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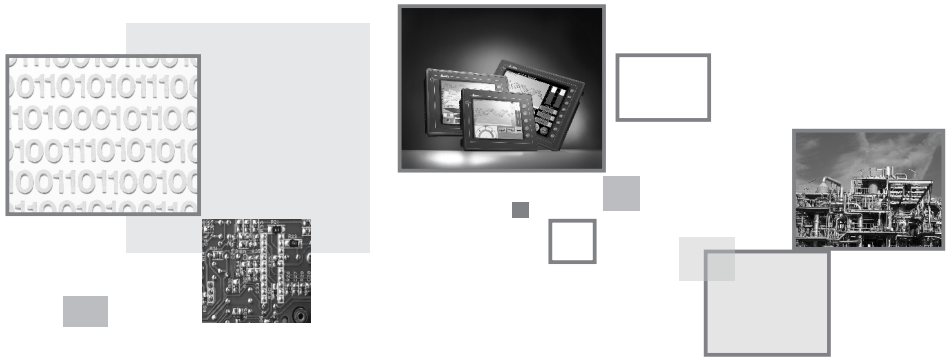
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* We reserve the right to change the information in this manual without prior notice
* 規格若有變更，以實際產品爲主
* 规格若有变更，以实际产品为主

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DELTA ELECTRONICS, INC.



# DOP-A

# QUICK START
# KULLANIM KILAVUZU
# 安裝手冊 / 安装手册

- ***Man-machine/High Reliability/ User-friendly HMI Products***
- ***Makine Dostu / Güvenilir / Kullanımı Kolay HMI Ürünleri***
- ***人性化/高可靠度/友善人機介面***
- ***人性化/高可靠度/友善人机界面***

**www.delta.com.tw/industrialautomation**

# Preface

Thank you for purchasing DELTA's DOP-A, AE and AS series. This quick start will be helpful in the installation, wiring and inspection of Delta HMI. Before using the product, please read this quick start to ensure correct use. You should thoroughly understand all safety precautions before proceeding with the installation, wiring and operation. Place this quick start in a safe location for future reference. Please observe the following precautions:

- Install the product in a clean and dry location free from corrosive and inflammable gases or liquids.
- Ensure that all wiring instructions and recommendations are followed.
- Ensure that HMI is correctly connected to a ground. The grounding method must comply with the electrical standard of the country.
- Do not modify or remove wiring when power is applied to HMI.
- Do not touch the power supply during operation. Otherwise, it may cause electric shock.
- For the information of HMI software operation, software installation and hardware wiring, please refer to the HMI software manual.

If you have any questions during operation, please contact our local distributors or Delta sales representative.

The content of this quick start may be revised without prior notice. Please consult our distributors or download the most updated version at http://www.delta.com.tw/industrialautomation.

## Safety Precautions

Carefully note and observe the following safety precautions when receiving, inspecting, installing, operating, maintaining and troubleshooting. The following words, DANGER, WARNING and STOP are used to mark safety precautions when using the Delta's HMI product. Failure to observe these precautions may void the warranty!

### Installation




- Comply with quick start for installation. Otherwise it may cause equipment damage.
- Do not install the product in a location that is outside the stated specification for the HMI. Failure to observe this caution may result in electric shock, fire, or personal injury.

### Wiring




- Connect the ground terminals to a class-3 ground (Ground resistance should not exceed 100Ω). Improper grounding may result in communication error, electric shock or fire.

### Operation




- The users should use Delta Screen Editor software to perform editing in Delta's HMI product. To perform editing and confirming HMI programs without using Delta Screen Editor software in Delta's HMI product may result in abnormal operation.




- Do not modify wiring during operation. Otherwise it may result in electric shock or personal injury.
- Never use a hard or pointed object to hit or strike the screen as doing this may damage the screen and let the screen has not respond at all, and then cause HMI to work abnormally..

**Maintenance and Inspection**




- Do not touch any internal or exposed parts of the HMI as electrical shock may result.
- Do not remove operation panel while power is on. Otherwise electrical shock may result.
- Wait at least 10 minutes after power has been removed before touching any HMI terminals or performing any wiring and/or inspection as an electrical charge may still remain in the HMI with hazardous voltages even after power has been removed.
- Turn the power off before changing backup battery and check system settings after finishing change. (all data will be cleared after changing battery).
- Be sure the ventilation holes are not obstructed during operation. Otherwise malfunction may result due to bad ventilation or overheating troubles.

**Wiring Method**




- Remove the terminal block from the HMI before wiring.
- Insert only one wire into one terminal on the terminal block.
- If the wiring is in error, perform the wiring again with proper tools. Never use force to remove the terminals or wires. Otherwise, it may result in malfunction or damage.
- For the power line that forced to take out, ensure to check wiring again and restart.

**Communication Wiring**




- Comply with communication wiring specification for wiring.
- Wiring length should comply with the stated specification for the HMI.
- Proper grounding to avoid bad communication quality.

## Installation and Storage Conditions

The product should be kept in the shipping carton before installation. In order to retain the warranty coverage, the HMI should be stored properly when it is not to be used for an extended period of time. Some storage suggestions are:

- Store in a clean and dry location free from direct sunlight.
- Store within an ambient temperature range of -20˚C to +60˚C (-4˚F to 140˚F).
- Store within a relative humidity range of 10% to 90% and non-condensing.
- Do not store the HMI in a place subjected to corrosive gases and liquids.
- Correctly packaged and placed on a solid and durable surface.
- Do not mount the HMI adjacent to heat-radiating elements or in direct sunlight.
- Do not mount the HMI in a location subjected to corrosive gases, liquids, or airborne dust or metallic particles.
- Do not mount the HMI in a location where temperatures and humidity will exceed specification.
- Do not mount the HMI in a location where vibration and shock will exceed specification.
- Do not mount the HMI in a location where it will be subjected to high levels of electromagnetic radiation.

## Installation

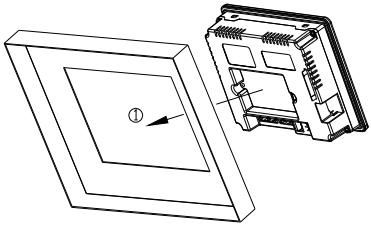
Installation Note:

- Improper installation will result in malfunction and greatly reduce the life of the HMI. Be sure to follow the guidelines in this quick start when installing the HMI.
- In order to ensure the HMI being well ventilated, make sure that the ventilation holes are not obstructed and must provide sufficient free space around HMI.
- For use on a flat surface of a Type 4X "Indoor Use Only" enclosure or equivalent.

Installation Method [A and AE Series]:

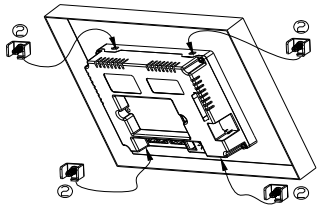
Step 1:

Ensure to put waterproof gasket into HMI and then insert the HMI into the panel cutout.



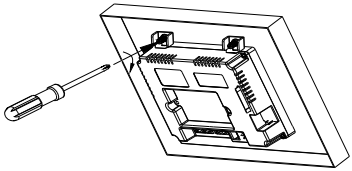

Step 2:

Ensure to insert fasteners into the HMI's insertion slots and turn the screw till screws touch panel cutout.




Step 3:

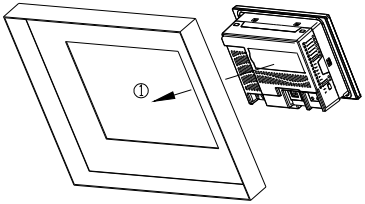
Turn the screw with less than torque 0.7N-M to avoid damage to plastic box. Torque: 6.17lb-inch(0.7N-M)



Installation Method [AS Series]:

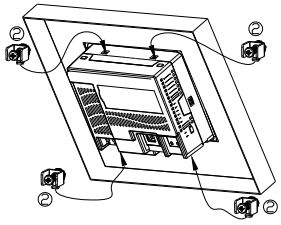
Step 1:

Ensure to put waterproof gasket into HMI and then insert the HMI into the panel cutout.



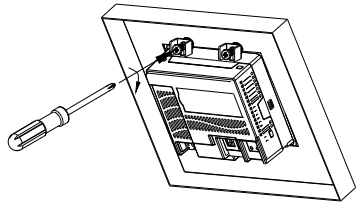

Step 2:

Ensure to insert fasteners into the HMI's insertion slots and turn the screw till screws touch panel cutout.



Step 3:

Turn the screw with less than torque 0.7N-M to avoid damage to plastic box. Torque: 6.17lb-inch(0.7N-M)



## Power Line Installation

The specifications for power terminal wiring are shown in the table below:

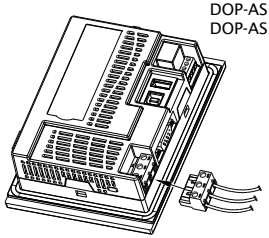
| Type | Wire Gauge (AWG) | Stripped length | Torque |
|---|---|---|---|
| Solid | 28~12 | 7~8 mm | 5 kg-cm (4.3 lb-in) |
| Stranded | 28~12 | 7~8 mm | 5 kg-cm (4.3 lb-in) |

The specifications for communication terminal wiring are shown in the table below (AS Series only):

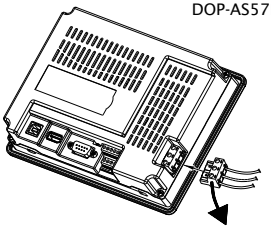
| Type | Wire Gauge (AWG) | Stripped length | Torque |
|---|---|---|---|
| Solid | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm (1.7 lb-in) |
| Stranded | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm (1.7 lb-in) |

Be sure to plug power line into HMI according to following arrow direction.

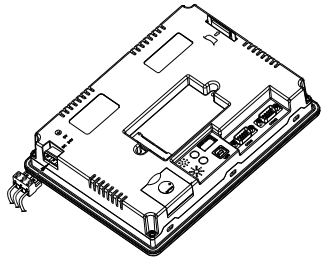
DOP-AS35THTD
DOP-AS38BSTD



DOP-AS57BSTD



DOP-A80THTD1
DOP-AE80THTD
DOP-A(E)10THTD1

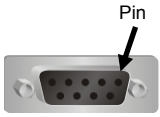


## Basic Inspection

| Item | Content |
|---|---|
| General Inspection | ■ Periodically inspect the screws of the connection between the HMI and device. Tighten screws as necessary as they may loosen due to vibration and varying temperatures.<br>■ Ensure that oil, water, metallic particles or any foreign objects do not fall inside the HMI, control panel or ventilation slots and holes. As these will cause damage.<br>■ Ensure the correct installation and the control panel. It should be free from airborne dust, harmful gases or liquids. |
| Inspection before operation (power is not applied) | ■ Ensure that all wiring terminals are correctly insulated.<br>■ Ensure that all wiring is correct or damage and or malfunction may result.<br>■ Visually check to ensure that there are not any unused screws, metal strips, any conductive or inflammable materials inside HMI.<br>■ Ensure to lower electromagnetic interference when devices are influenced by it.<br>■ Ensure that the external applied voltage to HMI is correct and matched to the controller. |
| Inspection before operation (power is applied) | ■ Check if power LED lights.<br>■ Check if the communication among devices is normal.<br>■ Please contact our local distributors or Delta sales representative if there are any abnormal conditions. |

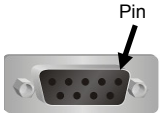
## Pin Definition of Serial Communication

**COM1 Port [A, AE and AS57BSTD Series]**

| COM Port | PIN | Contact |
|---|---|---|
| | | RS-232 |
|  | 1 | |
| | 2 | RXD |
| | 3 | TXD |
| | 4 | |
| | 5 | GND |
| | 6 | |
| | 7 | RTS |
| | 8 | CTS |
| | 9 | |

Note: Blank = No Connection.

**COM2 Port [A Series]**

| COM Port | PIN | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|
| | | RS-232 | RS-422 | RS-485 |
|  | 1 | | RXD- | D- |
| | 2 | RXD | RXD+ | D+ |
| | 3 | TXD | TXD+ | D+ |
| | 4 | | TXD- | D- |
| | 5 | GND | | |
| | 6 | | RTS- | |
| | 7 | RTS | RTS+ | |
| | 8 | CTS | CTS+ | |
| | 9 | | CTS- | |

Note 1: Blank = No Connection.

Note 2: When selecting Mode3 (for RS-485), D+ indicates that PIN 2 and PIN 3 is connected, and D- indicates that PIN 1 and PIN 4 is connected.

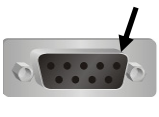
**COM2 and COM3 Port [AE, A80THTD1 and A10THTD1 Series]**

| COM Port | | PIN | MODE1 | MODE2 | MODE3 | MODE4 | MODE5 | MODE6 |
|---|---|---|---|---|---|---|---|---|
| | | | RS-232 | RS-422 | RS-485 | RS-232*2 | RS-422*2 | RS-485*2 |
|  | COM2 | 1 | | RXD- | D- | | RXD1- | D1- |
| | | 2 | RXD | RXD+ | D+ | RXD1 | RXD1+ | D1+ |
| | | 3 | TXD | TXD+ | D+ | TXD1 | TXD1+ | D1+ |
| | | 4 | | TXD- | D- | | TXD1- | D1- |
| | | 5 | GND | | | | | |
| | COM3 | 6 | | RTS- | | | TXD2- | D2- |
| | | 7 | RTS | RTS+ | | TXD2 | TXD2+ | D2+ |
| | | 8 | CTS | CTS+ | | RXD2 | RXD2+ | D2+ |
| | | 9 | | CTS- | | | RXD2- | D2- |

Note 1: Blank = No Connection.

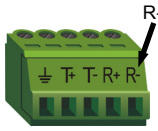
Note 2: When selecting Mode3 (for RS-485), D+ indicates that PIN 2 and PIN 3 is connected, and D- indicates that PIN 1 and PIN 4 is connected. When selecting Mode6 (for RS-485), D1+ indicates that PIN 2 and PIN 3 is connected, D1- indicates that PIN 1 and PIN 4 is connected, D2+ indicates that PIN 7 and PIN 8 is connected, and D2- indicates that PIN 6 and PIN 9 is connected.

