Automation for a Changing World

Delta Compact Modular Mid-range PLC
AS Series

Smarter. Greener. Together.

Flexible, Smart, Friendly - The Best Choice for a Controller of Automated Equipment

AS Series

The AS Series Compact Modular Mid-range PLC is a high performance multi-purpose controller designed for all kinds of automated equipment. It features Delta's self-developed 32-bit SoC CPUs for enhanced execution speed (40k steps / ms) and supports up to 32 extension modules or up to 1,024 inputs / outputs. The AS series provides accurate positioning control for up to 8 axes via CANopen motion network and 6 axes via pulse control (200 kHz). It is widely used in diverse automated equipment such as electronics manufacturing, labeling, food packaging, and textile machines.

The AS Series Controller is equipped with CANopen and EtherNet/IP network communication for high-speed data transmission. The professional yet simple editing software ISPSoft delivers quick hardware and network configuration with built-in function blocks for different industries. It also provides multi-layer password protection for enhanced system security.

The AS Series adopts a rackless design and patented DIN rail clips for fast vertical module installation. The simple shape and dark gray exterior of the AS series help resist stains and dirt in harsh industrial environments.

High Efficiency Computing

- Advanced CPU performance
- Optimized execution efficiency
- Optimized I/O update rate
- Permanent data backup, no battery required

Accurate Axis Control

- Delta CANopen positioning control
- Simple control instructions
- High-speed pulse positioning control
- High-speed counter

Simple Installation

- Easy installation process
- Convenient grounding protection
- Screwless installation procedure
- Loose-proof clip-type terminal block

Industrial Network Solution

- EtherNet/IP solution
- Remote I/O solution
- Serial communication solution

## Programming and Diagnosis Functions

- Modular programming structure
- Convenient editing environment
- Easy hardware configuration and parameter setting
- Complete setting tools
- Multiple password protection

Models and Specifications

- CPU
- AS Series I/O modules
- High-density modules and accessories
- Dimensions
- Ordering information

ΔΕLTA

High Efficiency Computing
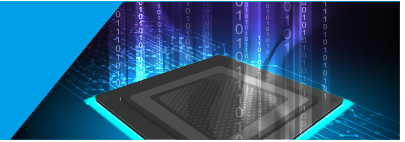
Delta's self-developed AS Series CPU provides 32-bit high-performance computing. As the core of a high-efficiency controller, it helps increase productivity and adaptability to demanding equipment.

Advanced CPU Performance

- **High speed execution up to 40k steps/ms**
  (Condition: 40 % LD instruction / 60% MOV instruction)

  - Max. number of inputs/outputs: 1,024
  - Program capacity: 128k steps
  - Data registers: 60k words
  - Max. extension ability: 32 modules

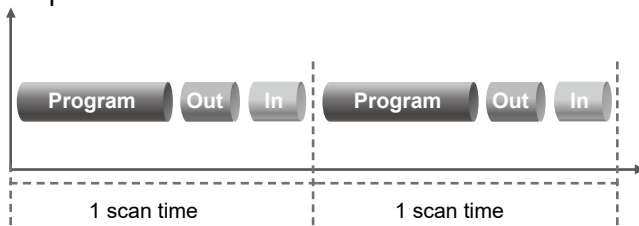|	
LD instruction	25 ns
MOV instruction	0.15 µs
Floating point operation instruction	1.6 µs
Trigonometric function instruction	3.5 µs

Optimized Execution Efficiency

■ General Scanning Method

Standard simplex scanning which sequentially goes through instructions by fixed schedule operation (e.g. I/O update).

It significantly affects overall execution speed.


■ AS Series Scanning Method

Fixed schedule operations will be automatically processed by CPU background program when scanning starts. It significantly enhances execution speed.
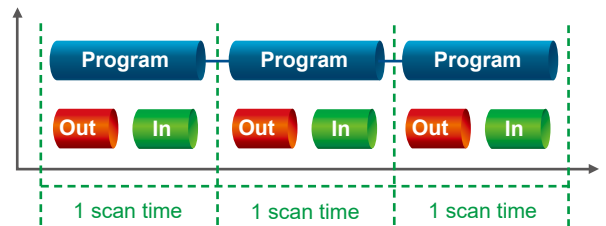

Optimized I/O updates

■ Common in the industry: PLC module bus update via serial communication

▪ General serial communication: the signal is sequentially sent from the 1st module to the last module. The more modules the longer I/O update time it takes.


The more modules, the slower update speed
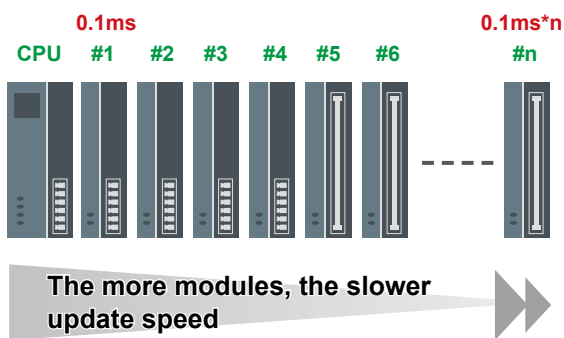
■ AS Series: PLC module bus update via parallel communication

▪ Industrial communication: the signal is sent via parallel communication. The I/O update time is not significantly prolonged even with more modules.

Industrial communication bus greatly enhances stability and speed.

Industrial communication bus greatly enhances stability and speed
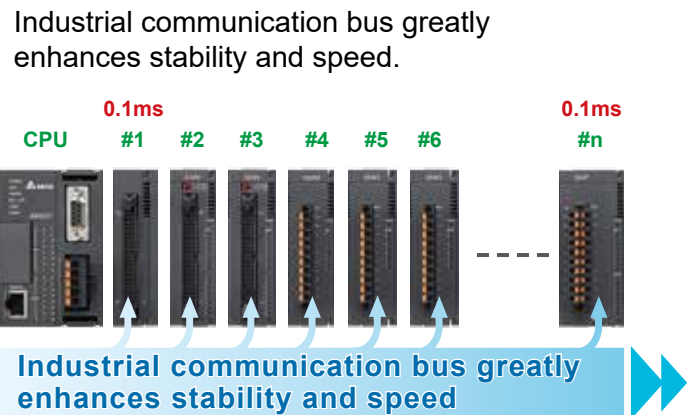
Permanent data backup, no battery required

■ Non-volatile memory material for data backup
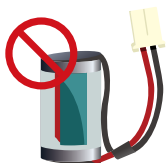
	PLC power off
PLC programs	permanent backup
Latched area	permanent backup

■ Lithium button battery for Real Time Clock (RTC) function

Install general CR 1620 battery

	PLC power off
RTC	keeps accurate time

DELTA

Accurate Axis Control - Positioning Control Solution

CANopen
DS301

**Motion control of max. 8
Delta AC Servo Drives ASDA-A2 Series**
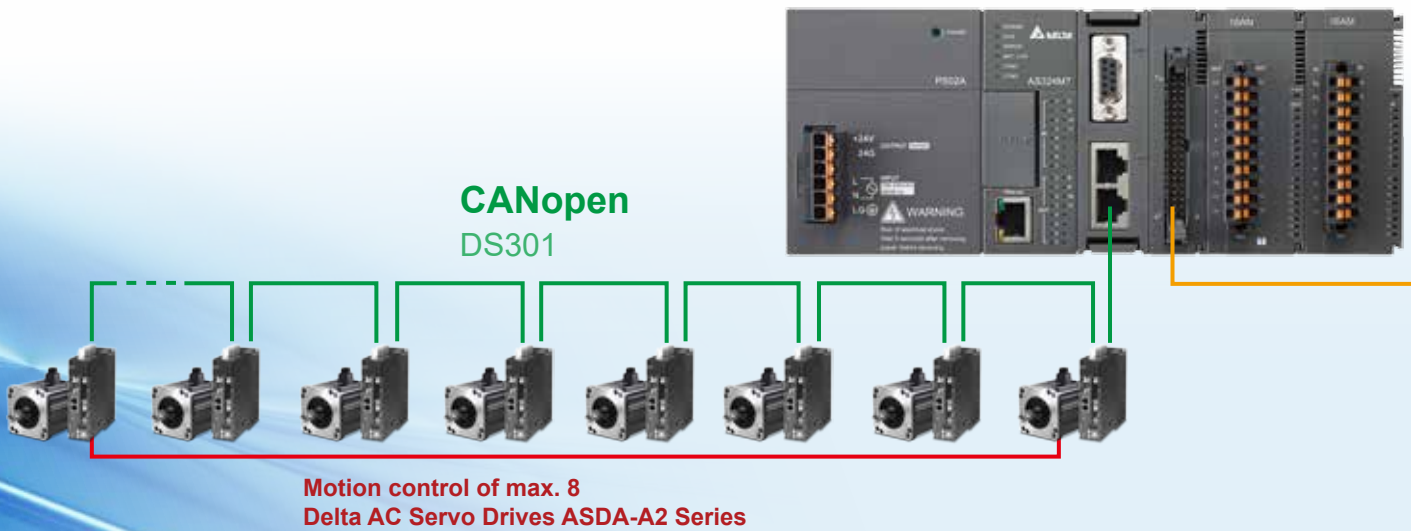
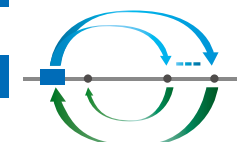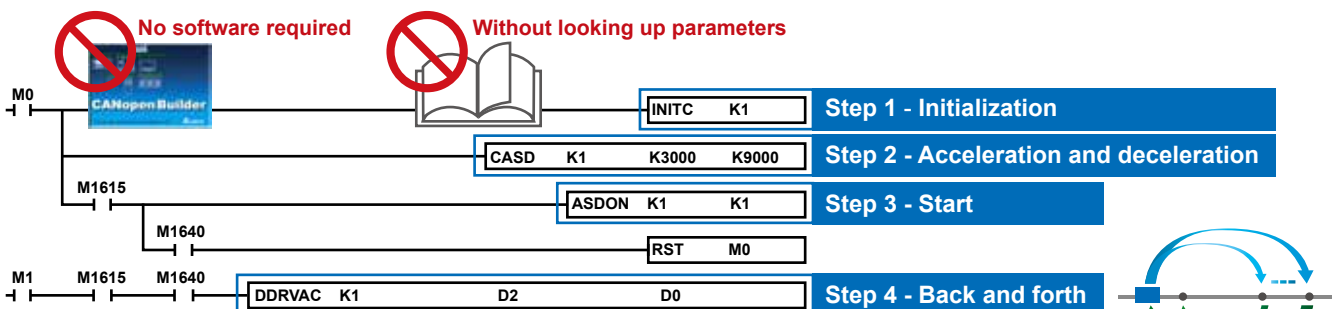## ■ Positioning control - Delta's CANopen Control

- Delivers up to 8-axis CANopen positioning control with AS-FCOPM communication card
- Fast positioning configuration in one initialization instruction without building CANopen data exchange table
- Batch download programmable servo drive parameters avoids risk of loss
- Axis control by instructions provides easy maintenance and high PLC program readability

CANopen
DS301

Controls up to 8   AC Servo Drive
ASDA-A2 Series
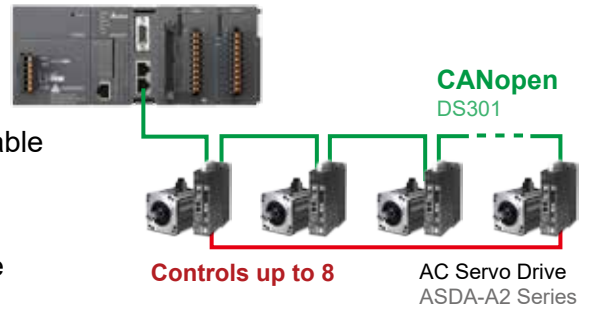
■ Simple control instructions for AC Servo Drive ASDA-A2 Series

- Initialization: INITC
- Relative positioning: DRVIC
- Read and write parameter: COPRW
- Acceleration and deceleration: CASD

- Constant speed control: PLSVC
- Absolute positioning: DRVAC
- Start / Stop: ASDON
- Homing: ZRNC

ASDA-A2 back and forth motion control in 4 steps

No software required   Without looking up parameters

M0			INITC	K1		**Step 1 - Initialization**
			CASD	K1	K3000	K9000	**Step 2 - Acceleration and deceleration**
M1615			ASDON	K1	K1	**Step 3 - Start**
	M1640		RST	M0		
M1	M1615	M1640	DDRVAC	K1	D2	D0	**Step 4 - Back and forth**

Dynamic modification of next speed and position.

