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*Slight variations in appearance and specifications may exist between the catalogue and the actual product.
We reserve the right to change the information in this catalogue without prior notice.



DOP-A

Delta Human Machine Interface



www.delta.com.tw/industrialautomation

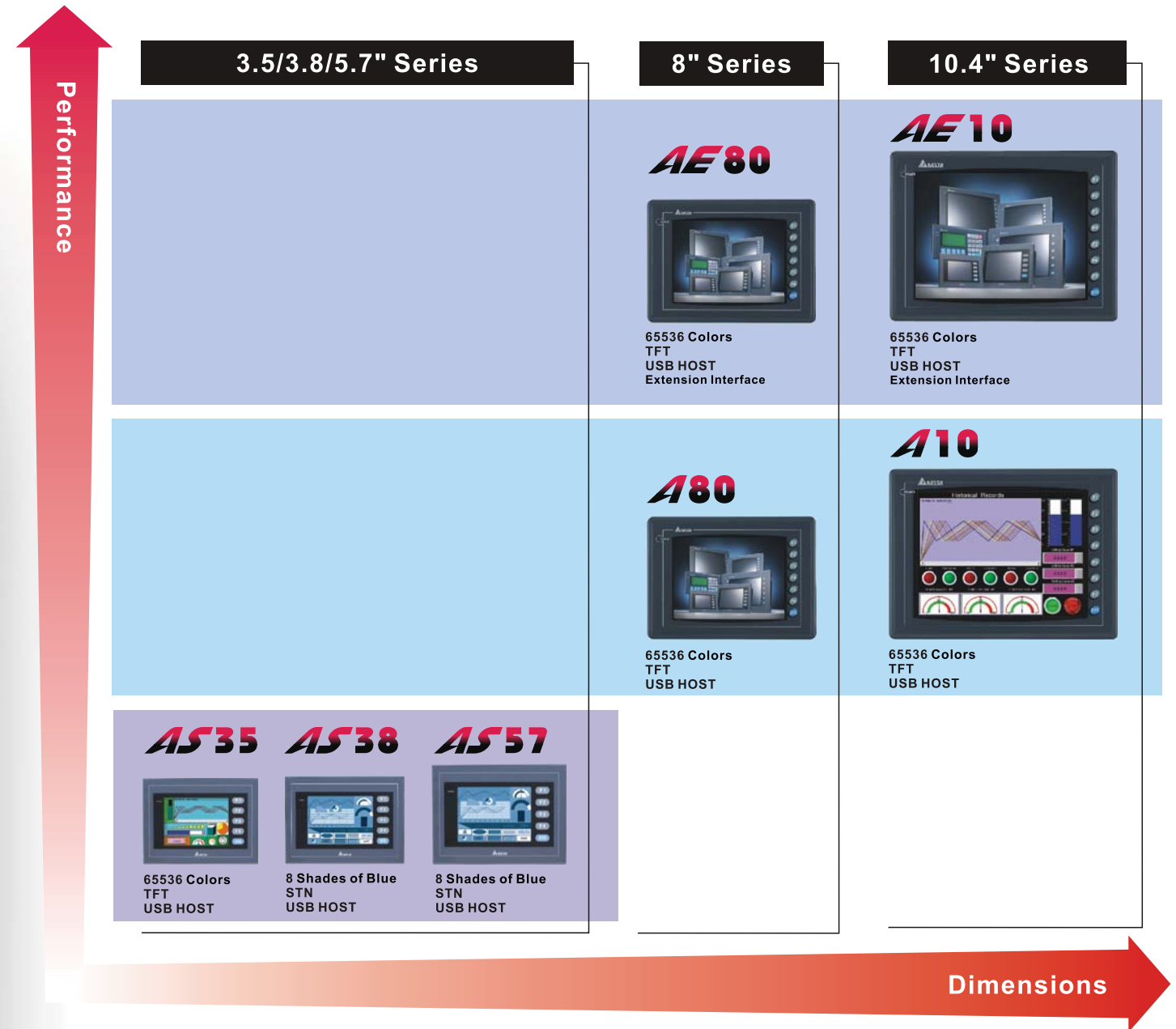


Product Lineup

Various dimensions, display size, functions for a wide range of industrial applications

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Series	AS			A		AE	
	3.5"	3.8"	5.7"	8"	10.4"	8"	10.4"
Display Size	3.5"	3.8"	5.7"	8"	10.4"	8"	10.4"
Resolution	320 x 240	320 x 240	320 x 240	640 x 480	640 x 480	640 x 480	640 x 480
Display Color	65536 colors	8 shades of blue	8 shades of blue	65536 colors	65536 colors	65536 colors	65536 colors
Flash Memory	2M (OS System:1MB User Application:1MB)	2M (OS System:1MB User Application:1MB)	2M (OS System:1MB User Application:1MB)	8MB (OS System:2MB User Application:6MB)	8MB (OS System:2MB User Application:6MB)	8MB (OS System:2MB User Application:6MB)	8MB (OS System:2MB User Application:6MB)
SRAM	128K	128K	128K	512K	512K	512K	512K
Function Key	4+SYS	4+SYS	4+SYS	6+SYS	7+SYS	6+SYS	7+SYS
USB HOST	YES	YES	YES	YES	YES	YES	YES
Extension Module	N/A	N/A	N/A	N/A	N/A	YES	YES
Serial Communication	COM x 3	COM x 3	COM x 3	COM x 3	COM x 3	COM x 3	COM x 3

Features

Extension Module

Offer various kinds of optional extension modules to extend the HMI functionality.

Extension Printer Module:
Used to connect to printer.

Extension DIO Module:
Match the need for display, control and operation all-in-one application.

Extension Ethernet Module:
Peripheral equipment can be connected by Ethernet Module. The ability to long-distance data transmission enables fast and effective monitoring and controlling.



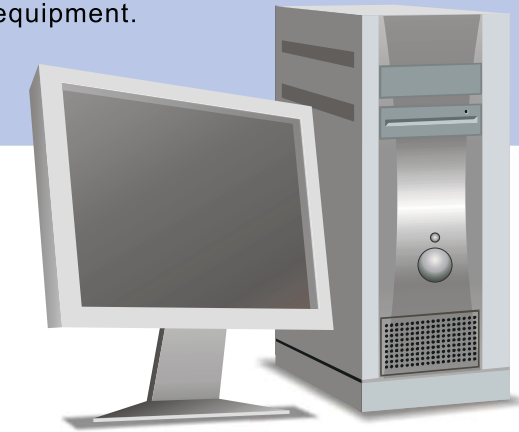
Display

Full-color Display:
Offer many different displays for the users to produce colorful, bright and high-resolution images. Max. 65536 colors TFT LCD display is provided. Clear and realistic images and graphs can be easily created.

Transferring Data

Rapid USB Download:
Efficiently reduce download time by using USB high-speed transmission interface.

USB Disk for Copying Screen Data:
USB disk is used to copy the HMI screen data. It also provides password protection function and is able to limit the frequency of copying the screen data. Using USB disk can protect the screen data effectively and achieve easier maintenance of remote equipment.



Fast Operation

PLC program can be upgraded and maintained via HMI. It provides fast operation with less wiring and less connections.

Saving Data

Screen data, history records and recipes can be easily saved through USB disk.