**COM1 and COM3 [AS38BSTD, AS35THTD Series]**

| COM Port | | PIN | MODE1 | MODE2 |
|---|---|---|---|---|
| | | | RS-232 | RS-232*2 |
|  | COM1 | 1 | | |
| | | 2 | RXD | RXD1 |
| | | 3 | TXD | TXD1 |
| | | 4 | | |
| | | 5 | GND | |
| | COM3 | 6 | | |
| | | 7 | RTS | TXD2 |
| | | 8 | CTS | RXD2 |
| | | 9 | | |

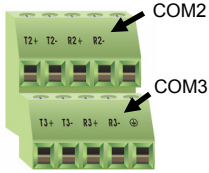
Note: Blank = No Connection.

**COM2 Port [AS38BSTD, AS35THTD Series]**

| COM Port | PIN | MODE1 | MODE2 |
|---|---|---|---|
| | | RS-422 | RS-485 |
|  | R- | RXD- | D- |
| | R+ | RXD+ | D+ |
| | T- | TXD- | D- |
| | T+ | TXD+ | D+ |
| | G | GND | |

Note 1: When selecting Mode2 (for RS-485), D+ indicates that R+ and T+ is connected, and D- indicates that R- and T- is connected.

**COM2 and COM3 Port [AS57BSTD Series]**

| COM Port | | PIN | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|---|
| | | | RS-485*2 | RS-422*2 | RS-422 |
|  | COM2 | R- | D- | RXD- | RXD- |
| | | R+ | D+ | RXD+ | RXD+ |
| | | T- | | TXD- | TXD- |
| | | T+ | | TXD+ | TXD+ |
| | | G | GND | | |
| | COM3 | R- | D- | RXD- | CTS- |
| | | R+ | D+ | RXD+ | CTS+ |
| | | T- | | TXD- | RTS- |
| | | T+ | | TXD+ | RTS+ |

Note 1: Blank = No Connection.

Note 2: When using RS-422 flow control, please refer to the COM3 Port signals table above for pin assignments. At this time, COM2 and COM3 ports cannot be used individually.

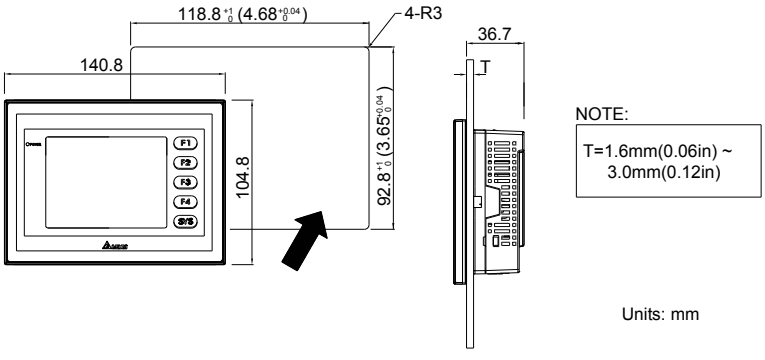
**Comparison of Flow Control Protocols**

| COM Port | DOP-AE Series | DOP-A Series | DOP-AS57 Series | DOP-AS35 / AS38 Series |
|---|---|---|---|---|
| COM1 | RS-232 flow control supported | RS-232 flow control supported | RS-232 flow control supported | RS-232 flow control supported. But, when RS-232 flow control function is enabled, COM3 can not be used. |
| COM2 | RS-422 flow control supported. But, when RS-422 flow control function is enabled, COM3 can not be used. | RS-422 flow control supported | RS-422 flow control supported. But, when RS-422 flow control function is enabled, COM3 can not be used. | RS-422 flow control is not supported. |
| COM3 | | N/A | | RS-232 flow control supported. But, when RS-232 flow control function is enabled, COM3 can not be used. |

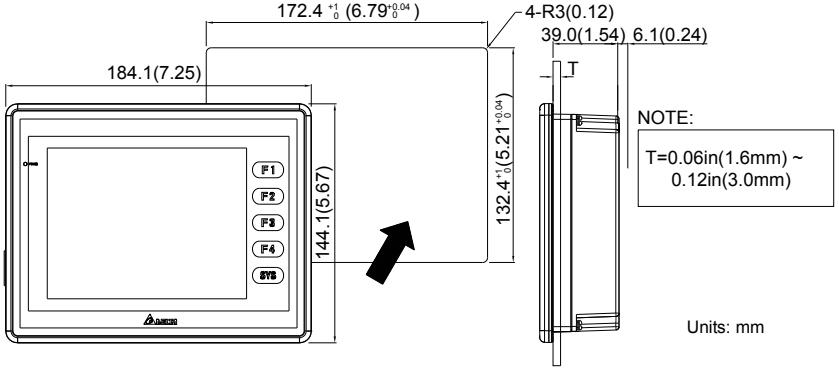
Note: For more detailed information regarding the pin definition for flow control, please refer to the pin definition of serial communication of each series.

## Dimensions

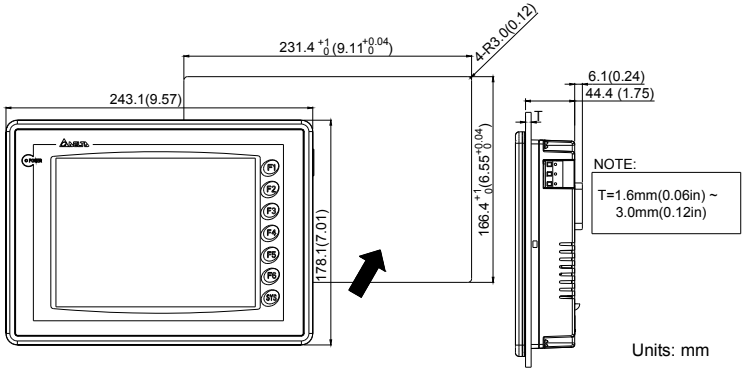
### DOP-AS35THTD / DOP-AS38BSTD



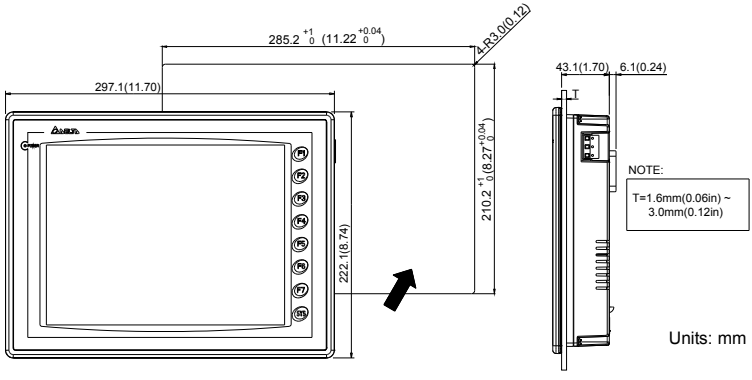

### DOP-AS57BSTD



**DOP-A80THTD1 / DOP-AE80THTD**




**DOP-A(E)10THTD1**



## Specifications

| MODEL | | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|---|
| LCD MODULE | Display Type | 3.5" TFT LCD (65536 colors) | 3.8" STN LCD (8 shades of blue) | 5.7" STN LCD (8 shades of blue) |
| | Resolution | 320 x 240 pixels | | |
| | Back Light | LED Back Light (less than 30,000 hours half-life at 25℃) (Note 1) | LED Back Light (less than 10,000 hours half-life at 25℃) (Note 1) | CCFL Back Light (less than 50,000 hours half-life at 25℃) (Note 1) |
| | Display Size | 70.08 x 52.56mm | 76.8 x 57.6mm | 115.17 x 86.37mm |
| Operation System | | Delta Real Time OS | | |
| MCU | | 32-bit RISC Micro-controller | | |
| Flash ROM | | NOR Flash ROM 2 MB (OS System: 1MB / User Application: 1MB) | | |
| SDRAM | | 8Mbytes | 4Mbytes | 16Mbytes |
| Backup Memory (Bytes) | | 128K | | |
| SM Card | | N/A | | |
| Extension Interface | | N/A | | |
| USB Host | | 1 USB Host Ver 1.1 | | |
| USB Client | | 1 USB Client Ver 1.1 | | |
| Serial COM Port | COM1 | RS-232 | | |
| | COM2 | RS-422 / RS-485 | | |
| | COM3 | RS-232 | | RS-422 / RS-485 |
| Function Key | | User defined key x 4 + System key x 1 | | |
| Operation Voltage | | DC +24V (-10% ~ +15%) (Please use isolated power supply) (Note 2) | | |
| Power Consumption (Note 3) | | 3.36W | 2.64W | 5.28W |
| Backup Battery | | 3V lithium battery CR2032 x 1 / battery life: 5 years | | |
| Buzzer | | 85dB | | |
| Perpetual Calendar (RTC) | | Built-in | | |
| Cooling Method | | Natural air circulation | | |
| Safety Approval (Waterproof for front panel) | | IP65 / NEMA4 / CE, UL | | |
| Operation Temp. | | 0℃ ~ 50℃ | | |
| Storage Temp. | | -20℃ ~ +60℃ | | |
| Ambient Humidity | | 10% ~ 90% RH [0 ~ 40℃], 10% ~ 55% RH [41 ~ 50℃] Pollution Degree 2 | | |

| MODEL | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|
| Vibration Resistance | IEC 61131-2 Compliant<br>5Hz≦f＜9Hz = Continuous: 1.75mm / Occasional: 3.5mm<br>9Hz≦f≦150Hz = Continuous: 0.5g / Occasional: 1.0g<br>X, Y, Z directions for 10 times | | |
| Dimensions (W) x (H) x (D) mm | 140.8 x 104.8 x 44.8 | | 184.1 x 144.1 x 47 |
| Panel Cutout (W) x (H) mm | 118.8 x 92.8 | | 172.4 x 132.4 |
| Weight | Approx. 310g | | Approx. 760g |

**NOTE**

1) The half-life of backlight is defined as original luminance being reduced by 50% when the maximum driving current is supplied to HMI. The life of LED backlight shown here is an estimated value under 25℃ normal temperature and humidity conditions.
2) Users please use isolated power supply except DOP-A80THTD1, DOP-AE80THTD and DOP-A(E)10THTD1 these models.
3) The value of the power consumption indicates the electrical power consumed by HMI only without connecting to any peripheral devices. In order to ensure the normal operation, it is recommended to use a power supply which the capacity is 1.5 ~2 times the value of the power consumption.
4) Users can download the Screen Editor V1.05, the program editor of Delta HMI product and the user manual via the following link: .http://www.delta.com.tw/industrialautomation/.
5) The content of this quick start may be revised without prior notice. Please consult our distributors or download the most updated version at .http://www.delta.com.tw/industrialautomation/.

| MODEL | | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|---|
| LCD MODULE | Display Type | 8" TFT LCD<br>(65536 colors) | 10.4" TFT LCD<br>(65536 colors) |
| | Resolution | 640 x 480 pixels | |
| | Back Light | CCFL Back Light<br>(less than 50,000 hours half-life at 25°C) (Note 1) | CCFL Back Light<br>(less than 30,000 hours half-life at 25°C) (Note 1) |
| | Display Size | 162.2 x 121.7mm | 211.2 x 158.4mm |
| Operation System | | Delta Real Time OS | |
| MCU | | 32-bit RISC Micro-controller | |
| Flash ROM | | NOR Flash ROM 8 MB (OS System: 2MB / User Application: 6MB) | |
| SDRAM | | 32Mbytes | |
| Backup Memory (Bytes) | | 512K | |
| SM Card | | ✓（AE） | |
| Extension Interface | | ✓（AE） | |
| USB Host | | 1 USB Host Ver 1.1 | |
| USB Client | | 1 USB Client Ver 1.1 | |
| Serial COM Port | COM1 | RS-232 | |
| | COM2 | RS-232 / RS-422 / RS-485 | |
| | COM3 | RS-232 / RS-422 / RS-485 | |
| Function Key | | User defined key x 6 +<br>System key x 1 | User defined key x 7 +<br>System key x 1 |
| Operation Voltage | | DC +24V (-10% ~ +15%) (Please use isolated power supply) (Note 2) | |
| Power Consumption (Note 3) | | 14W | 15W |
| Backup Battery | | 3V lithium battery CR2032 x 1 / battery life: 5 years | |
| Buzzer | | 85dB | |
| Perpetual Calendar (RTC) | | Built-in | |
| Cooling Method | | Natural air circulation | |
| Safety Approval (Waterproof for front panel) | | IP65 / NEMA4 / CE, UL | |
| Operation Temp. | | 0°C ~ 50°C | |
| Storage Temp. | | -20°C ~ +60°C | |
| Ambient Humidity | | 10% ~ 90% RH [0 ~ 40°C], 10% ~ 55% RH [41 ~ 50°C]<br>Pollution Degree 2 | |

| MODEL | A80THTD1<br>AE80THTD | A(E)10THTD1 |
|---|---|---|
| Vibration Resistance | IEC 61131-2 Compliant<br>5Hz≦f＜9Hz = Continuous: 1.75mm / Occasional: 3.5mm<br>9Hz≦f≦150Hz = Continuous: 0.5g / Occasional: 1.0g<br>X, Y, Z directions for 10 times | |
| Dimensions (W) x (H) x (D) mm | 243.1 x 178.1 x 52.4 | 297.1 x 222.1 x 51.1 |
| Panel Cutout (W) x (H) mm | 231.4 x 166.4 | 285.2 x 210.2 |
| Weight | Approx. 1140g | Approx. 1735g |

**NOTE**

1) The half-life of backlight is defined as original luminance being reduced by 50% when the maximum driving current is supplied to HMI. The life of LED backlight shown here is an estimated value under 25°C normal temperature and humidity conditions.
2) Users please use isolated power supply except DOP-A80THTD1, DOP-AE80THTD and DOP-A(E)10THTD1 these models.
3) The value of the power consumption indicates the electrical power consumed by HMI only without connecting to any peripheral devices. In order to ensure the normal operation, it is recommended to use a power supply which the capacity is 1.5 ~2 times the value of the power consumption.
4) Users can download the Screen Editor V1.05, the program editor of Delta HMI product and the user manual via the following link: http://www.delta.com.tw/industrialautomation/.
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# Önsöz

DELTA'nın DOP-A, AE ve AS serisi operatör panellerini seçtiğiniz için teşekkürler. Bu bilgi dökümanı Delta HMI kurulum, bağlantı, bakım ve kontrolünde kullanıcıya yardımcı olacaktır. Doğru kullanım için ürünü kullanmadan önce bu dökümanı mutlaka okuyunuz. Kurulum, bağlantı ve çalışma yapmadan önce güvenlik uyarılarını tamamen anladığınızdan emin olunuz. Bu dökümanı daha sonra da kullanmak için iyi muhafaza ediniz. Lütfen aşağıdaki güvenlik uyarılarına dikkat ediniz:

- Ürünün kurulumunu yanıcı gaz ve sıvılardan uzak kuru ve temiz ortamlara yapınız.
- Bağlantıları yaparken tüm bağlantı kurallarının sağlandığından emin olunuz.
- HMI'nın toprak bağlantısının doğru yapıldığından emin olunuz. Topraklama metodunun ürünün kurulduğu ülke standartlarına uygun olduğuna emin olunuz.
- HMI enerjili iken kablo bağlantısı yapmayınız ya da sökmeyiniz.
- Çalışma sırasında power supply terminallerine dokunmayınız. Aksi halde elektrik şoku olabilir.
- HMI yazılımının kurulumu, çalışması ve donanım bağlantısı ile ilgili daha fazla bilgi için lütfen HMI manualini inceleyiniz.

