       |        | OFF    | The port is disconnected.   |   |
| 100/1000M (SFP Fiber) | Green  | ON     | The port is connected at a speed of 1000 Mbps.  |   |
|                       |        | Orange | ON  | The port is connected at a speed of 100 Mbps.       |
|                       |        | OFF    | The port is disconnected.   |   |

| LED        | Color  | Status   | Description   |
|------------|--------|----------|---|
| LINK/ACT   | Green  | ON       | The Network communication connection has been established.            |
|            |        | Blinking | The data is being transmitted.  |
|            |        | OFF      | The Network communication connection has not been established.        |
| R.M/CPLG.R | Yellow | ON       | As a master of ONE RING, or a forwarding path of Coupling Ring.       |
|            |        | Blinking | Any node disconnection is occurred in ONE RING or Coupling Ring.      |
|            |        | OFF      | A slave of ONE RING, or ONE RING or Coupling Ring is not available.   |
| C.HD/C.TL  | Green  | ON       | As a head or a tail of ONE CHAIN.                                     |
|            |        | Blinking | As a head or a tail of ONE CHAIN, any node disconnection is occurred. |
|            |        | OFF      | ONE CHAIN is not available.   |

### 9 Ethernet Interface

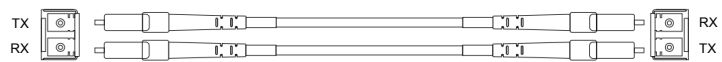
#### ■ 10/100Base-T(X), 10/100/1000Base-T Connection

The 10/100Base-T(X) or 10/100/1000Base-T ports of the DVS series switches are used to connect to Ethernet. RJ45 ports support MDI (NIC-type) and MDI-X (HUB/Switch-type) modes, the pin definition of the Ethernet cable is as follows.

| 10/100Base-T(X) |          | 1000Base-T |                | 8-PIN RJ45 |
|-----------------|----------|------------|----------------|------------|
| PIN             | MDI Mode | MDI-X Mode | MDI/MDI-X Mode |            |
| 1               | Tx+      | Rx+        | TP0+           |            |
| 2               | Tx-      | Rx-        | TP0-           |            |
| 3               | Rx+      | Tx+        | TP1+           |            |
| 4               | n.c.     | n.c.       | TP2+           |            |
| 5               | n.c.     | n.c.       | TP2-           |            |
| 6               | Rx-      | Tx-        | TP1-           |            |
| 7               | n.c.     | n.c.       | TP3+           |            |
| 8               | n.c.     | n.c.       | TP3-           |            |

#### ■ 100/1000Base-SFP Fiber Connection

Each SFP module has TX and RX interface, make sure the fiber connect TX interface to RX interface between two SFP modules.



### 10 Mechanical Characteristics

|               | DVS-108W02-2SFP              | DVS-109W02-1GE | DVS-110W02-3SFP |
|---------------|------------------------------|----------------|-----------------|
| Case          | IP40 Aluminum metal case     |                |                 |
| Dimension(mm) | 145.3 (H) x 75(W) x 108.2(D) |                |                 |
| Weight(g)     | 520                          | 500            | 564             |

◆ For more information about the product, please visit <http://www.deltaww.com>

### ⚠ 注意事項

繁體中文

- ✓ 此安裝手冊只提供電氣規格、一般規格、安裝及配線。
- ✓ 電路板上的零件與 IC 易受靜電破壞，未做好防靜電措施前請勿用手觸摸，防止非維護人員操作或意外衝擊本體，造成危險與損壞，且請勿在上電時觸摸任何端子。
- ✓ 本產品可能內建 Class 1 LASER/LED 光收發器，請勿直視光纖埠口，否則將對眼睛造成嚴重的傷害。
- ✓ 請務必仔細閱讀本安裝說明，並依照說明指示進行操作，以免造成產品受損，或導致人員受傷。