Communication

Serial Communication Interface:
Up to three COM ports for serial communication. Used to connect to multiple controllers in serial simultaneously. Besides Delta industrial automation products, Delta HMI product can also support more than twenty well-known brands of controllers and continue to increase.



HMI Editing Software - Screen Editor

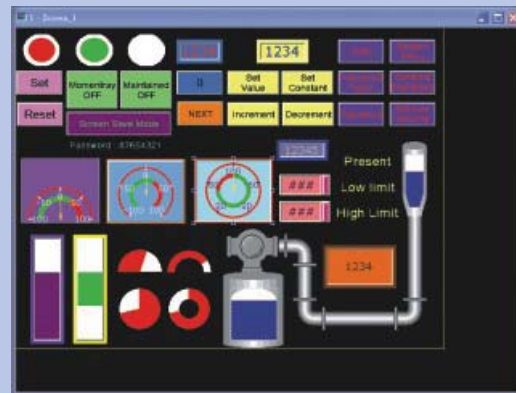
Easy-to-understand Toolbar:
Easily execute any editing operation by using the icons on Toolbar.



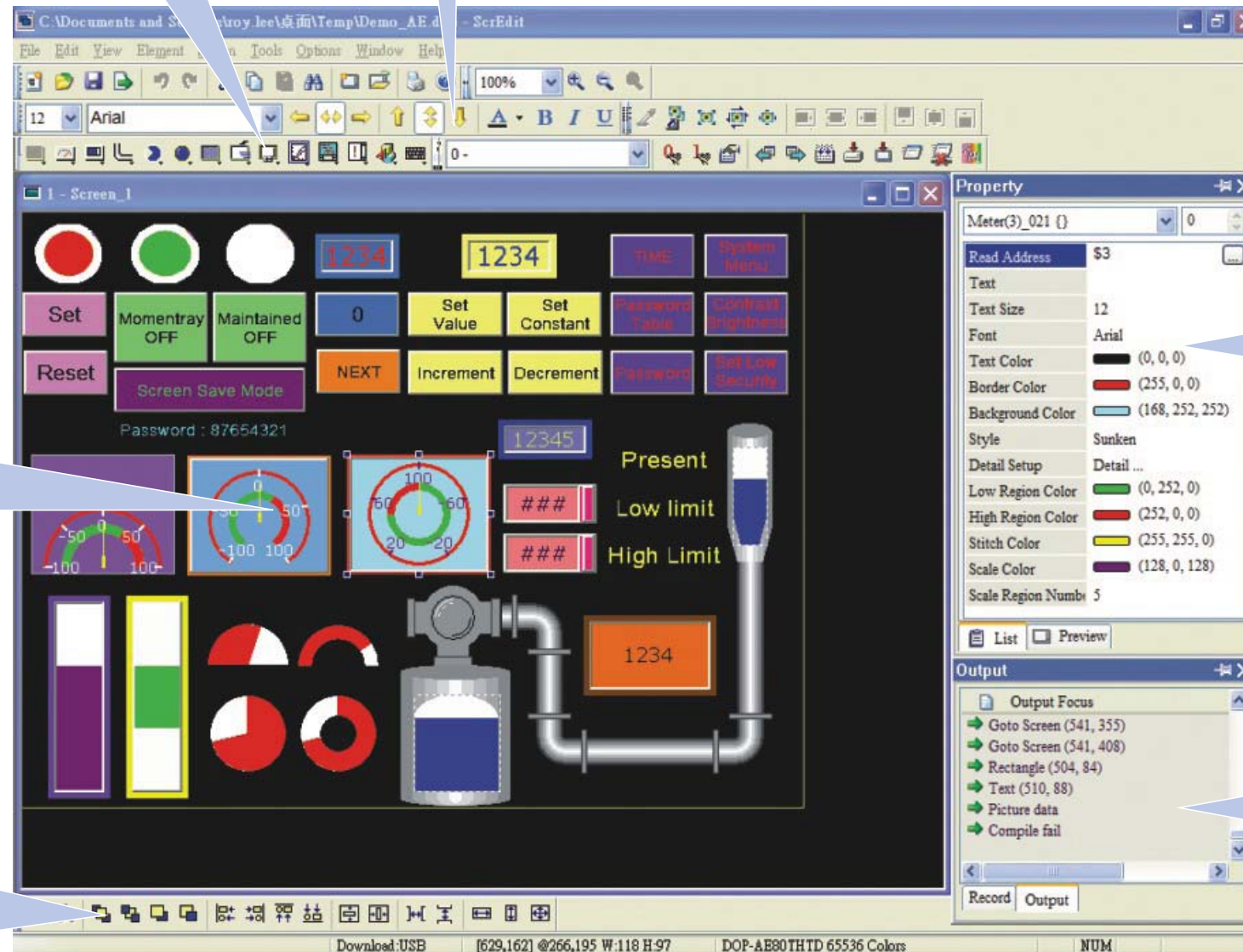
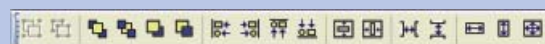
Element Toolbar:
Various elements satisfy the needs of all applications.



Work Place (Drawing Area):
The users can create and edit all elements here.
The work place will change to different size automatically depending on selected HMI model.



Layout Toolbar:
It helps the users to align, position the element and also allows the users to make the element be the same size.

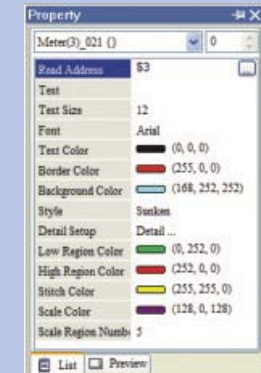


Recommended System Requirements of Screen Editor:

Item	System Requirement
CPU	Pentium III 500MHz or higher
Memory	256 MB or more of available space is needed.
Hard Disk	400 MB or more of available space is needed.
Display	Display resolution of 800 x 600 or more is recommended.
Printer	Printer that is compatible with Windows 2000/WindowsXP
OS	Windows 2000/WindowsXP

The users can download the Screen Editor, the program editor of Delta HMI product and the user manual via the following link: <http://www.delta.com.tw/industrialautomation/>.

Property Table:
It provides element property settings for each element.



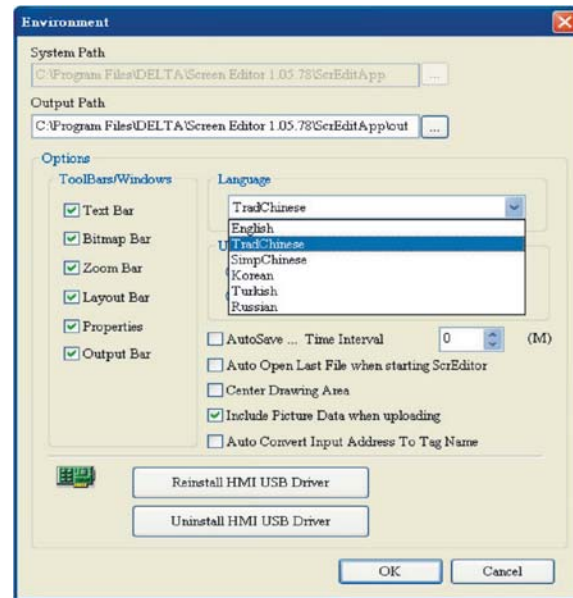
Output Window:
All editing actions and output messages will be shown here when compile is finished.