HMI ile ilgili sorularınız için lütfen teknik servisimizle bağlantıya geçiniz.

Herhangi bir ihbara gerek kalmaksızın bu bilgi dökümanının içeriği değiştirilebilir. Güncellenmiş versiyonunu elde etmek için teknik servisimize danışabilir yada http://www.delta.com.tw/industrialautomation adresinden indirebilirsiniz.

## Güvenlik Uyarıları

Ürünü alırken, kontrol ederken, kurulumunu yaparken, çalıştırırken, bakım ve arıza teşhisi yaparken aşağıdaki güvenlik uyarılarına dikkat ediniz. DANGER, WARNING, ve STOP başlıkları DELTA HMI ürününü kullanırken yapılması gerekenleri dikkat çekmek için kullanılmıştır. Ürünün garantisini muhafaza etmek için bu uyarılara mutlaka dikkat ediniz!

**Kurulum**




- Kurulumu doküman da belirtildiği gibi yapınız. Aksi halde ürün zarar görebilir.
- Operatör panelini doküman da belirtilen ortam değerlerinin dışında kurulumunu yapmayınız. Aksi halde elektrik şoku, yangın ya da kişisel zararlara sebep olabilir.

**Bağlantı**




- Toprak terminallerini class-3 topraklama yapınız. (Topraklama direnci 100Ω 'u aşmamalıdır). Yanlış yapılan topraklama bağlantısı haberleşme hatasına, elektrik şokuna ve yangına sebep olabilir.

**Çalışma**




- DELTA'nın HMI ürünlerini programlamak için Delta Screen Editor yazılımı kullanılmalıdır. DELTA HMI ürünlerini programlamak için Delta Screen Editor yazılımı dışında bir yazılım kullanılması durumunda HMI çalışmasında problem meydana gelebilir.




- Çalışma sırasında kablo bağlantılarını değiştirmeyiniz. Aksi halde elektrik şokuna veya kişisel zararlara sebep olabilir.
- Dokunmatik ekrana sert ve sivri nesneler kullanarak basmayınız. Aksi halde HMI ekranı zarar görebilir ve HMI'nın anormal çalışmasına sebep olabilir.

**Bakım ve Kontroller**




- HMI içindeki devre elemanlarına dokunmayınız aksi halde elektrik şoku meydana gelebilir.
- Enerjili iken operatör panelinin bağlantılarına müdahale etmeyiniz. Aksi halde elektrik şoku meydana gelebilir.
- HMI enerjisi kesildikten sonra HMI üzerinde tehlikeli seviyede elektrik şarj voltajı kalabileceğinden ürüne dokunmadan ve bağlantılara müdahale etmeden önce en az 10 dakika beklenilmesi tavsiye edilir.
- Pili değiştirmeden önce ürünün enerjisini kesiniz ve pili değiştirdikten sonra sistem ayarlarını kontrol ediniz. (Pil değiştirildikten sonra tüm datalar silinecektir).
- Çalışma sırasında havalandırma deliklerinin tıkalı olmadığından emin olunuz. Aksi halde kötü havalandırmadan veya aşırı sıcaklıktan dolayı ürün zarar görebilir.

**Bağlantı Metodu**




- Kablo bağlantısı yapmadan önce terminal bloğunu HMI'dan ayırınız.
- Terminal bloğundaki her bir terminale sadece tek bir kablo bağlayınız.
- Eğer bağlantıda hata varsa, bağlantıyı uygun aletleri kullanarak tekrar yapınız. Terminal ya da kabloları sökmek için darbe uygulamayınız. Aksi halde ürün zarar görebilir.
- Enerji hattında bir kopukluk meydana gelmişse, bağlantıların sağlamlığını kontrol ettikten sonra tekrar enerji verin.

**Haberleşme Bağlantısı**




- Haberleşme bağlantısını döküman da belirtildiği gibi yapınız.
- HMI Kablo uzunlukları döküman da belirtildiği gibi olmalıdır.
- Haberleşmenin kalitesini arttırmak için düzgün topraklama yapınız.

## Kurulum ve Saklama Koşulları

Kurulum yapılana kadar ürün orjinal kutusu içinde muhafaza edilmelidir. Ürünün garanti kapsamının devamı için, ürün belli bir süre kullanılmayacaksa, HMI uygun bir şekilde saklanmalıdır. Bazı saklama önerileri:

- Doğrudan güneş ışığının temas etmediği kuru ve temiz ortamda saklanmalıdır.
- 20˚C - +60˚C (-4˚F - 140˚F) sıcaklık aralığında saklanmalıdır.
- 10% - 90% rutubet aralığında ve yoğunlaşmasız ortamda saklanmalıdır.
- HMI aşındırıcı sıvı ve gaz bulunan ortamlarda saklanmamalıdır.
- Ürün uygun paketlenmeli, sert ve düz bir yüzeyde saklanmalıdır.
- HMI doğrudan güneş ışığının temas ettiği yerlere ya da ısı yayan nesnelerin yakınına monte edilmemelidir.
- HMI aşındırıcı gaz ve sıvının olduğu toz veya metal parçacıkların bulunduğu yerlere monte edilmemelidir.
- HMI doküman da belirtilen sıcaklık ve rutubet oranlarının dışındaki ortamlara monte edilmemelidir.
- HMI doküman da belirtilen titreşim ve şok oranlarının üzerindeki ortamlara monte edilmemelidir.
- HMI yüksek seviyede elektromanyetik radyasyonun bulunduğu ortamlara monte edilmemelidir

## Kurulum

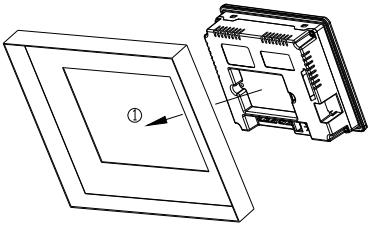
Kurulum Notları:

- Yanlış kurulum yapılması ürünün zarar görmesini veya çalışma ömrünün kısalmasına sebep olur. HMI kurulumunun doküman da belirtildiği gibi yapılması gerekir.
- HMI'nın havalandırmasının doğru olduğuna emin olmak için, havalandırma deliklerinin tıkalı olmadığına ve HMI etrafına gerekli boşluğun bırakıldığına emin olunuz.
- Düz yüzey, Tip 4X "Sadece kapalı alanda kullanım" ve eşdeğer ortamlarda kurulum yapılmalıdır.

Kurulum Metodu [A ve AE Serisi]:

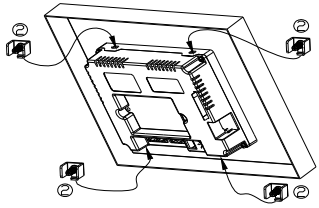
Adım 1:

HMI içine su geçirmez contanın takıldığına emin olunuz ve sonra pano boşluğuna yerleştiriniz.



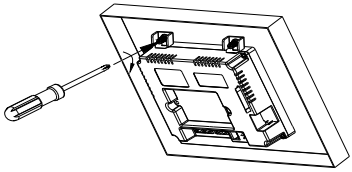

Adım 2:

Montaj aparatlarını HMI'nın yuvalarına yerleştiriniz ve sonra panoya değene kadar vidaları sıkınız.




Adım 3:

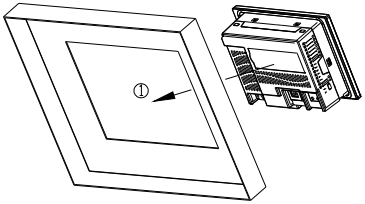
Plastik kasaya zarar vermemek için vidayı 0.7N.M'den az bir tork ile sıkınız. Tork: 6.17lb-inch(0.7N-M)



Kurulum Metodu [AS Serisi]:

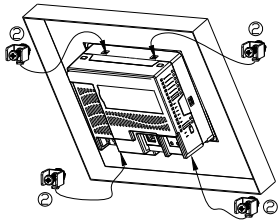
Adım 1:

HMI içine su geçirmez contanın takıldığına emin olunuz ve sonra pano boşluğuna yerleştiriniz.



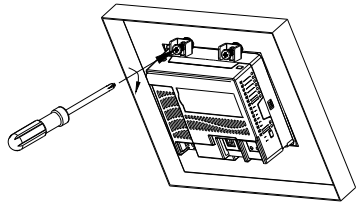

Adım 2:

Montaj aparatlarını HMI'nın yuvalarına yerleştiriniz ve sonra panoya değene kadar vidaları sıkınız.



Adım 3:

Plastik kasaya zarar vermemek için vidayı 0.7N.M'den az bir tork ile sıkınız. Tork: 6.17lb-inch(0.7N-M)



## Power Hattı Kurulumu

Tavsiye edilen bağlantı şekli aşağıdadır:

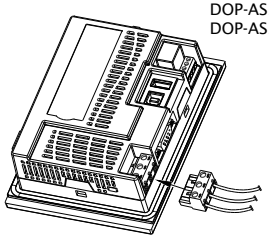
| Tip | Kablo Kesiti (AWG) | Soyulacak uzunluk | Tork |
|---|---|---|---|
| Solid | 28~12 | 7~8 mm | 5 kg-cm (4.3 lb-in) |
| Stranded | 28~12 | 7~8 mm | 5 kg-cm (4.3 lb-in) |

Tavsiye edilen bağlantı şekli aşağıdadır (Sadece AS Serisi):

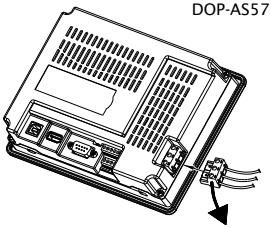
| Tip | Kablo Kesiti (AWG) | Soyulacak uzunluk | Tork |
|---|---|---|---|
| Solid | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm (1.7 lb-in) |
| Stranded | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm (1.7 lb-in) |

HMI'ya power konnektörünü aşağıda gösterildiği gibi bağlayınız.

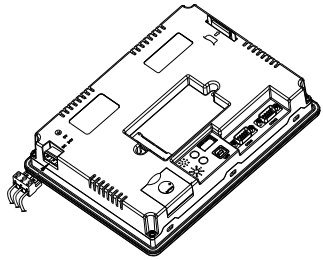
DOP-AS35THTD
DOP-AS38BSTD



DOP-AS57BSTD



DOP-A80THTD1
DOP-AE80THTD
DOP-A(E)10THTD1

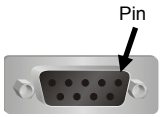


## Temel Kontrol

| Madde | İçerik |
|---|---|
| Genel Kontrol | ■ HMI bağlantılarını periyodik olarak kontrol ediniz. Titreşim ve sıcaklık değişiminden dolayı gevşeyen vidaları sıkınız.<br>■ HMI içine, kontrol paneline veya havalandırma slot ve deliklerine yağ, su, metal parçalar veya yabancı nesnelerin düşmediğine emin olunuz. Bu durum ürüne zarar verir.<br>■ Kurulumu doğru yaptığınıza emin olunuz. Ortamda toz, zararlı gaz ve sıvılar olmamalıdır. |
| Çalışmadan önce kontrol (enerji verilmeden önce) | ■ Tüm bağlantı terminallerinin doğru izole olduğundan emin olunuz.<br>■ Zarar ve hasar meydana gelmemesi için tüm bağlantıların doğru yapıldığına emin olunuz.<br>■ HMI içinde kullanılmayan vidaların, metal parçaların, iletken veya yanıcı maddelerin olmadığını gözle kontrol ediniz.<br>■ Ürünü etkileyebilecek elektromanyetik gürültünün düşük olduğuna emin olunuz.<br>■ HMI ünitesine uygulanan harici voltajın doğru ve ürüne uygun olduğunu kontrol ediniz. |
| Çalıştırmadan önce kontrol (enerji verildikten sonra) | ■ Power LED ışığının yandığını kontrol ediniz.<br>■ Cihazlar arasında haberleşmenin normal olduğunu kontrol ediniz.<br>■ Anormal bir durum ile karşılaştığınızda teknik servisimizle bağlantıya geçiniz. |

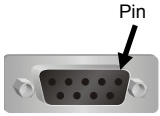
## Seri Haberleşme Pin Açıklaması

**COM1 Port [A, AE ve AS57BSTD Serisi]**

| COM Port | PIN | Bağlantı |
|---|---|---|
| | | RS-232 |
|  | 1 | |
| | 2 | RXD |
| | 3 | TXD |
| | 4 | |
| | 5 | GND |
| | 6 | |
| | 7 | RTS |
| | 8 | CTS |
| | 9 | |

Not: Boş pin = Bağlantı yapılmaz.

**COM2 Port [A Serisi]**

| COM Port | PIN | MOD 1 | MOD 2 | MOD 3 |
|---|---|---|---|---|
| | | RS-232 | RS-422 | RS-485 |
|   | 1 | | RXD- | D- |
| | 2 | RXD | RXD+ | D+ |
| | 3 | TXD | TXD+ | D+ |
| | 4 | | TXD- | D- |
| | 5 | GND | | |
| | 6 | | RTS- | |
| | 7 | RTS | RTS+ | |
| | 8 | CTS | CTS+ | |
| | 9 | | CTS- | |

Not 1: Boş pin = Bağlantı yapılmaz.

Not 2: Mod 3 seçileceği zaman (RS-485 için), D+ PIN 2 ve PIN 3'ün bağlanacağını gösterir ve D- ise PIN 1 ve PIN 4'ün bağlanacağını gösterir.