5

Pulse

Motion control of max. 6 Delta AC Servo Drives ASDA-B2 Series

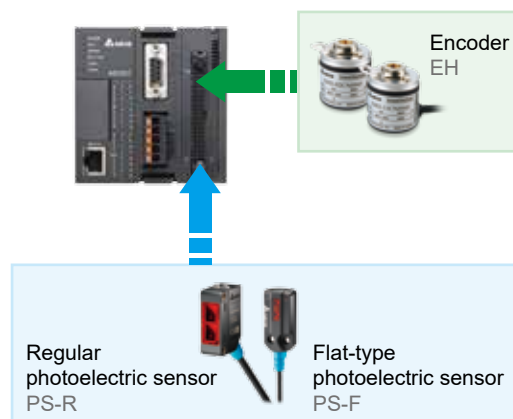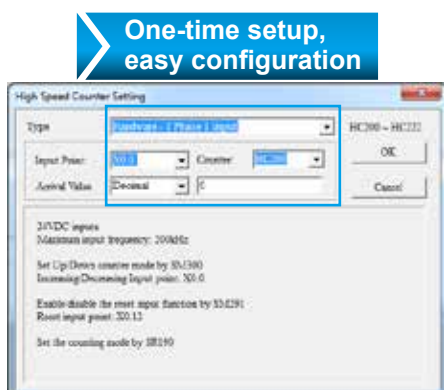- **Positioning control - high-speed pulse**

  - AS332T-A / AS332P-A transistor CPU: 6 axes (or 12 channels) 200 kHz
  - AS324MT-A differential CPU: 2 axes 4 MHz + 4 axes 200 kHz
  - Supports positioning planning table for fast positioning planning and path simulation
  - Choose any given 2 axes for linear and arc interpolation
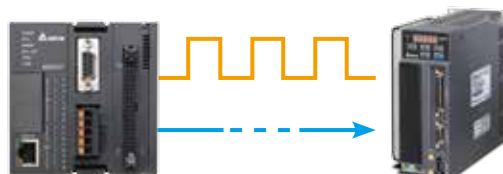
AC Servo Drive
ASDA-B2 Series

- **High-speed counter**

  - Real-time high precision monitoring:
    AS332T-A / AS332P-A transistor CPU: 6 channels 200 kHz
    AS324MT-A differential CPU: 2 channels 4 MHz / 4 channels 200 kHz
  - Up to 16 external input interrupts
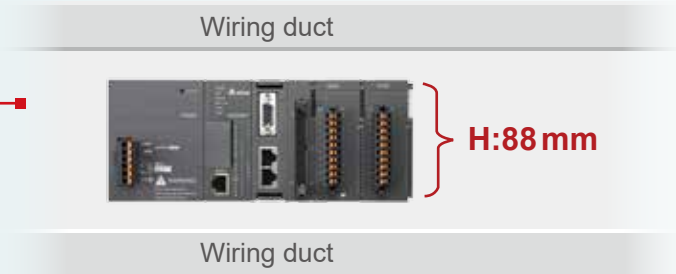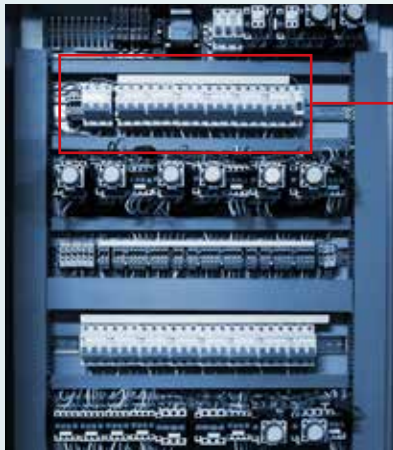 - High-speed counter setting tools

One-time setup, easy configuration

Encoder
EH

Regular photoelectric sensor
PS-R

Flat-type photoelectric sensor
PS-F

Simple Installation

■ Easy installation design

- Space-saving design suitable for installation in control panels

Wiring duct

H:88 mm

Wiring duct

■ Rackless Din-rail installation

- Delta patented design

Robust slot and clip interlocking design
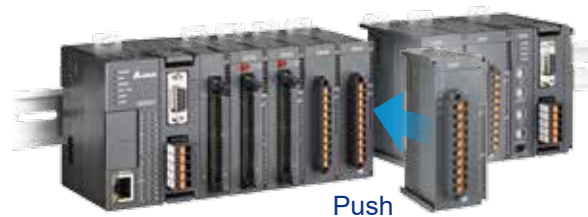
Delta's patent

■ Fast disassembly

- Release the clip ring to easily take out the module from the front without moving adjacent modules

■ Simple installation process

- Press the clip rings and push the module to the desired position until hearing a "click" to finish installation

Push

■ Convenient grounding protection

- Install on Din-rail: CPU module and expansion modules can be installed directly on Din-rail without backplane
- Install with screw: pull out the installation clip ring and directly install it on the panel
- Both methods are equipped with ground protection

Ground protection

Top clip ring   Back clip ring
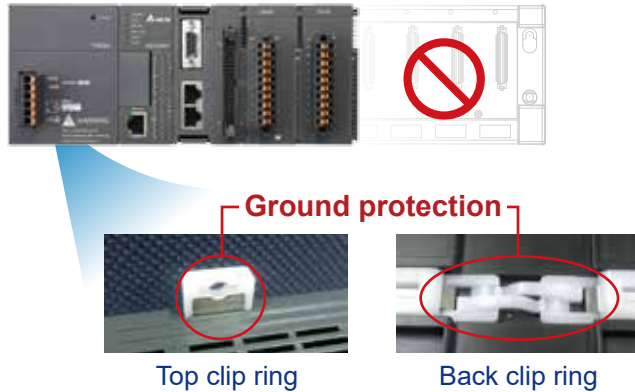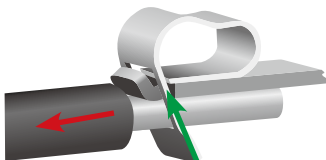
■ Screwless and time-saving installation

Time-saving installation Complete I/O wiring in 1 second

■ Robust Loose-proof spring clamp terminal block

- In commonly used spring clamp terminal blocks, the clamping force is determined by the spring material, which decreases with the aging of the spring.

The green arrow is the clamping force, and the red arrow is the pull-out force.

- The AS Series adopts the full-covered spring clamp design that enhances the clamping force. When the wire is pulled-out (red arrow) and the spring moves up (green arrow), a downward force is generated (blue arrow) to clamp the wire.
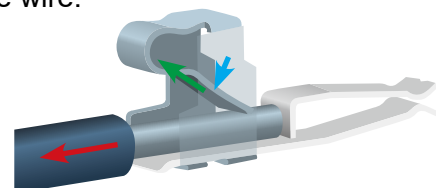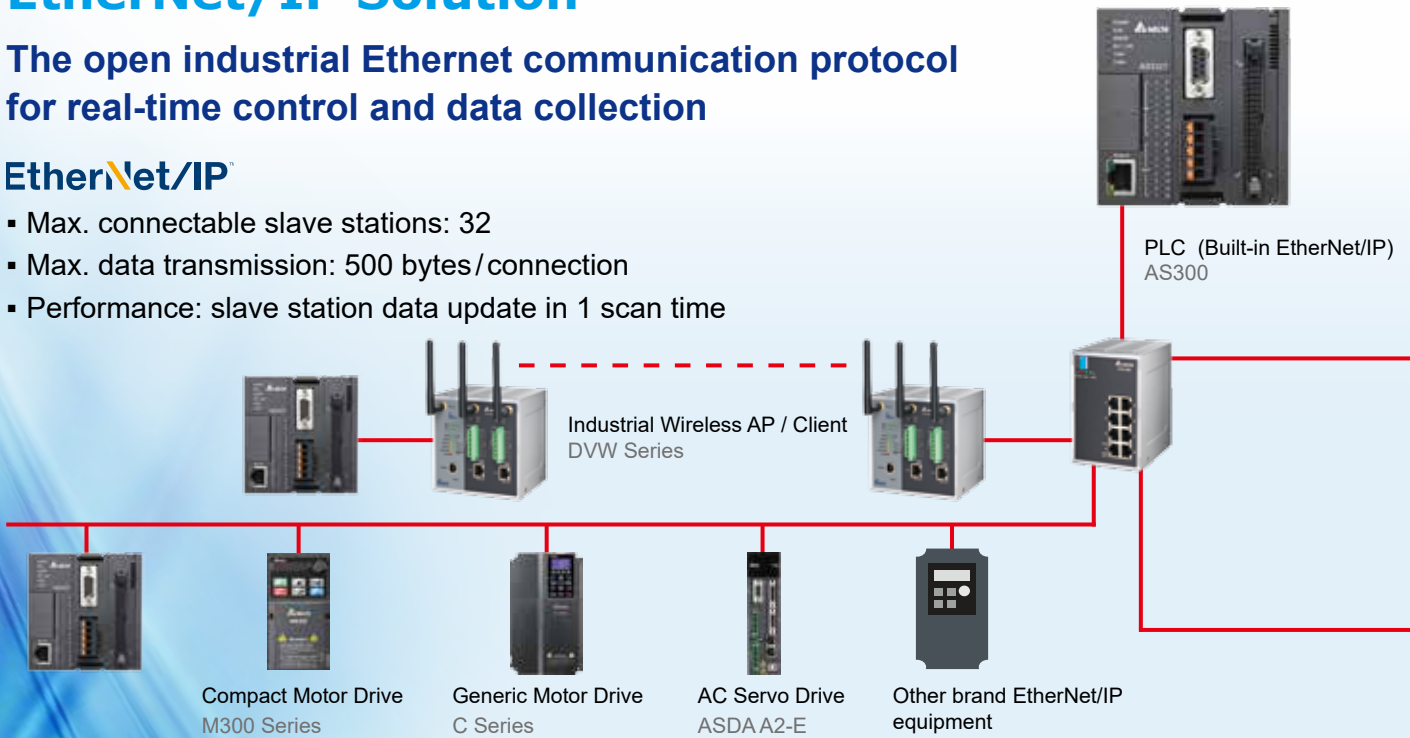
Industrial Network Solution

EtherNet/IP Solution

**The open industrial Ethernet communication protocol for real-time control and data collection**

EtherNet/IP

- Max. connectable slave stations: 32
- Max. data transmission: 500 bytes / connection
- Performance: slave station data update in 1 scan time

PLC (Built-in EtherNet/IP)
AS300

Industrial Wireless AP / Client
DVW Series

Compact Motor Drive
M300 Series

Generic Motor Drive
C Series

AC Servo Drive
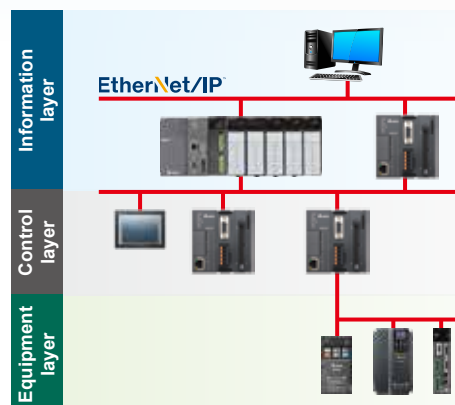ASDA A2-E

Other brand EtherNet/IP equipment
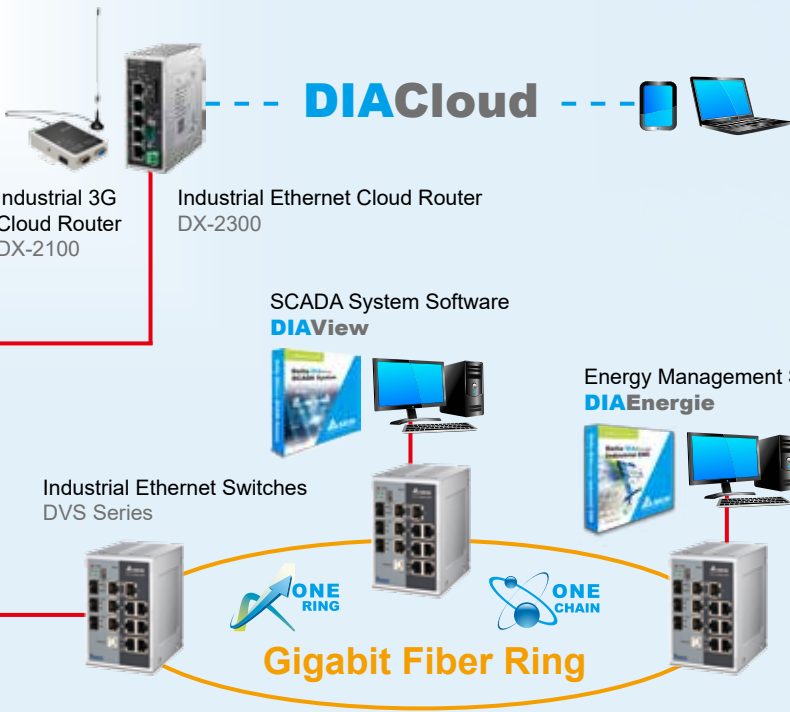
■ Flexible network system configuration

- Supports star, linear network topology for fast expansion and management on production lines
- Compatible with IT network. No independent network or IT technician required
- Combines with Delta IES solution to construct IoT for more automation applications and industrial 4.0 upgrades

Linear

Star
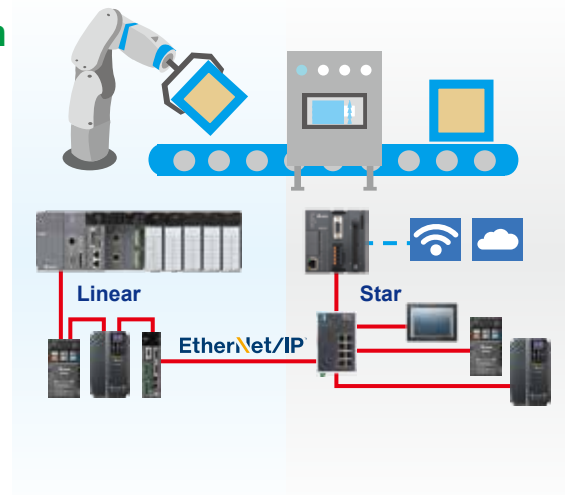
EtherNet/IP

■ One cable, one network

- Complete Delta EtherNet/IP solution connects different equipment via Ethernet cable and simplify cable preparation
- Replaces traditional 3-layer industrial network structure with seamless connection via 100MB high-speed network
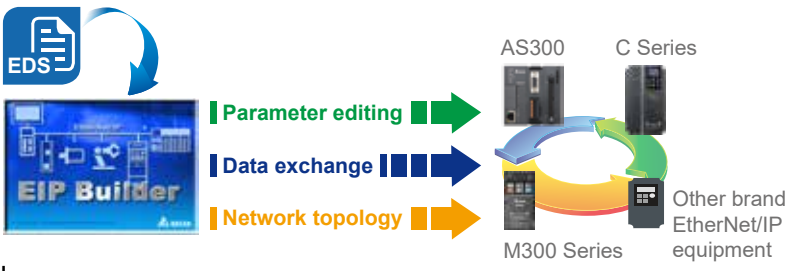- Complete industrial network diagnosis for shortened debug time