Features of Screen Editor

Multi-Language Interface

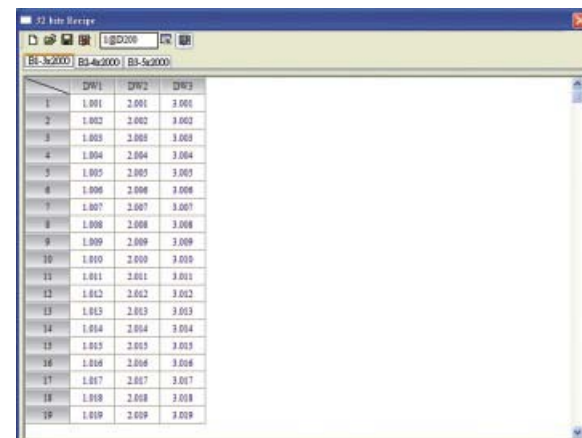
3 viewable languages are provided: Traditional Chinese, Simplified Chinese and English. More languages support, such as Korean, Turkish, etc. will be available soon.



Flexible Recipe Function. 32-bit recipe is supported.

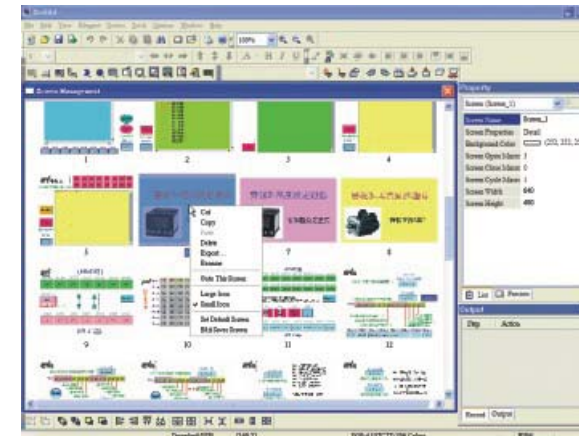
Simple recipe editing function can save parameter setting values from production site to HMI and command the controller to change the parameters. This function is convenient for different production process changes.

32-bit floating point format is available for high-precision production process. The recipes can be saved to USB disk. Besides, CSV file data is also allowed and can also be edited.



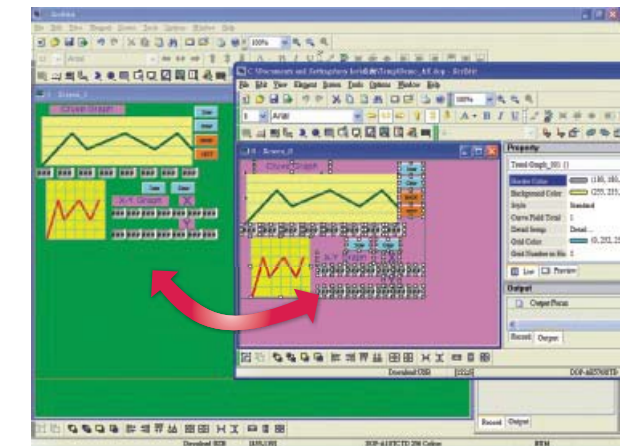
Convenient Screen Management

HMI screen management function can easily manage the designed screen.



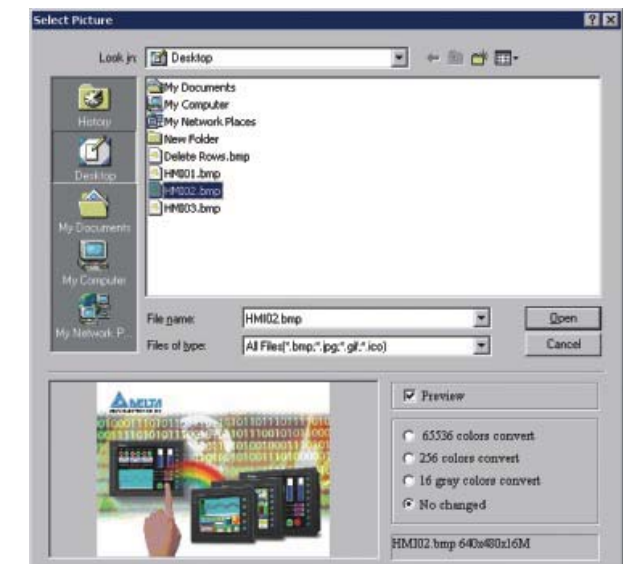
Multi-Screen Editing

Screen Editor allows the users to edit several projects at the same time. The users can work on different screens and copy the images or data from one project to another.



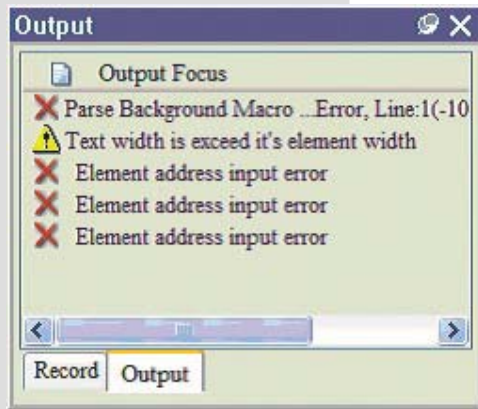
Picture Bank

The users can use this option to import various pictures (*.bmp, *.gif, *.jpg, *.ico) to enrich the screen. The picture can be converted to different color according to different types of models.



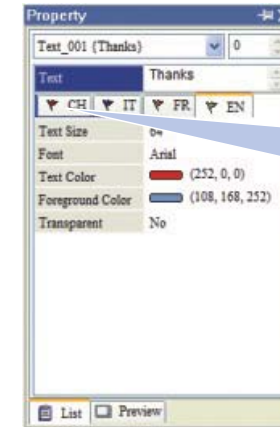
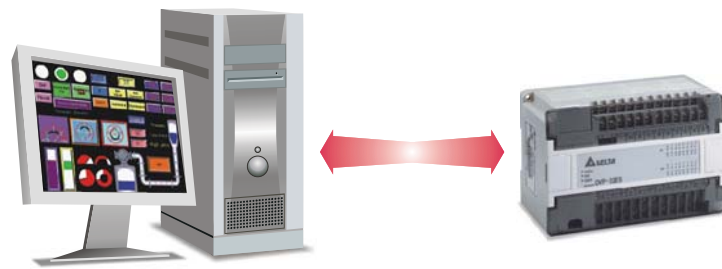
Features of Screen Editor

Easy Debugging

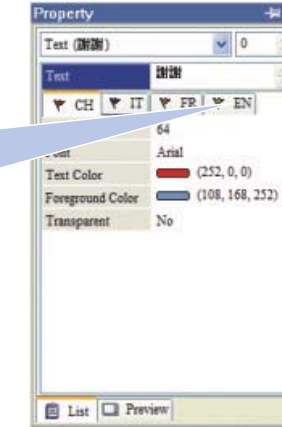


Once an error occurs when compile is finished, the error messages will display in Output Window. The users can know where the error occurs and proceed debugging immediately

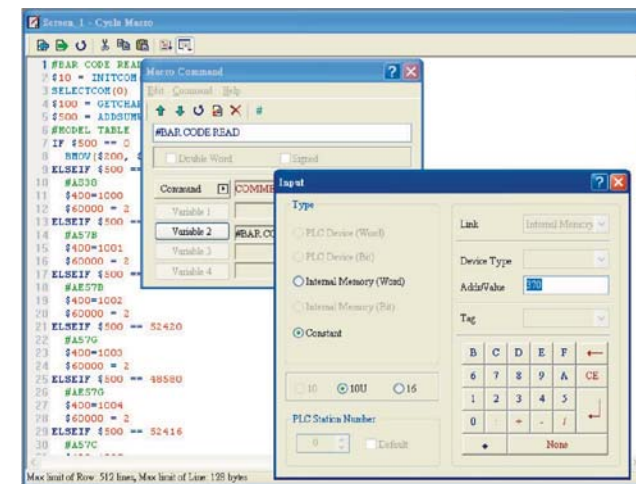
The users also can perform debugging without HMI. To save the design time, the on-line / off-line simulation function can be easily executed via PC software only.