### 1 產品簡介

感謝您使用台達DVS工業級網管型乙太網路交換器，DVS系列是專為應用於各式嚴苛環境所設計之解決方案，具備電源故障，數位輸入，通訊斷線警報輸出及-40 ~ 75°C寬溫工作標準，優越工藝技術，通過UL、CE與FCC等工業安規認證。

### 2 功能特色

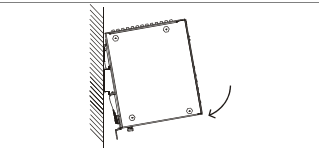
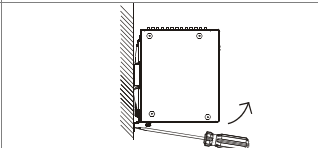
- 10/100Base-T(X) (RJ45)、10/100/1000Base-T (RJ45)、100/1000Base-SFP 光纖
- IEEE 802.3/802.3u/802.3ab/802.3x/802.3z
- 自動傳輸速率偵測
- MDI/MDI-X 自動跳線偵測

### 3 產品包裝

- 台達 DVS 工業級網管型乙太網路交換器 x1
- RJ45 保護蓋
- 壁掛式金屬配件
- USB A 公轉 B 公控制線 x1
- 使用手冊及產品光碟
- 安裝說明書

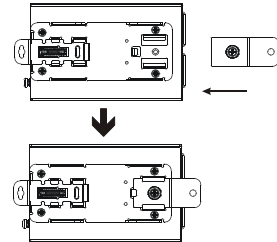
### 4 安裝方式

#### ■ 軌道式安裝

|   |  |
|---|--|
| <p>◆ 安裝<br/>步驟一：將 DVS 背後的金屬安裝配件扣住 DIN-Rail<br/>步驟二：將 DVS 向內推，直到金屬彈簧夾與 DIN-Rail 完全緊合</p>  | <p>◆ 卸下<br/>步驟一：將一字起子插入金屬彈簧夾下的洞孔並向下拉<br/>步驟二：拉起 DVS 底部即可順勢取出</p>  |
|---|--|

#### ■ 壁掛式安裝

- 步驟一：將附送的壁掛式金屬配件插入 DVS 後的凹槽，並用十字螺絲起子將金屬配件鎖緊於 DVS
- 步驟二：經由 DVS 後金屬配件的兩個螺絲孔，將 DVS 鎖緊於您所需要的位置。



### 5 備援式電源輸入

DVS內建一到兩組12 ~ 48VDC直流電輸入 ( PWR1/PWR2 )，當其中一組電源故障時，另一組電源可以馬上啟動，確保機器正常運作。

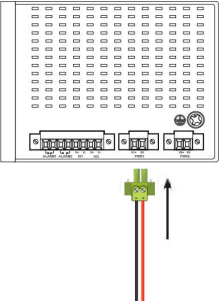
步驟一：將端子座公頭從 DVS 取下，並將 DC 直流電源線插入端子座公頭上，並確認正極接入 V1+或 V2+與負極接入 0V

步驟二：利用小一字螺絲起子將電源線鎖緊於端子座公頭上



註：請使用60/75°C，導體線徑為16-24AWG之銅線；其鎖螺絲之扭力為2.2kgf-cm ( 1.91 in-lbs )

步驟三：將端子座公頭插回 DVS 端子座母座上

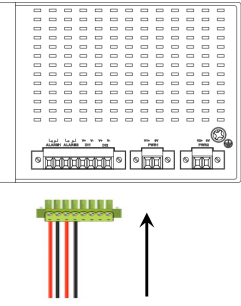


註：請務必正確接上DVS底部的接地端子，可提高抗EMI雜訊能力。

- Please use Class 2 power sources.
- The devices are designed for operation with a LPS power supply of \*12 to 48VDC, 1A power rating\* in accordance with EN 60950-1 ed.2.
- The devices is intended to be operated under altitude up to 10,000ft(3048m), the DC power supply source comply with the requirement of 10,000ft(3048m) of clearance is multiplied by the altitude correction factor(1.15), specified in table A.2 of IEC 60664-1, 1992+A1:2000.

