Automation for a Changing World

Delta Compact Modular Mid-range PLC AS Series

TAIWAN EXCELLENCE 2017

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DELTA

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 for 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 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

Delta's self-developed AS200/AS300 Series CPU provides 32-bit high-performance computing and a real-time operation system. As the core of a high-efficiency controller, it helps increase the productivity and adaptability of demanding equipment.

Advanced CPU Performance

▪ High execution speed

- Max. number of inputs/outputs: 1,024
- Max. extension ability: 32 modules

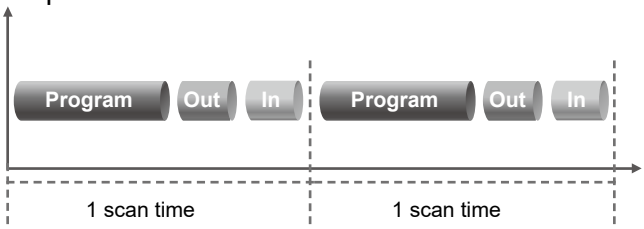
LD instruction of AS200/300 series CPU	25 ns
LD instruction of AS500 series CPU	50 ns
LD instruction of AX-3 series CPU	5 ns

Optimized Execution Efficiency

▪ General Scanning Method

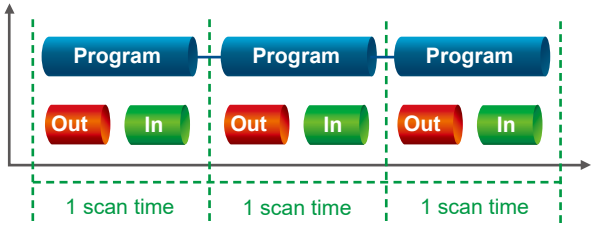
Standard simplex scanning which sequentially goes through instructions by fixed schedule operation (e.g. I/O update).

It significantly affects overall execution speed.



▪ AS Series Scanning Method

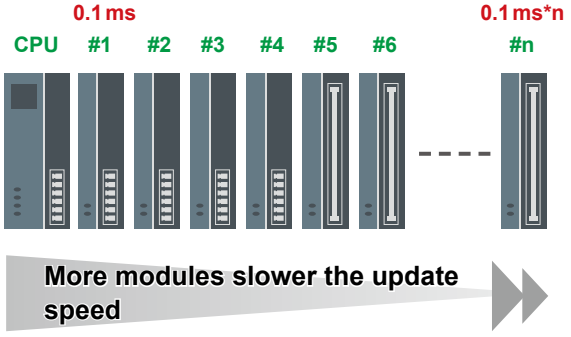
Fixed schedule operations will be automatically processed by the CPU background program when scanning starts. This significantly enhances execution speed.



Optimized I/O updates

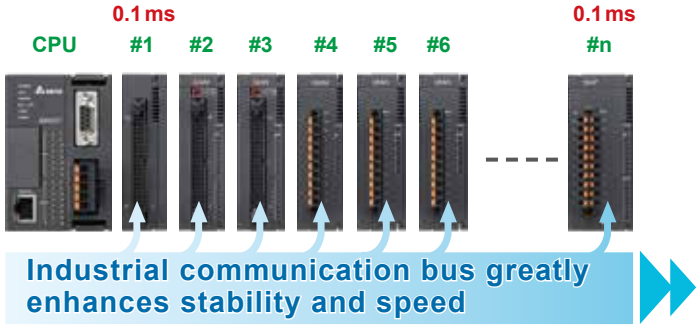
▪ Common in the industry: PLC module bus update via serial communication

- 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.



▪ AS Series: PLC module bus update via optimized CAN protocol

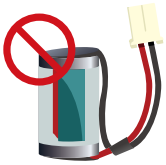
- CAN protocol : The signal is sent via optimized CAN bus protocol. The I/O update time is not significantly prolonged even with more modules.



Note: The real updating performance will be different for different extension modules.

Permanent data backup, no battery required

▪ Non-volatile memory material for data backup

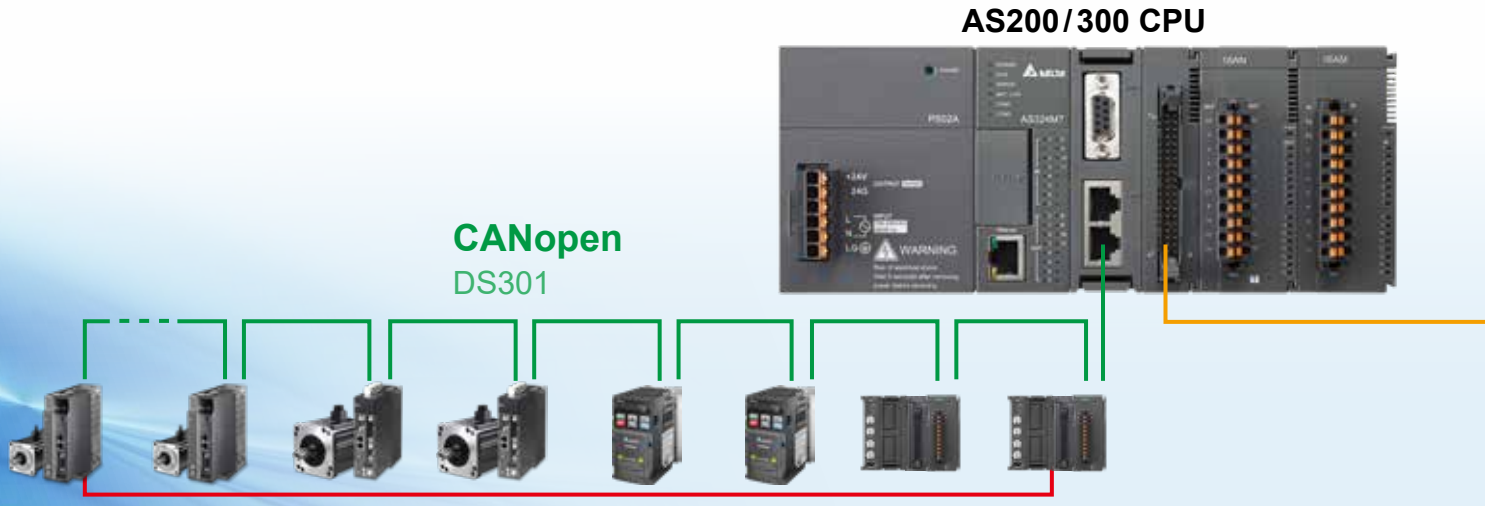


	PLC power off
PLC programs	permanent backup
Latched area	permanent backup

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

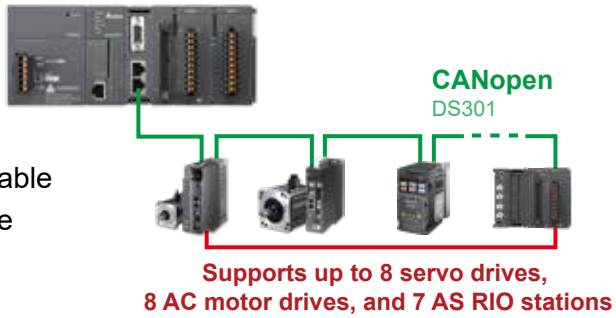
	PLC power off
RTC	keeps accurate time

Accurate Axis Control - Positioning Control Solution



▪ AS200/300 positioning control - Delta's CANopen control

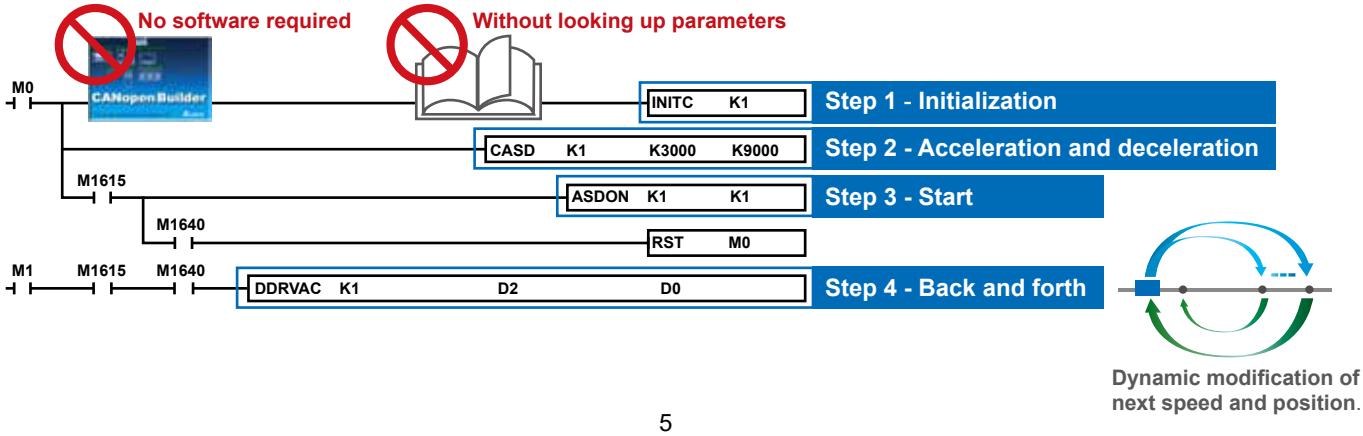
- AS200/300 support up to 8 Delta servo drives and 8 AC motor drives (AS-FCOPM function card is needed for the AS300)
- Fast positioning configuration in one initialization instruction without building CANopen data exchange table
- Axis control by instructions provides easy maintenance and high PLC program readability