Chose different tab to switch to different language.



Macro Editing Function



Powerful macro commands provide four fundamental operations of arithmetic, condition judgments, data move and the operation of floating points. Using macro editing function can simplify the PLC program editing efficiently. Easy-to-learn interface provides good flexibility in use and lets the users have more selection for program editing. Communication macro commands are also provided. The users can transmit and receive data through COM port to control the special equipment.

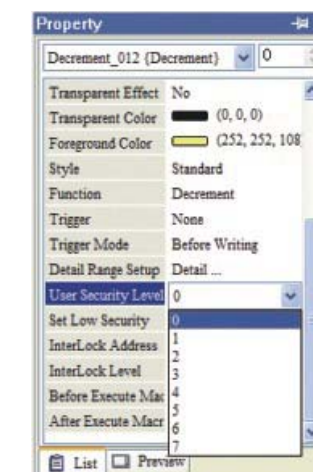
Multilingual Display



Max. 8 user-defined languages can be displayed on HMI screen by simple software editing. It is easy for the users to switch the desired language.

User Security Level

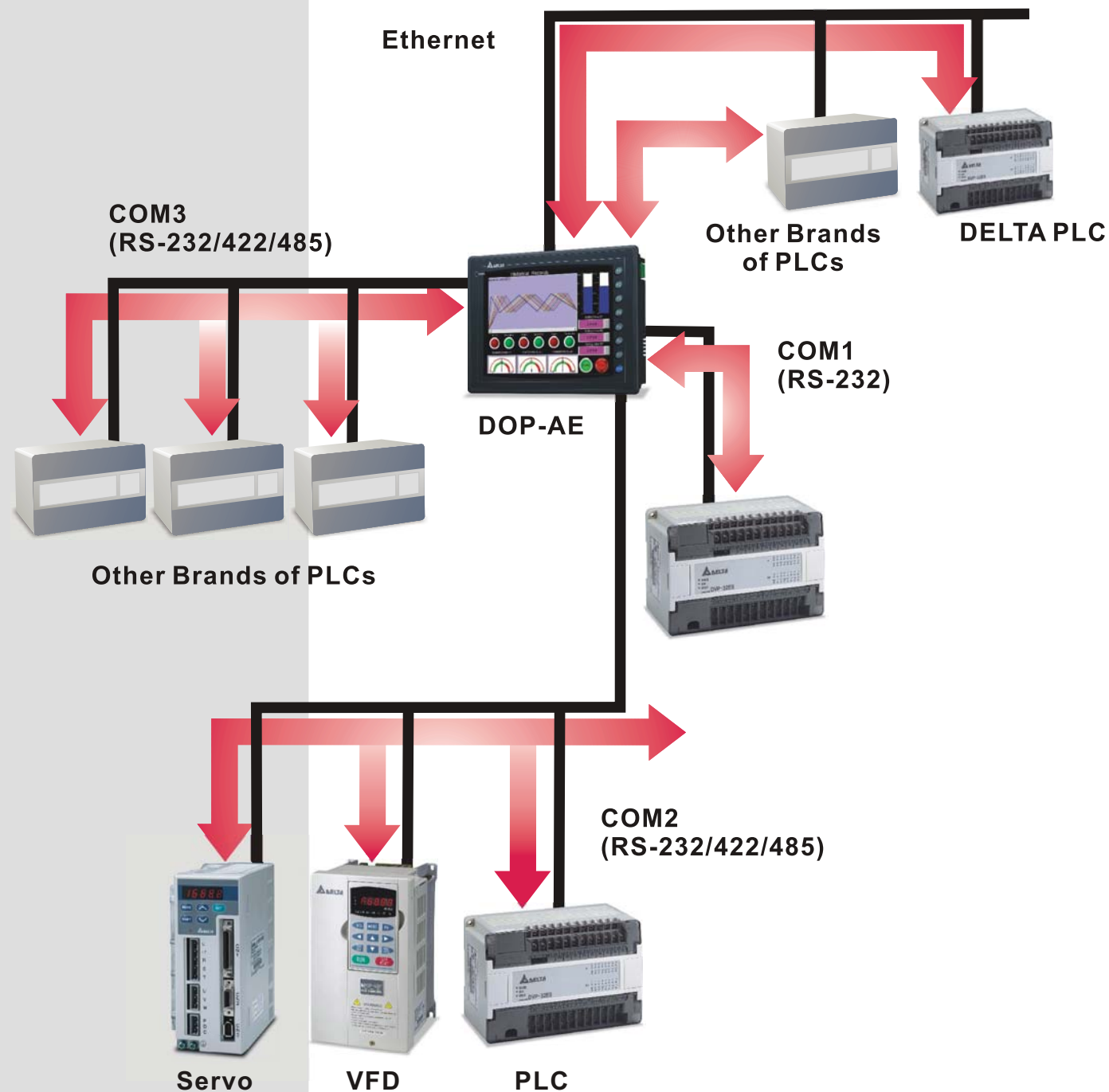
Provide 8 security levels with password protection for the authorization control for different elements.



Other Functions

Four kinds of controllers can be connected simultaneously (DOP-AE series only)

DOP-AE series supports up to 3 COM ports for serial communication. In addition to COM ports, if the extension Ethernet module is also used, DOP-AE series can connect to four kinds of external controllers at the same time. An ultimate central control system for factory control can be achieved.



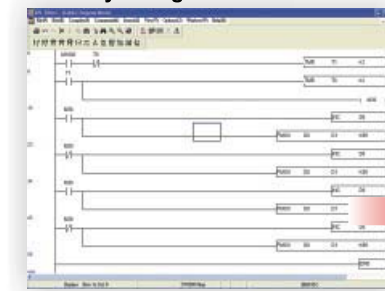
Optional Extension Modules

AE series HMI product can connect to various kinds of optional extension modules to extend the HMI functionality through the extension interface located on rear cover.

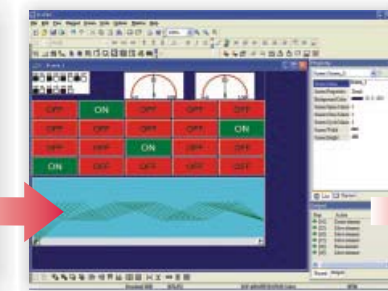


Extension DIO Module:
Using HMI-WPLSoft which is built in Screen Editor can make HMI to be an all-in-one and cost-effective controller with excellent control performance for display, control and operation.