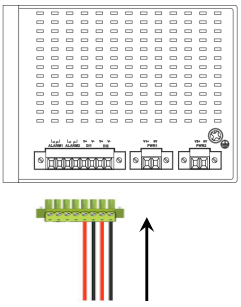
## 6 警報接點輸出

DVS內建一到兩組繼電器警報接點輸出。在正常模式下，接點為“OPEN”模式；若當兩組電源中有一組故障或是通訊中斷發生，接點將形成“CLOSED”模式。繼電器最大可承受5A/24VDC負載。



## 7 數位接點輸入

DVS內建一到兩組數位輸入接點。若輸入電壓介於0~5V，則DI的狀態為“OFF”；若輸入電壓介於11~30V，則DI的狀態為“ON”，最大輸入電流為6mA。



- DI1 及 DI2 的電路互相獨立，因此無需在 DI 的接線類型為 NPN 或 PNP。當插入纜線至 DI 時，正、負極若插反，DI 仍可正常運作。

## 8 LED 燈指示說明

### ■ DVS-108W02-2SFP / 109W02-1GE / 110W02-3SFP

| 指示燈                 | 指示燈狀態 | 說明                       |
|---------------------|-------|--------------------------|
| ALARM               | 紅燈    | 恆亮 通訊中斷，電源中斷或已設定的警報事件發生  |
|                     | 恆滅    | 無通訊中斷，無電源中斷或已設定的警報事件未發生  |
| PWR1                | 綠燈    | 恆亮 電源供應正常                |
|                     | 恆滅    | 無電源供應                    |
| PWR2                | 綠燈    | 恆亮 電源供應正常                |
|                     | 恆滅    | 無電源供應                    |
| DI1                 | 綠燈    | 恆亮 數位訊號輸入正常              |
|                     | 恆滅    | 無數位訊號輸入                  |
| DI2                 | 綠燈    | 恆亮 數位訊號輸入正常              |
|                     | 恆滅    | 無數位訊號輸入                  |
| 10/100M (RJ45)      | 橘燈    | 恆亮 10Mbps 或 100Mbps 速度連線 |
|                     | 恆滅    | 無連線                      |
| 10/100/1000M (RJ45) | 綠燈    | 恆亮 1000Mbps 速度連線         |
|                     | 橘燈    | 恆亮 10Mbps 或 100Mbps 速度連線 |
|                     | 恆滅    | 無連線                      |

| 指示燈                | 指示燈狀態 | 說明  |
|--------------------|-------|---|
| 100/1000M (SFP 光纖) | 綠燈    | 恆亮 1000Mbps 速度連線                          |
|                    | 橘燈    | 恆亮 100Mbps 速度連線                           |
|                    | 恆滅    | 無連線                                       |
| LINK/ACT           | 綠燈    | 恆亮 已建立網路通訊連線                              |
|                    | 閃爍    | 資料封包傳輸中                                   |
|                    | 恆滅    | 未建立網路通訊連線                                 |
| R.M/CPLG.R         | 黃燈    | 恆亮 ONE RING 的主站或 Coupling Ring 中的主路徑      |
|                    | 閃爍    | ONE RING 或 Coupling Ring 中有任何節點發生斷線       |
|                    | 恆滅    | ONE RING 的從站/ONE RING 或 Coupling Ring 未建立 |
| C.HD/C.TL          | 綠燈    | 恆亮 ONE CHAIN 的 Head 或 Tail                |
|                    | 閃爍    | ONE CHAIN 的 Head 或 Tail 有任何節點發生斷線         |
|                    | 恆滅    | ONE CHAIN 未建立                             |