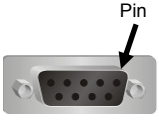
**COM2 ve COM3 Port [AE, A80THTD1 ve A10THTD1 Serisi]**

| COM Port | | PIN | MOD 1 | MOD 2 | MOD 3 | MOD 4 | MOD 5 | MOD 6 |
|---|---|---|---|---|---|---|---|---|
| | | | RS-232 | RS-422 | RS-485 | RS-232*2 | RS-422*2 | RS-485*2 |
|   | COM2 | 1 | | RXD- | D- | | RXD1- | D1- |
| | | 2 | RXD | RXD+ | D+ | RXD1 | RXD1+ | D1+ |
| | | 3 | TXD | TXD+ | D+ | TXD1 | TXD1+ | D1+ |
| | | 4 | | TXD- | D- | | TXD1- | D1- |
| | | 5 | GND | | | | | |
| | COM3 | 6 | | RTS- | | | TXD2- | D2- |
| | | 7 | RTS | RTS+ | | TXD2 | TXD2+ | D2+ |
| | | 8 | CTS | CTS+ | | RXD2 | RXD2+ | D2+ |
| | | 9 | | CTS- | | | RXD2- | D2- |

Not 1: Boş pin = Bağlantı yapılmaz.

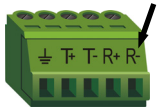
Not 2: Mod 3 seçildiği zaman (RS-485 için), D+ PIN 2 ve PIN 3'ün bağlanacağını gösterir ve D- ise PIN 1 ve PIN 4'ün bağlanacağını gösterir. Mod 6 seçildiği zaman (RS-485 için), D1+ PIN 2 ve PIN 3'ün bağlanacağını gösterir ve D1- ise PIN 1 ve PIN 4'ün bağlanacağını gösterir. D2+ PIN 7 ve PIN 8'ün bağlanacağını gösterir ve D2- ise PIN 6 ve PIN 9'ün bağlanacağını gösterir.

**COM1 ve COM3 [AS38BSTD, AS35THTD Serisi]**

| COM Port | | PIN | MOD 1 | MOD 2 |
|---|---|---|---|---|
| | | | RS-232 | RS-232*2 |
|   | COM1 | 1 | | |
| | | 2 | RXD | RXD1 |
| | | 3 | TXD | TXD1 |
| | | 4 | | |
| | | 5 | GND | |
| | COM3 | 6 | | |
| | | 7 | RTS | TXD2 |
| | | 8 | CTS | RXD2 |
| | | 9 | | |

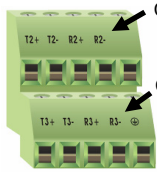
Not: Boş pin = Bağlantı yapılmaz.

**COM2 Port [AS38BSTD, AS35THTD Serisi]**

| COM Port | PIN | MOD 1 | MOD 2 |
|---|---|---|---|
| | | RS-422 | RS-485 |
|  | R- | RXD- | D- |
| | R+ | RXD+ | D+ |
| | T- | TXD- | D- |
| | T+ | TXD+ | D+ |
| | G | GND | |

Not 1: Mod 2 seçildiği zaman (RS-485 için), D+ gösterilen yere R+ ve T+ terminallerinin bağlanacağını gösterir ve, D- ise R- ve T- terminallerinin bağlanacağını gösterir.

**COM2 ve COM3 Port [AS57BSTD Serisi]**

| COM Port | | PIN | MOD 1 | MOD 2 | MOD 3 |
|---|---|---|---|---|---|
| | | | RS-485*2 | RS-422*2 | RS-422 |
|  | COM2 | R- | D- | RXD- | RXD- |
| | | R+ | D+ | RXD+ | RXD+ |
| | | T- | | TXD- | TXD- |
| | | T+ | | TXD+ | TXD+ |
| | | G | GND | | |
| | COM3 | R- | D- | RXD- | CTS- |
| | | R+ | D+ | RXD+ | CTS+ |
| | | T- | | TXD- | RTS- |
| | | T+ | | TXD+ | RTS+ |

Not 1: Boş pin = Bağlantı yapılmaz.

Not 2: RS-422 flow control kullanıldığı zaman, lütfen yukarıdaki COM 3 port sinyal tablosu pin çıkışlarını inceleyiniz. Bu durumda COM 2 ve COM 3 bağımsız kullanılamaz.

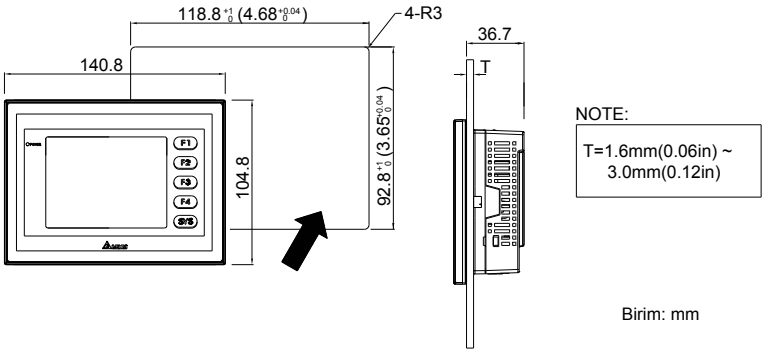
**Flow Control Protokol Karşılaştırması**

| COM Port | DOP-AE Serisi | DOP-A Serisi | DOP-AS57 Serisi | DOP-AS35 / AS38 Serisi |
|---|---|---|---|---|
| COM1 | RS232 flow control destekler | RS232 flow control destekler | RS232 flow control destekler | RS-232 flow control destekler. Fakat, RS-232 flow control fonksiyonu aktif edildiği zaman, COM3 kullanılamaz. |
| COM2 | RS-422 flow control destekler. Fakat, RS-422 flow control fonksiyonu aktif edildiği zaman, COM3 kullanılamaz. | RS-422 flow control destekler | RS-422 flow control destekler. Fakat, RS-422 flow control fonksiyonu aktif edildiği zaman, COM3 kullanılamaz. | RS422 flow control desteklemez. |
| COM3 | | N/A | | RS-232 flow control destekler. Fakat, RS-232 flow control fonksiyonu aktif edildiği zaman, COM3 kullanılamaz. |

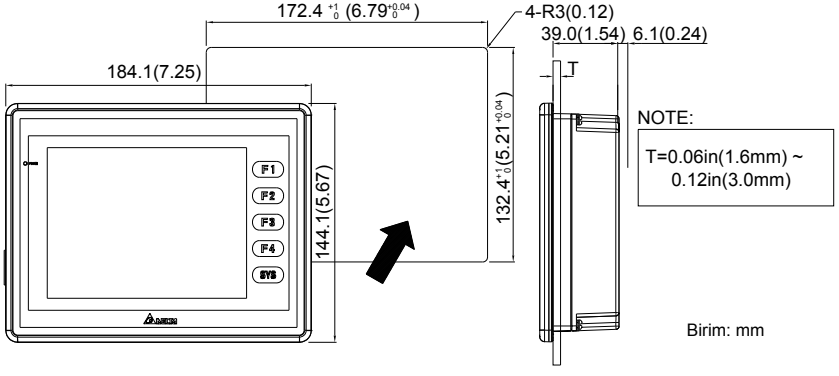
Not: Flow control pin açıklamaları ile ilgili daha detaylı bilgi için, lütfen her modelin seri haberleşme pin açıklamasına bakınız.

## Ölçüler

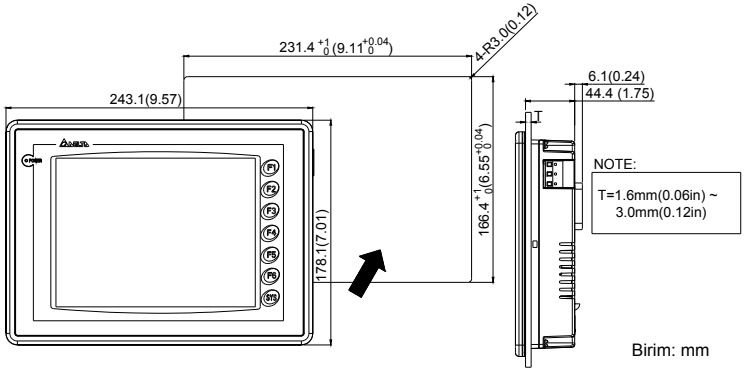
### DOP-AS35THTD / DOP-AS38BSTD



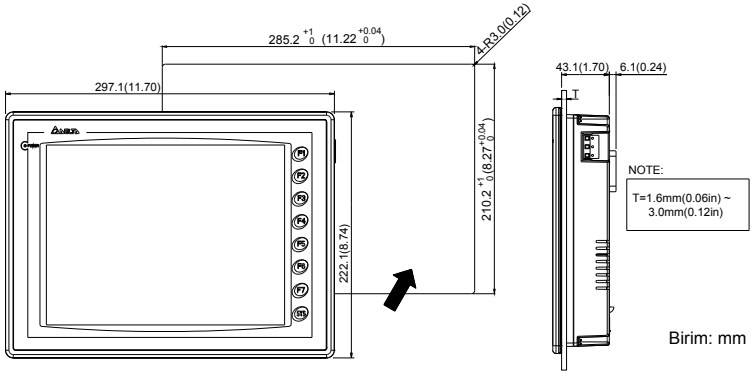

### DOP-AS57BSTD



**DOP-A80THTD1 / DOP-AE80THTD**




**DOP-A(E)10THTD1**



## Özellikler

| MODEL | | AS35THTD | AS38BSTD | AS57B(C)STD |
|---|---|---|---|---|
| LCD MODÜL | Display Tipi | 3.5" TFT LCD (65536 renk) | 3.8" STN LCD (8 ton mavi) | 5.7" STN LCD (BS: 8 ton mavi CS: 256 renk) |
| | Çözünürlük | 320 x 240 piksel | | |
| | Arka Işık | LED Arka Işık (25°C yarım ömürde 30,000 saatden az) (Not 1) | LED Arka Işık (25°C yarım ömürde 30,000 saatden az) (Not 1) | CCFL Arka Işık (25°C yarım ömürde 50,000 saatden az) (Not 1) |
| | Display Ölçü | 70.08 x 52.56mm | 76.8 x 57.6mm | 115.17 x 86.37mm |
| İşletim Sistemi | | Delta Real Time OS | | |
| MCU | | 32-bit RISC Micro-controller | | |
| Flash ROM | | NOR Flash ROM 2 MB (OS Sistem: 1MB / Kullanıcı Uygulaması: 1MB) | | |
| SDRAM | | 8Mbyte | 4Mbyte | 16Mbyte |
| Backup Memory (Byte) | | 128K | 128K | 128K |
| SM Card | | N/A | | |
| İlave arabirim | | N/A | | |
| USB Host | | 1 USB Host Ver 1.1 | | |
| USB Client | | 1 USB Client Ver 1.1 | | |
| Seri COM Port | COM1 | RS-232 | | |
| | COM2 | RS-422 / RS-485 | | |
| | COM3 | RS-232 | | RS-422 / RS-485 |
| Fonksiyon Tuşu | | 4 adet kullanıcı tanımlı tuş + 1 adet sistem tuşu | | |
| Çalışma Voltajı | | DC +24V (-10% ~ +15%) (Lütfen izoleli güç kaynağı kullanınız) (Not 2) | | |
| Güç Tüketimi (Not 3) | | 3.36W | 2.64W | 5.28W |
| Backup Battery | | 1 adet 3V lityum pil / pil ömrü: 5 yıl | | |
| Buzzer | | 85dB | | |
| Gerçek Zaman Saati (RTC) | | Dahili | | |
| Soğutma Metodu | | Doğal hava soğutma | | |
| Güvenlik Onayı (Su geçirmez ön panel) | | IP65 / NEMA4 / CE, UL | | |
| Çalışma Sıcaklığı | | 0°C ~ 50°C | | |
| Saklama Sıcaklığı | | -20°C ~ +60°C | | |

| MODEL | AS35THTD | AS38BSTD | AS57B(C)STD |
|---|---|---|---|
| Rutubet Oranı | 10% ~ 90% RH [0 ~ 40°C], 10% ~ 55% RH [41 ~ 50°C]<br>Kirlenme Derecesi 2 | | |
| Titreşim Direnci | IEC 61131-2 Uyumlu<br>5Hz≦f＜9Hz = Sürekli: 1.75mm / Geçici: 3.5mm<br>9Hz≦f≦150Hz = Sürekli: 0.5g / Geçici: 1.0g<br>X, Y, Z yönlerinde 10 defa | | |
| Ölçüler<br>(W) x (H) x (D)<br>mm | 140.8 x 104.8 x 44.8 | | 184.1 x 144.1 x 47 |
| Panel Kesim<br>(W) x (H) mm | 118.8 x 92.8 | | 172.4 x 132.4 |
| Ağırlık | Yaklaşık 310g | | Yaklaşık 760g |

**NOTE**

1) Arka ışık yarım-ömrü, HMI maksimum akımla beslendiğinde orijinal aydınlatmanın %50 düşürüldüğü anlamına gelir. Yukarıda gösterilen arka ışık LED aydınlatma ömrü 25 derecede normal sıcaklık ve rutubet ortamında tahmin edilen değerlerdir.
2) DOP-A80THTD1, DOP-AE80THTD ve DOP-A(E)10THTD1 modelleri dışında lütfen izoleli güç kaynağı kullanınız.
3) Güç tüketimi HMI ünitesinin hiç bir cihaza bağlı olmadan boş olarak tükettiği gücü gösterir. Normal çalışmada HMI'nın boşken tükettiği gücün 1.5 veya 2 katı güç verebilen besleme kaynağı kullanılması tavsiye edilir.
4) Delta HMI Screen editor yazılımını ve user manuali aşağıdaki linkten indirebilirsiniz: http://www.delta.com.tw/industrialautomation/.
5) Herhangi bir ihbar olmadan bu dökümanın içeriği değiştirilebilir. En son güncellenmiş halini firmamızdan talep edebilir yada aşağıdaki link adresinden indirebilirsiniz http://www.delta.com.tw/industrialautomation/.