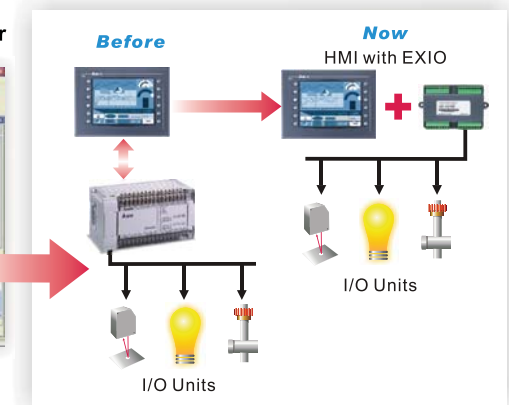
Editing PLC programs by using HMI-WPLSoft



Editing Screen of Screen Editor



Easily achieve all-in-one requirement for display, control and operation



Extension Printer Module:

When USB Host is connected to USB disk, the users can use this module and connect to a printer.



Extension Ethernet Module:

Using Extension Ethernet Module can connect peripheral equipment and establish the network between HMI and peripheral equipment. The transmission distance will be no longer limited. Modbus communication on TCP/IP is supported. In the near future, other compatible communication protocol for Ethernet will be available soon.



Ethernet Solution

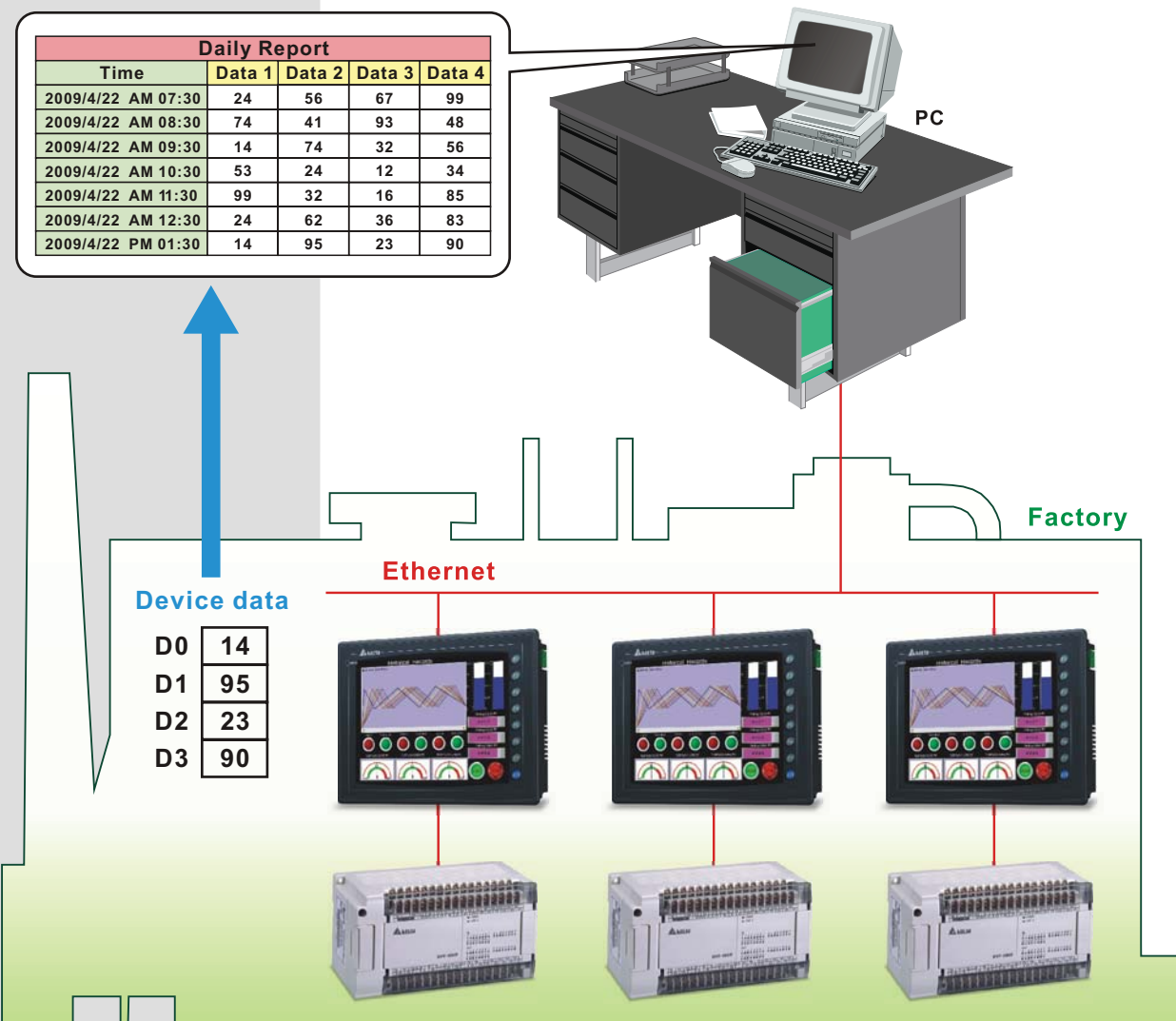
DOP-A

Complete Ethernet Solution

DOP eServer Data Collection Software

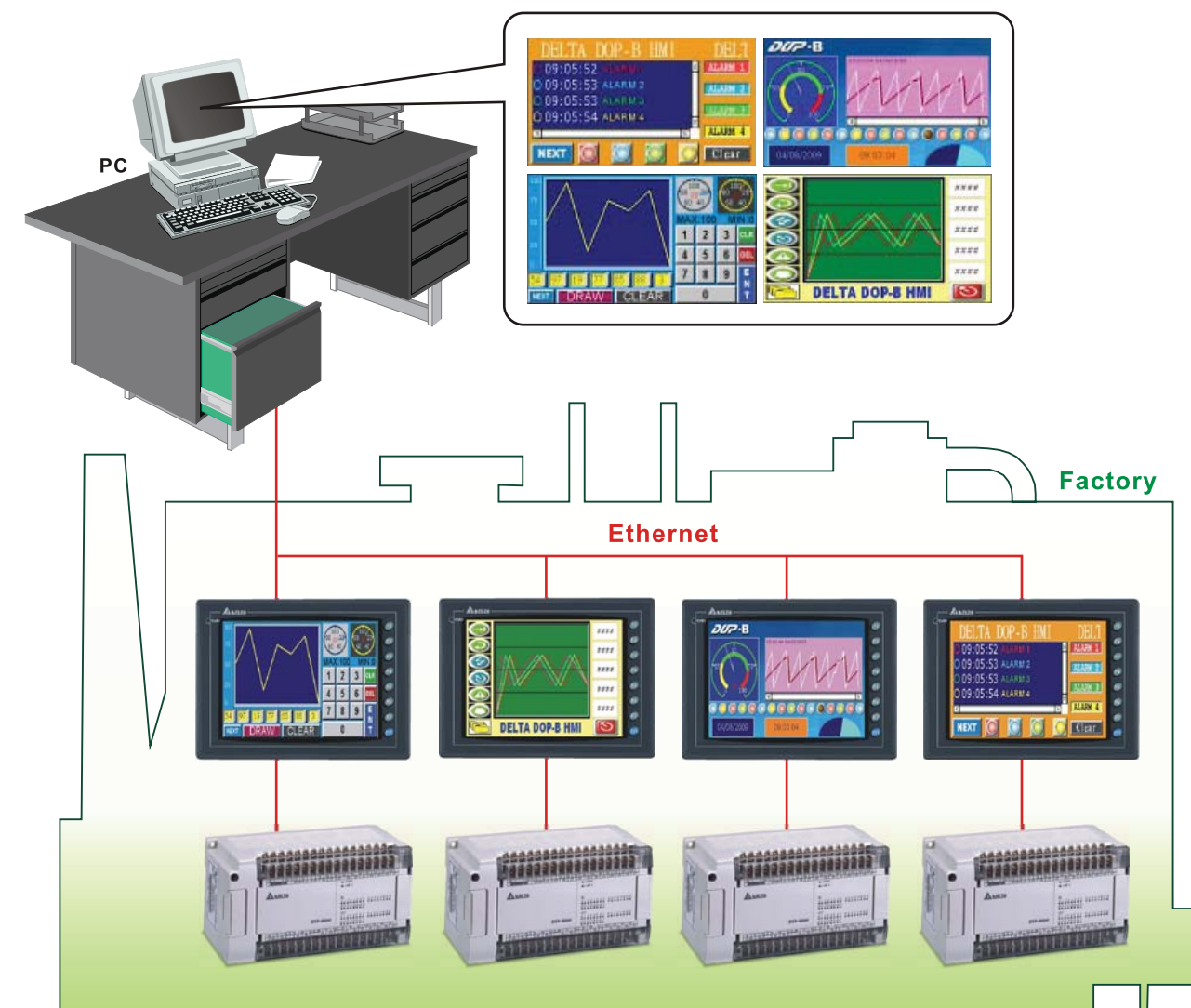
eServer is used to transfer production information and history data directly from production site to a PC in the office via Ethernet.