Information layer

EtherNet/IP

Control layer

Equipment layer

DIACloud

Industrial 3G
Cloud Router
DX-2100

Industrial Ethernet Cloud Router
DX-2300

SCADA System Software
DIAView

Energy Management System Software
DIAEnergie

Industrial Ethernet Switches
DVS Series

ONE RING

ONE CHAIN

Gigabit Fiber Ring

IoT & Industrial Ethernet

- DIACloud platform connection
- Redundancy ring recovery time < 20 ms
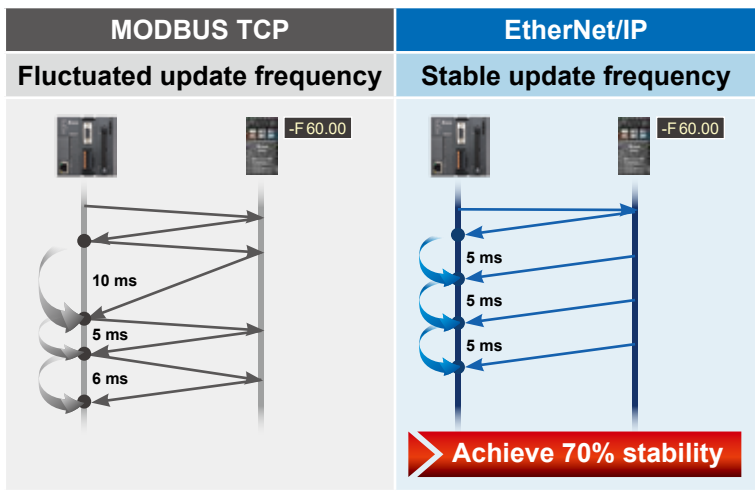- Industrial class EMC testing

■ Software integration

- Consistent data exchange interface shortens learning time with fast system configuration
- Provides Delta equipment parameter list for quick parameter matching without looking into detailed manual
- EDS File provides quick connection with EtherNet/IP products of other brands

EDS

EIP Builder

Parameter editing
Data exchange
Network topology

AS300   C Series

M300 Series

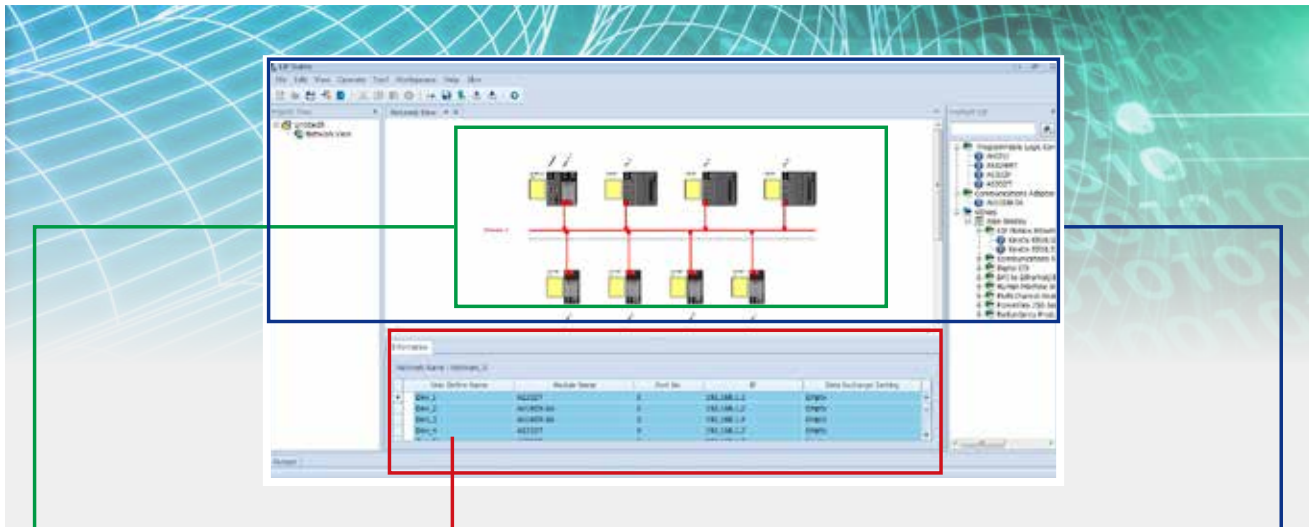Other brand EtherNet/IP equipment

■ Accurate data update

- Provides real-time cyclic and acyclic data transmission and define data priority between equipment
- Establishes multiple CIP links and define different register priority with one piece of equipment
- Executes data update based on user RPI. Updates all slave station data in one scan time
- 70% better stability compared with traditional MODBUS TCP

MODBUS TCP	EtherNet/IP
Fluctuated update frequency	**Stable update frequency**

-F 60.00

-F 60.00

10 ms
5 ms
6 ms

5 ms
5 ms
5 ms

Achieve 70% stability

DELTA
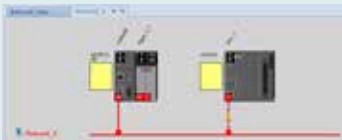
EtherNet/IP Software EIP Builder

Visualized Network Mapping
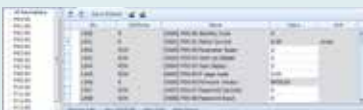
- Direct network planning

Network Mapping Diagnosis

- Real-time network status and device indicators display

Parameter List

- Built-in parameter list of Delta's products
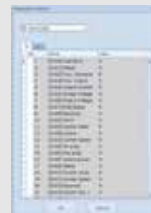

Data Exchange Table

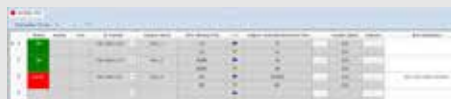- Data exchange via table blanks filling. PLC programing is not required

Data Input/Output Corresponding Table

- Preset data exchange on corresponding parameters
- Connecting equipment editing on corresponding parameters

Data Exchange Diagnosis

- Data exchange status and error codes

Visualized Product List

- Visualized equipment selection

IP Management Function

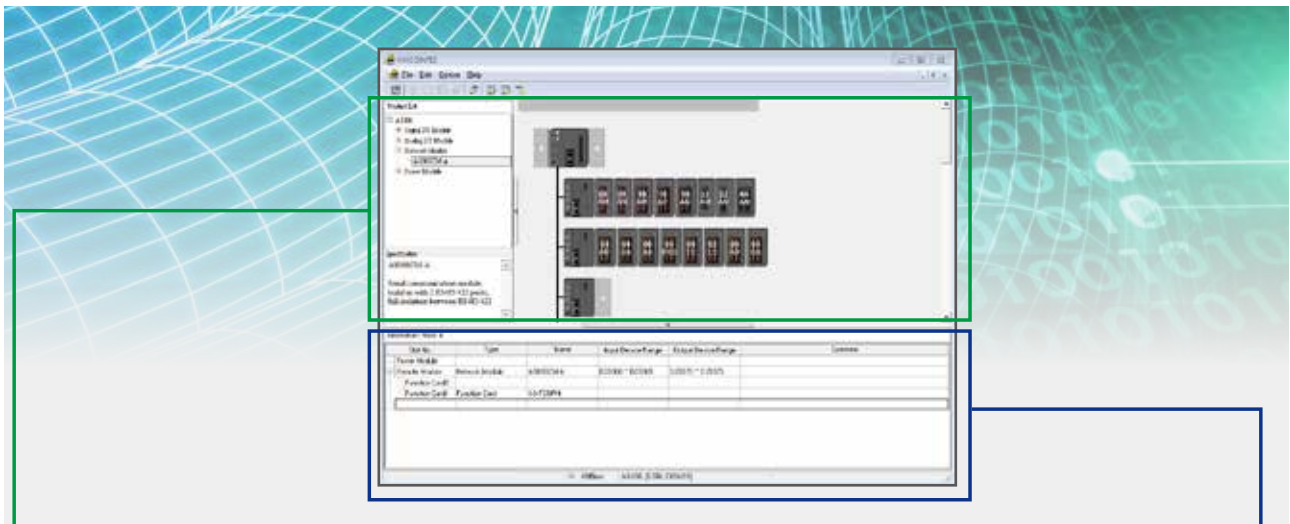- Configure all IP address of all EtherNet/IP products
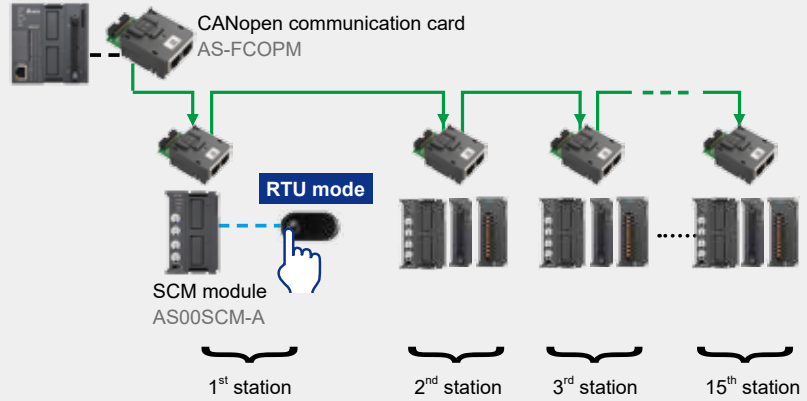

Equipment Description Management Function

Remote I/O Solution

CANopen Remote I/O

- Max quantity of RIO stations: 15 stations

- Max quantity of IO modules (CPU right side + RIO (SCM) right side): 32 modules
  - Max DIO points: 1,024 points
  - Max quantity of AIO modules: 16 modules
  - Max quantity of communication modules: 4 modules (Only installed on CPU right side)
  - Max quantity of IO modules installed on RIO (SCM) right side: 8 modules

- AS-FCOPM can only be installed in slot 2 of the CPU and SCM
  - When a CPU is installed as AS-FCOPM in slot 2, then slot 1 can be used to install another function card except AS-FCOPM
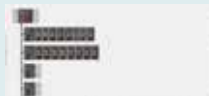 - When SCM is working in RIO (RTU) mode, then slot 1 is disabled

CANopen communication card
AS-FCOPM

RTU mode

SCM module
AS00SCM-A

1st station   2nd station   3rd station   15th station

Hardware Configuration

- Hardware parameter complete planning

Visualized I/O Structure

- Direct I/O planning

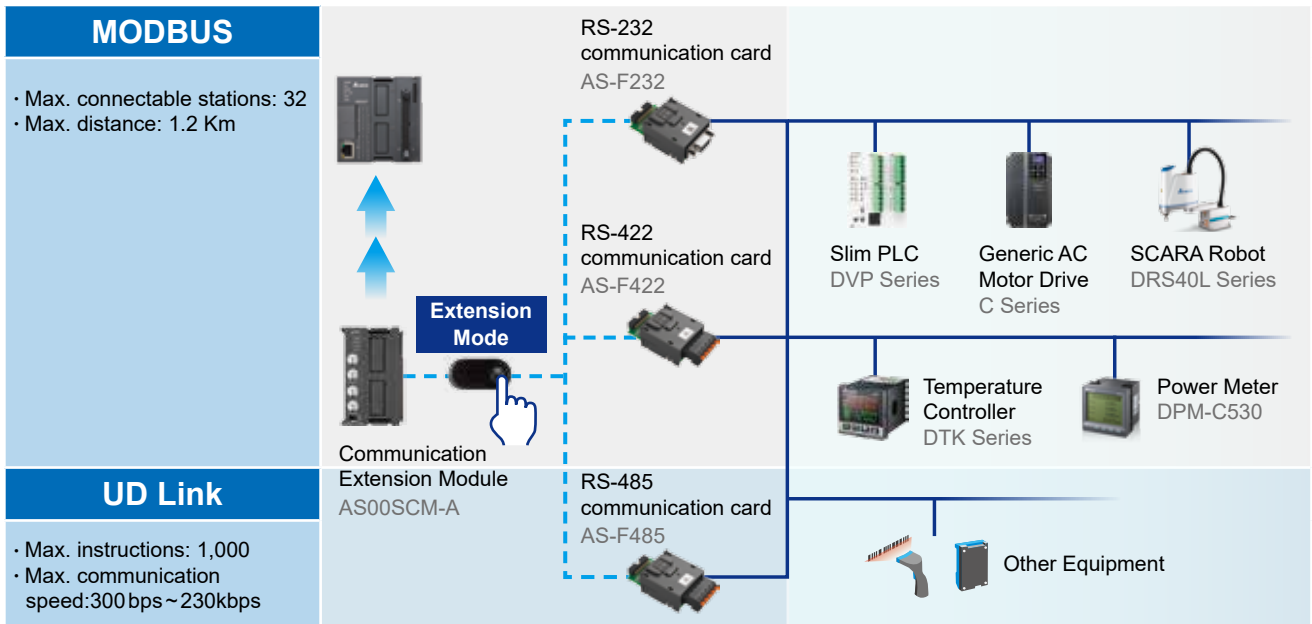## I/O Product List

- Product description and specification

I/O Without Planning

- Auto-mapping with I/O addresses in CPU (X,Y, and D)