| MODEL | | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|---|
| LCD MODÜL | Display Tipi | 8” TFT LCD<br>(65536 renk) | 10.4” TFT LCD<br>(65536 renk) |
| | Çözünürlük | 640 x 480 piksel | |
| | Arka Işık | CCFL Arka Işık<br>(25°C yarım ömürde 50,000 saatden az) (Not 1) | CCFL Arka Işık<br>(25°C yarım ömürde 30,000 saatden az) (Not 1) |
| | Display Ölçü | 162.2 x 121.7mm | 211.2 x 158.4mm |
| İşletim Sistemi | | Delta Real Time OS | |
| MCU | | 32-bit RISC Micro-controller | |
| Flash ROM | | NOR Flash ROM 8 MB (OS Sistem: 2MB / Kullanıcı Uygulaması: 6MB) | |
| SDRAM | | 32Mbyte | 32Mbyte |
| Backup Memory (Byte) | | 512K | |
| SM Card | | ✓（AE） | |
| İlave Arabirim | | ✓（AE） | |
| USB Host | | 1 USB Host Ver 1.1 | |
| USB Client | | 1 USB Client Ver 1.1 | |
| Seri COM Port | COM1 | RS-232 | |
| | COM2 | RS-232 / RS-422 / RS-485 | |
| | COM3 | RS-232 / RS-422 / RS-485 | |
| Fonksiyon Tuşu | | 6 adet Kullanıcı tanımlı tuş +<br>1 adet Sistem tuşu | 7 adet Kullanıcı tanımlı tuş +<br>1 adet Sistem tuşu |
| Çalışma Voltajı | | DC +24V (-10% ~ +15%) (Lütfen izoleli güç kaynağı kullanınız) (Not 2) | |
| Güç Tüketimi (Not 3) | | 14W | 15W |
| Backup Battery | | 1 adet 3V lityum pil CR2032 / pil ömrü: 5 yıl | |
| Buzzer | | 85dB | |
| Gerçek Zaman Saati (RTC) | | Dahili | |
| Soğutma Metodu | | Doğal hava soğutma | |
| Güvenlik Onayı (Su geçirmez ön panel) | | IP65 / NEMA4 / CE, UL | |
| Çalışma Sıcaklığı | | 0°C ~ 50°C | |
| Saklama Sıcaklığı | | -20°C ~ +60°C | |
| Rutubet Oranı | | 10% ~ 90% RH [0 ~ 40°C], 10% ~ 55% RH [41 ~ 50°C]<br>Kirlenme Derecesi 2 | |

| MODEL | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|
| Titreşim Direnci | IEC 61131-2 Uyumlu<br>5Hz≦f＜9Hz = Sürekli: 1.75mm / Geçici: 3.5mm<br>9Hz≦f≦150Hz = Sürekli: 0.5g / Geçici: 1.0g<br>X, Y, Z yönlerinde 10 defa | |
| Ölçüler<br>(W) x (H) x (D)<br>mm | 243.1 x 178.1 x 52.4 | 297.1 x 222.1 x 51.1 |
| Panel Kesim<br>(W) x (H) mm | 231.4 x 166.4 | 285.2 x 210.2 |
| Ağırlık | Yaklaşık 1140g | Yaklaşık 1735g |

**NOTE**

1) Arka ışık yarım-ömrü, HMI maksimum akımla beslendiğinde orijinal aydınlatmanın %50 düşürüldüğü anlamına gelir. Yukarıda gösterilen arka ışık LED aydınlatma ömrü 25 derecede normal sıcaklık ve rutubet ortamında tahmin edilen değerlerdir.
2) DOP-A80THTD1, DOP-AE80THTD ve DOP-A(E)10THTD1 modelleri dışında lütfen izoleli güç kaynağı kullanınız.
3) Güç tüketimi HMI ünitesinin hiç bir cihaza ba□lı olmadan bo□ olarak tüketti□i gücü gösterir. Normal çalı□mada HMI'nın bo□ken tüketti□i gücün 1.5 veya 2 katı güç verebilen besleme kayna□ı kullanılması tavsiye edilir.
4) Delta HMI Screen editor yazılımını ve user manuali aşağıdaki linkten indirebilirsiniz: http://www.delta.com.tw/industrialautomation/.
5) Herhangi bir ihbar olmadan bu dökümanın içeriği değiştirilebilir. En son güncellenmiş halini firmamızdan talep edebilir yada aşağıdaki link adresinden indirebilirsiniz http://www.delta.com.tw/industrialautomation/.

Bu sayfa not almanız için boş bırakılmıştır.

# 序言

感謝您使用本產品，本人機介面安裝手冊提供 DOP-A、AE、AS 系列人機介面的相關資訊。在使用之前，請您仔細詳讀本手冊以確保使用上的正確。此外，請妥善將其放置在明顯的地點以便隨時查閱。下列事項在您尚未讀完本手冊前，請務必遵守：

- 安裝的環境必須沒有水氣，腐蝕性氣體及可燃性氣體。
- 接線時，請依接線圖說明施工。
- 接地工程必須確實實施，接地時須遵照國家現行相關電工法規之規定施行（請參考 NFPA 70: National Electrical Code, 2005 Ed.）。
- 在通電時，請勿拆解人機介面或更改配線。
- 在通電運作時，請勿接觸電源處，以免觸電。

如果您在使用上仍有問題，請洽詢經銷商或者本公司客服中心。由於產品精益求精，當內容規格有所修正時，請洽詢代理商或至台達網站（http://www.delta.com.tw/industrialautomation/）下載最新版本。

## 安全注意事項

安裝、配線、操作、維護及檢查時，應隨時注意以下安全注意事項。

**安裝注意**




- 依照手冊指定的方式安裝人機介面，否則可能導致設備損壞。
- 禁止將本產品暴露在有水氣、腐蝕性氣體、可燃性氣體等物質的場所下使用，否則可能會造成觸電或火災。

**配線注意**




- 請將接地端子連接到 class-3（100 Ω以下）接地，接地不良可能會造成通訊異常、觸電或火災。

**操作注意**




- 人機介面需配合編輯軟體規劃畫面，未經規劃或確認之人機介面可能會導致不正常運轉結果。




- 不得在開啟電源情況下改變配線，否則可能造成觸電或人員受傷。
- 請勿以尖銳物品碰觸面板，否則可能導致面板凹陷，進而使人機介面無法正常運作。

**保養及檢查**




- 禁止接觸人機介面內部，否則可能會造成觸電。
- 電源啟動時，禁止拆下人機介面面板，否則可能會造成觸電。
- 電源關閉 10 分鐘內，不得接觸接線端子，殘餘電壓可能造成觸電。
- 更換備用電池時，應切斷電源再進行，並在更換後重新檢查系統設定值。
- 人機介面在操作時，排氣孔不可封住，否則人機容易因為散熱不良而造成故障。

**配線方法**




- 配線時請將快速接頭從人機介面的本體上拆下來。
- 快速接頭的一個電線插入口，請僅插入一根電線。
- 對於錯誤強行拔出電線的動作，請重新檢查連接電線再啟動。

**通訊電路的配線**




- 請依標準規格採用通訊配線線材。
- 通訊線材長度需在符合規定內。
- 採用正確的接地迴路，以避免通訊不良。

## 安裝環境條件

本產品在安裝之前必須置於其包裝箱內，若暫時不使用，爲了使該產品能夠符合本公司的保固範圍及日後的維護，儲存時務必注意下列事項：

- 必須置於無塵垢、乾燥之位置。
- 儲存位置的環境溫度必須在-20˚C to +60˚C（-4˚F to 140˚F）範圍內。
- 儲存位置的相對溼度必須在 10%到 90%範圍內，且無結露。
- 避免儲存於含有腐蝕性氣、液體之環境中。
- 最好適當包裝存放在架子或檯面。
- 本產品適合的安裝環境包括有：無發高熱裝置之場所；無水滴、蒸氣、灰塵及油性灰塵之場所；無腐蝕、易燃性之氣、液體之場所；無漂浮性的塵埃及金屬微粒之場所；堅固無振動、無電磁雜訊干擾之場所。

## 安裝方向與空間

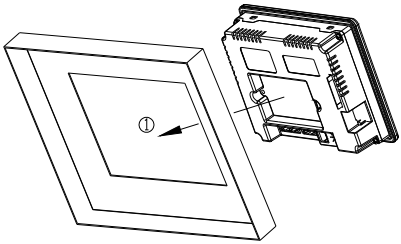
注意事項：

- 安裝方向必須依規定，否則會造成故障原因。
- 爲了使冷卻循環效果良好，安裝人機介面時，其上下左右與相鄰的物品和擋板(牆)必須保持足夠的空間，否則會造成散熱不良。
- 使用於 Type 4X 室內用等級之外殼平面。

安裝示意圖【適用 A、AE 系列】:

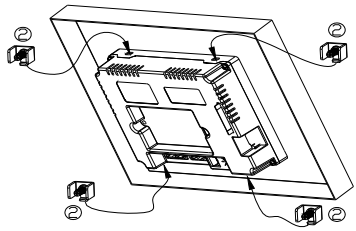
步驟一：

請確實將防水墊圈裝入，然後再安裝人機介面




步驟二：

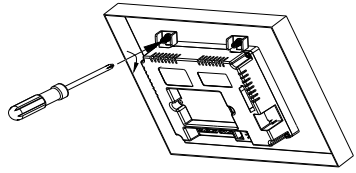
請確實將固定片螺絲組裝入內，然後下方鉤住前蓋螺絲頭頂住控制箱內側



步驟三：

請以 0.7N-M 扭力鎖緊，切記不可超過此扭力，否則將造成塑膠外殼的損壞。

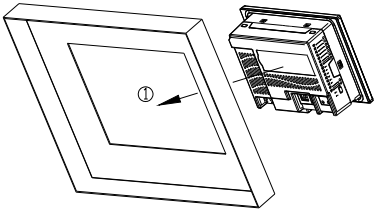
扭力：6.17lb-inch（0.7N-M）。



安裝示意圖【適用 AS 系列】:

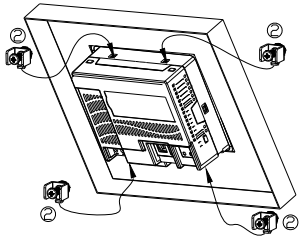
步驟一：

請確實將防水墊圈裝入，然後再安裝人機介面




步驟二：

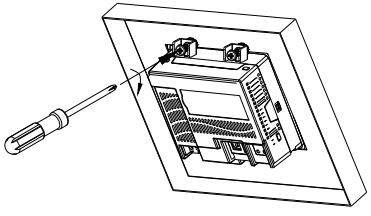
請確實將固定片螺絲組裝入內，然後下方鉤住前蓋螺絲頭頂住控制箱內側




步驟三：

請以 0.7N-M 扭力鎖緊，切記不可超過此扭力，否則將造成塑膠外殼的損壞。

扭力：6.17lb-inch（0.7N-M）。



## 配線

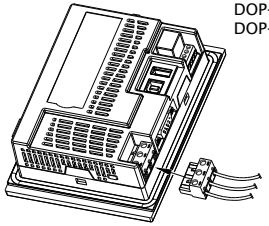
電源端子配線資訊如下：

| 種類 | 電源配線（AWG） | 剝線長度 | 扭力 |
|---|---|---|---|
| 單芯線 | 28 ~ 12 | 7 ~ 8 mm | 5 kg-cm（4.3 lb-in） |
| 多芯線 | 30 ~ 12 | 7 ~ 8 mm | 5 kg-cm（4.3 lb-in） |

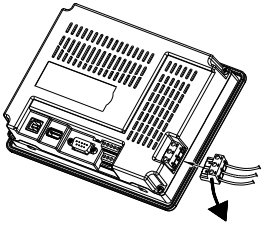
AS 系列通訊端子配線資訊如下：

| 種類 | 電源配線（AWG） | 剝線長度 | 扭力 |
|---|---|---|---|
| 單芯線 | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm（1.7 lb-in） |
| 多芯線 | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm（1.7 lb-in） |

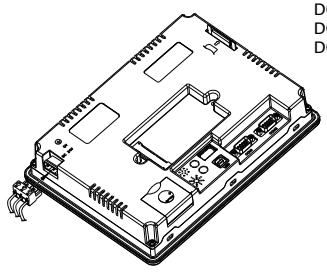
請確實依指示方向將快速接頭裝入



DOP-AS35THTD
DOP-AS38BSTD



DOP-AS57BSTD



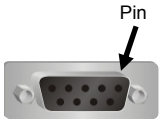
DOP-A80THTD1
DOP-AE80THTD
DOP-A(E)10THTD1

## 基本檢測

| 檢測項目 | 檢測內容 |
|---|---|
| 一般檢測 | ■ 定期檢查人機介面與設備連接處的螺絲是否有鬆動。<br>■ 排氣孔應避免油、水或金屬粉等異物侵入，且應防止電鑽的切削粉落入人機介面內。<br>■ 人機介面若設置於有害氣體或多粉塵的場所，應防止有害氣體與粉塵的侵入。 |
| 操作前檢測<br>（未供應控制電源） | ■ 配線端子的接續部請實施絕緣處理。<br>■ 通訊配線應正確，否則可能發生異常動作。<br>■ 檢查螺絲或金屬片等導電性物體、可燃性物體是否存在人機介面內。<br>■ 人機介面附近使用的電子儀器受到電磁干擾時，請使用儀器調校以降低電磁干擾。<br>■ 請確定人機介面的供應電源電壓準位是否正確。 |
| 運轉前檢測<br>（已供應控制電源） | ■ 電源指示燈是否顯示。<br>■ 與各設備之間通訊動作是否正常。<br>■ 人機介面若有異常現象，請與經銷商或者本公司客服中心聯絡。 |

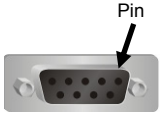
# 通訊腳位定義

**COM1 定義【適用 A、AE、AS57BSTD 系列】**

| COM Port 示意圖 | 腳位 | 說明 |
|---|---|---|
| | | RS-232 |
|  | 1 | |
| | 2 | RXD |
| | 3 | TXD |
| | 4 | |
| | 5 | GND |
| | 6 | |
| | 7 | RTS |
| | 8 | CTS |
| | 9 | |

註：空白＝不需連接

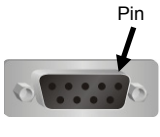
**COM2 定義【適用 A 系列】**

| COM Port 示意圖 | 腳位 | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|
| | | RS-232 | RS-422 | RS-485 |
|  | 1 | | RXD- | D- |
| | 2 | RXD | RXD+ | D+ |
| | 3 | TXD | TXD+ | D+ |
| | 4 | | TXD- | D- |
| | 5 | GND | | |
| | 6 | | RTS- | |
| | 7 | RTS | RTS+ | |
| | 8 | CTS | CTS+ | |
| | 9 | | CTS- | |