! Will be released soon!



DOP eRemote Remote Control Software

eRemote is used to view and check the same screen shown on HMI at the production site, and control the manufacturing process via Ethernet. No matter where you are, remote controlling is not an arduous task at all.



- Collected data can be saved in user-defined Excel file according to various purposes for the users to easily create production reports.
- If the formulas in Excel file are set in advance, the production data, i.e. defective rate, average working hour and capacity utilization rate, etc. can be calculated simultaneously while production data is recorded.
- Production data can be saved in daily reports, week reports and monthly reports, etc. automatically under different settings.

Hardware / Software	System Requirement
CPU	Pentium 4, 1.6GHz or greater is recommended
Memory	1G MB and above is recommended
Hard Disk	Capacity: 50MB and above
Monitor	Support resolution: 1024 x 768 or higher full-color display.
Printer	Printer compatible Windows 2000 / Windows XP / Windows Vista / Windows 7
Operation System	Windows 2000 / Windows XP / Windows Vista / Windows 7

* Users can download the DOP-eRemote / DOP-eServer software and the user manual at Delta's website via the following link:
<http://www.delta.com.tw/industrialautomation/>.

Specifications

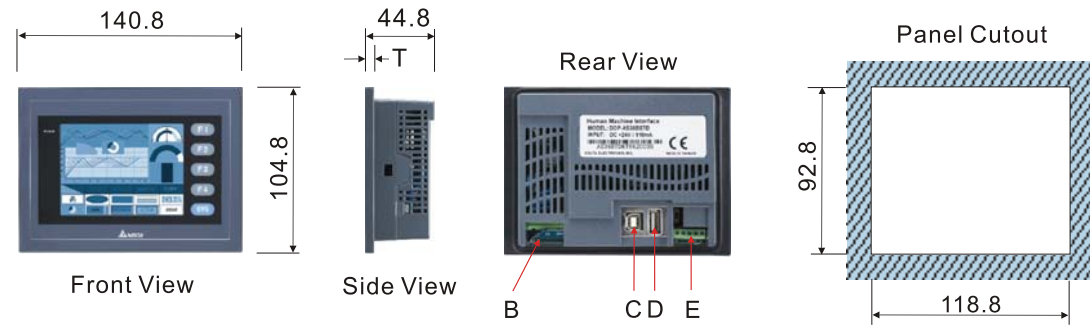
MODEL		AS35THTD	AS38BSTD	AS57BSTD
LCD MODULE	Display Type	3.5" TFT LCD (65536 colors)	3.8" STN LCD (8 shades of blue)	5.7"STN LCD (8 shades of blue)
	Resolution	320 x 240 pixels	320 x 240 pixels	320 x 240 pixels
	Backlight	LED Backlight (less than 30,000 hours half-life at 25°C) ^(Note 1)	LED Backlight (less than 10,000 hours half-life at 25°C) ^(Note 1)	CCFL Backlight (less than 50,000 hours half-life at 25°C) ^(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		8 MB	4 MB	16 MB
Backup Memory (Bytes)		128K	128K	128K
Extension Interface		—	—	—
USB Host		1 USB Host Ver 1.1		
USB Client		1 USB Client Ver 1.1		
Serial COM Port	COM1	RS-232	RS-232	RS-232
	COM2	RS-422/485	RS-422/485	RS-422/485
	COM3	RS-232	RS-232	RS-422/485
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°C ~ 50°C		
Storage Temp.		-20°C ~ +60°C		
Ambient Humidity		10% ~ 90% RH [0~40°C] · 10% ~ 55% RH [41~50°C] · Pollution Degree 2		
Vibration Resistance		IEC 61131-2 Compliant 5Hz ≤ f < 9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz ≤ f ≤ 150Hz = Continuous: 0.5g / Occasional: 1.0g 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

A80THTD1	AE80THTD	A10THTD1	AE10THTD1
8" TFT LCD (65536 colors)	8" TFT LCD (65536 colors)	10.4" TFT LCD (65536 colors)	10.4" TFT LCD (65536 colors)
640 x 480 pixels	640 x 480 pixels	640 x 480 pixels	640 x 480 pixels
CCFL Backlight (less than 50,000 hours half-life at 25°C) ^(Note 1)	CCFL Backlight (less than 50,000 hours half-life at 25°C) ^(Note 1)	CCFL Backlight (less than 30,000 hours half-life at 25°C) ^(Note 1)	CCFL Backlight (less than 30,000 hours half-life at 25°C) ^(Note 1)
162.2 x 121.7mm	162.2 x 121.7mm	211.2 x 158.4mm	211.2 x 158.4mm
Delta Real Time OS			
32-bit RISC Micro-controller			
NOR Flash ROM 8 MB (OS System: 2MB / User Application: 6MB)			
32 MB	32 MB	32 MB	32 MB
512K	512K	512K	512K
—	✓	—	✓
1 USB Host Ver 1.1			
1 USB Client Ver 1.1			
RS-232	RS-232	RS-232	RS-232
RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485
RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485
User defined key x 6 + System key x 1		User defined key x 7 + System key x 1	
DC +24V (-10% ~ +15%) (Please use isolated power supply) ^(Note 2)			
14W	14W	15W	15W
3V lithium battery CR2032 x 1 / battery life: 5 years			
85dB			
Built-in			
Natural air circulation			
IP65 / NEMA4 / CE, UL			
0°C ~ 50°C			
-20°C ~ +60°C			
10% ~ 90% RH [0~40°C] · 10% ~ 55% RH [41~50°C] · Pollution Degree 2			
IEC 61131-2 Compliant 5Hz ≤ f < 9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz ≤ f ≤ 150Hz = Continuous: 0.5g / Occasional: 1.0g X, Y, Z directions for 10 times			
243.1 x 178.1 x 52.4		297.1 x 222.1 x 51.1	
231.4 x 166.4		285.2 x 210.2	
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/>.
 5)The specifications of this catalogue may be revised without prior notice. Please consult our distributors or download the most updated version at <http://www.delta.com.tw/industrialautomation/>.