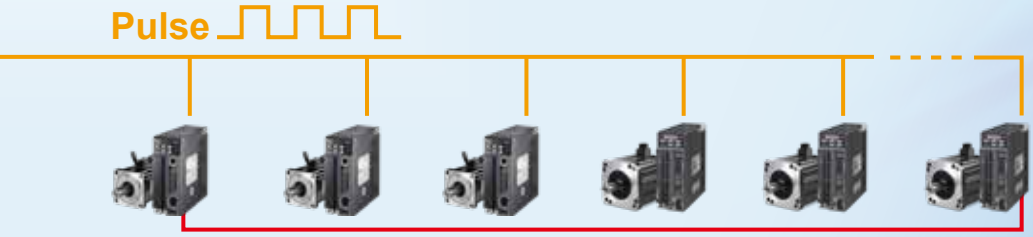


▪ Simple control instructions for Delta drives (AS200/300 series CPU only)

- Initialization: INITC
- Relative positioning: DRVIC (Servo only)
- Read and write parameter: COPRW
- Acceleration and deceleration: CASD
- Constant speed control: PLSVC
- Absolute positioning: DRVAC (Servo only)
- Start/Stop: ASDON
- Homing: ZRNC (Servo only)

ASDA-A2 back and forth motion control in 4 steps



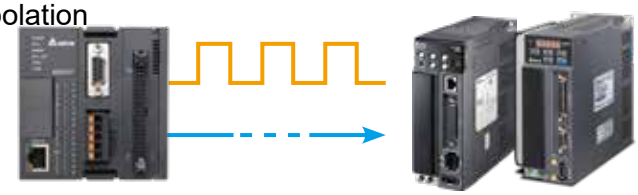


Motion control of max. 6 Delta AC Servo Drives

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 (AS200/300 series CPU only)
- Choose any given 2 axes for linear and arc interpolation

* Note: Please refer to the product specification section (P.28) for more information on CPU models



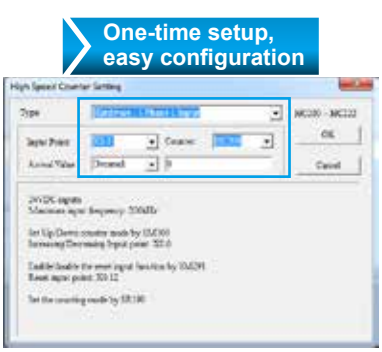
AS200/300 CPU

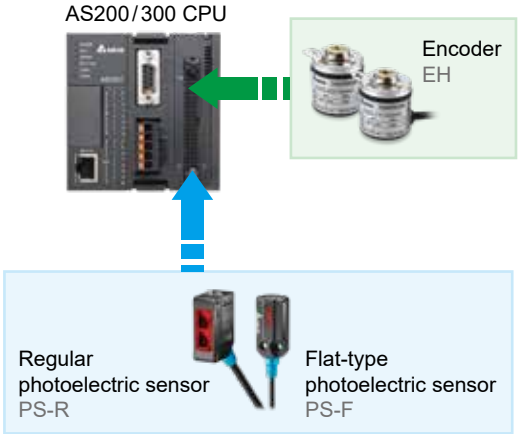
AC Servo Drive
ASDA-B3 & ASDA-B2 Series

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

* Note: Please refer to the product specification section (P.28) for more information on CPU models

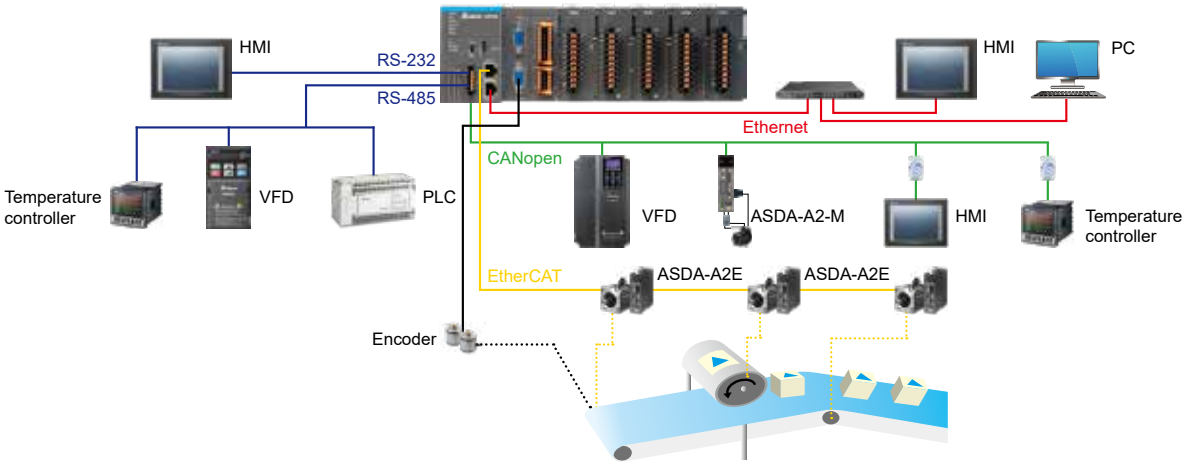




AS500 Motion Control Solution

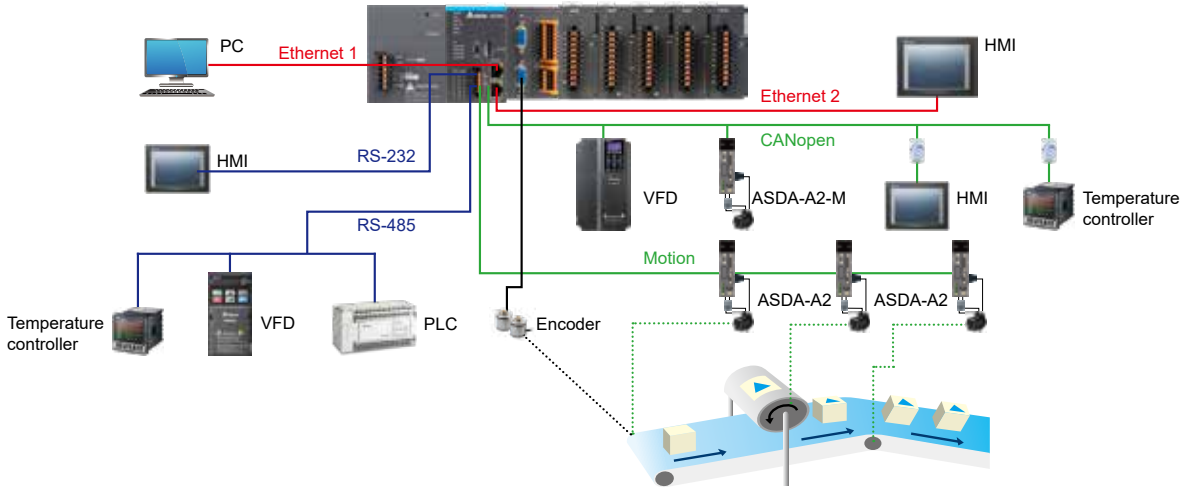
AS500 EtherCAT motion control system

- AS516E CPU supports up to 16 Delta EtherCAT servos (min. sync time: 1 ms / 16 axes)
- AS532ES/AS564ES CPUs support up to 32/64 Delta EtherCAT servos (Point-to-Point mode)
- Supports AS power, DIO, AIO, temperature and load cell expansion modules (max. 32 modules)
- 1 GHz processor provides high operation performance
- Provides various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, G-code, and more
- Built-in 16 DI & 8 DO, 2 incremental encoders, SSI absolute encoder, RS-232/485, Ethernet, CANopen DS301 and EtherCAT interfaces



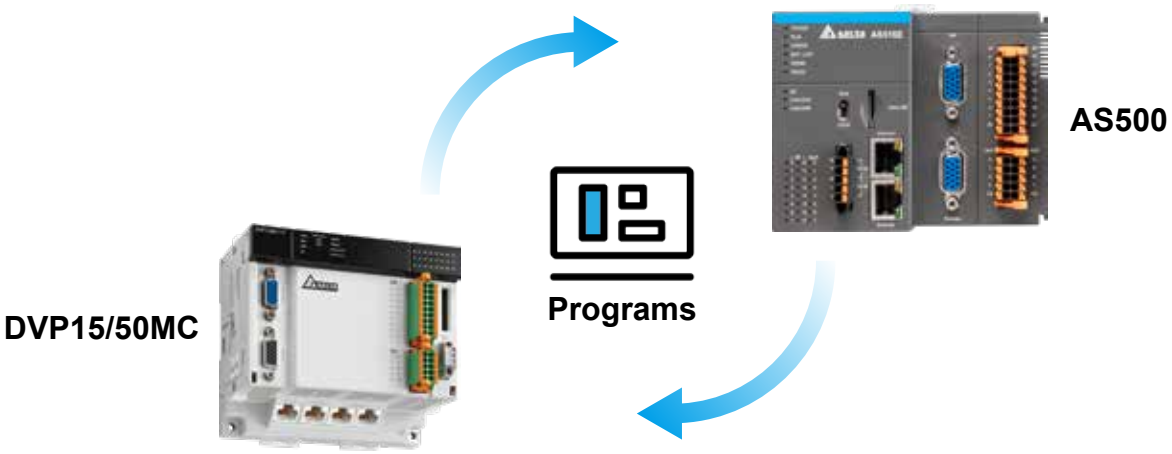
AS500 CANopen motion control system

- AS524C CPU supports up to 24 axes Delta CANopen servos (min. sync time: 2 ms / 4 axes)
- Supports AS power, DIO, AIO, temperature and load cell expansion modules (max. 32 modules)
- 1 GHz processor provides high operation performance
- Provides various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, G-code, and more
- Built-in 16 DI & 8 DO, 2 incremental encoders, SSI absolute encoder, RS-232/485, Ethernet (x2), CANopen DS301 and CANopen motion interfaces