## 9 乙太網路介面

### ■ 10/100Base-T(X), 10/100/1000Base-T 連線

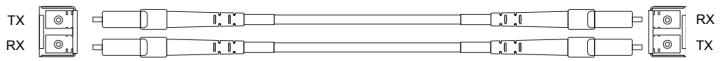
DVS RJ45 10/100Base-T(X)或10/100/1000Base-T埠是用來連接乙太網路的介面。RJ45埠可同時支援MDI(NIC-type)與MDI-X(HUB/Switch-type)模式。腳位定義如下：

| 腳位 | 10/1000Base-T(X) |          | 1000Base-T   |
|----|------------------|----------|--------------|
|    | MDI 模式           | MDI-X 模式 | MDI/MDI-X 模式 |
| 1  | Tx+              | Rx+      | TP0+         |
| 2  | Tx-              | Rx-      | TP0-         |
| 3  | Rx+              | Tx+      | TP1+         |
| 4  | n.c              | n.c      | TP2+         |
| 5  | n.c              | n.c      | TP2-         |
| 6  | Rx-              | Tx-      | TP1-         |
| 7  | n.c.             | n.c      | TP3+         |
| 8  | n.c.             | n.c      | TP3-         |



### ■ 100/1000Base-SFP 光纖埠連線

每一個 SFP 模組都有 TX 及 RX 介面，請確認光纖纜線連接的兩側，一側為 TX 介面，另一側為 RX 介面。



## 10 實體特性

| 外觀      | DVS-108W02-2SFP              | DVS-109W02-1GE | DVS-110W02-3SFP |
|---------|------------------------------|----------------|-----------------|
| 尺寸 (mm) | 145.3 (H) x 75(W) x 108.2(D) |                |                 |
| 重量 (公克) | 520                          | 500            | 564             |

◆ 更多完整產品安裝資訊請參考 <http://www.deltaww.com>

## 11 注意事項 简体中文

- ✓ 此安裝手冊只提供電氣規格、一般規格、安裝及配線。
- ✓ 電路板上的零件與 IC 易受靜電破壞，未做好防靜電措施前請勿用手触摸，防止非維護人員操作或意外冲击本体，造成危險與損壞，且請勿在上電時触摸任何端子。
- ✓ 本產品可能內建 Class 1 LASER/LED 光收發器，請勿直視光纖端口，否則將對眼睛造成嚴重的傷害。
- ✓ 請務必仔細閱讀本安裝說明，並依照說明指示進行操作，以免造成產品受損，或導致人員受傷。

## 12 產品簡介

感谢您使用台达DVS网管型工业以太网交换机。DVS系列是专为应用于各式严苛环境所设计之解决方案，具备电源故障，数字输入，通讯断线警報输出及-40 ~ 75°C宽温工作标准，优越工艺技术，通过UL, CE与FCC等工业认证。

## 13 功能特色

- 10/100Base-T(X) (RJ45)、10/100/1000Base-T (RJ45)、100/1000Base-SFP 光纤
- IEEE 802.3/802.3u/802.ab/802.3x/802.3z
- 自动传输速率检测
- MDI/MDI-X 自适应

## 14 产品包装

- 台达 DVS 网管型工业以太网交换机 x1
- RJ45 保护盖
- 壁挂式金属配件
- USB A 公转 B 公控制线 x1
- 使用手册及产品光盘
- 安装说明书
- 保证卡

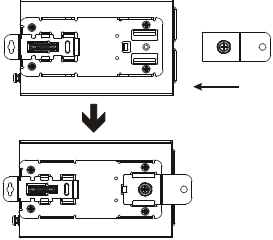
## 15 安装方式

### ■ 轨道式安装

|  |   |
|--|---|
| <ul style="list-style-type: none"><li>◆ 安装<br/>步骤一：将 DVS 背后的金属安装配件扣住 DIN-Rail<br/>步骤二：将 DVS 向内推，直到金属弹簧夹与 DIN-Rail 完全契合</li></ul> | <ul style="list-style-type: none"><li>◆ 卸下<br/>步骤一：将一字起子插入金属弹簧夹下的洞孔并向下拉<br/>步骤二：拉起 DVS 底部即可顺势取出</li></ul> |
|--|---|