Dimensions

DOP-AS35THTD / DOP-AS38BSTD



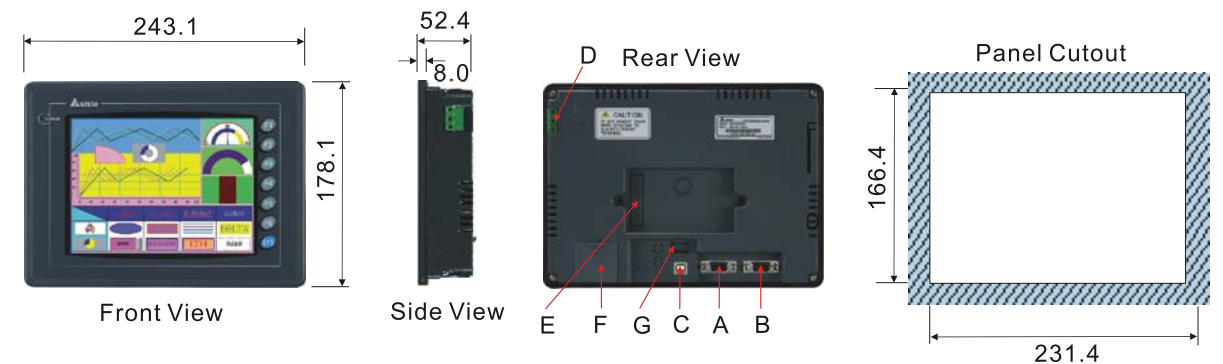
NOTE:

T=1.6mm(0.06in) ~ 3.0mm(0.12in)

A	COM1/COM3 (RS-232)
B	Power Input Terminal
C	USB Client
D	USB Host
E	COM2 (RS-422/RS-485)

(Units : mm)

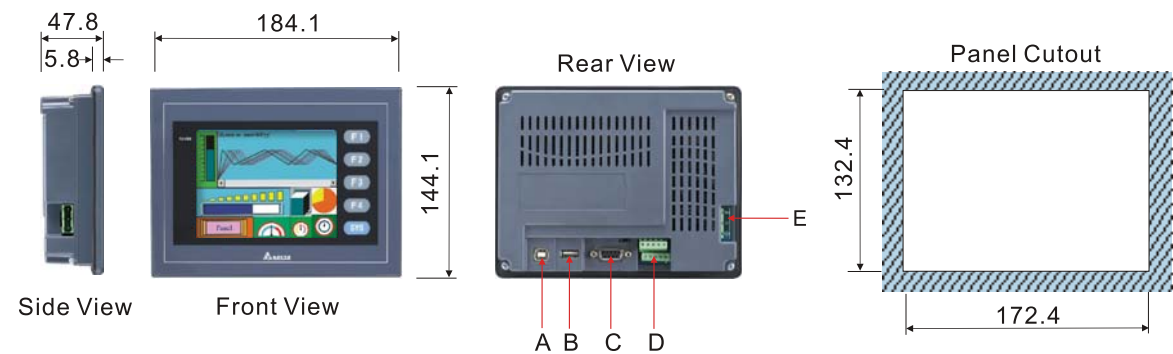
DOP-AE80THTD / DOP-A80THTD1



A	COM1(RS-232)
B	COM2 (RS-232/RS-422 /RS-485)
C	USB Client
D	Power Input Terminal
E	Extension Interface
F	Battery Cover
G	USB Host

(Units : mm)

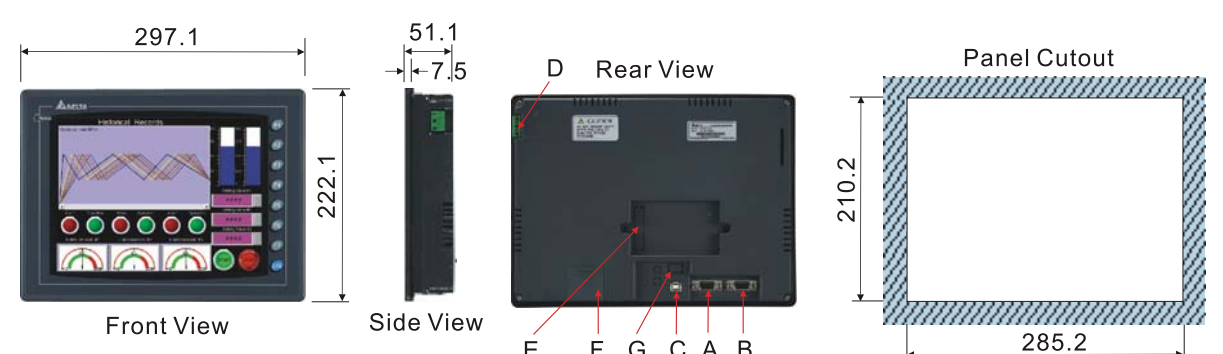
DOP-AS57BSTD



A	USB Client
B	USB Host
C	COM1(RS-232)
D	COM2/COM3 (RS-422/RS-485)
E	Power Input Terminal

(Units : mm)

DOP-AE10THTD1 / DOP-A10THTD1



A	COM1(RS-232)
B	COM2(RS-232 /RS-422/RS-485)
C	USB Client
D	Power Input Terminal
E	Extension Interface
F	Battery Cover
G	USB Host

(Units : mm)

Extension Modules

Extension Digital DIO Module

Electric Specifications

Item / Model Name	DOP-EXIO14RAE	DOP-EXIO28RAE
Power Supply Voltage	5VDC · 1A (supplied by HMI)	
Power Consumption	0.25W	0.5W
Noise Immunity	RS: Frequency: 80MHz ~ 1GHz, 1.4GHz ~ 2.0GHz, Test level 10V/m CS: Frequency: 0.15MHz ~ 80MHz, Test level 10V (HMI power port & I/O line) ESD: Air discharge ±8KV EFT: ±1.5KV (HMI power port) ±1KV (I/O line) Surge: ±2KV (HMI power port)	
Ambient Temperature / Humidity	Operation : 0°C ~ 50°C (Temperature) · 10 ~ 90% (Humidity) Storage : -40°C ~ 85°C (Temperature) · 10 ~ 90% (Humidity)	
Vibration / Shock	IEC 61131-2 Compliant 5Hz ≤ f < 9Hz = Continuous: 1.75mm / Occasional: 3.5mm 9Hz ≤ f ≤ 150Hz = Continuous: 0.5g / Occasional: 1.0g X, Y, Z directions for 10 times	
Weight	Approx. 95.5g	Approx. 116g



Input Point Electric Specifications

Input Type	DC (SINK or SOURCE)
Input Voltage	24VDC (5mA)
Active Level	Off→On, above 16VDC On→Off, below 14.4VDC
Response Time	Approx. 10ms