DIO

AIO

DELTA

Serial Communication Solution

MODBUS

· Max. connectable stations: 32
· Max. distance: 1.2 Km

Extension Mode

Communication Extension Module
AS00SCM-A

UD Link

· Max. instructions: 1,000
· Max. communication
  speed:300 bps～230kbps

RS-232 communication card
AS-F232

RS-422 communication card
AS-F422

RS-485 communication card
AS-F485

Slim PLC
DVP Series

Generic AC Motor Drive
C Series

SCARA Robot
DRS40L Series

Temperature Controller
DTK Series

Power Meter
DPM-C530

Other Equipment

■ MODBUS Mode

▪ Easy data exchange configuration

Compact Modular Mid-range PLC
AS300

Standard Type PLC
DVP-ES2 Series

On-site deployment

Creating Table

ISPSoft Data Exchange Table

Generic AC Motor Drive
C Series

Temperature Controller
DTK Series

Power Meter
DPM-C530

13
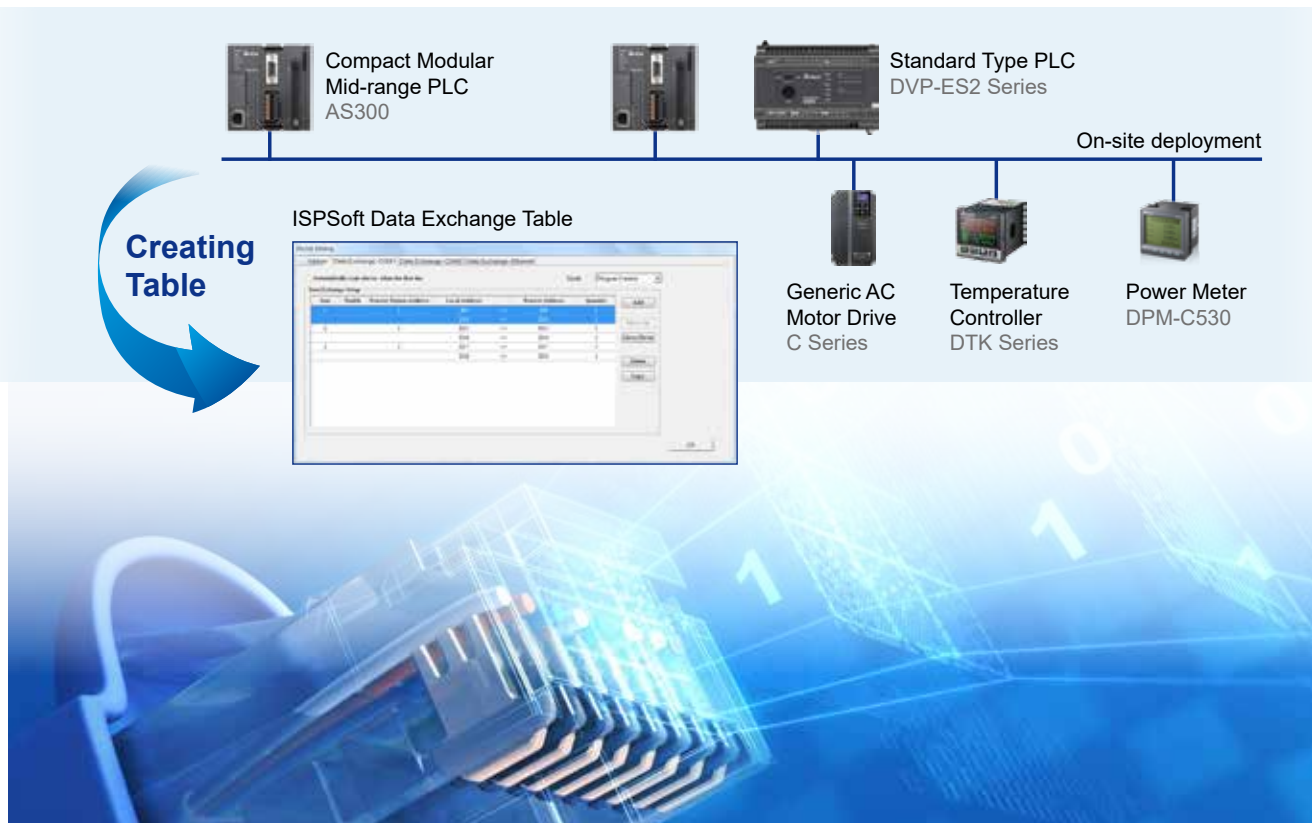
■ Real-time history log diagnosis

- AS00SCM stores 2k bytes history log. SCMSoft directly displays the log for real-time communication status monitoring with no additional monitoring software required
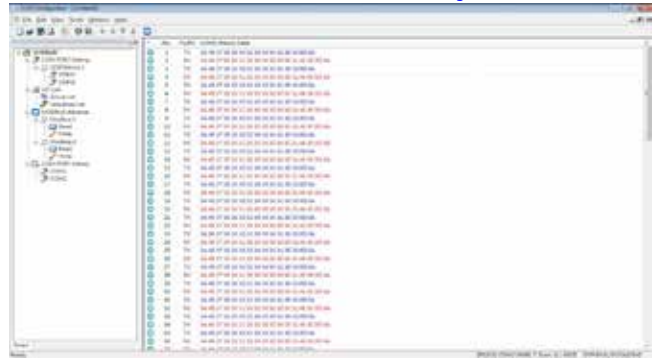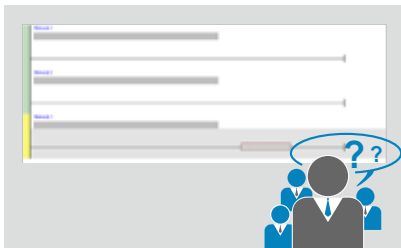

■ UD Link Mode (User-defined)

- Easy connection to end equipment of special communication protocols

Traditional programming structure

Instruction receiving, accessing, editing, transmitting, sequence control

Connection to end equipment of special communication protocols

- Editing the transmitting/receiving packets via SCMSoft. Format exchange and checksum calculation via AS00SCM
- Packet content auto-combination for logic control in PLC, reducing PLC program complexity
- Max. 1,000 transmitting/receiving packets

*	Packet No.	RX Packet Name
	1	RX Packet1
	2	RX Packet2
	3	RX Packet3

*	Packet No.	TX Packet Name
	1	TX Packet1
	2	TX Packet2
	3	TX Packet3

Packet Segment Edit

No.	Class	Format	Segment View	
1	Message Constant	ASCII	"abcd"	Up
2	Address Variable	Null	(R(D Register [4]), 4)	Down
3	Message Constant	ASCII	"efgh"	
				Delete

Instruction execution sequence planning

User-defined communication format editing

| *	Command No.	Command Type	Send Packet	Recv Packet	Success	Fail	Retry	Repeat	Send Wait
	1	Send & Receive	TX Packet1	RX Packet1	Goto : 1	Goto : 1	0	2	0
	2	Send & Receive	TX Packet2	RX Packet2	Goto : 2	Goto : 1	0	3	0
	3	Send & Receive	TX Packet21	RX Packet3	Goto : 3	Goto : 1	0	4	0
	4	Send & Receive	TX Packet25	RX Packet4	Goto : 4	Goto : 1	0	5	0
	5	Send & Receive	TX Packet28	RX Packet5	Goto : 5	Goto : 1	0	6	0

Programming and Diagnosis Functions

ISPSoft IEC Programming Software

Easy operation greatly enhances efficiency
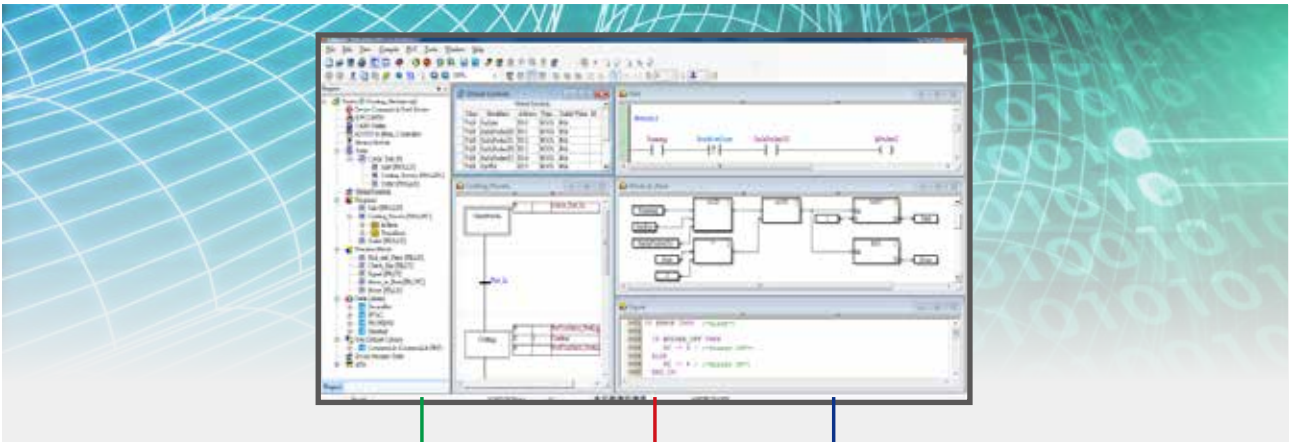
Data Tracer / Logger

- Data log and time-sequential analysis
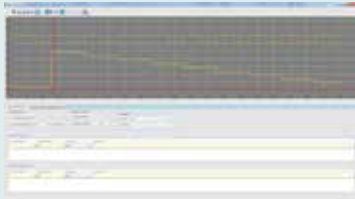
Positioning Planning Tool

- Table-structured position planning

CARD Utility

- Data backup tool

COMMGR

- Communication interface manager

HWCONFIG

- Hardware configuration and parameter setting

EIP Builder

- EtherNet/IP network configuration
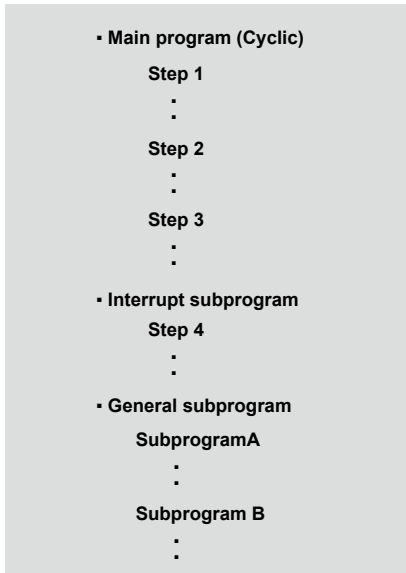

CANopen Builder

- CANopen network configuration
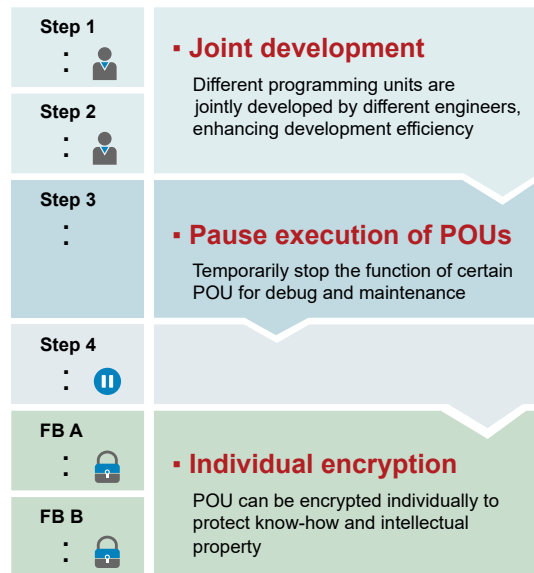
Modular Program Structure

■ **Traditional program structure**

Errors are often found in large-scale programs under a traditional structure. It's hard to debug with increased maintenance cost.
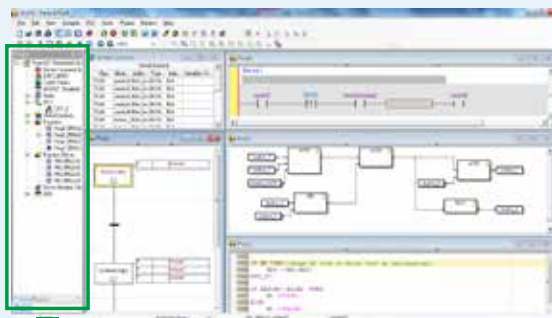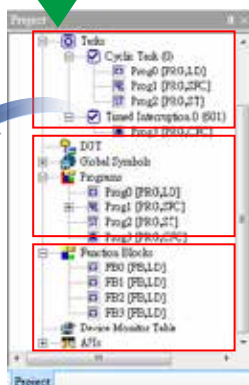
- Main program (Cyclic)
  - Step 1
    .
  - Step 2
    .
  - Step 3
    .
- Interrupt subprogram
  - Step 4
    .
- General subprogram
  - SubprogramA
    .
  - Subprogram B
    .

■ **Modular program structure**

Programming organization unit (POU) enables easy management in large-scale programs with high development efficiency.

Step 1	
Step 2	▪ **Joint development** Different programming units are jointly developed by different engineers, enhancing development efficiency
Step 3	▪ **Pause execution of POUs** Temporarily stop the function of certain POU for debug and maintenance
Step 4	
FB A	▪ **Individual encryption** POU can be encrypted individually to protect know-how and intellectual property
FB B	

■ **Modular Program Structure**

Display panel of task manager

▪ **Task manager**

Plan the execution sequence of POUs and define the nature of the tasks (cyclical or interruptive)

▪ **POU management**

Manage all POUs via project tree and support POU import/export for joint development or other uses

▪ **User library**

Built-in variety of Delta developed FBs. Users can add frequently used FBs to the library for future use.