### ■ 壁挂式安装

- 步骤一：将附送的壁挂式金属配件插入 DVS 后的凹槽，并用十字螺丝起子将金属配件锁紧于 DVS
- 步骤二：经由 DVS 后金属配件的两个螺丝孔，将 DVS 锁紧于您所需要的位置。

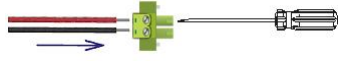


## 16 备援式电源输入

DVS內建一到兩組12 ~ 48VDC直流電輸入 (PWR1/PWR2)，當其中一組電源故障時，另一組電源可以馬上啟動，確保機器正常運作。

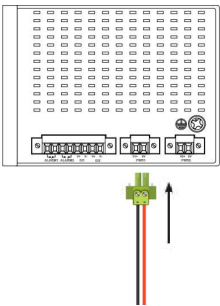
步驟一：將端子座公頭從 DVS 取下，並將 DC 直流電源線插入端子座公頭上，並確認正級接入 V1+或 V2+而負級接入 0V

步驟二：利用小一字螺絲起子將電源線鎖緊于端子座公頭上



注：请使用 60/75°C，导体线径为 16-24AWG 的铜线；其锁螺丝之扭力为 2.2kgf-cm ( 1.91 in-lbs )。

步驟三：將端子座公頭插回 DVS 端子座母座上

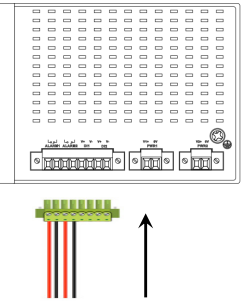


注：請務必正確接上 DVS 底部的接地端子，可提高抗 EMI 噪声能力。

- Please use Class 2 power sources.
- The devices are designed for operation with a LPS power supply of \*12 to 48VDC, 1A power rating\* in accordance with EN 60950-1 ed.2.
- The devices is intended to be operated under altitude up to 10,000ft(3048m), the DC power supply source comply with the requirement of 10,000ft(3048m) of clearance is multiplied by the altitude correction factor(1.15), specified in table A.2 of IEC 60664-1, 1992+A1:2000.

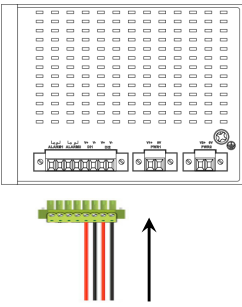
## 17 报警接点输出

DVS內建一到兩組繼電器報警接點輸出。在正常模式下，接點為“OPEN”模式；若當兩組電源中有一組故障或是通訊中斷發生，接點將形成“CLOSED”模式。繼電器最大可承受5A/24VDC負載。