▪ Higher scalability in DVP-MC and AS500

AS500 motion CPUs are designed with the Delta DVP-MC motion platform, which allows users to scale up/down their systems to AS/DVP systems without rewriting all programs



▪ Highly integrated CPU design

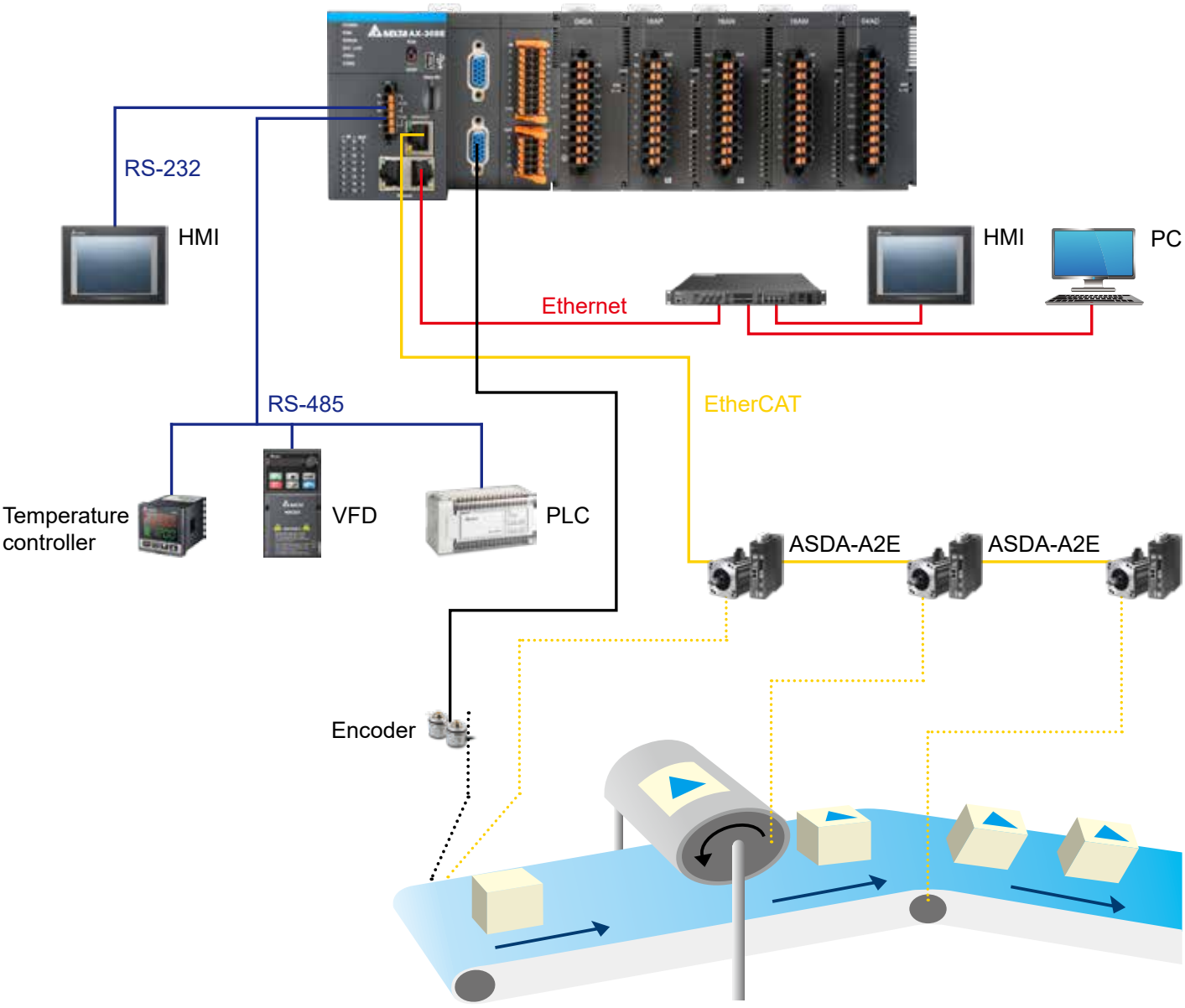
The AS500 motion control CPUs feature various built-in I/O and communication protocols to satisfy customer needs for compact design and high performance

AS5xxE	CANopen (2-port)		EtherCAT
AS524C	CANopen	CAN Motion	Ethernet

AX-3 CODESYS Control Solution

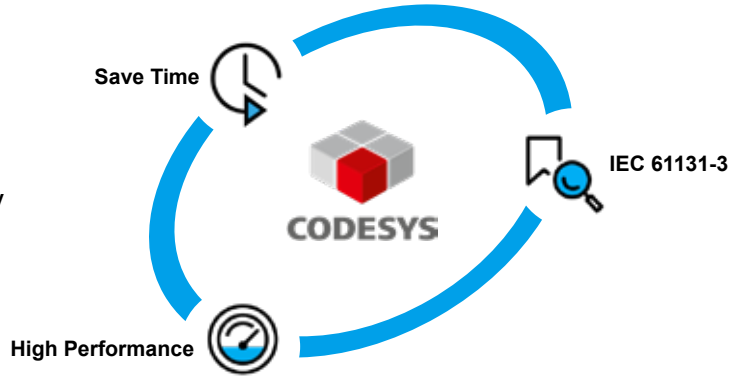
AX-3 CODESYS Control System

- Provides multiple controller solutions
  - EtherCAT motion controllers
    - AX-308E CPU supports up to 8 EtherCAT axes (min. sync time: 2 ms / 8 axes)
    - AX-304EL / AX-364EL CPUs support up to 4 / 64 EtherCAT axes (Point-to-Point mode)
  - Logical controllers
    - AX-300N / AX-324N CPUs built-in 0 / 24 DIO points
- Supports AS power, DIO, AIO and temperature expansion modules (max. 32 modules)
- High performance, min. command execution time: 5 ns
- Provides various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, and more
- Built-in 16 DI & 8 DO, 2 incremental encoders, SSI absolute encoder, RS-232/485, Ethernet and EtherCAT interfaces



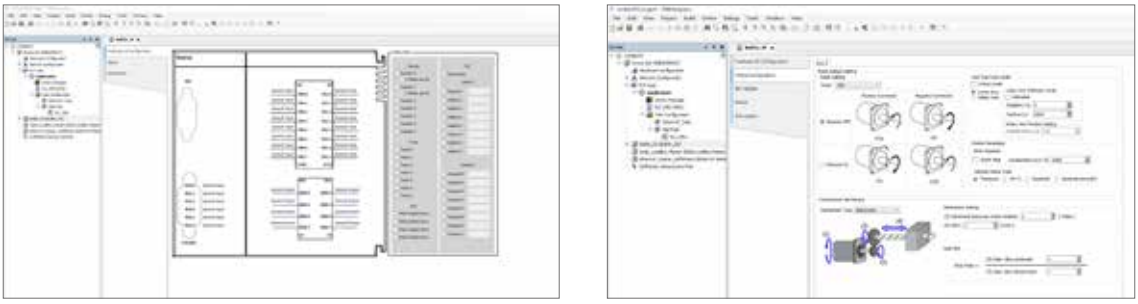
Benefits of CODESYS platform

- IEC61131-3 standards
- High performance and stable operation system
- Enhances project development efficiency with a standardized programming and controller development platform for parameter setting, configuration and PLCOpen editing



User-friendly programming software New

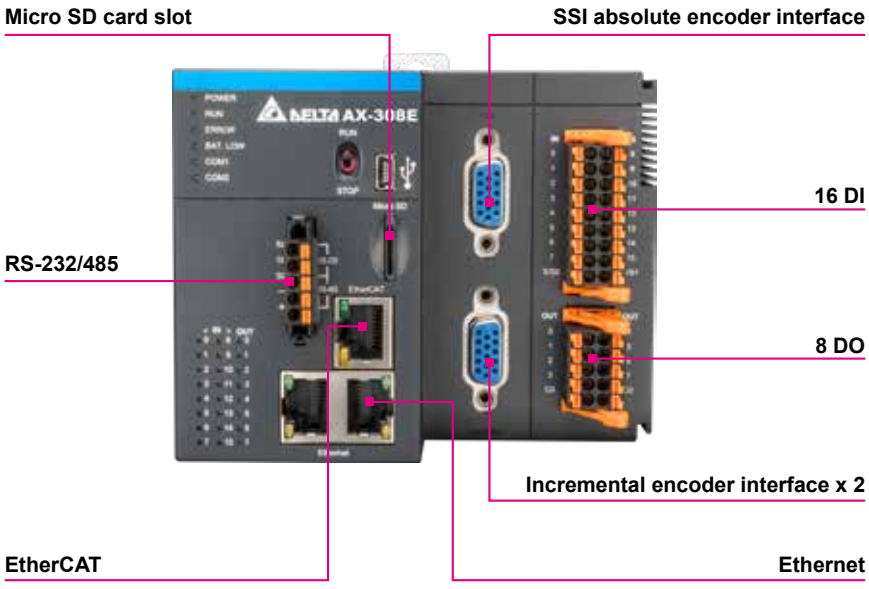
DIADesigner+ is a new programming software for Delta AX series CPUs; it provides an optimized user-friendly programming environment and reduces programming time and effort for users