註 1：空白＝不需連接

註 2：使用 Mode3 時，D+爲 Pin2、Pin3 短路，D-爲 Pin1、Pin4 短路

**COM2、COM3 定義【適用 AE、A80THTD1、A10THTD1 系列】**

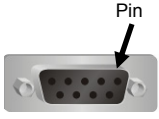
| COM Port 示意圖 | COM Port | 腳位 | MODE1 | MODE2 | MODE3 | MODE4 | MODE5 | MODE6 |
|---|---|---|---|---|---|---|---|---|
| | | | RS-232 | RS-422 | RS-485 | RS-232*2 | RS-422*2 | RS-485*2 |
|  | COM2 | 1 | | RXD- | D- | | RXD1- | D1- |
| | | 2 | RXD | RXD+ | D+ | RXD1 | RXD1+ | D1+ |
| | | 3 | TXD | TXD+ | D+ | TXD1 | TXD1+ | D1+ |
| | | 4 | | TXD- | D- | | TXD1- | D1- |
| | | 5 | GND | | | | | |
| | COM3 | 6 | | RTS- | | | TXD2- | D2- |
| | | 7 | RTS | RTS+ | | TXD2 | TXD2+ | D2+ |
| | | 8 | CTS | CTS+ | | RXD2 | RXD2+ | D2+ |
| | | 9 | | CTS- | | | RXD2- | D2- |

註 1：空白＝不需連接

註 2：使用 Mode3 時，D+爲 Pin2、Pin3 短路，D-爲 Pin1、Pin4 短路

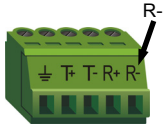
使用 Mode6 時，D1+爲 Pin2、Pin3 短路，D1-爲 Pin1、Pin4 短路，D2+爲 Pin7、Pin8 短路，D2-爲 Pin6、Pin9 短路

**COM1、COM3 定義【適用 AS38BSTD、AS35THTD 系列】**

| COM Port 示意圖 | COM Port | 腳位 | MODE1 | MODE2 |
|---|---|---|---|---|
| | | | RS-232 | RS-232*2 |
|  | COM1 | 1 | | |
| | | 2 | RXD | RXD1 |
| | | 3 | TXD | TXD1 |
| | | 4 | | |
| | | 5 | GND | |
| | COM3 | 6 | | |
| | | 7 | RTS | TXD2 |
| | | 8 | CTS | RXD2 |
| | | 9 | | |

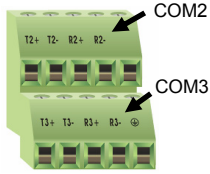
註：空白＝不需連接

**COM2 定義【適用 AS38BSTD、AS35THTD 系列】**

| COM Port 示意圖 | 腳位 | MODE1 | MODE2 |
|---|---|---|---|
| | | RS-422 | RS-485 |
|  | R- | RXD- | D- |
| | R+ | RXD+ | D+ |
| | T- | TXD- | D- |
| | T+ | TXD+ | D+ |
| | G | GND | |

註 1：使用 Mode2 時，D+爲 R+、T+短路，D-爲 R-、T-短路

**COM2、COM3 定義【適用 AS57BSTD 系列】**

| COM Port 示意圖 | COM Port | 腳位 | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|---|
| | | | RS-485*2 | RS-422*2 | RS-422 |
|  | COM2 | R- | D- | RXD- | RXD- |
| | | R+ | D+ | RXD+ | RXD+ |
| | | T- | | TXD- | TXD- |
| | | T+ | | TXD+ | TXD+ |
| | | G | GND | | |
| | COM3 | R- | D- | RXD- | CTS- |
| | | R+ | D+ | RXD+ | CTS+ |
| | | T- | | TXD- | RTS- |
| | | T+ | | TXD+ | RTS+ |

註 1：空白＝不需連接

註 2：欲使用 RS-422 流量控制時，其控制腳位請參考 MODE3 腳位定義。此時 COM2、COM3 無法單獨使用。

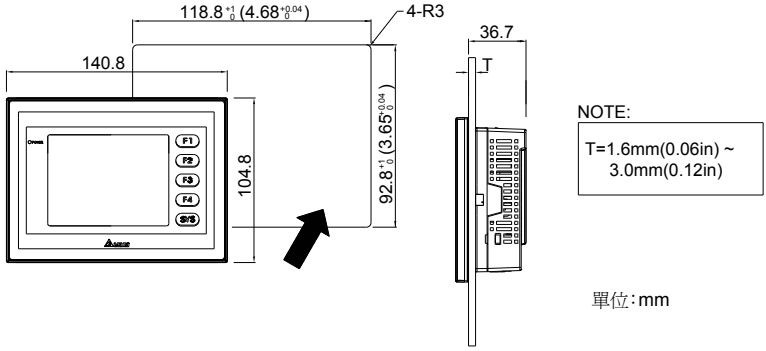
**各系列機種通訊流量控制支援對照表**

| COM Port | DOP-AE 系列 | DOP-A 系列 | DOP-AS57 系列 | DOP-AS35／AS38 系列 |
|---|---|---|---|---|
| COM1 | 支援 RS-232 流量控制 | 支援 RS-232 流量控制 | 支援 RS-232 流量控制 | 支援 RS-232 流量控制，啓動流量控制時，COM3 無法使用 |
| COM2 | 支援 RS-422 流量控制，啓動流量控制時，COM3 無法使用 | 支援 RS-422 流量控制 | 支援 RS-422 流量控制，啓動流量控制時，COM3 無法使用 | 不支援 RS-422 流量控制 |
| COM3 | | N/A | | 支援 RS-232 流量控制，啓動流量控制時，COM3 無法使用 |

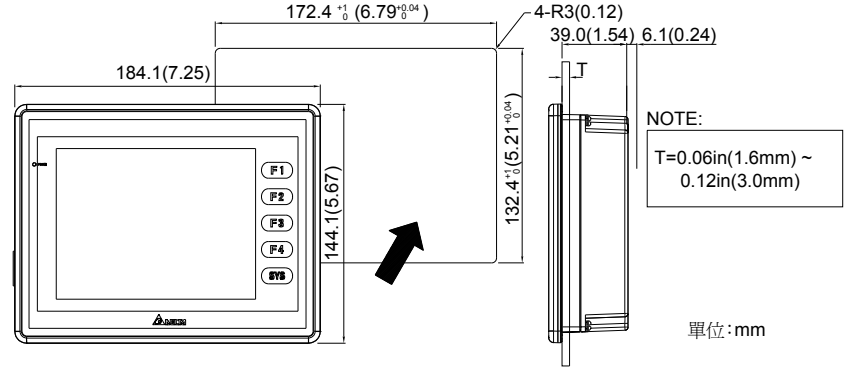
註：詳細流量控制腳位，請參考各機種腳位定義。

# 尺寸規格

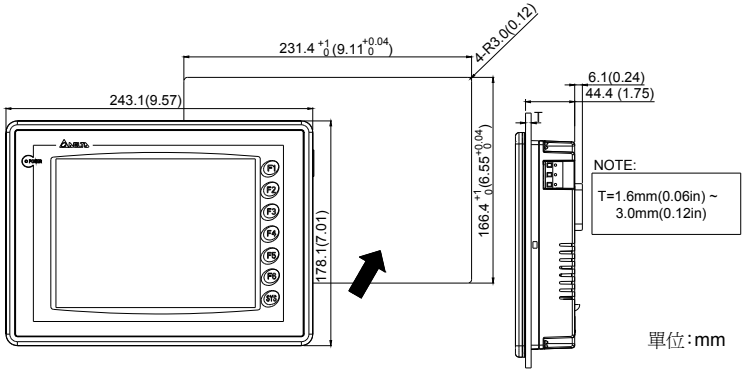
**DOP-AS35THTD／DOP-AS38BSTD**



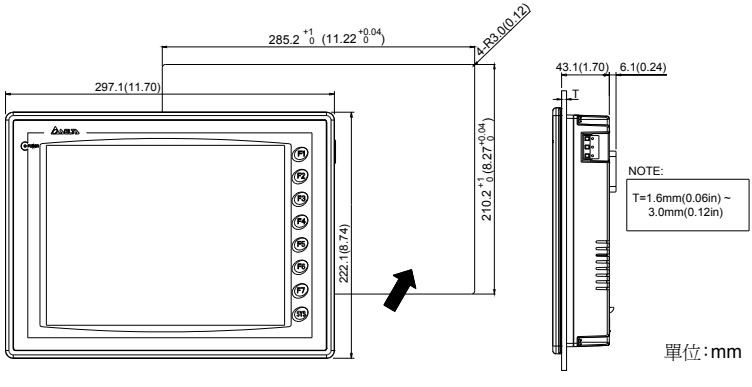

**DOP-AS57BSTD**



**DOP-A80THTD1／DOP-AE80THTD**




**DOP-A(E)10THTD1**



## 硬體規格

| 型號 | | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|---|
| 顯示器 | 面板種類 | 3.5” TFT LCD<br>（65536 色） | 3.8” STN LCD<br>（8 灰階藍白） | 5.7” STN LCD<br>（8 灰階藍白） |
| | 解析度 | 320 x 240 pixels | | |
| | 背光燈 | LED Back Light<br>（常溫 25℃ 下半衰期>3 萬小時）(Note 1) | LED Back Light<br>（常溫 25℃ 下半衰期>1 萬小時）(Note 1) | CCFL Back Light<br>（常溫 25℃ 下半衰期>5 萬小時）(Note 1) |
| | 顯示範圍 | 70.08 x 52.56mm | 76.8 x 57.6mm | 115.17 x 86.37mm |
| 作業系統 | | Delta Real Time OS | | |
| 中央處理器 | | 32-bit RISC Micro-controller | | |
| 記憶體 ROM | | NOR Flash ROM 2 MB(OS System: 1MB / User Application: 1MB) | | |
| 內部記憶體 | | 8Mbytes | 4Mbytes | 16Mbytes |
| 斷電保持內部記憶體（Bytes） | | 128K | 128K | 128K |
| SM Card | | N/A | | |
| 擴充介面 | | N/A | | |
| USB Host | | 1 USB Host Ver 1.1 | | |
| USB Client | | 1 USB Client Ver 1.1 | | |
| 串列通訊埠 | COM1 | RS-232 | | |
| | COM2 | RS-422／RS-485 | | |
| | COM3 | RS-232 | | RS-422／RS-485 |
| 輔助鍵 | | 使用者定義鍵 x 4 + 系統鍵 x 1 | | |
| 工作電壓 | | DC +24V（-10% ~ +15%）（請使用隔離式電源供應器）(Note 2) | | |
| 消耗功率 (Note 3) | | 3.36W | 2.64W | 5.28W |
| 記憶體備份電池 | | 3V 鋰電池 CR2032×1，電池壽命：5 年 | | |
| 蜂鳴器 | | 85dB | | |
| 萬年曆 | | 內建 | | |
| 冷卻方式 | | 自然冷卻 | | |
| 安規認證（面板防水等級） | | IP65／NEMA4／CE, UL | | |
| 操作溫度 | | 0°C ~ 50°C | | |
| 儲存溫度 | | -20°C ~ +60°C | | |
| 工作環境 | | 10% ~ 90% RH【0 ~ 40°C】，10% ~ 55% RH【41 ~ 50°C】，污染等級 2 | | |

| 型號 | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|
| 耐震動／耐衝擊 | IEC61131-2 規定 不連續振動 5Hz-9Hz 3.5mm，9Hz-150Hz 1G<br>連續振動 5Hz-9Hz 1.75mm，9Hz-150Hz 0.5G<br>X, Y, Z 各方向 10 次 | | |
| 尺寸<br>（W）x（H）x（D）<br>mm | 140.8 x 104.8 x 44.8 | | 184.1 x 144.1 x 47 |
| 開孔尺寸<br>（W）x（H）mm | 118.8 x 92.8 | | 172.4 x 132.4 |
| 重量 | 約 310g | | 約 760g |

**NOTE**

1) 背光模組半衰期的定義：最大驅動電流下，背光亮度衰退到最大亮度的一半時，即爲半衰期。所標示之壽命時間爲 25°C 常溫常濕工作環境下之預估值。
2) 除了 DOP-A80THTD1, DOP-AE80THTD, DOP-A(E)10THTD1 這些機種外皆請使用隔離式電源供應器。
3) 消耗功率爲無外接週邊設備時，人機本體所消耗的功率。建議選用的電源供應器容量爲標示消耗功率之 1.5~2 倍，以確保人機工作正常。
4) DOP-A/AE/AS系列HMI 編輯軟體Screen Editor 1.05 系列及其使用操作手冊，可由台達網站下載取得，網址爲 http://www.delta.com.tw/industrialautomation/。
5) 本人機介面安裝手冊內所記載之規格若有變更，本公司恕不另行通知。當內容規格有所修正時，請洽詢代理商或至台達網站 http://www.delta.com.tw/industrialautomation/下載最新版本。

| 型號 | | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|---|
| 顯示器 | 面板種類 | 8” TFT LCD<br>（65536 色） | 10.4” TFT LCD<br>（65536 色） |
| | 解析度 | 640 x 480 pixels | |
| | 背光燈 | CCFL Back Light<br>（常溫 25℃ 下半衰期>5 萬小時）(Note 1) | CCFL Back Light<br>（常溫 25℃ 下半衰期>3 萬小時）(Note 1) |
| | 顯示範圍 | 162.2 x 121.7mm | 211.2 x 158.4mm |
| 作業系統 | | Delta Real Time OS | |
| 中央處理器 | | 32-bit RISC Micro-controller | |
| 記憶體 ROM | | NOR Flash ROM 8 MB (OS System: 2MB / User Application: 6MB) | |
| 內部記憶體 | | 32Mbytes | |
| 斷電保持內部記憶體（Bytes） | | 512K | |
| SM Card | | ✓（AE） | |
| 擴充介面 | | ✓（AE） | |
| USB Host | | 1 USB Host Ver 1.1 | |
| USB Client | | 1 USB Client Ver 1.1 | |
| 串列通訊埠 | COM1 | RS-232 | |
| | COM2 | RS-232／RS-422／RS-485 | |
| | COM3 | RS-232／RS-422／RS-485 | |
| 輔助鍵 | | 使用者定義鍵 x6 +<br>系統鍵 x1 | 使用者定義鍵 x7 +<br>系統鍵 x1 |
| 工作電壓 | | DC +24V（-10% ~ +15%）（請使用隔離式電源供應器）(Note 2) | |
| 消耗功率 (Note 3) | | 14W | 15W |
| 記憶體備份電池 | | 3V 鋰電池 CR2032x1，電池壽命：5 年 | |
| 蜂鳴器 | | 85dB | |
| 萬年曆 | | 內建 | |
| 冷卻方式 | | 自然冷卻 | |
| 安規認證（面板防水等級） | | IP65／NEMA4／CE, UL | |
| 操作溫度 | | 0˚C ~ 50˚C | |
| 儲存溫度 | | -20˚C ~ +60˚C | |
| 工作環境 | | 10% ~ 90% RH【0 ~ 40˚C】，10% ~ 55% RH【41 ~ 50˚C】，污染等級 2 | |
| 耐震動／耐衝擊 | | IEC61131-2 規定 不連續振動 5Hz-9Hz 3.5mm，9Hz-150Hz 1G<br>連續振動 5Hz-9Hz 1.75mm，9Hz-150Hz 0.5G<br>X, Y, Z 各方向 10 次 | |

| 型號 | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|
| 尺寸<br>（W）x（H）x（D）<br>mm | 243.1 x 178.1 x 52.4 | 297.1 x 222.1 x 51.1 |
| 開孔尺寸<br>（W）x（H）mm | 231.4 x 166.4 | 285.2 x 210.2 |
| 重量 | 約 1140g | 約 1735g |