## 18 数字接点输入

DVS內建一到兩組數字輸入接點。若輸入電壓介於0~5V，則DI的狀態為“OFF”；若輸入電壓介於11~30V，則DI的狀態為“ON”，最大輸入電流為6mA。



- DI1 及 DI2 的電路互相獨立，因此無需在 DI 的接線類型為 NPN 或 PNP。當插入纜線至 DI 時，正、負極若插反，DI 仍可正常運作。

## 19 LED 灯指示说明

### ■ DVS-108W02-2SFP / 109W02-1GE / 110W02-3SFP

| 指示灯                   | 指示灯状态 | 说明                       |
|-----------------------|-------|--------------------------|
| ALARM                 | 红灯    | 恆亮 通信中斷，電源中斷或已設定的報警事件發生  |
|                       | 恆滅    | 無通信中斷，無電源中斷或已設定的報警事件未發生  |
| PWR1                  | 綠燈    | 恆亮 電源供應正常                |
|                       | 恆滅    | 無電源供應                    |
| PWR2                  | 綠燈    | 恆亮 電源供應正常                |
|                       | 恆滅    | 無電源供應                    |
| DI1                   | 綠燈    | 恆亮 數位訊號輸入正常              |
|                       | 恆滅    | 無數位訊號輸入                  |
| DI2                   | 綠燈    | 恆亮 數位訊號輸入正常              |
|                       | 恆滅    | 無數位訊號輸入                  |
| 10/100M (RJ45 口)      | 橘燈    | 恆亮 10Mbps 或 100Mbps 速度联接 |
|                       | 恆滅    | 無通信                      |
| 10/100/1000M (RJ45 口) | 綠燈    | 恆亮 1000Mbps 速度联接         |
|                       | 橘燈    | 恆亮 10Mbps 或 100Mbps 速度联接 |
|                       | 恆滅    | 無通信                      |

| 指示灯                | 指示灯状态 | 说明  |
|--------------------|-------|---|
| 100/1000M (SFP 光纤) | 綠燈    | 恆亮 1000Mbps 速度联接                          |
|                    | 橘燈    | 恆亮 100Mbps 速度联接                           |
|                    | 恆滅    | 無通信                                       |
| LINK/ACT           | 黃燈    | 恆亮 已建立网络通信联接                              |
|                    | 閃爍    | 数据封包传输中                                   |
|                    | 恆滅    | 未建立网络通信联接                                 |
| R.M/CPLG.R         | 橘燈    | 恆亮 ONE RING 的主站或 Coupling Ring 中的主路徑。     |
|                    | 閃爍    | ONE RING 或 Coupling Ring 中有任何节点发生断线       |
|                    | 恆滅    | ONE RING 的从站/ONE RING 或 Coupling Ring 未建立 |
| C.HD/C.TL          | 綠燈    | 恆亮 ONE CHAIN 的 Head 或 Tail                |
|                    | 閃爍    | ONE CHAIN 的 Head 或 Tail 有任何节点发生断线         |
|                    | 恆滅    | ONE CHAIN 未建立                             |

## 20 以太网接口

### ■ 10/100Base-T(X), 10/100/1000Base-T 接线

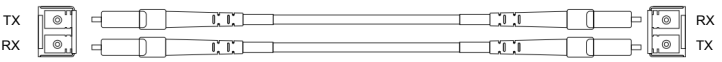
DVS RJ45 10/100Base-T(X)或10/100/1000Base-T端口是用来连接以太网的接口。RJ45端口可同时支持MDI(NIC-type)与MDI-X(HUB/Switch-type)自适应模式。脚位定义如下：

| 引脚 | 10/100Base-T(X) |          | 1000Base-T   |
|----|-----------------|----------|--------------|
|    | MDI 模式          | MDI-X 模式 | MDI/MDI-X 模式 |
| 1  | Tx+             | Rx+      | TP0+         |
| 2  | Tx-             | Rx-      | TP0-         |
| 3  | Rx+             | Tx+      | TP1+         |
| 4  | n.c.            | n.c.     | TP2+         |
| 5  | n.c.            | n.c.     | TP2-         |
| 6  | Rx-             | Tx-      | TP1-         |
| 7  | n.c.            | n.c.     | TP3+         |
| 8  | n.c.            | n.c.     | TP3-         |



### ■ 100/1000Base-SFP 光纤接线

每一个 SFP 模块都有 TX 及 RX 接口，请确认光纤线缆连接的两侧，一側為 TX 接口，另一側為 RX 界面。



## 21 实体特性

| 外觀      | DVS-108W02-2SFP              | DVS-109W02-1GE | DVS-110W02-3SFP |
|---------|------------------------------|----------------|-----------------|
| 尺寸 (mm) | 145.3 (H) x 75(W) x 108.2(D) |                |                 |
| 重量 (公克) | 520                          | 500            | 564             |

◆ 更多完整产品安装信息请參考 <http://www.deltaww.com>