The user interface of built-in IO and axis parameter configuration

Highly integrated CPU design

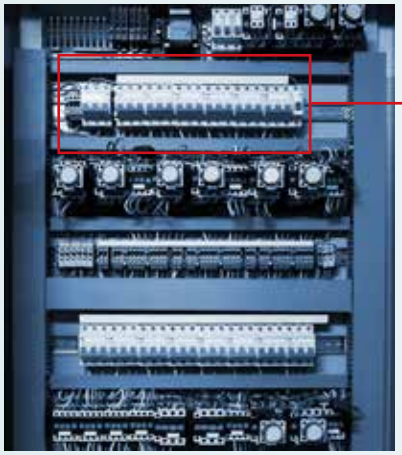
The AX-3 motion control CPUs feature various built-in I/O and communication protocols to satisfy customer needs for compact design and high performance

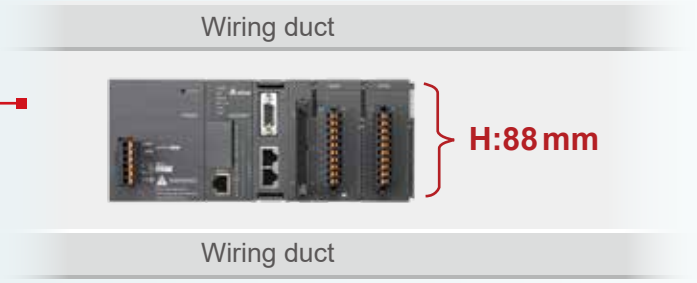


Simple Installation

Easy installation

- Space-saving design, suitable for installation in control panels





Rackless DIN-rail installation

Robust slot and clip interlocking design

Fast disassembly

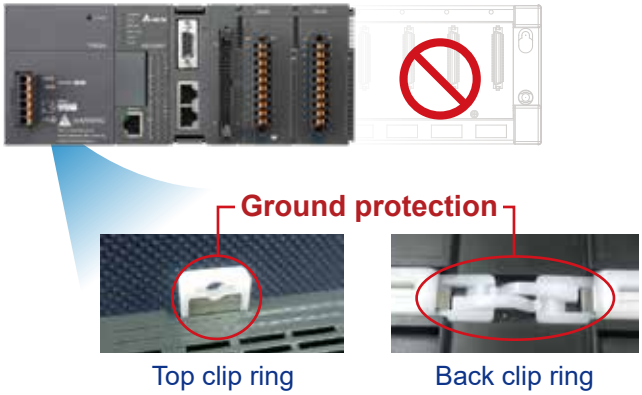
- Release the clip ring to easily take out the module from the front without moving adjacent modules

Simple installation process

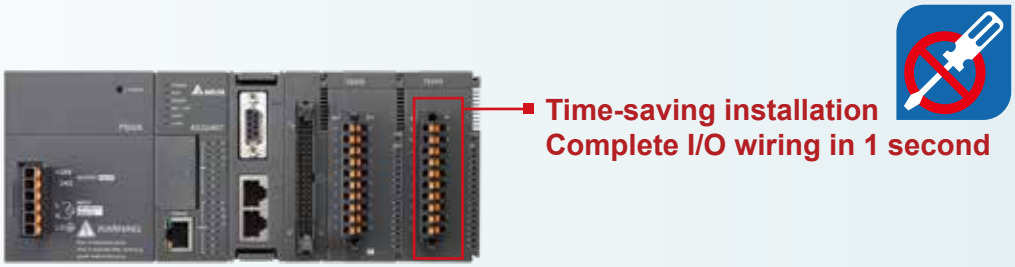
- Press the clip rings and push the module to the desired position until you hear a "click" to finish installation

▪ Convenient grounding protection

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

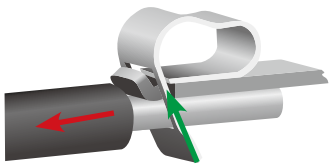


▪ Screwless and time-saving installation



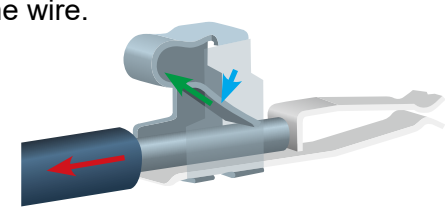
▪ Robust Loose-proof spring clamp terminal block

- 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 a 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.