ΔNELTA

Convenient Programming

▪ **User-defined data type**

In addition to basic data types, users can define structures and enumerations for flexible programming
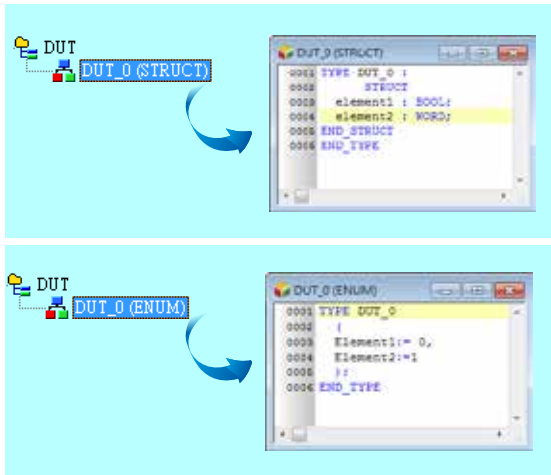
▪ **On-line programming / update**

Supports program editing in monitoring mode and program updates during equipment operation for convenient debugging and maintenance

▪ **Debugging mode**

Supports breakpoints, single step execution and other functions to enhance debugging efficiency
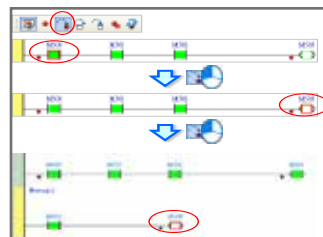
Various Programming Languages

▪ **Support multiple programming languages in the same project**

▪ **Ladder Diagram (LD)**

ISPSoft provides a programming interface with the widely used LD language for faster programming

▪ **Structured Text (ST)**

Similar programming method to advanced programming language C or PASCAL. ST provides more convenient editing for complicated expression

▪ **Continuous Function Chart (CFC)**

CFC provides more advanced applications than FBD. It supports data feedback, direct display of data stream and execution sequence for motion control and sequence-centered application
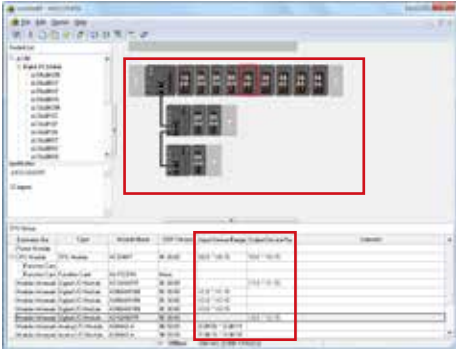

Note: ISPSoft V3.01 supports CFC language

▪ **Sequential Function Chart (SFC)**

Direct and easy expression for the steps in flow charts for applications that require process control
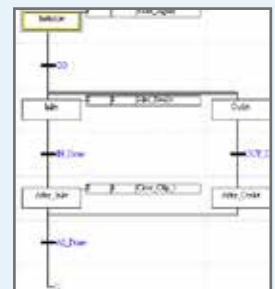
# Easy Hardware Configuration and Parameter Setting

HWCONFIG

- **Graphic panel for module configuration**

  Easy configuration based on connecting equipment scanning for quick setup

- **I/O listing**

  Direct display for corresponding device addresses after configuration

- **Parameter setting**
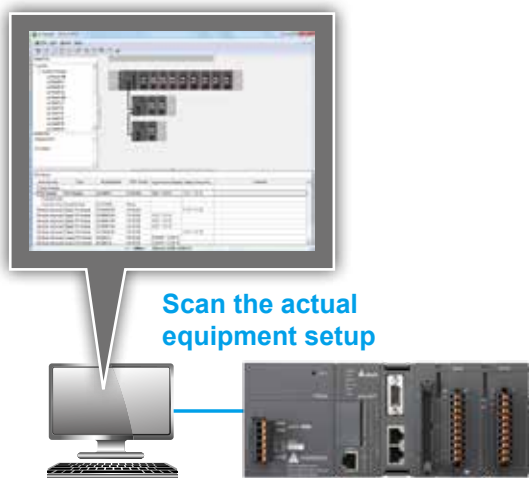
  Fast parameter setting on controller and modules without manual reference or programming
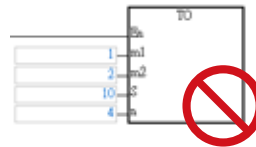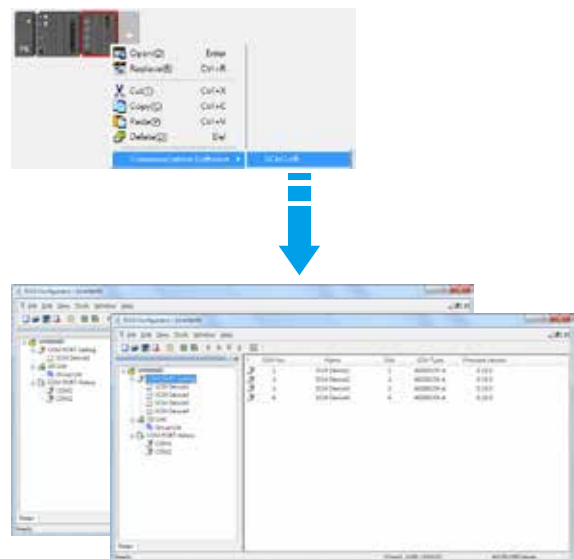

Note: Fill the table to configure module parameters quickly.
From/To instruction is not required for module initialization.

- **Module configuration method**

Scan the actual equipment setup

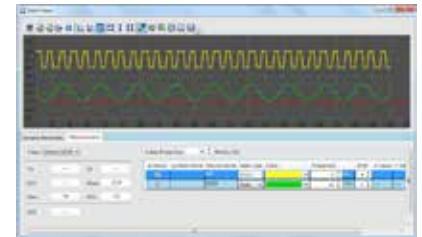- **Smart module configuration**

  Supports an advanced planning tool for a variety of network modules

# Complete Diagnosis Tools for Quick and Effective System Monitoring

Data Logger / Tracer

> **Real-time**
>
> **Stable**
>
> **Precise**

- **Real-time monitoring:**
  High-speed tracer for fast sampling within 1 scanning cycle

- **Stable logging:**
  Long-time data logger savings of up to 32,768 data records, which can be transferred to SD card

- **Precise data capture:**
  Supports a variety of sampling intervals and trigger modes

- **Convenient comparison:**
  Multiple data logs in various data formats can be recorded at the same time

- **Efficient data analysis:**
  Supports trend display, scaling, arrangement, merge and measurement

Real-time Module Monitoring
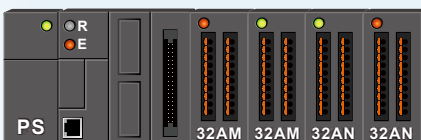
- **Visualized monitoring**
  Direct monitoring interface provides real-time status on modules via LED indicators

- **Module comparison**
  Real-time inspection of actual module settings to ensure consistency

- **Error logs**
  Immediate inquiry for error messages and logs of abnormal modules

- **Module information**
  Provides model name and version of current modules
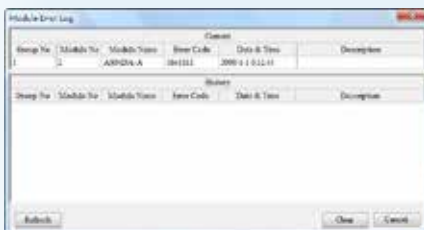
Convenient Software Wizards for Effortless Planning

Position planning table

- **2D simulation**

  Intuitive 2D track simulation without complicated calculation for real-time path planning
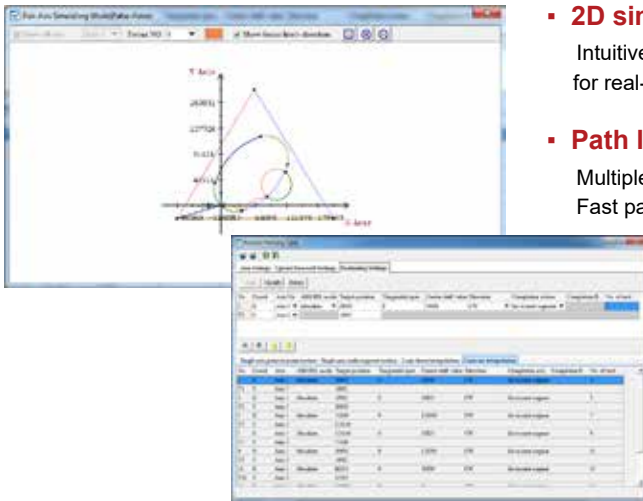
- **Path list**

  Multiple combinations for positioning modes and tracks
  Fast path planning via table-structured planning

- **Axis parameter setting**

  Intuitive configuration interface for easy axis parameter setting without manual reference

High-speed counter setting tool

Counter index will display corresponding contact point, device and counter specification once the counting mode is chosen. Fast planning without manual reference for enhanced development efficiency.

One-time setting
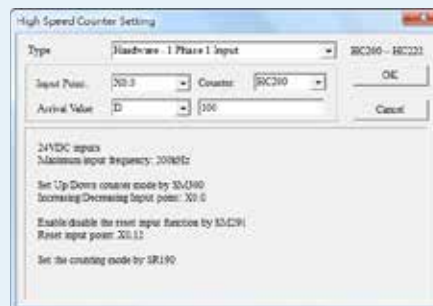
Data backup tool - CARD Utility

Friendly guidance interface for easy data backup and restore on programs, parameters and devices
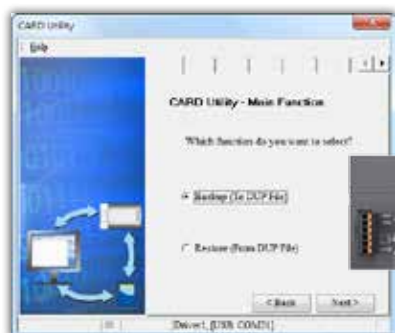
Various backup and restore methods for flexible management and operation

Data backup to PC

32GB Data backup to SD card

NELTA

Multiple Security Protection for Programs and Data

- **Security: provides 6 types of program protection for data safety**

  - 16-digit password protection on main program
  - 16-digit password protection on FBs
  - Access denial mechanism on error login
  - Data upload protection function
  - Verification between Project (Programmimg ID) and CPU (PLC ID)

  - Prevention of direct copy from IC

Product Models and Specifications

AS Series CPU module
- AS332T-A
- AS332P-A
- AS324MT-A

High-density I/O expansion accessories
- UC-ET010-24D
- UB-10-ID16A

Power supply module
- AS-PS02
- AS-PS02A

AS Series programming software
- ISPSoft 3.0

USB

Ethernet
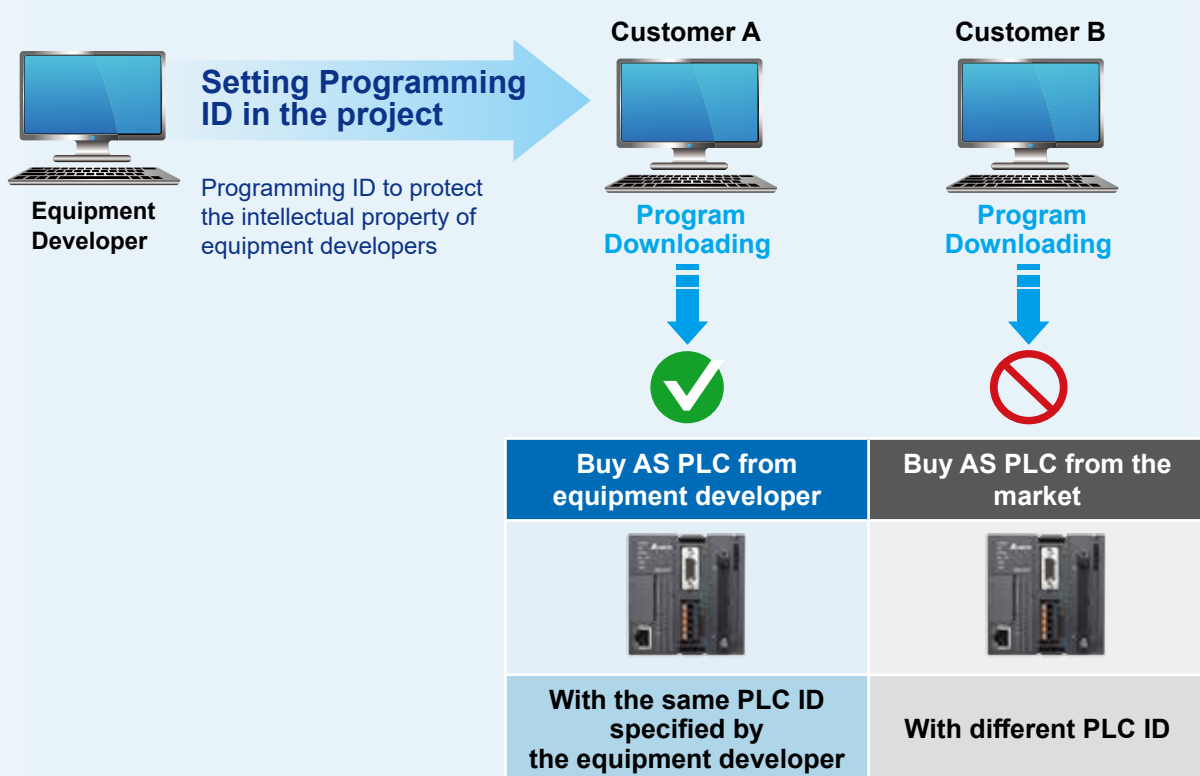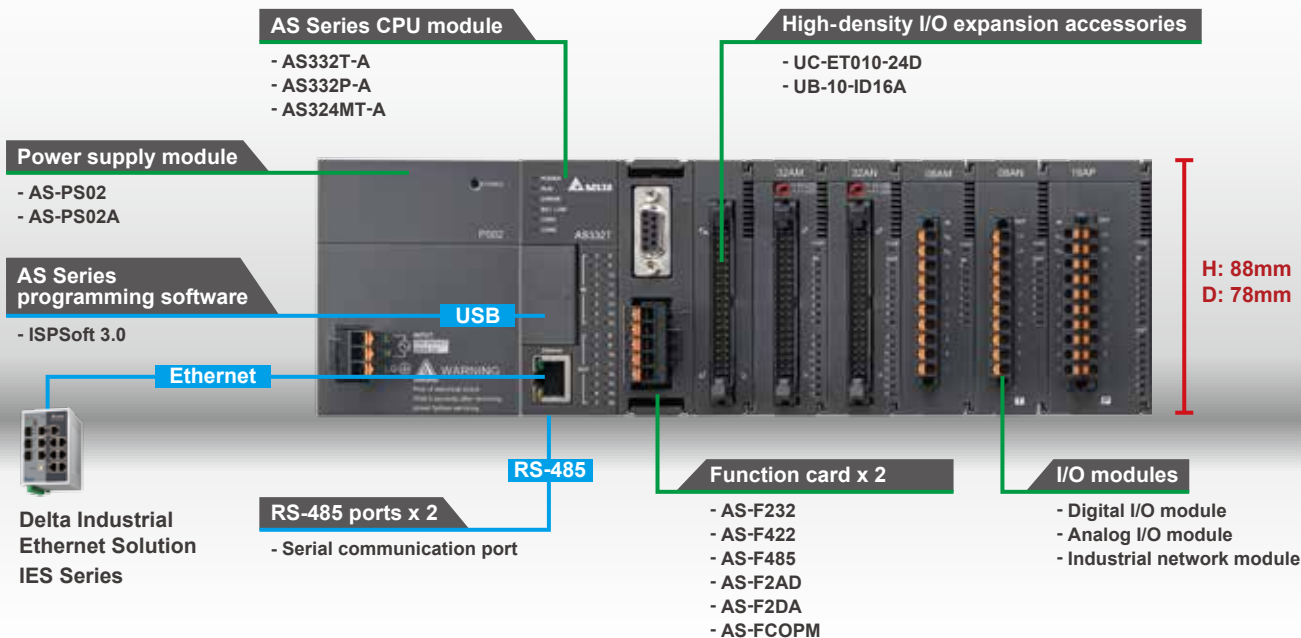
Delta Industrial Ethernet Solution IES Series