**NOTE**

1) 背光模組半衰期的定義：最大驅動電流下，背光亮度衰退到最大亮度的一半時，即爲半衰期。
所標示之壽命時間爲 25°C 常溫常濕工作環境下之預估值。
2) 除了 DOP-A80THTD1, DOP-AE80THTD, DOP-A(E)10THTD1 這些機種外皆請使用隔離式電源供應器。
3) 消耗功率爲無外接週邊設備時，人機本體所消耗的功率。建議選用的電源供應器容量爲標示消耗功率之 1.5~2 倍，以確保人機工作正常。
4) DOP-A/AE/AS系列HMI 編輯軟體Screen Editor 1.05 系列及其使用操作手冊，可由台達網站下載取得，網址爲 http://www.delta.com.tw/industrialautomation/。
5) 本人機介面安裝手冊內所記載之規格若有變更，本公司恕不另行通知。當內容規格有所修正時，請洽詢代理商或至台達網站 http://www.delta.com.tw/industrialautomation/下載最新版本。

# 序言

感谢您使用本产品，本人机接口安装手册提供 DOP-A、AE、AS 系列人机接口的相关信息。在使用之前，请您仔细详读本手册以确保使用上的正确。此外，请妥善将其放置在明显的地点以便随时查阅。下列事项在您尚未读完本手册前，请务必遵守：

- 安装的环境必须没有水气，腐蚀性气体及可燃性气体。
- 接线时，请依接线图说明施工。
- 接地工程必须确实实施，接地时须遵照国家现行相关电工法规的规定施行（请参考 NFPA 70: National Electrical Code, 2005 Ed.）。
- 在通电时，请勿拆解人机接口或更改配线。
- 在通电运行时，请勿接触电源处，以免触电。

如果您在使用上仍有问题，请咨询经销商或者本公司客服中心。由于产品精益求精，当内容规格有所修正时，请咨询代理商或至台达网站（http://www.delta.com.tw/industrialautomation/）下载最新版本。

## 安全注意事项

安装、配线、操作、维护及检查时，应随时注意以下安全注意事项。

**安装注意**




- 依照手册指定的方式安装人机接口，否则可能导致设备损坏。
- 禁止将本产品暴露在有水气、腐蚀性气体、可燃性气体等物质的场所下使用，否则可能会造成触电或火灾。

**配线注意**




- 请将接地端子连接到 class-3（100 Ω以下）接地，接地不良可能会造成通讯异常、触电或火灾。

**操作注意**




- 人机接口需配合编辑软件规划画面，未经规划或确认的人机接口可能会导致不正常运行结果。




- 不得在开启电源情况下改变配线，否则可能造成触电或人员受伤。
- 请勿以尖锐物品碰触面板，否则可能导致面板凹陷，进而使人机界面无法正常运行。

**保养及检查**




- 禁止接触人机接口内部，否则可能会造成触电。
- 电源启动时，禁止拆下人机接口面板，否则可能会造成触电。
- 电源关闭 10 分钟内，不得接触接线端子，残余电压可能造成触电。
- 更换备用电池时，应切断电源再进行，并在更换后重新检查系统设定值。
- 人机接口在操作时，排气孔不可封住，否则人机容易因为散热不良而造成故障。

**配线方法**




- 配线时请将快速连接器从人机接口的本体上拆下来。
- 快速连接器的一个电线插入口，请仅插入一根电线。
- 对于错误强行拔出电线的情况，请重新检查连接电线再启动。

**通讯电路的配线**




- 请依标准规格采用通讯配线线材。
- 通讯线材长度需在符合规定内。
- 采用正确的接地回路，以避免通讯不良。

## 安装环境条件

本产品在安装之前必须置于其包装箱内，若暂时不使用，为了使该产品能够符合本公司的保修范围及日后的维护，储存时务必注意下列事项：

- 必须置于无尘垢、干燥的位置。
- 储存位置的环境温度必须在-20˚C to +60˚C（-4˚F to 140˚F）范围内。
- 储存位置的相对湿度必须在 10%到 90%范围内，且无结露。
- 避免储存于含有腐蚀性气、液体的环境中。
- 最好适当包装存放在架子或台面。
- 本产品适合的安装环境包括有：无发高热装置的场所；无水滴、蒸气、灰尘及油性灰尘的场所；无腐蚀、易燃性的气、液体的场所；无漂浮性的尘埃及金属微粒的场所；坚固无振动、无电磁噪声干扰的场所。

## 安装方向与空间

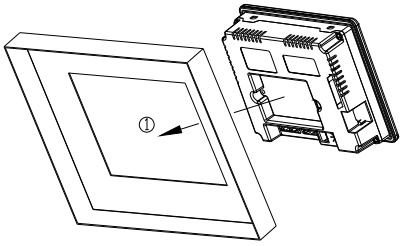
注意事项：

- 安装方向必须依规定，否则会造成故障原因。
- 为了使冷却循环效果良好，安装人机接口时，其上下左右与相邻的物品和挡板(墙)必须保持足够的空间，否则会造成散热不良。
- 使用于 Type 4X 室内用等级的外壳平面。

安装示意图【适用 A、AE 系列】:

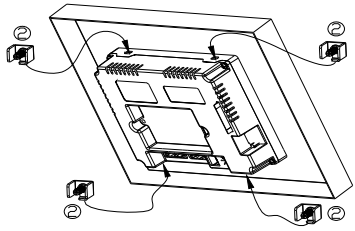
步骤一：

请确实将防水垫圈装入，然后再安装人机接口




步骤二：

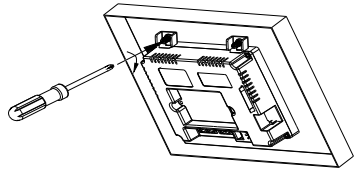
请确实将固定片螺丝组装入内，然后下方钩住前盖螺丝头顶住控制箱内侧



步骤三：

请以 0.7N-M 扭力锁紧，切记不可超过此扭力，否则将造成塑胶外壳的损坏。

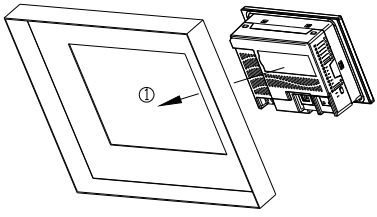
扭力：6.17lb-inch（0.7N-M）。



安装示意图【适用 AS 系列】：

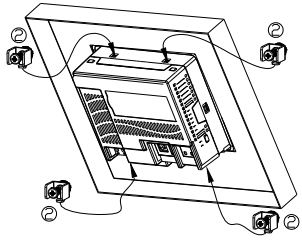
步骤一：

请确实将防水垫圈装入，然后再安装人机接口




步骤二：

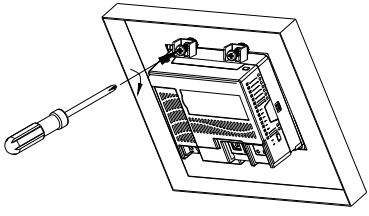
请确实将固定片螺丝组装入内，然后下方钩住前盖螺丝头顶住控制箱内侧




步骤三：

请以 0.7N-M 扭力锁紧，切记不可超过此扭力，否则将造成塑胶外壳的损坏。

扭力：6.17lb-inch（0.7N-M）。



## 配线

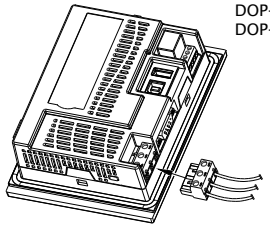
电源端子配线信息如下：

| 种类 | 电源配线（AWG） | 剥线长度 | 扭力 |
|---|---|---|---|
| 单芯线 | 28 ~ 12 | 7 ~ 8 mm | 5 kg-cm（4.3 lb-in） |
| 多芯线 | 30 ~ 12 | 7 ~ 8 mm | 5 kg-cm（4.3 lb-in） |

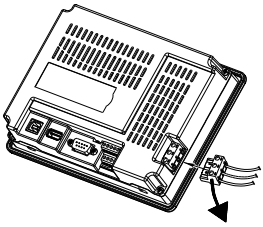
AS 系列通讯端子配线信息如下：

| 种类 | 电源配线（AWG） | 剥线长度 | 扭力 |
|---|---|---|---|
| 单芯线 | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm（1.7 lb-in） |
| 多芯线 | 30 ~ 16 | 5 ~ 6 mm | 2 kg-cm（1.7 lb-in） |

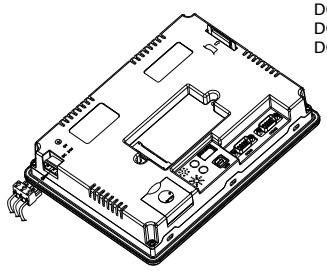
请确实依指示方向将快速接头装入



DOP-AS35THTD
DOP-AS38BSTD



DOP-AS57BSTD



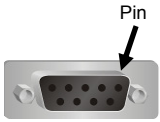
DOP-A80THTD1
DOP-AE80THTD
DOP-A(E)10THTD1

## 基本检测

| 检测项目 | 检测内容 |
|---|---|
| 一般检测 | ■ 定期检查人机接口与设备连接处的螺丝是否有松动。<br>■ 排气孔应避免油、水或金属粉等异物侵入，且应防止电钻的切削粉落入人机界面内。<br>■ 人机界面若设置于有害气体或多粉尘的场所，应防止有害气体与粉尘的侵入。 |
| 操作前检测<br>（未供应控制电源） | ■ 配线端子的接续部请实施绝缘处理。<br>■ 通讯配线应正确，否则可能发生异常。<br>■ 检查螺丝或金属片等导电性物体、可燃性物体是否存在人机接口内。<br>■ 人机接口附近使用的电子仪器受到电磁干扰时，请使用仪器调校以降低电磁干扰。<br>■ 请确定人机接口的供应电源电压准位是否正确。 |
| 运行前检测<br>（已供应控制电源） | ■ 电源指示灯是否显示。<br>■ 与各设备之间通讯是否正常。<br>■ 人机接口若有异常现象，请咨询经销商或者本公司客服中心。 |

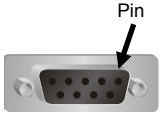
# 通讯引脚定义

**COM1 定义【适用 A、AE、AS57BSTD 系列】**

| COM Port 示意图 | 引脚 | 说明 |
|---|---|---|
| | | RS-232 |
|  | 1 | |
| | 2 | RXD |
| | 3 | TXD |
| | 4 | |
| | 5 | GND |
| | 6 | |
| | 7 | RTS |
| | 8 | CTS |
| | 9 | |

注：空白＝不需连接

**COM2 定义【适用 A 系列】**

| COM Port 示意图 | 引脚 | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|
| | | RS-232 | RS-422 | RS-485 |
|  | 1 | | RXD- | D- |
| | 2 | RXD | RXD+ | D+ |
| | 3 | TXD | TXD+ | D+ |
| | 4 | | TXD- | D- |
| | 5 | GND | | |
| | 6 | | RTS- | |
| | 7 | RTS | RTS+ | |
| | 8 | CTS | CTS+ | |
| | 9 | | CTS- | |

注 1：空白＝不需连接

注 2：使用 Mode3 时，D+为 Pin2、Pin3 短路，D-为 Pin1、Pin4 短路

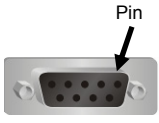
**COM2、COM3 定义【适用 AE、A80THTD1、A10THTD1 系列】**

| COM Port 示意图 | COM Port | 引脚 | MODE1 | MODE2 | MODE3 | MODE4 | MODE5 | MODE6 |
|---|---|---|---|---|---|---|---|---|
| | | | RS-232 | RS-422 | RS-485 | RS-232*2 | RS-422*2 | RS-485*2 |
|  | COM2 | 1 | | RXD- | D- | | RXD1- | D1- |
| | | 2 | RXD | RXD+ | D+ | RXD1 | RXD1+ | D1+ |
| | | 3 | TXD | TXD+ | D+ | TXD1 | TXD1+ | D1+ |
| | | 4 | | TXD- | D- | | TXD1- | D1- |
| | | 5 | GND | | | | | |
| | COM3 | 6 | | RTS- | | | TXD2- | D2- |
| | | 7 | RTS | RTS+ | | TXD2 | TXD2+ | D2+ |
| | | 8 | CTS | CTS+ | | RXD2 | RXD2+ | D2+ |
| | | 9 | | CTS- | | | RXD2- | D2- |

注 1：空白＝不需连接

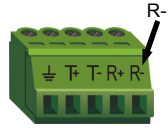
注 2：使用 Mode3 时，D+为 Pin2、Pin3 短路，D-为 Pin1、Pin4 短路
使用 Mode6 时，D1+为 Pin2、Pin3 短路，D1-为 Pin1、Pin4 短路，D2+为 Pin7、Pin8 短路，D2-为 Pin6、Pin9 短路