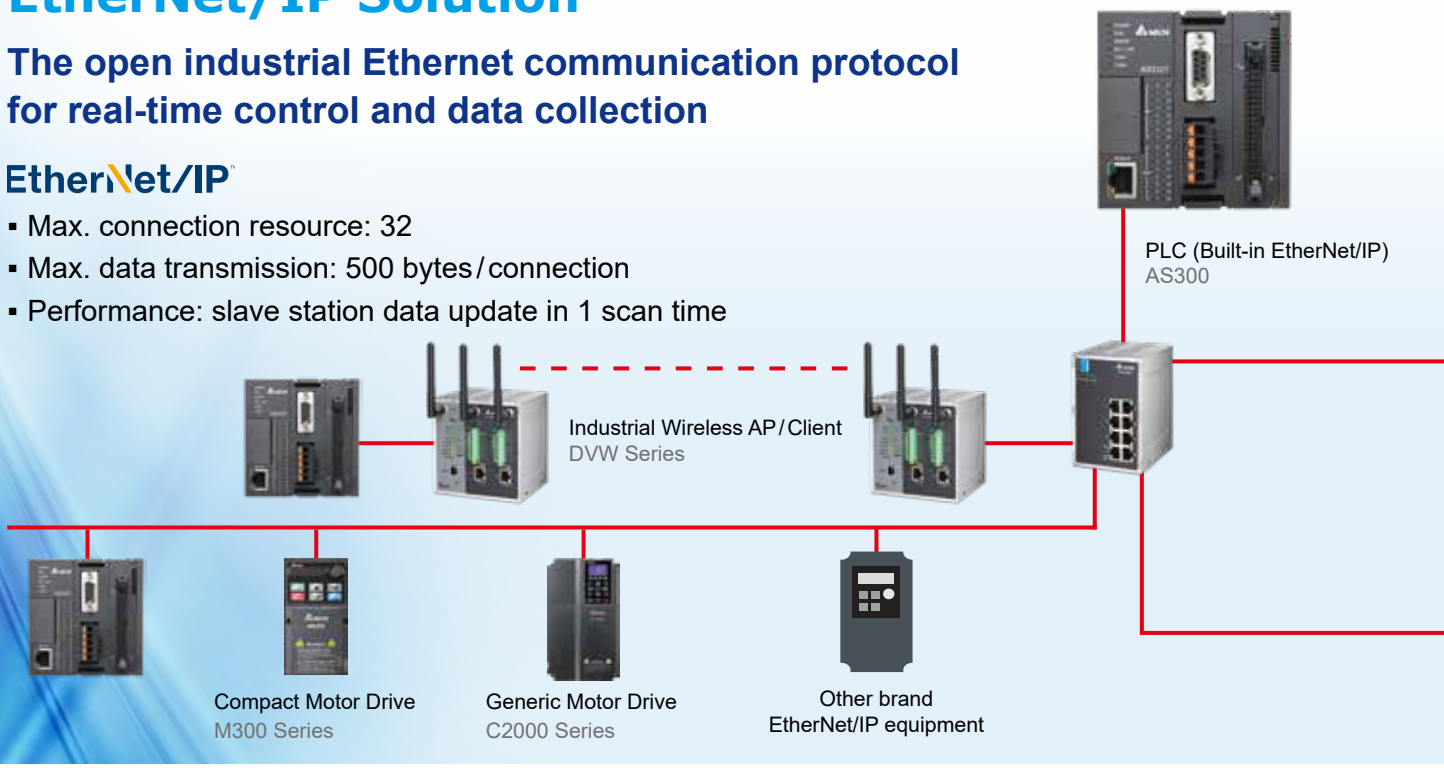
Industrial Network Solution

EtherNet/IP Solution

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

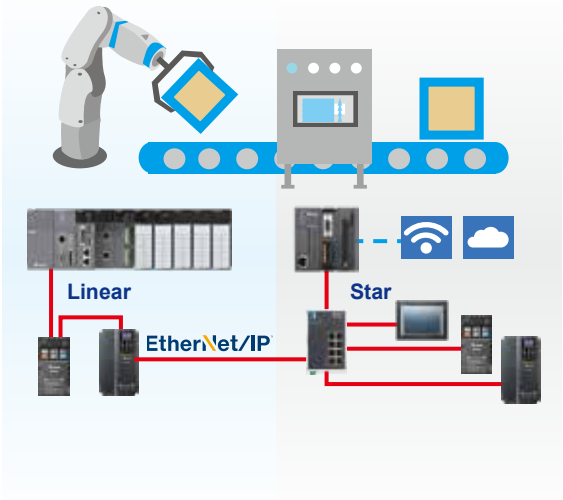
EtherNet/IP

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



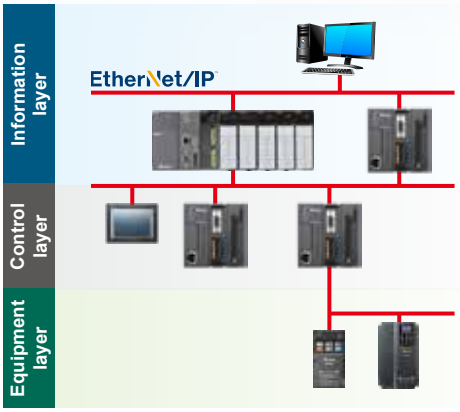
▪ Flexible network system configuration

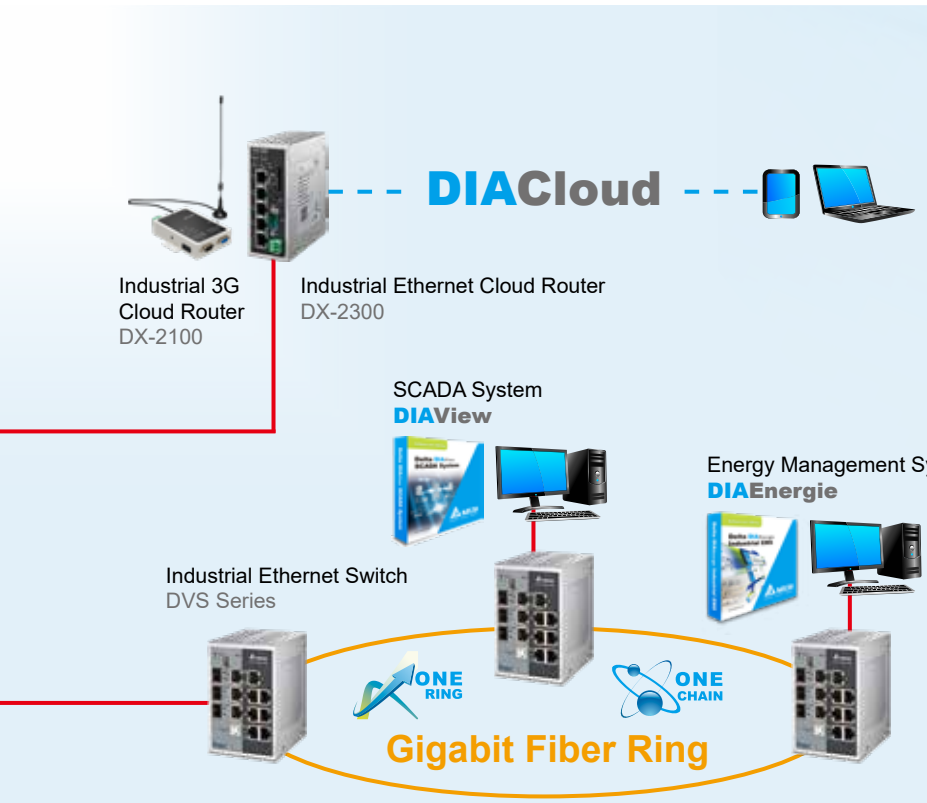
- Supports star, linear network topology for fast expansion and management on production lines
- Compatible with IT network, no independent network or IT technician required
- Combines with Delta IES solution to construct IoT for more automation applications and industrial 4.0 upgrades



▪ One cable, one network

- Complete Delta EtherNet/IP solution connects different equipment via Ethernet cable to simplify system networking
- Replaces traditional 3-layer industrial network structure with seamless connection via 100 MB high-speed network
- Complete industrial network diagnosis to shorten debug time



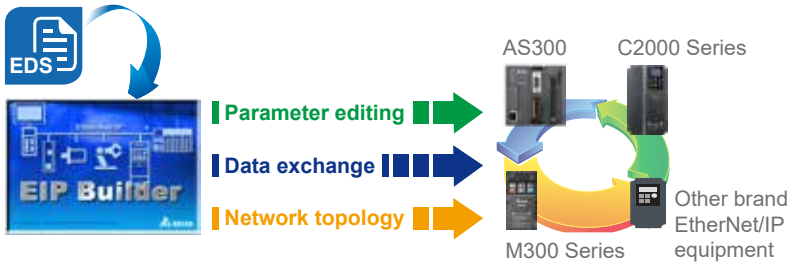


IoT & Industrial Ethernet

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

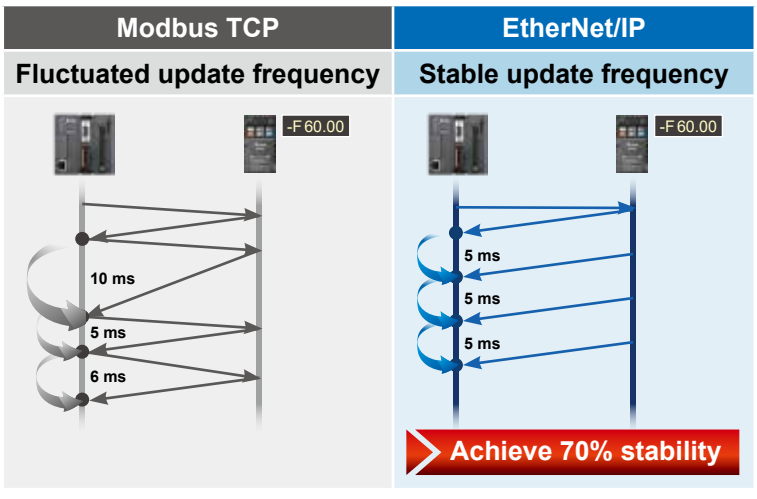
Software integration

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

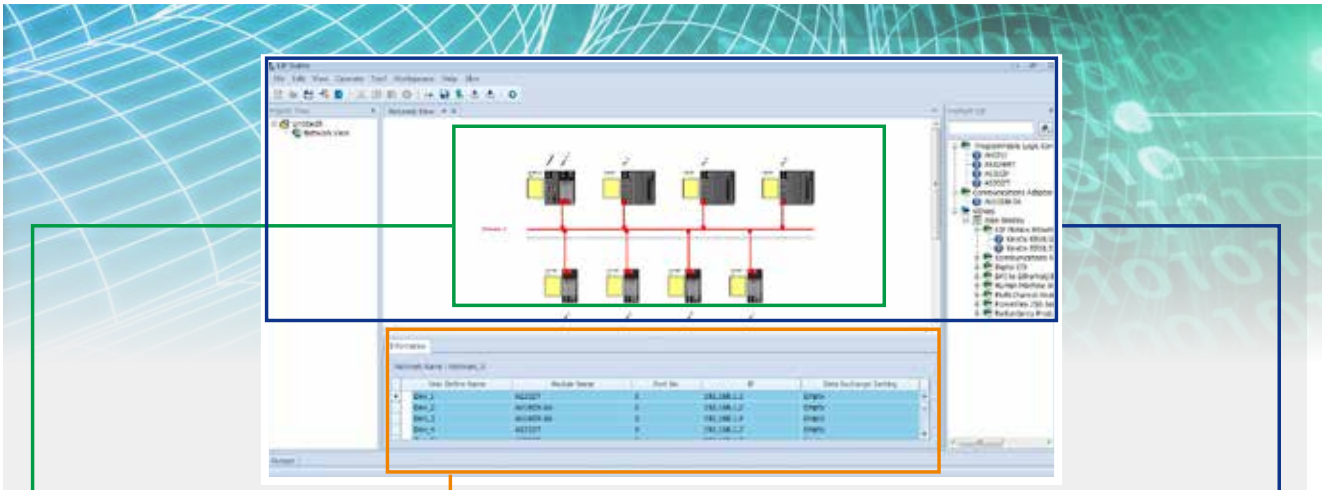


Accurate data update

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



Ethernet/IP Software: EIP Builder

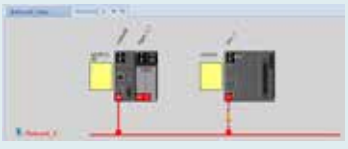


Visualized Network Mapping

- 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

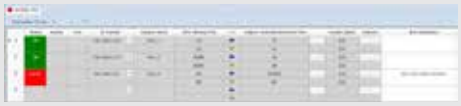
- Data exchange via table blanks filling. PLC programing is not required

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

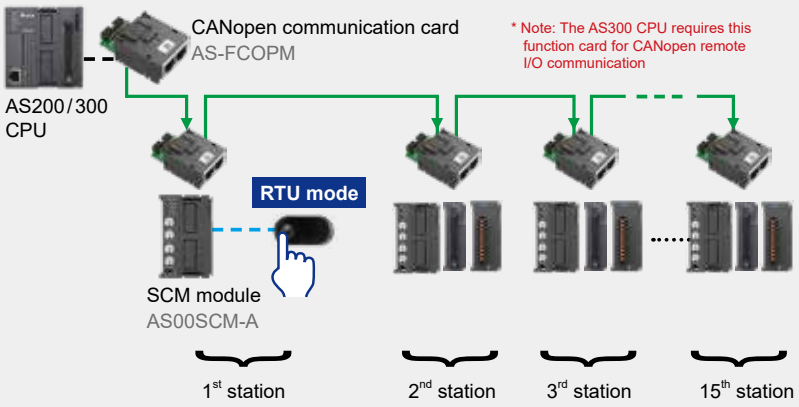
- Configure all IP address of all EtherNet/IP products

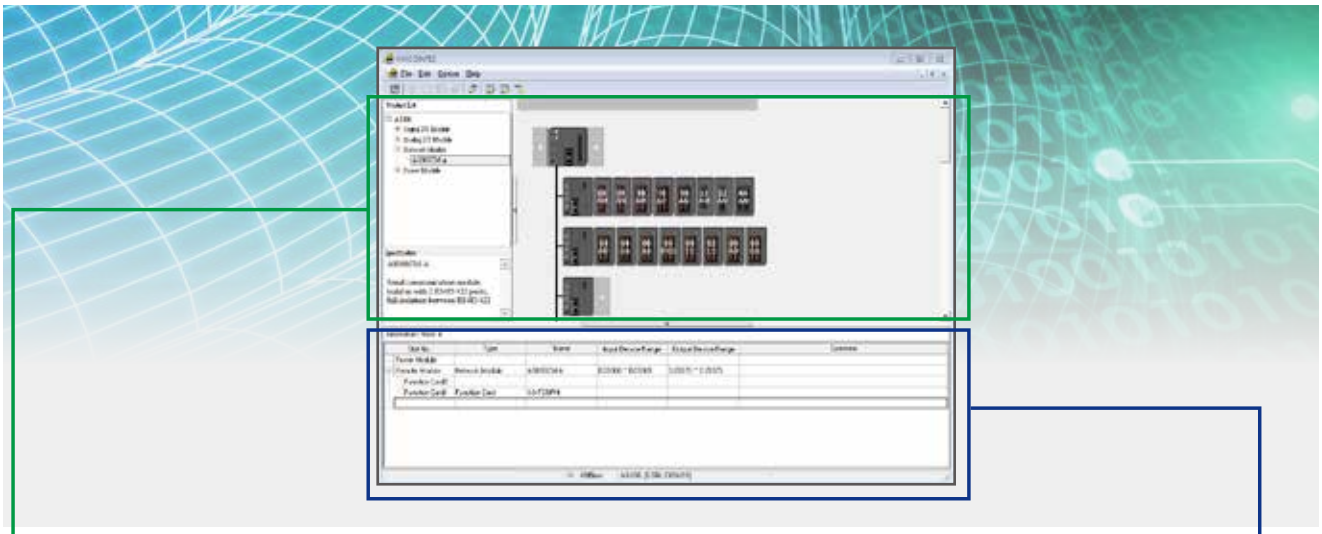
Equipment Description Management Function