RS-485

RS-485 ports x 2
- Serial communication port

Function card x 2
- AS-F232
- AS-F422
- AS-F485
- AS-F2AD
- AS-F2DA
- AS-FCOPM

I/O modules
- Digital I/O module
- Analog I/O module
- Industrial network module

H: 88mm
D: 78mm

CPU Module

AS332T-A (NPN output)
AS332P-A (PNP output)
AS324MT-A (Differential-type)

Specifications	Program capacity 128k steps	Basic instruction 25 ns	I/O capability: 1,024 Expansion modules: 32	
	USB / RS-485 x 2 / EtherNet/IP	Micro SD Card	Function card x 2	CANopen remote I/O
Built-in I/O	16DO / 16DI 12DO ^{*1} / 12DI ^{*2}	6 axes 200 kHz pulse output ^{*1}	6 channels 200 kHz high-speed counters ^{*2}	CANopen DS301 point-to-point positioning control

*1: AS324MT-A (differential type): 12DO (2 axes 4 MHz + 4 axes 200 kHz output)
*2: AS324MT-A (differential type): 12DI (2 channels 4 MHz + 4 channels 200 kHz input)

Power Supply AS-PS02

Input
$100\,V_{AC} \sim 240\,V_{AC}$

$24\,V_{DC}$, 2A
(for internal bus)

Power Supply AS-PS02A

Input
$100\,V_{AC} \sim 240\,V_{AC}$

$24\,V_{DC}$, 1.5A (for internal bus)

$24\,V_{DC}$, 0.5A (for external I/O)

ΔNELTA

Product Specifications

Model	AS332T-A	AS332P-A	AS324MT-A
Programming Languages	Ladder Diagram (LD), Structured Text (ST), Continuous Function Chart (CFC), Sequential Function Chart (SFC)		
Instruction Processing Speed — **LD Instruction**	25 ns		
MOV Instruction	0.15 µs		
Elementary Arithmetic for Integer	0.92 µs ~ 1.02 µs		
Elementary Arithmetic for Floating Point	1.69 ~ 1.85 µs		
Program Capacity	128k steps		
Memory Capacity — **Data (D)**	64k words (30k user-defined, 30k software configuration and 4k special registers)		
Extension (FR)	64k words (user parameter storage)		
Function Card No.	CPU supports 2 function cards		
Max. Extension Modules	32 (max. 16 analog modules / 4 communication modules)		
Max. Number of Inputs/Outputs	1,024 (input & output)		
CPU Built-in Inputs/Outputs	32		24
CPU Built-in Differential Inputs/Outputs	-		4 Input + 4 Output
Inputs/Outputs — **X**	1,024 inputs (X0.0 ~ X63.15)		
Y	1,024 outputs (Y0.0 ~ Y63.15)		
Bit Devices — **M**	8,192 Bit (M0 ~ M8191)		
S	2,048 Bit (S0 ~ S2047)		
Timer — **T**	512 (T0 ~ T511)		
16 bit Counter — **C**	512 (C0 ~ C511)		
32 bit Counter — **HC**	256 (HC0 ~ HC255)		
Pulse Output	NPN/PNP: 6 axes at 200 kHz		Differential type: 2 axes at 4 MHz 4 axes at 200 kHz, 2 channels at 4 MHz 4 channels at 200 kHz NPN/PNP: 4 axes 200 kHz
High-Speed Counter	6 channels at 200 kHz		Differential type: 2 channels 4 MHz General: 4 channels 200 kHz
Data Backup (Without Battery) — **Program**	Flash ROM, 100,000 times rewritable		
Latched Area	MRAM, no rewriting limit		
CANopen DS301 — **Connectable Salve Stations**	Max. 64		
PDO Data Capacity (Host)	Max. 2000 Bytes (Read & Write)		
PDO Data Capacity (Slave)	Max. 8 PDO (Read & Write); Max. 8 Bytes for each PDO		
Real-time Clock (RTC)	General Lithium button battery (CR1620)		
Self-Diagnosis Function	CPU error, built-in memory error and more		
Rated Input Current — **AS-PS02/AS-PS02A**	110 V_{AC} ~ 240 V_{AC} (±10%)		
CPU	24 V_{DC} (±10%)		
Extension modules			

Electrical and Environmental Specifications

Items		Specifications
Internal Power Consumption	**CPU**	150 mA
	Extension Module	Digital relay output <150 mA, Other modules < 80 mA
Operating Temperature		-20~60 ℃
Storage Temperature		-40~80 ℃
Operating Humidity		5~95%, non-condensing
Storage Humidity		5~95%, non-condensing
Vibration		IEC 61131-2, IEC 60068-2-6 (TEST Fc); 5 Hz ≤ f ≤ 8.4 Hz, constant amplitude 3.5 mm; 8.4 Hz ≤ f ≤ 150 Hz, constant acceleration 1g
Shock		IEC 61131-2, IEC 60068-2-27 (TEST Ea); 15g peak, 11 ms duration, half-sine
Operating Environment		Non-corrosive gas
Installation		Inside of the control panel
Pollution Degree		2
Protection Rating		IP20
Altitude		< 2,000 m

Ethernet Specifications

Items			AS324MT-A / AS332T-A / AS332P-A	Note
Protocols			MODBUS TCP, EherNet/IP	Support the protocols at the same time
MODBUS TCP	Equipment Type		Client / Server	
	Server / Client		32 / 32	
	RTU Mapping		4 sets	
Socket	TCP / UDP Links		4 TCP / 4 UDP	
EtherNet/IP	Equipment Type		Scanner / Adapter	
	CIP_IO Connection	CIP	32 (Client+Server)	
		TCP	16 (Client+Server)	
		Requested Packet Interval (RPI)	5 ms~1000 ms	Preset: 20 ms
		Max. Performance	3000 pps	
		Max. Capacity/Connection	500 bytes	
	CIP_Explicit Message	Class 3 (Connected Type)	32 (Servers), shared with UCMM	Shared with I/O Connection
		UCMM (Non-Connected Type)	32 (Clients + Servers), shared with Class 3	Shared with I/O Connection

AS Series PLC Selection Tool

Please go to Delta's official website:

http://www.deltaww.com/services/DownloadCenter2.aspx?secID=8&pid=2&tid=0&CID=06&itemID=060301&typeID=1&downloadID=,&title=--%20Select%20Product%20Series%20--&dataType=1;&check=1&hl=en-US

AS Series I/O Modules

■ Digital I/O Modules (Input)

8 inputs	16 inputs	32 inputs	64 inputs
Faster wiring terminal block	Faster wiring terminal block	High-density MIL terminal block	High-density MIL terminal block
AS08AM10N-A	AS16AM10N-A	AS32AM10N-A	AS64AM10N-A

Rated input voltage
5~24 V$_{DC}$

Response time
1 ms

Filter function
1~20 ms

Screwless removable terminal block
8 /16 inputs

■ Digital I/O Modules (Output)

8 outputs	8 outputs	8 outputs	32 outputs
Faster wiring terminal block Transistor output NPN (Sink)	Faster wiring terminal block Relay output	Faster wiring terminal block Transistor output PNP (Source)	High-density MIL terminal block Transistor output NPN (Sink)
AS08AN01T-A	AS08AN01R-A	AS08AN01P-A	AS32AN02T-A

NPN (Sink) or PNP (Source) module

Response time
1 ms (Transistor)
10 ms (Relay)

Screwless removable terminal block
8 /16 outputs

16 outputs	16 outputs	16 outputs	64 outputs
Faster wiring terminal block Transistor output NPN (Sink)	Faster wiring terminal block Relay output	Faster wiring terminal block Transistor output PNP (Source)	High-density MIL terminal block Transistor output NPN (Sink)
AS16AN01T-A	AS16AN01R-A	AS16AN01P-A	AS64AN02T-A

Digital I/O Modules (Mixed)

16 inputs / outputs	16 inputs / outputs	16 inputs / outputs
Faster wiring terminal block 8 inputs / 8 transistor outputs NPN (Sink)	Faster wiring terminal block 8 inputs 8 relay outputs	Faster wiring terminal block 8 inputs / 8 transistor outputs PNP (Source)
AS16AP11T-A	AS16AP11R-A	AS16AP11P-A

NPN (Sink) or PNP (Source) module

Rated input voltage 5~24 V$_{DC}$	Filter function 1~20 ms

Screwless removable terminal block

Response time
1 ms (Transistor)
10 ms (Relay)

Analog I/O Modules

4 channels	8 channels	8 channels	4 channels	6 channels
Analog input	Analog input	Analog input	Analog output	Analog input / output
AS04AD-A	AS08AD-B New	AS08AD-C New	AS04DA-A	AS06XA-A

Conversion time 2 ms / channel	50 / 60 Hz filter	A: Voltage and current B: Voltage C: Current	Resolution AI: 16-bit AO: 12-bit
Accuracy ±0.2%	4 / 6 / 8 CH	Module monitoring / configuration	Differential inputs

Load Cell Module

2 channels
AS02LC-A

Functions	50 / 60 Hz filter	High-speed dynamic measurement	2 channels of independent sampling	
	Accuracy 0.4% full range	2 CH	Connectable to 4-wire / 6-wire load cell sensor	
Software	LCSoft	Filter function	Multiple-point calibration	Online monitoring / configuration

26

ΔNELTA

AS Series I/O Modules

■ Temperature Measurement Modules

4 channels

PT, NI temperature sensor

AS04RTD-A

Conversion time 200 ms / channel		Resolution 0.1°C / 0.1°F		Wire breaking detection
Accuracy ±0.1%	50/60 Hz filter	Module monitoring / configuration		4 CH
Pt100 / Ni100 / Pt1000 / Ni1000 / JPt100 / LG-Ni1000 / Cu50 / Cu100, resistor 0～300 Ω, 0～3,000 Ω				

4 channels

TC temperature sensor

AS04TC-A

Conversion time 200 ms / channel		Resolution 0.1°C / 0.1°F		Disconnection detection
Accuracy ±0.1%	50/60 Hz filter	Module monitoring / configuration		4 CH
J, K, R, S, T, E, N, B type thermocouple; ±100 mV				

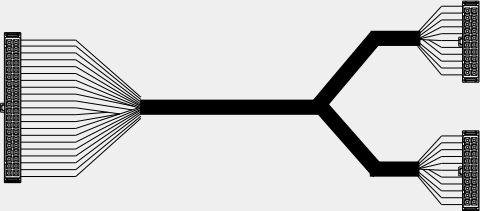## ■ Communication Modules
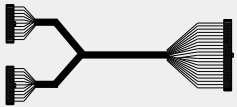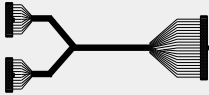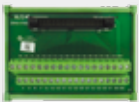
2 COM ports

AS00SCM-A

COM port	RS-232C	RS-422	RS-485	CANopen
Function	Selectable COM ports; supporting standard MODBUS protocol and user-defined protocol			Delta communication protocol
Software	SCMSoft	Data exchange table for quick setup		Real-time monitoring on communication status
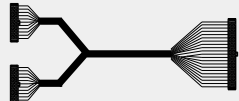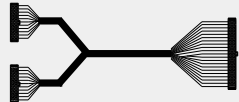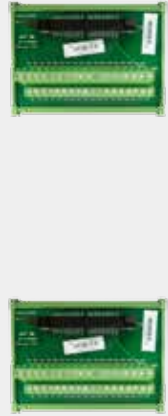
Accessory Selection for High-density Modules
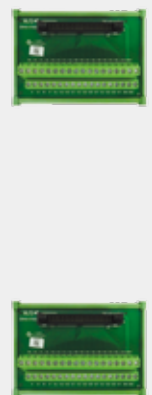
Model Name		
AS332T-A AS332P-A AS324MT-A	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	UB-10-ID16A

Model Name				
UB-10-ID16A	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	AS32AM10N-A	UC-ET010-24B (1M) UC-ET020-24B (2M) UC-ET030-24B (3M)	UB-10-ID32A