**COM1、COM3 定义【适用 AS38BSTD、AS35THTD 系列】**

| COM Port 示意图 | COM Port | 引脚 | MODE1 | MODE2 |
|---|---|---|---|---|
| | | | RS-232 | RS-232*2 |
|  | COM1 | 1 | | |
| | | 2 | RXD | RXD1 |
| | | 3 | TXD | TXD1 |
| | | 4 | | |
| | | 5 | GND | |
| | COM3 | 6 | | |
| | | 7 | RTS | TXD2 |
| | | 8 | CTS | RXD2 |
| | | 9 | | |

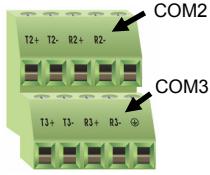
注：空白＝不需连接

**COM2 定义【适用 AS38BSTD、AS35THTD 系列】**

| COM Port 示意图 | 引脚 | MODE1 | MODE2 |
|---|---|---|---|
| | | RS-422 | RS-485 |
|  | R- | RXD- | D- |
| | R+ | RXD+ | D+ |
| | T- | TXD- | D- |
| | T+ | TXD+ | D+ |
| | G | GND | |

注 1：使用 Mode2 时，D+为 R+、T+短路，D-为 R-、T-短路

**COM2、COM3 定义【适用 AS57BSTD 系列】**

| COM Port 示意图 | COM Port | 引脚 | MODE1 | MODE2 | MODE3 |
|---|---|---|---|---|---|
| | | | RS-485*2 | RS-422*2 | RS-422 |
|  | COM2 | R- | D- | RXD- | RXD- |
| | | R+ | D+ | RXD+ | RXD+ |
| | | T- | | TXD- | TXD- |
| | | T+ | | TXD+ | TXD+ |
| | | G | GND | | |
| | COM3 | R- | D- | RXD- | CTS- |
| | | R+ | D+ | RXD+ | CTS+ |
| | | T- | | TXD- | RTS- |
| | | T+ | | TXD+ | RTS+ |

注 1：空白＝不需连接

注 2：欲使用 RS-422 流量控制时，其控制引脚请参考 MODE3 引脚定义。此时 COM2、COM3 无法单独使用。

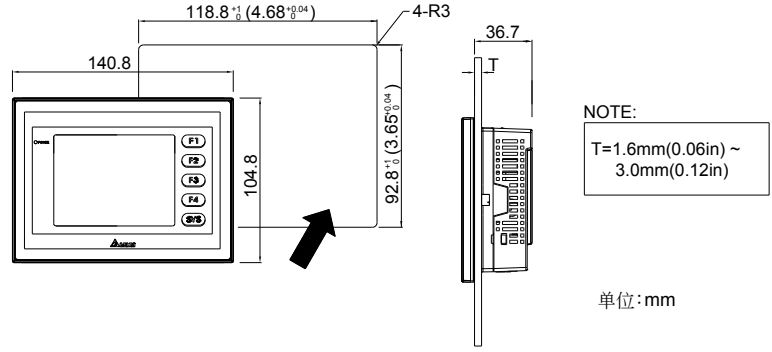
**各系列机种通讯流量控制支持对照表**

| COM Port | DOP-AE 系列 | DOP-A 系列 | DOP-AS57 系列 | DOP-AS35 / AS38 系列 |
|---|---|---|---|---|
| COM1 | 支持 RS-232 流量控制 | 支持 RS-232 流量控制 | 支持 RS-232 流量控制 | 支持 RS-232 流量控制，启动流量控制时，COM3 无法使用 |
| COM2 | 支持 RS-422 流量控制，启动流量控制时，COM3 无法使用 | 支持 RS-422 流量控制 | 支持 RS-422 流量控制，启动流量控制时，COM3 无法使用 | 不支持 RS-422 流量控制 |
| COM3 | | N/A | | 支持 RS-232 流量控制，启动流量控制时，COM3 无法使用 |

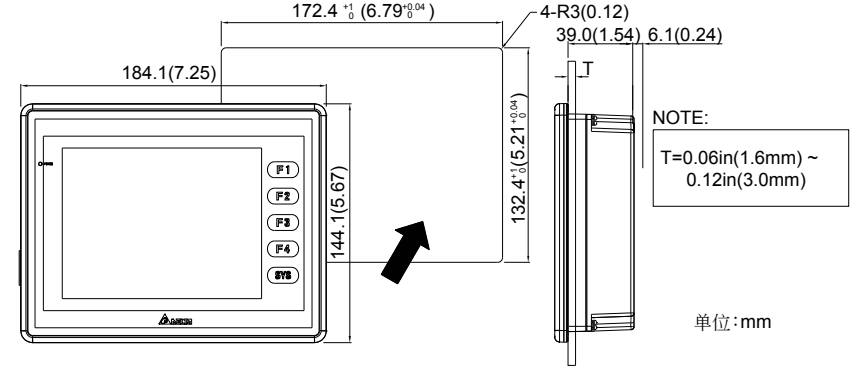
注：详细流量控制引脚，请参考各机种引脚定义。

# 尺寸规格

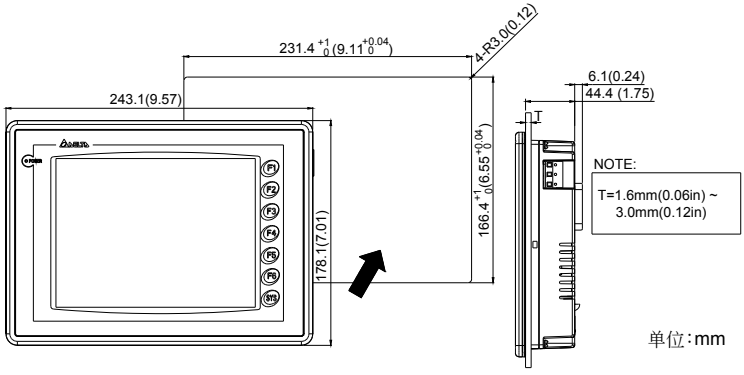
**DOP-AS35BSTD / DOP-AS38BSTD**



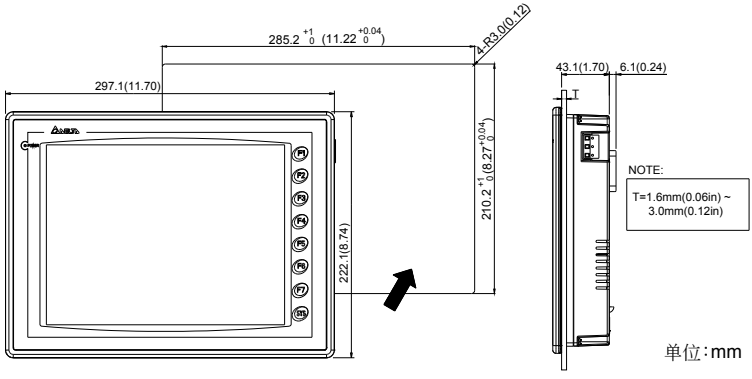

**DOP-AS57BSTD**



**DOP-A80THTD1 / DOP-AE80THTD**




**DOP-A(E)10THTD1**



## 硬件规格

| 型号 | | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|---|
| 显示器 | 面板种类 | 3.5” TFT LCD<br>（65536 色） | 3.8” STN LCD<br>（8 灰度蓝白） | 5.7” STN LCD<br>（8 灰度蓝白） |
| | 分辨率 | 320 x 240 pixels | | |
| | 背光灯 | LED Back Light<br>（常温 25℃ 下半衰期>3 万小时）(Note 1) | LED Back Light<br>（常温 25℃ 下半衰期>1 万小时）(Note 1) | CCFL Back Light<br>（常温 25℃ 下半衰期>5 万小时）(Note 1) |
| | 显示范围 | 70.08 x 52.56mm | 76.8 x 57.6mm | 115.17 x 86.37mm |
| 操作系统 | | Delta Real Time OS | | |
| 中央处理器 | | 32-bit RISC Micro-controller | | |
| 内存 ROM | | NOR Flash ROM 2 MB(OS System: 1MB / User Application: 1MB) | | |
| 内部存储器 | | 8Mbytes | 4Mbytes | 16Mbytes |
| 断电保持内部内存（Bytes） | | 128K | 128K | 128K |
| SM Card | | N/A | | |
| 扩展界面 | | N/A | | |
| USB Host | | 1 USB Host Ver 1.1 | | |
| USB Client | | 1 USB Client Ver 1.1 | | |
| 串行通讯口 | COM1 | RS-232 | | |
| | COM2 | RS-422 / RS-485 | | |
| | COM3 | RS-232 | | RS-422 / RS-485 |
| 辅助键 | | 使用者定义键 x 4 + 系统键 x 1 | | |
| 工作电压 | | DC +24V（-10% ~ +15%）（请使用隔离式电源供应器）(Note 2) | | |
| 消耗功率 (Note 3) | | 3.36W | 2.64W | 5.28W |
| 内存备份电池 | | 3V 锂电池 CR2032×1，电池寿命：5 年 | | |
| 蜂鸣器 | | 85dB | | |
| 实时时钟 | | 内建 | | |
| 冷却方式 | | 自然冷却 | | |
| 安规认证（面板防水等级） | | IP65 / NEMA4 / CE, UL | | |
| 操作温度 | | 0˚C ~ 50˚C | | |
| 储存温度 | | -20˚C ~ +60˚C | | |
| 工作环境 | | 10% ~ 90% RH【0 ~ 40˚C】，10% ~ 55% RH【41 ~ 50˚C】，污染等级 2 | | |

| 型号 | AS35THTD | AS38BSTD | AS57BSTD |
|---|---|---|---|
| 耐震动 / 耐冲击 | IEC61131-2 规定 不连续振动 5Hz-9Hz 3.5mm，9Hz-150Hz 1G<br>连续振动 5Hz-9Hz 1.75mm，9Hz-150Hz 0.5G<br>X, Y, Z 各方向 10 次 | | |
| 尺寸<br>（W）x（H）x（D）<br>mm | 140.8 x 104.8 x 44.8 | | 184.1 x 144.1 x 47 |
| 开孔尺寸<br>（W）x（H）mm | 118.8 x 92.8 | | 172.4 x 132.4 |
| 重量 | 约 310g | | 约 760g |

**NOTE**

1) 背光模块半衰期的定义：最大驱动电流下，背光亮度衰退到最大亮度的一半时，即为半衰期。所标示的寿命时间为 25°C 常温常湿工作环境下的预估值。
2) 除了 DOP-A80THTD1, DOP-AE80THTD, DOP-A(E)10THTD1 这些机种外皆请使用隔离式电源供应器。
3) 消耗功率为无外接外围设备时，人机本体所消耗的功率。建议选用的电源供应器容量为标示消耗功率的 1.5~2 倍，以确保人机工作正常。
4) DOP 系列HMI 编辑软件Screen Editor 1.05 系列及其使用操作手册，可由台达网站下载取得，网址为 http://www.delta.com.tw/industrialautomation/。
5) 本人机接口安装手册内所记载的规格若有变更，本公司恕不另行通知。当内容规格有所修正时，请咨询代理商或至台达网站 http://www.delta.com.tw/industrialautomation/下载最新版本。

| 型号 | | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|---|
| 显示器 | 面板种类 | 8" TFT LCD<br>（65536 色） | 10.4" TFT LCD<br>（65536 色） |
| | 分辨率 | 640 x 480 pixels | |
| | 背光灯 | CCFL Back Light<br>（常温 25℃ 下半衰期>5 万小时）(Note 1) | CCFL Back Light<br>（常温 25℃ 下半衰期>3 万小时）(Note 1) |
| | 显示范围 | 162.2 x 121.7mm | 211.2 x 158.4mm |
| 操作系统 | | Delta Real Time OS | |
| 中央处理器 | | 32-bit RISC Micro-controller | |
| 内存 ROM | | NOR Flash ROM 8 MB (OS System: 2MB / User Application: 6MB) | |
| 内部存储器 | | 32Mbytes | |
| 断电保持内部内存（Bytes） | | 512K | |
| SM Card | | ✓（AE） | |
| 扩展界面 | | ✓（AE） | |
| USB Host | | 1 USB Host Ver 1.1 | |
| USB Client | | 1 USB Client Ver 1.1 | |
| 串行通讯口 | COM1 | RS-232 | |
| | COM2 | RS-232 / RS-422 / RS-485 | |
| | COM3 | RS-232 / RS-422 / RS-485 | |
| 辅助键 | | 使用者定义键 x6 + 系统键 x1 | 使用者定义键 x7 + 系统键 x1 |
| 工作电压 | | DC +24V（-10% ~ +15%）（请使用隔离式电源供应器）(Note 2) | |
| 消耗功率 (Note 3) | | 14W | 15W |
| 内存备份电池 | | 3V 锂电池 CR2032×1，电池寿命：5 年 | |
| 蜂鸣器 | | 85dB | |
| 实时时钟 | | 内建 | |
| 冷却方式 | | 自然冷却 | |
| 安规认证（面板防水等级） | | IP65 / NEMA4 / CE, UL | |
| 操作温度 | | 0°C ~ 50°C | |
| 储存温度 | | -20°C ~ +60°C | |
| 工作环境 | | 10% ~ 90% RH【0 ~ 40°C】，10% ~ 55% RH【41 ~ 50°C】，污染等级 2 | |
| 耐震动 / 耐冲击 | | IEC61131-2 规定 不连续振动 5Hz-9Hz 3.5mm，9Hz-150Hz 1G<br>连续振动 5Hz-9Hz 1.75mm，9Hz-150Hz 0.5G<br>X, Y, Z 各方向 10 次 | |

| 型号 | A80THTD1<br>AE80THTD | A10THTD1<br>AE10THTD1 |
|---|---|---|
| 尺寸<br>（W）x（H）x（D）<br>mm | 243.1 x 178.1 x 52.4 | 297.1 x 222.1 x 51.1 |
| 开孔尺寸<br>（W）x（H）mm | 231.4 x 166.4 | 285.2 x 210.2 |
| 重量 | 约 1140g | 约 1735g |

**NOTE**

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所标示的寿命时间为 25°C 常温常湿工作环境下的预估值。
2) 除了 DOP-A80THTD1, DOP-AE80THTD, DOP-A(E)10THTD1 这些机种外皆请使用隔离式电源供应器。
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