AS200 / 300 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





Hardware Configuration

- Hardware parameter complete planning

Visualized I/O Structure

- Direct I/O planning

I/O Product List

- Product description and specification

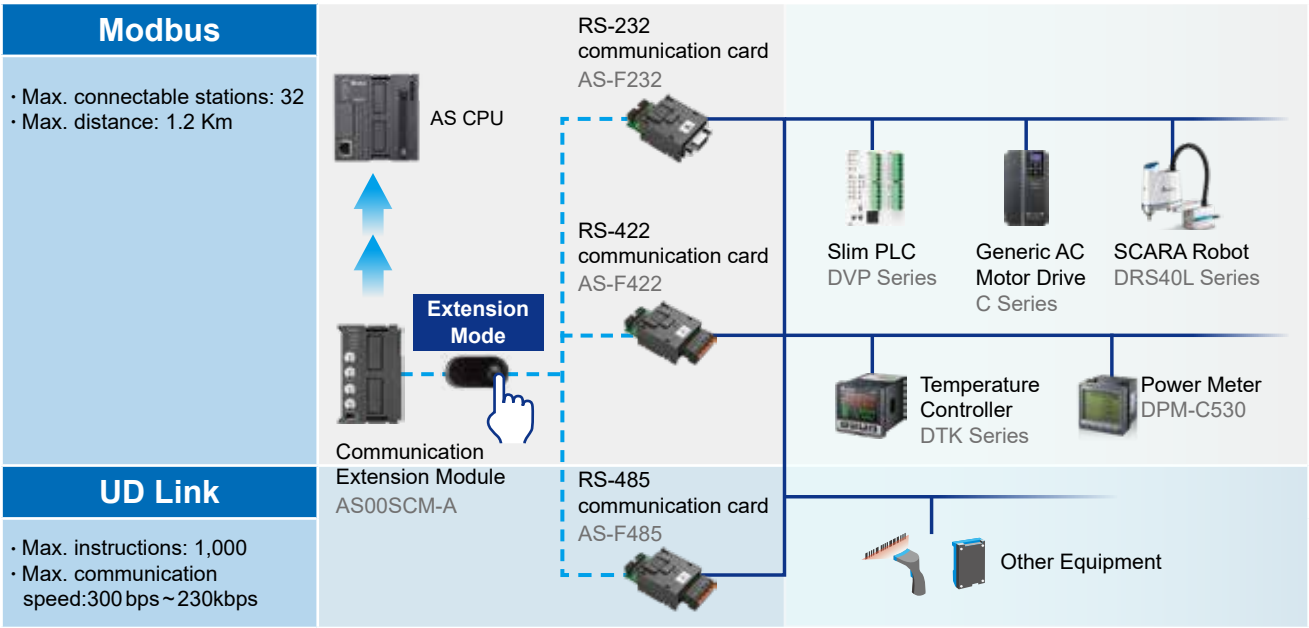
I/O without Planning

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

DIO

AIO

Serial Communication Solution

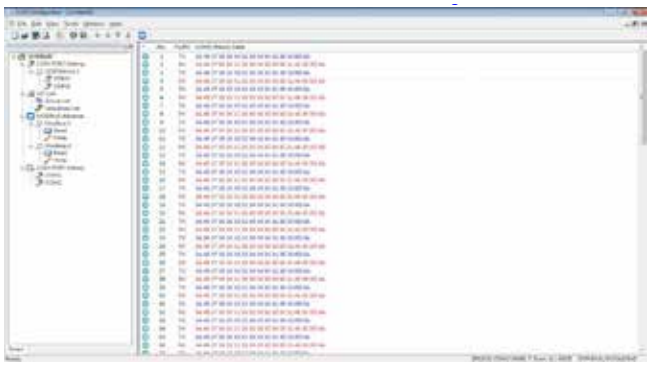


■ Modbus Mode

▪ Easy data exchange configuration

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

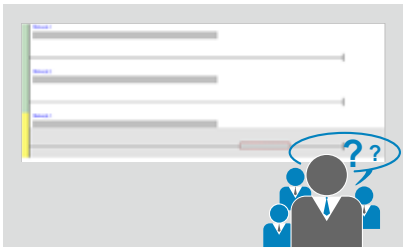


UD Link Mode (User-defined)

- Easy connection to end equipment via special communication protocols

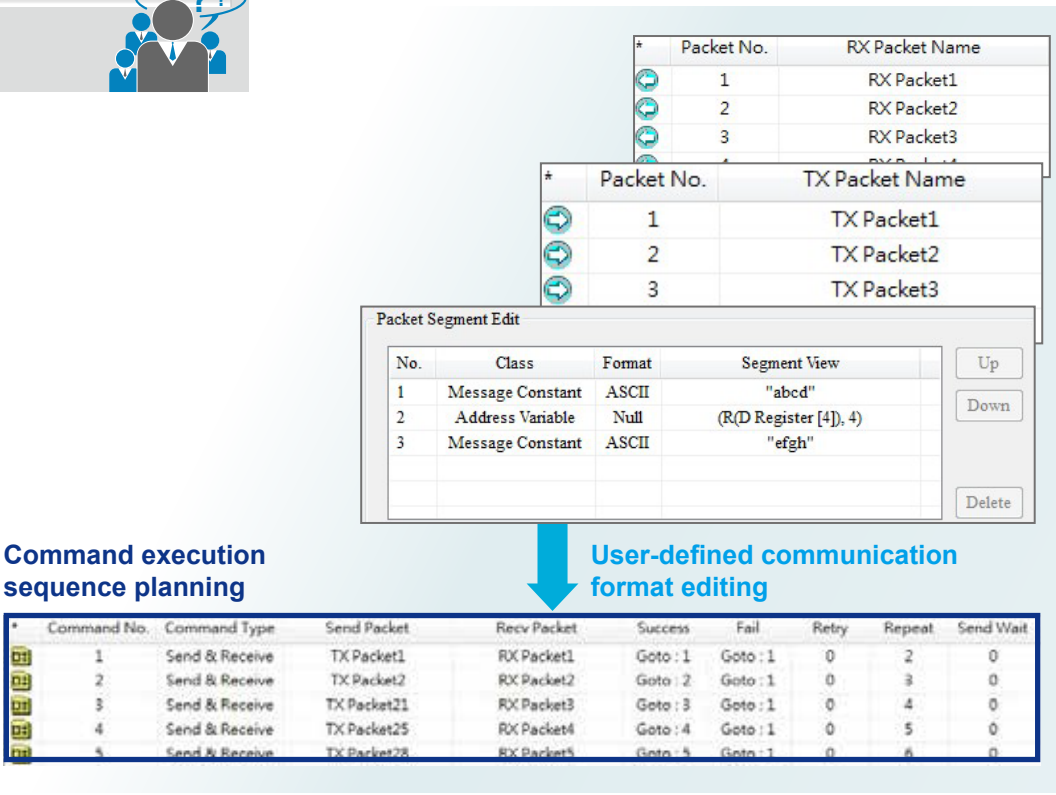
Traditional programming structure

Instruction receiving, accessing, editing, transmitting, sequence control



Connection to end equipment via special communication protocols

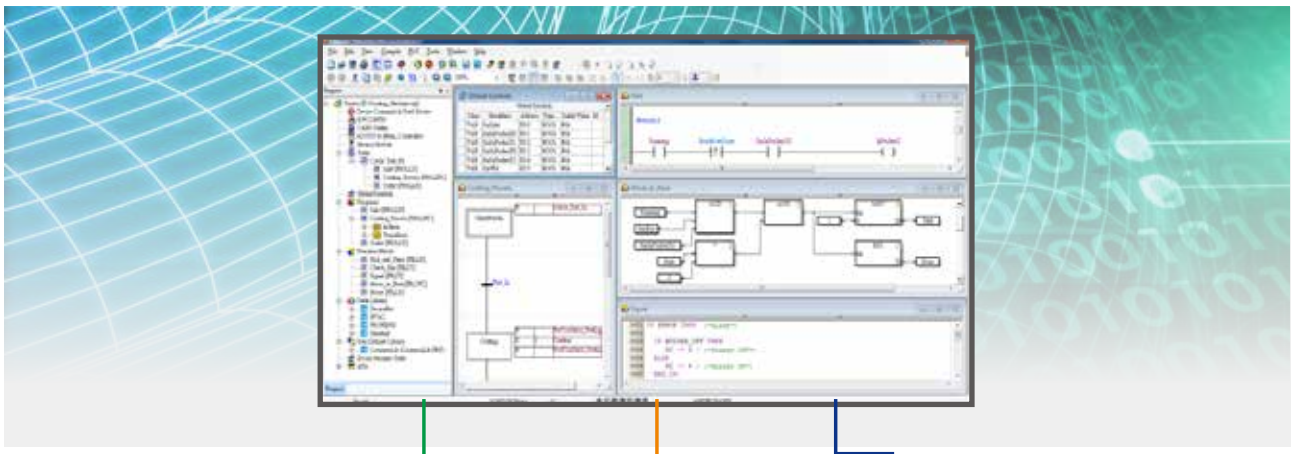
- Edits the transmitting/receiving packets via SCMSoft; format exchange and checksum calculation via AS00SCM
- Packet content auto-combination for logic control in PLC, reducing PLC program complexity
- Max. 1,000 transmitting/receiving packets