Model Name				
UB-10-ID16A or UB-10-OR16A (Relay)	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	AS32AN02T-A	UC-ET010-24B (1M) UC-ET020-24B (2M) UC-ET030-24B (3M)	UB-10-OT32A

ΔNELTA

Accessory Selection for High-density Modules

Model Name				
UB-10-ID16A	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	AS64AM10N-A	UC-ET010-24B (1M) UC-ET020-24B (2M) UC-ET030-24B (3M)	UB-10-ID32A

Model Name				
UB-10-ID16A or UB-10-OR16A (Relay)	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	AS64AN02T-A	UC-ET010-24B (1M) UC-ET020-24B (2M) UC-ET030-24B (3M)	UB-10-OT32A

Dimensions

Dimensions are in mm

AS332T-A, AS332P-A, AS324MT-A
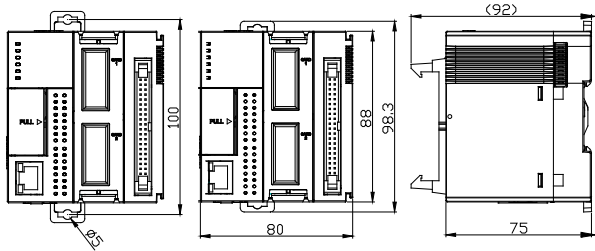
Power Supply Modules

Dimensions are in mm

AS-PS02, AS-PS02A
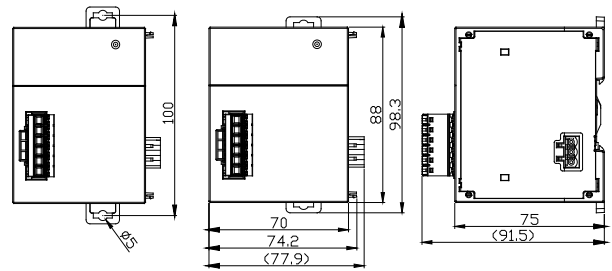
Digital I/O Modules

Dimensions are in mm

AS08AM10N-A, AS08AN01R-A, AS08AN01T-A, AS08AN01P-A
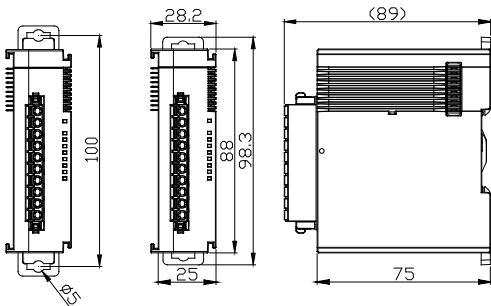
AS16AM10N-A, AS16AN01R-A, AS16AN01T-A, AS16AN01P-A, AS16AP11R-A, AS16AP11T-A, AS16AP11P-A
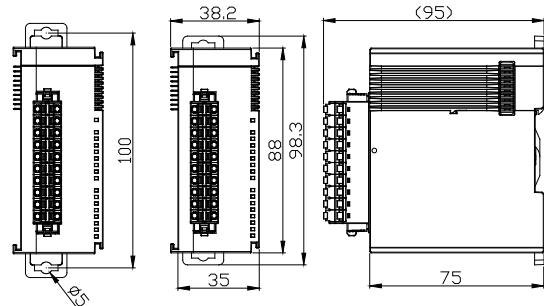
AS32AM10N-A, AS32AN02T-A
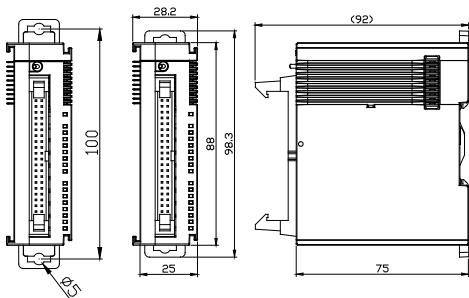
AS64AM10N-A, AS64AN02T-A

30
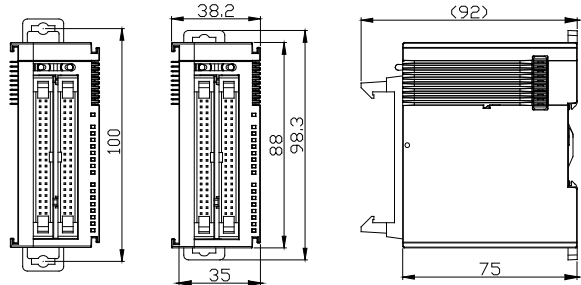
Dimensions

Analog Modules

AS02LC-A, AS04AD-A, AS04DA-A,
AS04TC-A, AS04RTD-A, AS06XA-A
AS08AD-B New, AS08AD-C New
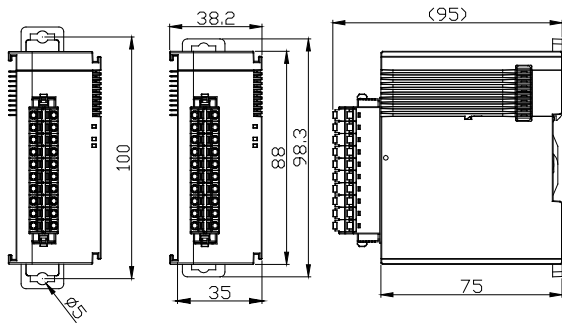
Communication Modules

Dimensions are in mm

AS00SCM-A
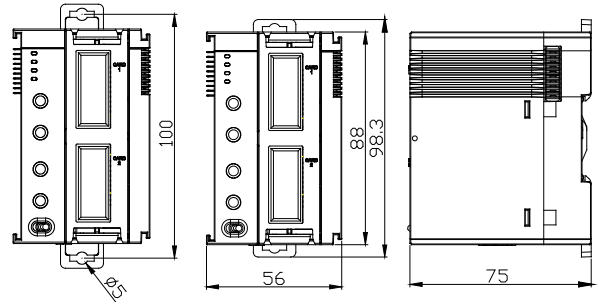
Function Cards

Dimensions are in mm

AS-F232

AS-FCOPM

AS-F2AD, AS-F2DA,
AS-F422, AS-F485
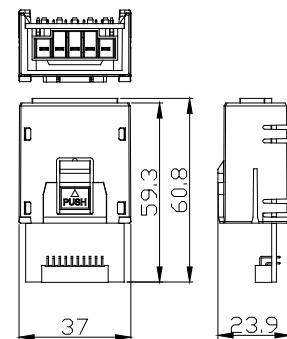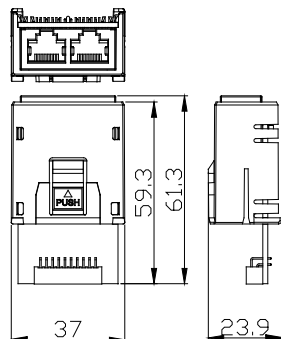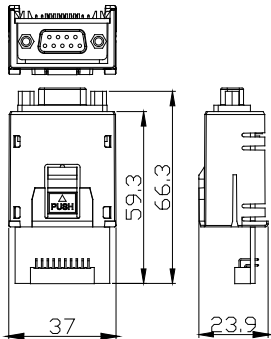
Installation Notes

Dimensions are in mm

Din-Rail Size

Suggested to install left/right-end stopper

120~140 mm

75 mm

160~180 mm

75 mm

140~160 mm
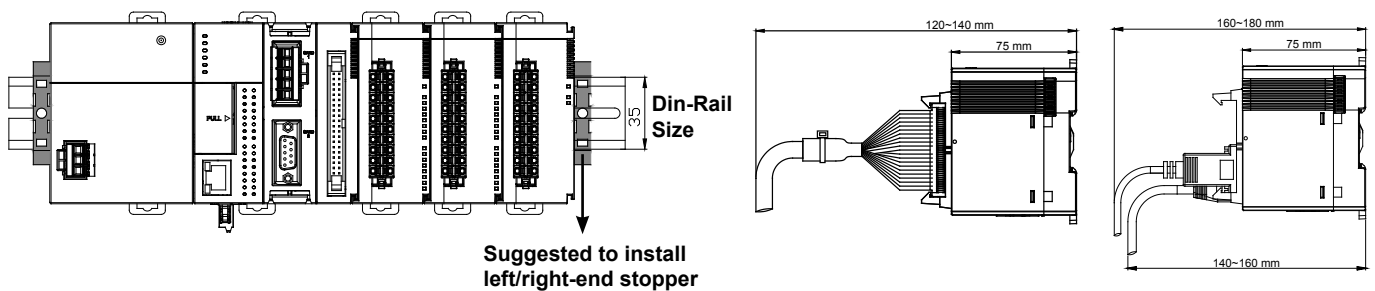
Cable (MIL)

UC-ET010-24D (1M), UC-ET020-24D (2M), UC-ET030-24D (3M)
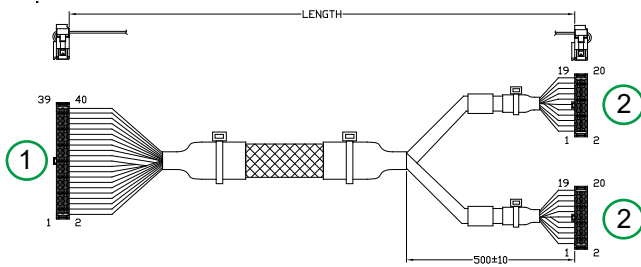
Serial	Name	Description
1	40-pin terminal	Connect to modules
2	20-pin terminal	Connect to external terminal modules UB-10-ID16A or UB-10-OR16A or UB-10-OR16B

UC-ET010-24B (1M), UC-ET020-24B (2M), UC-ET030-24B (3M)
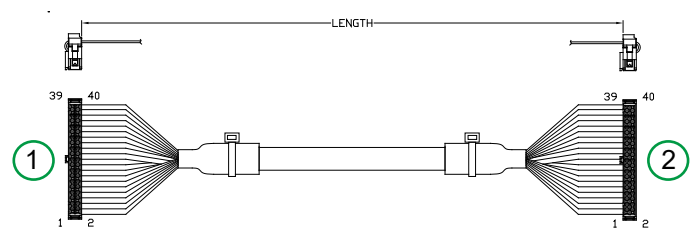
Serial	Name	Description
1	40-pin terminal	Connect to modules
2	40-pin terminal	Connect to external terminal modules UB-10-ID32A or UB-10-OT32A

External Terminal Modules

UB-10-OR16A, UB-10-OR16B
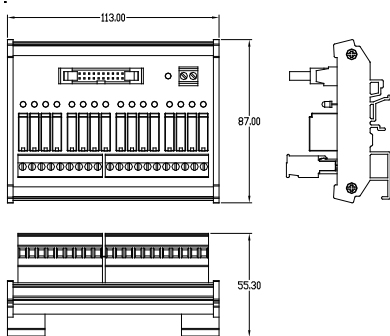
UB-10-OT32A
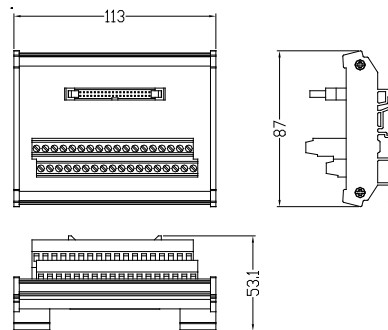
UB-10-ID16A
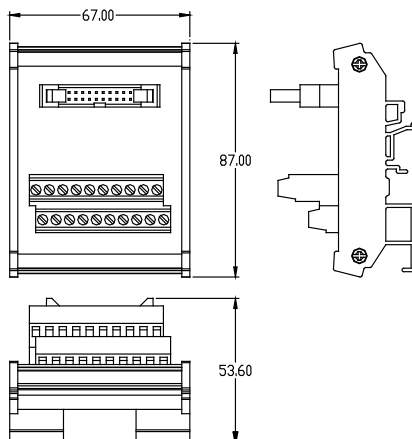
UB-10-ID32A
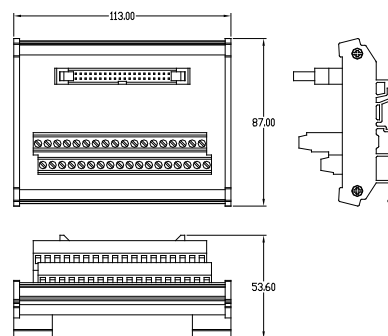
Ordering Information

■ CPU Module

Name	Model	Program Capacity	Data Register	Instruction Speed / Performance		Built-in Communication	Memory Card
CPU	AS332T-A AS332P-A AS324MT-A	128k steps	60k words	LD: 25 ns MOV: 0.15 μs	40k steps / 1 ms (LD 40%, MOV 60%)	USB, RS-485*2, Ethernet	Micro SD Max. 32GB

Name	Model	I/O Type / Terminal Block Type	Built-in I/O	Axes Controlled	Max. inputs & outputs / Extension Module (Max. Extension Racks)	Certification
CPU	AS332T-A	NPN (Sink) / MIL connector	32 (16 in / 16 out)	Built-in 6 axes (or 12 channels) 200 kHz	1,024 inputs & outputs / 32 modules (Max. 15 extension racks)	CE/UL
	AS332P-A	PNP (Source) / MIL connector				
	AS324MT-A	Differential / MIL connector	24 (12 in / 12 out)	Built-in 2 axes 4 MHz / 4 axes 200 kHz		