Output Point Electric Specifications

Output Type	Relay-R
Current Specifications	1.5A / 1 Point (5A/COM)
Voltage Specifications	250VAC, below 30VDC
Maximum Loading	75VA (Inductive) 90 W (Resistive)
Response Time	Approx. 10 ms
Mechanical Life	2 x 10 ⁷ times (without load)
Electrical Life	100,000 times (3A 250VAC/30VDC) 6,000 times (5A 250VAC/30VDC)

Extension Ethernet Module

Item / Model Name	DOP-EXLNHJ1AE
Power Supply Voltage	DC 5V +/-10%, 1A (supplied by HMI)
Ambient Temperature / Humidity	Operation : 0°C~50°C (Temperature) · 10%~85% (Humidity) Storage : -40°C~85°C (Temperature) · 5%~85% (Humidity)
Interface	10Base-T, 100Base-TX



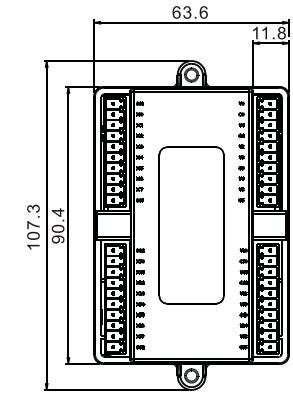
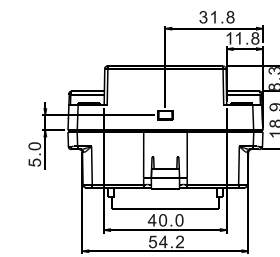
Extension Printer Module

Item / Model Name	DOP-EXPM110
Power Supply Voltage	DC 5V +/-10%, 1A (supplied by HMI)
Ambient Temperature / Humidity	Operation : 0°C~50°C (Temperature) · 10%~85% (Humidity) Storage : -40°C~85°C (Temperature) · 5%~85% (Humidity)
Interface	25-pin Parallel Printer Port

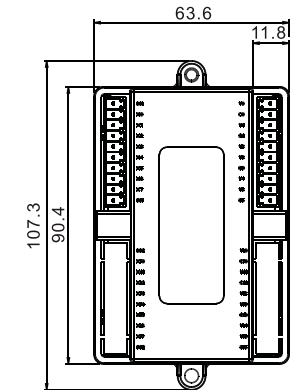
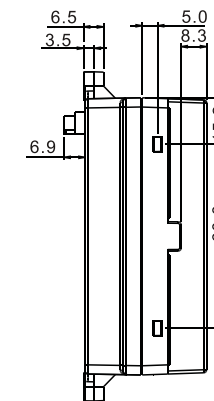
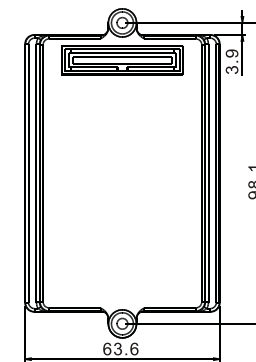


*Extension Digital I/O, Ethernet and Printer Modules are available for DOP-AE series HMI only.

DOP-EXIO14RAE / DOP-EXIO28RAE

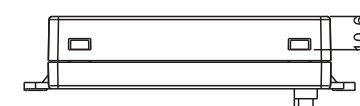
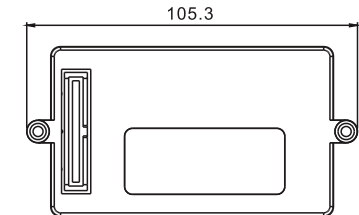
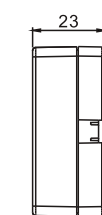
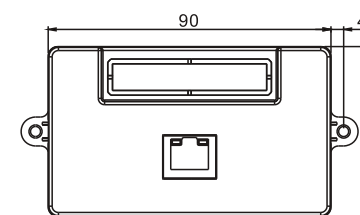
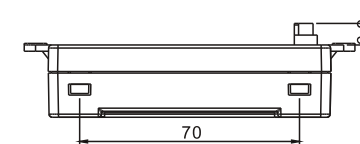


DOP-EXIO28RAE



DOP-EXIO14RAE

DOP-EXLNHJ1AE

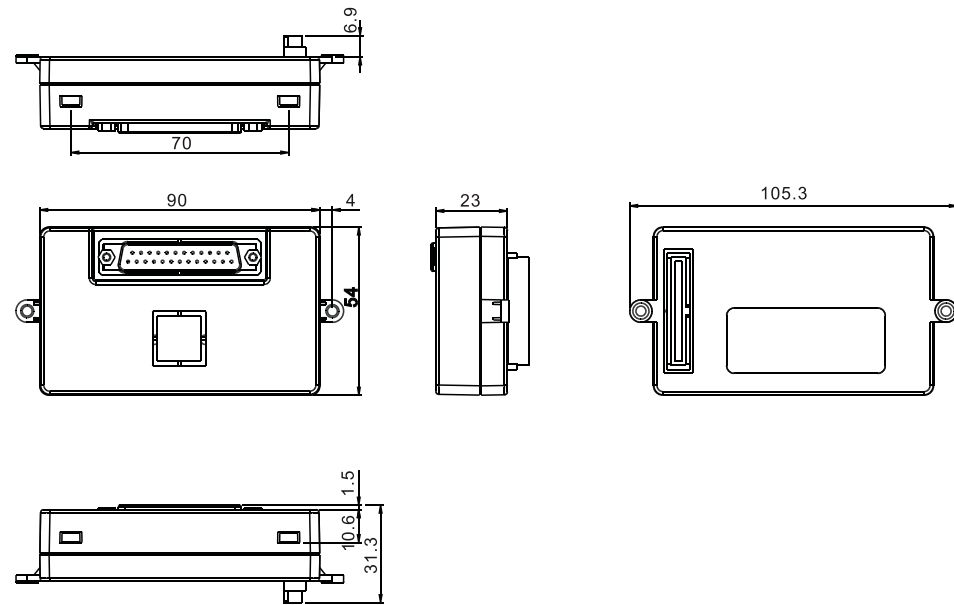


Extension Modules

Optional Accessories



DOP-EXPM110



Ordering Information

DOP - A 80 TH T D 1
 (1) (2) (3) (4) (5) (6) (7)

(1) Product Name	DOP: Delta Operation Panel
(2) Series	AS: Delta AS series HMI A: Delta A series HMI AE: Delta AE series HMI
(3) Display Size	38: 3.8 inches 57: 5.7 inches 80: 8 inches 10: 10.4 inches
(4) Display Type	BS : 8 Shades of Blue, STN monochrome LCD TH : 65536 colors, TFT color LCD
(5) Control Interface	T: Touch Panel
(6) Power Supply	D: DC+24V
(7) Version Identification Code	

DOP-CA232DP	HMI-PLC RS-232 Cable	
DOP-CAUSBAB	HMI USB Cable	
DOP-EXIO14RAE	14 points (8 Digital Inputs / 6 Digital Outputs) Extension DIO Module	
DOP-EXIO28RAE	28 points (16 Digital Inputs / 12 Digital Outputs) Extension DIO Module	
DOP-EXLNHJ1AE	Extension Ethernet Module	
DOP-EXPM110	Extension Printer Module	