Programming & Diagnosis

ISPSoft IEC Programming Software

Easy operation greatly enhances efficiency

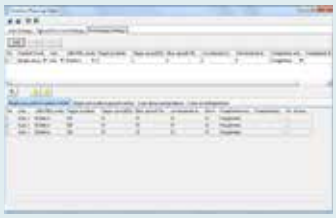


Data Tracer/Logger

- Data log and time-sequential analysis

Positioning Planning Tool

- Table-structured position planning



CARD Utility

- Data backup tool

COMMGR

- Communication interface manager

AS200/300 CPU

HWCONFIG

- Hardware configuration and parameter setting

EIP Builder

- EtherNet/IP network configuration

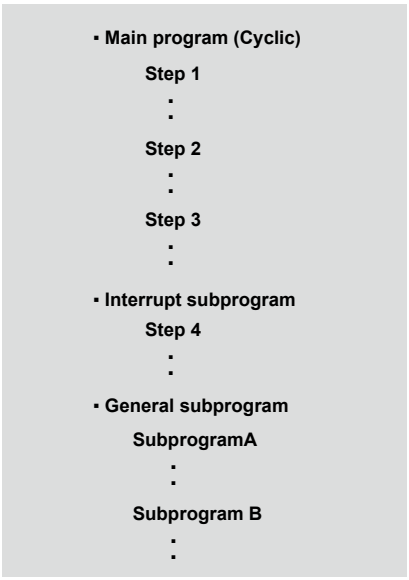
CANopen Builder

- CANopen network configuration

Modular Program Structure

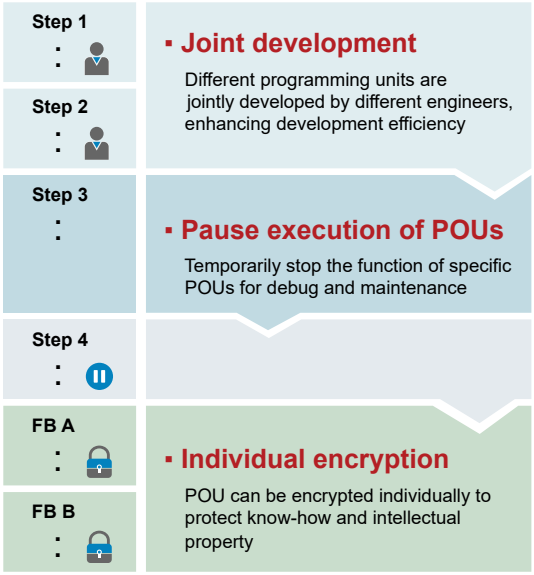
▪ Traditional program structure

Errors are often found in large-scale programs under a traditional structure and are hard to be debug while increasing maintenance cost

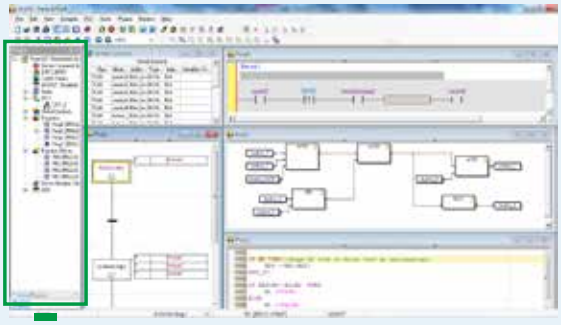


▪ Modular program structure

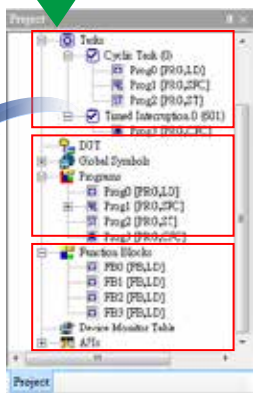
Programming organization unit (POU) enables easy management in large-scale programs with high development efficiency



▪ Modular Program Structure



Interface display of task manager



▪ Task manager

Plans the execution sequence of POUs and defines the nature of the tasks (cyclical or interruptive)

▪ POU management

Manages all POUs via a project tree and supports POU import/export for joint development or other uses

▪ User library

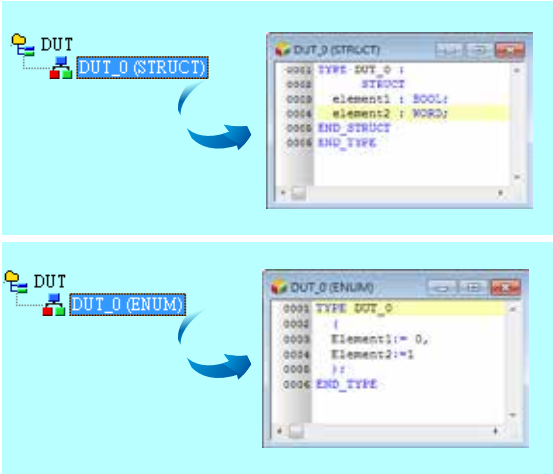
Various built-in Delta-developed FBs for users to choose and add to their library for quick use

Note: Actual support functions will vary by series

Convenient Programming

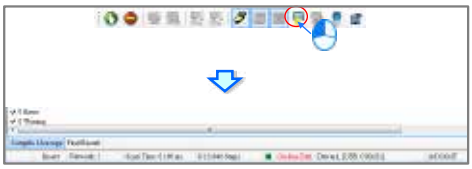
▪ User-defined data type

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

Multiple Programming Languages

▪ Supports multiple programming languages in the same project

▪ Ladder Diagram (LD)

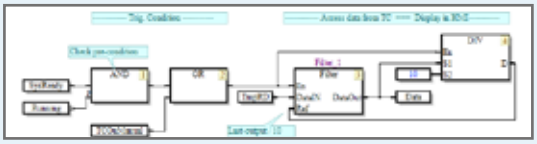
ISPSoft provides a programming interface with the widely used LD language for faster programming

▪ Structured Text (ST), C Language

Similar programming method to advanced programming language. It provides more convenient editing for complicated expression

▪ Continuous Function Chart (CFC)

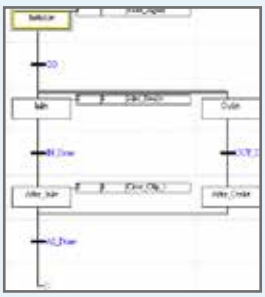
CFC provides more advanced applications than FBD; it supports data feedback, direct display of data stream and execution sequence for motion control and sequence-centered application



Note: ISPSoft V3.01 supports CFC language

▪ Sequential Function Chart (SFC)

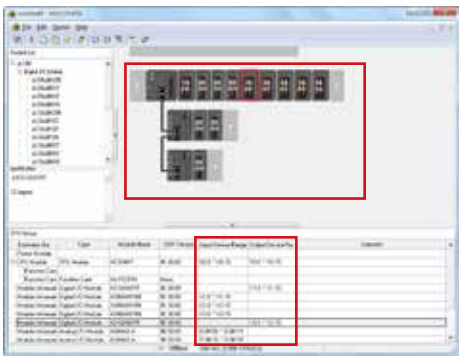
Direct and easy expression for the steps in flow charts, suitable for applications that require process control



Note: Actual support functions will vary by series

Easy Hardware Configuration and Parameter Setting

HWCONFIG



- **Graphic panel for module configuration**

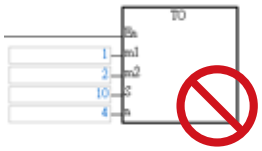
  Quick setup with automatic configuration imported by barcode scanning

- **I/O listing**

  Direct display for corresponding device addresses after configuration

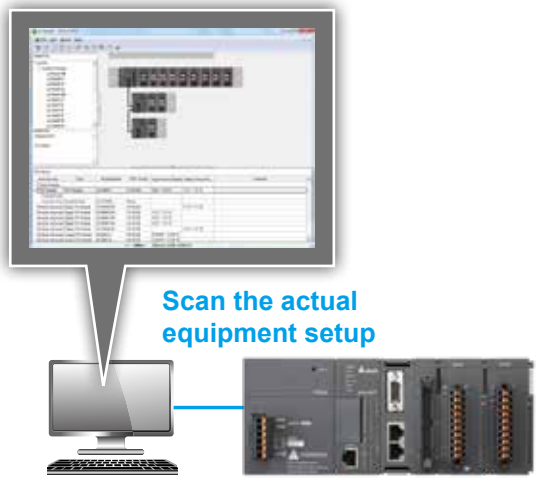
- **Parameter setting**

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



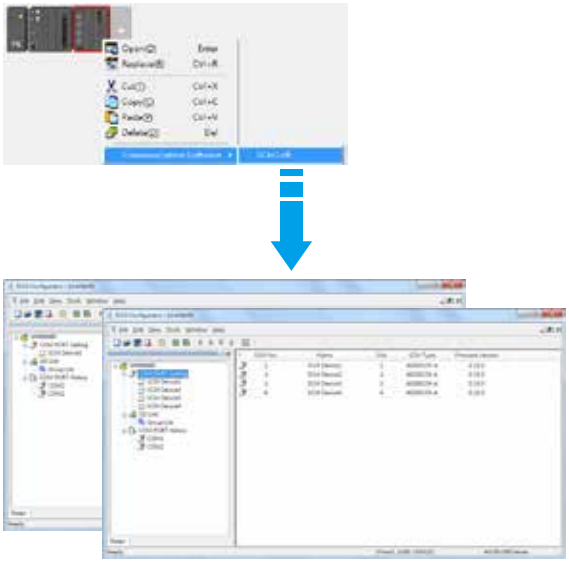
Note: Fill the table to configure module parameters quickly.
From/To instruction is not required for module initialization.