■ Software

Product Name	License	Descriptions	Supported Device
ISPSoft [V3]	Free	PLC programming software	AS Series, AH Series, DVP Series
COMMGR [V1]	Free	Communication management software	AS Series, AH Series, DVP Series
DCISoft [V1]	Free	Ethernet configuration software	AH series Ethernet / serial communication modules, AS series SCM module, DVP series built-in Ethernet PLCs, DVP series Ethernet / serial communication modules, IFD series Ethernet modules
	Free	SCM serial communication module planning software	AS Series, AH Series, DVP Series SCM communication modules
CANopen Builder [V5]	Free	CANopen configuration software/ motion control programming software	AS Series, AH Series, DVP Series built-in CANopen communication modules
EIP Builder [V1]	Free	EtherNet/IP configuration software	AS Series, AH Series, DVP Series built-in Ethernet communication modules
Delta OPC [V2] (HASP-20-OPC01)	Hardware License (USB)	Delta OPC Server	AS Series, AH Series,

■ Power Supply Module

Name	Model	Input	Output	Certification
Power Supply Module	AS-PS02	100~240 V$_{AC}$	24 V$_{DC}$, 2A (for modules on the rack)	CE/UL
	AS-PS02A		24 V$_{DC}$, 1.5A (for modules on the rack) 24 V$_{DC}$, 0.5A (for external I/O)	

Communication Module

Name	Model	Communication Card Installation	Max. Module on CPU rack	Power Consumption (Internal)	Specifications	Certification
Communication Extension Module	AS00SCM-A	2	4	0.6 W	• Serial communication: RS-232 / RS-422 / RS-485 • Provide CANopen communication interface for extension racks	CE/UL

Digital I/O Module

Name	Model	I/O	Signals	Terminal Block Type	Power Consumption (Internal)	Certification
Input Module	AS08AM10N-A	8	24 V_{DC} 5 mA	Removable terminal block	0.72 W	CE/UL
	AS16AM10N-A	16			0.72 W	
	AS32AM10N-A	32		MIL	0.48 W	
	AS64AM10N-A	64			0.72 W	

Name	Model	I/O	Signals	Terminal Block Type	Power Consumption (Internal)	Specifications	Certification
Output Module	AS08AN01R-A	8	240 V_{AC} 24 V_{DC}	Removable terminal block	1.7 W	Relay	CE/UL
	AS16AN01R-A	16			3.4 W	Relay	
	AS08AN01T-A	8	5~30 V_{DC} 0.5 A		0.72 W	Transistor NPN (Sink)	
	AS08AN01P-A	8			1.4 W	Transistor PNP (Source)	
	AS16AN01T-A	16			1.4 W	Transistor NPN (Sink)	
	AS16AN01P-A	16			1.4 W	Transistor PNP (Source)	
	AS32AN02T-A	32	5~30 V_{DC} 0.1 A	MIL	0.72 W	Transistor NPN (Sink)	
	AS64AN02T-A	64			1.44 W	Transistor NPN (Sink)	

Name	Model	I/O	Signals		Terminal Block Type	Power Consumption (Internal)	Specifications	Certification
			Input	Output				
Input / Output Module	AS16AP11R-A	16 (8 in / 8 out)	24 V_{DC} 5 mA	240 V_{AC} 24 V_{DC} 2 A	Removable terminal block	1.9 W	Relay	CE/UL
	AS16AP11T-A	16 (8 in / 8 out)		5~30 V_{DC} 0.5 A		0.7 W	Transistor NPN (Sink)	
	AS16AP11P-A	16 (8 in / 8 out)				0.7 W	Transistor PNP (Source)	

Ordering Information

■ Analog I/O Module

Name	Model	Channel	Mode	Terminal Block Type	Power Consumption (Internal)	Specifications	Certification
Analog Input Module	AS04AD-A	4	1~5V 0~5V -5~5V 0~10V -10~10V 4~20mA 0~20mA -20~20mA	Removable terminal block	1.2W / 2.5W	• Hardware resolution: 16-bit • Single channel on/off setting to enhance overall conversion efficiency • Conversion time: 2ms / channel • Wire break detection at 1~5V, 4~20mA modes	CE/UL
	New AS08AD-B	8	1~5V 0~5V -5~5V 0~10V -10~10V				
	New AS08AD-C		4~20mA 0~20mA -20~20mA				
Analog Output Module	AS04DA-A	4	0~10V -10~10V 4~20mA 0~20mA		1.2W / 3W	• Hardware resolution: 12-bit • Single channel on/off setting • Conversion time: 250µs / channel	
Analog Input / Output Module	AS06XA-A	Input: 4 Output: 2	• Input: 1~5V 0~5V -5~5V 0~10V -10~10V 4~20mA 0~20mA -20~20mA • Output: 0~10V -10~10V 4~20mA 0~20mA		1.2W / 2.5W	• Input resolution: 16-bit • Output resolution: 12-bit • Single channel on/off setting to enhance overall conversion efficiency • Conversion time: 2ms / channel • Wire break detection at 1~5V, 4~20mA modes	

■ Temperature Measurement Module

Name	Model	Channel	Mode	Terminal Block Type	Power Consumption (Internal)	Specifications	Certification
RTD Temperature Measurement Module	AS04RTD-A	4	Pt100 Ni100 Pt1000 Ni1000 JPt100 LG-Ni1000 Cu50 Cu100 Input Impendence 0~300 Ω 0~3,000 Ω	Removable terminal block	2 W / 1 W	• Resolution 0.1° C / 0.1° F • Conversion time: 200 ms / channel • Accuracy ±0.1% • Wire break detection • Module monitoring, setting	CE/UL
Thermocouple Temperature Measurement Module	AS04TC-A	4	J, K, R, S, T, E, N, B -100~+100 mV				

■ Load Cell Module

Name	Model	Channel	Mode	Terminal Block Type	Power Consumption (Internal)	Specifications	Certification
Load Cell Module	AS02LC-A	2	0~1 0~2 0~4 0~6 0~20 0~40 0~80 mV/V	Removable terminal block	0.75 W / 3 W	• Resolution: 24-bit for hardware (ADC), 32-bit for data output • 4-wire / 6-wire load cell sensor • Selectable signal input ranges • LCSoft software configuration • High-speed dynamic measurement • 50 / 60 Hz active filtering	CE/UL

Ordering Information

■ Function Cards

Name	Model	Channel	Specifications	Certification
Communication Card	AS-F232	1	Serial COM, RS-232 interface, slave/host mode	CE
	AS-F422	1	Serial COM, RS-422 interface, slave/host mode	
	AS-F485	1	Serial COM, RS-485 interface, slave/host mode	
	AS-FCOPM	1	• CANopen port, support DS301, AS Series remote control or Delta servo motor control • Built-in switchable terminal resistor (120 Ω)	
Analog I/O Card	AS-F2AD	2	2-channel analog input 0～10 V (12-bit resolution), 4～20 mA (11-bit resolution), conversion time: 3 ms / channel	
	AS-F2DA	2	2-channel analog Output 0～10 V, 4～20 mA (12-bit resolution), conversion time: 2 ms / channel	

■ Accessories

Name	Model	Descriptions	Specifications Length	Specifications Connector / Terminal Block Type	Applicable Module
PLC programming cable	UC-PRG015-01A	Communication cable for PLC to PC	1.5 m	PLC (mini USB)	AS332T, AS332P, AS324MT
	UC-PRG030-01A	Communication cable for PLC to PC	3 m	PLC (mini USB)	AS332T, AS332P, AS324MT
	UC-PRG030-20A	Communication cable for PLC / HMI (RJ45) to PC	3 m	PLC / HMI (RJ45)	AS332T, AS332P, AS324MT
Industrial network cable	UC-CMC003-01A	CANopen communication cable	0.3 m	---	AS-FCOPM
	UC-CMC005-01A		0.5 m		
	UC-CMC010-01A		1 m		
	UC-CMC015-01A		1.5 m		
	UC-CMC020-01A		2 m		
	UC-CMC030-01A		3 m		
	UC-CMC050-01A		5 m		
	UC-CMC100-01A		10 m		
	UC-CMC200-01A		20 m		

■ Accessories

Name	Model	Descriptions	Specifications		Applicable Module
			Length	Connector / Terminal Block Type	
I/O Cable	UC-ET010-24B	I/O cable for connecting I/O modules and external terminal modules	1 m	I/O extension cable (MIL connector IDC40 to IDC40) (Shielded)	AS32AM, AS64AM, AS32AN, AS64AN
	UC-ET010-24D		1 m	I/O extension cable (MIL connector IDC40 to IDC20 x 2) (Shielded)	AS332T, AS332P, AS324MT, AS32AM, AS64AM, AS32AN, AS64AN
	UC-ET020-24B		2 m	I/O extension cable (MIL connector IDC40 to IDC40) (Shielded)	AS32AM, AS64AM, AS32AN, AS64AN
	UC-ET020-24D		2 m	I/O extension cable (MIL connector IDC40 to IDC20 x 2) (Shielded)	AS332T, AS332P, AS324MT, AS32AM, AS64AM, AS32AN, AS64AN
	UC-ET030-24B		3 m	I/O extension cable (MIL connector IDC40 to IDC40) (Shielded)	AS32AM, AS64AM, AS32AN, AS64AN
	UC-ET030-24D		3 m	I/O extension cable (MIL connector IDC40 to IDC20 x 2) (Shielded)	AS332T, AS332P, AS324MT, AS32AM, AS64AM, AS32AN, AS64AN
External terminal module	UB-10-ID16A	External terminal module of digital input/output module	--	16 inputs or outputs (MIL connector, 20Pin)	AS332T, AS332P, AS324MT, AS32AM, AS64AM, AS32AN, AS64AN
	UB-10-ID32A			32 inputs (MIL connector, 40Pin)	AS32AM, AS64AM
	UB-10-OT32A			32 transistor outputs, MIL connector, for NPN output	AS32AN, AS64AN
	UB-10-OR16A			16 relay outputs, MIL connector, for NPN output	AS332T, AS32AN02T, AS64AN02T
	UB-10-OR16B			16 relay outputs, MIL connector, for PNP output	AS332P

Industrial Automation Headquarters

Delta Electronics, Inc.
Taoyuan Technology Center
18 Xinglong Road, Taoyuan District,
Taoyuan City 33068, Taiwan (R.O.C.)
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Shanghai) Co., Ltd
No.182 Minyu Road, Pudong Shanghai,
People's Republic of China
Post code : 201209
TEL: 86-21-68723988 / FAX: 86-21-6872-3996
Customer Service: 400-820-9595

Delta Electronics (Japan), Inc.
Tokyo Office
2-1-14 Minato-ku Shibadaimon,
Tokyo 105-0012, Japan
TEL: 81-3-5733-1111 / FAX: 81-3-5733-1211

Delta Electronics (Korea), Inc.
1511, Byucksan Digital Valley 6-cha, Gasan-dong,
Geumcheon-gu, Seoul, Korea, 153-704
TEL: 82-2-515-5303 / FAX: 82-2-515-5302

Delta Electronics Int'l (S) Pte Ltd.
4 Kaki Bukit Ave 1, #05-05, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.
Plot No 43 Sector 35, HSIIDC
Gurgaon, PIN 122001, Haryana, India
TEL: 91-124-4874900 / FAX : 91-124-4874945

Delta Electronics (Thailand) Public Company Limited
909 Soi 9, Moo 4,Bangpoo Industrial
Estate(Epz) Pattana 1rd., Tambol Phraksa
Amphur Muang, Samutprakarn 10280 Thailand
TEL: 66(0)2-709-2800

Delta Energy Systems Austral Pty Ltd.
Unit 20-21, 45 Normanby rd, Notting Hill Vic 3168, Australia
TEL: 61-3-9543-3720

Americas

Delta Products Corporation (USA)
Raleigh Office
P.O. Box 12173, 5101 Davis Drive,
Research Triangle Park, NC 27709, U.S.A.
TEL: 1-919-767-3800 / FAX: 1-919-767-3969

Delta Greentech (Brasil) S.A.
Sao Paulo Office
Rua Itapeva, 26 - 3° andar Edificio Itapeva One-Bela Vista
01332-000-São Paulo-SP-Brazil
TEL: 55-11-3568-3855 / FAX: 55-11-3568-3865

Delta Electronics Int. Mexico
Mexico Office
Via Dr. Gustavo Baz 2160, La Loma
C.P. 54060, Estado de México
TEL: 55-2628-3015

EMEA

Delta Electronics (Netherlands) B.V.
Eindhoven Office
De Witbogt 20, 5652 AG Eindhoven, The Netherlands
TEL: 31 (0) 40-8003800 / FAX: 31 (0) 40-8003898
MAIL: Sales.IA.EMEA@deltaww.com
MAIL: Sales.IA.Benelux@deltaww.com

Delta Energy Systems (France) S.A
ZI du bois Chaland 2 15 rue des Pyrénées,
Lisses 91056 Evry Cedex
MAIL: Sales.IA.France@deltaww.com

Delta Energy Systems (Spain) S.L.
Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
C/Llul, 321-329 (Edif. CINC) | 22@Barcrelona | 08019 Barcelona
MAIL: Sales.IA.Iberia@deltaww.com

Delta Energy Systems Srl (Italy)
Via Senigallia 18/2 – 20161 Milano (MI)
Piazza Grazioli 18 – 00186 ROMA
MAIL: Sales.IA.Italy@deltaww.com

Delta Energy Systems (Germany) GmbH
Coesterweg 45, D-59494 Soest
MAIL: Sales.IA.DACH@deltaww.com

Delta Energy Systems LLC (CIS)
Vereyskaya Plaza II, office 112 Vereyskaya str.
17 121357 Moscow
MAIL: Sales.IA.RU@deltaww.com

Delta Greentech Ltd. (Turkiye)
Şerifali Mevkii Barbaros Bulvari Söyleşi Sokak
No:19 K:1 Yukari Dudullu 34775 Ümraniye
İstanbul Sarigazi V.D 2740624765
MAIL: Sales.IA.Turkey@delta-emea.com

Delta Energy Systems (AG Dubai BR)
P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre,
Dubai, United Arab Emirates
MAIL: Sales.IA.MEA@deltaww.com

*We reserve the right to change the information in this catalogue without prior notice.