- **Module configuration method**



- **Smart module configuration**

  Supports an advanced planning tool for a variety of network modules

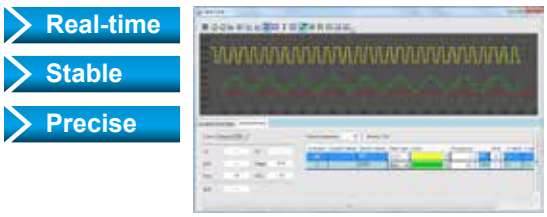


Note: Actual support functions will vary by series

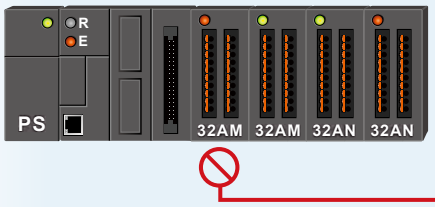
Complete Diagnosis Tools for Quick and Effective System Monitoring

Data Logger/Tracer

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



Real-time Module Monitoring



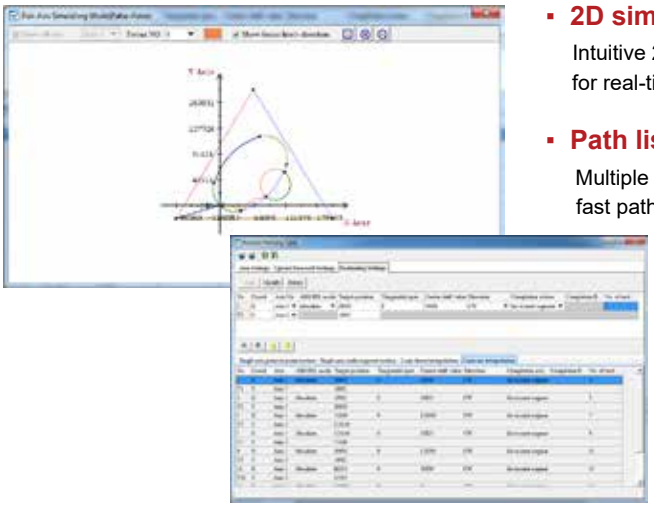
- **Visualized monitoring**
  Direct monitoring interface provides real-time status on modules via LED indicators
- **Module comparison**
  Real-time inspection of actual module settings to ensure consistency

- **Error logs**
  Immediate inquiry for error messages and logs of anomalies
- **Module information**
  Provides model name and version of current modules

Note: Actual support functions will vary by series

Convenient Software Wizards for Effortless Planning (AS200 / 300 series only)

Positioning 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 under counting mode

- 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

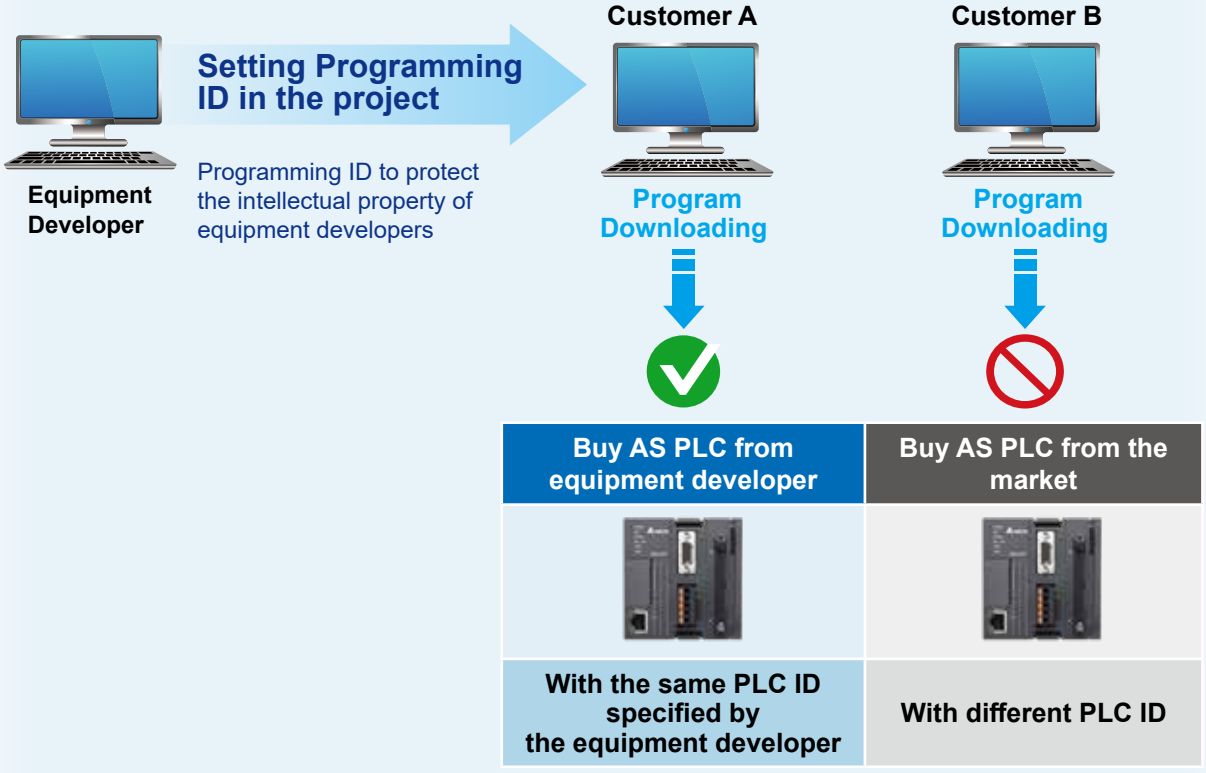
32GB Data backup to SD card

Note: Actual support functions will vary by series

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 (Programming ID) and CPU (PLC ID)



- Prevents direct copy from IC (AS200/300 series only)

Note: Actual support functions will vary by series

Model Name Explanation

CPUs

AS332T-A

AS	3	32		T		-	A	
Series	Model	IO Pts. / Axis Qty.		Output Type / Motion Network			Type	
	3: 300 2: 200 5 : 500 (Motion)	【200/300 CPU】 00: None 18: 18 pts. 20: 20 pts. 24: 24 pts. 28: 28 pts. 32: 32 pts.	【500 CPU】 16: 16 axes 24: 24 axes 32: 32 axes 64: 64 axes	【200/300 CPU】 N: None T: NPN P: PNP R: Relay MT: NPN+Diff.	【500 CPU】 C: CANopen, NPN E: EtherCAT, NPN EST: EtherCAT (P2P), NPN		【300/500 CPU】 A: HDC terminal B: EU terminal	【200 CPU】 A: Basic

AX-308EA0MA1T

AX-3	08	E	A0	MA1	T
Series	IO Pts./Axis Qty.	Motion Network	CPU Spec.	SYS Spec.	Output Type
CODESYS	【Logical】 00: None 24: 24 pts. 【Motion】 04: 4 axes 08: 8 axes 64: 64 axes	E: EtherCAT EL: EtherCAT (P2P) N: None	A0: Single core	MA1: SoftMotion PA1: Logical	T: NPN P: PNP

Digital I/O Modules

AS08AM10N-A

AS	08	AM	1	0	N	-	A
Series	IO Pts.	Classification	Function		Output type		Type
	08: 8 Pts. 16: 16 Pts. 32: 32 Pts. 64: 64 Pts.	AM: Digital input AN: Digital output AP: Digital input/output	0: No input 1: DC input (24 V)	0: No output 1: 0.5 A transistor/2 A relay output 2: 0.1 A transistor output	N: No output T: NPN P: PNP R: Relay		A: Basic

Analog I/O Modules

AS04AD-A

AS	04	AD	-	A
Series	IO Channels	Classification		Type
	04: 4-channel 06: 6-channel 08: 8-channel	AD: Analog input DA: Analog output XA: Analog input/output		A: Voltage/Current B: Voltage C: Current

Temperature & Load Cell Modules

AS04RTD-A

AS	04	RTD	-	A
Series	IO Channels	Classification		Type
	02: 2-channel 04: 4-channel 06: 6-channe 08: 8-channel	RTD: Platinum resistance thermometer TC: Thermocouple LC: Load cell		A: Basic

Function Cards

AS-F232

AS	-	F	232	
Series		Classification	Function	
		F: Function card	232: RS-232 422: RS-422 485: RS-485 COPM: CANopen	2AD: 2-channel analog input 2DA: 2-channel analog output EN02: Ethernet PFN02: PROFINET OPC02 : OPC UA

Positioning & High Speed Counter Modules

AS02PU-A

AS	02	PU	-	A
Series	IO Channels	Classification		Type
	02: 2-channel 04: 4-channel	HC: High-speed counter PU: Pulse-train output		A: Basic

Communication Modules

AS00SCM-A

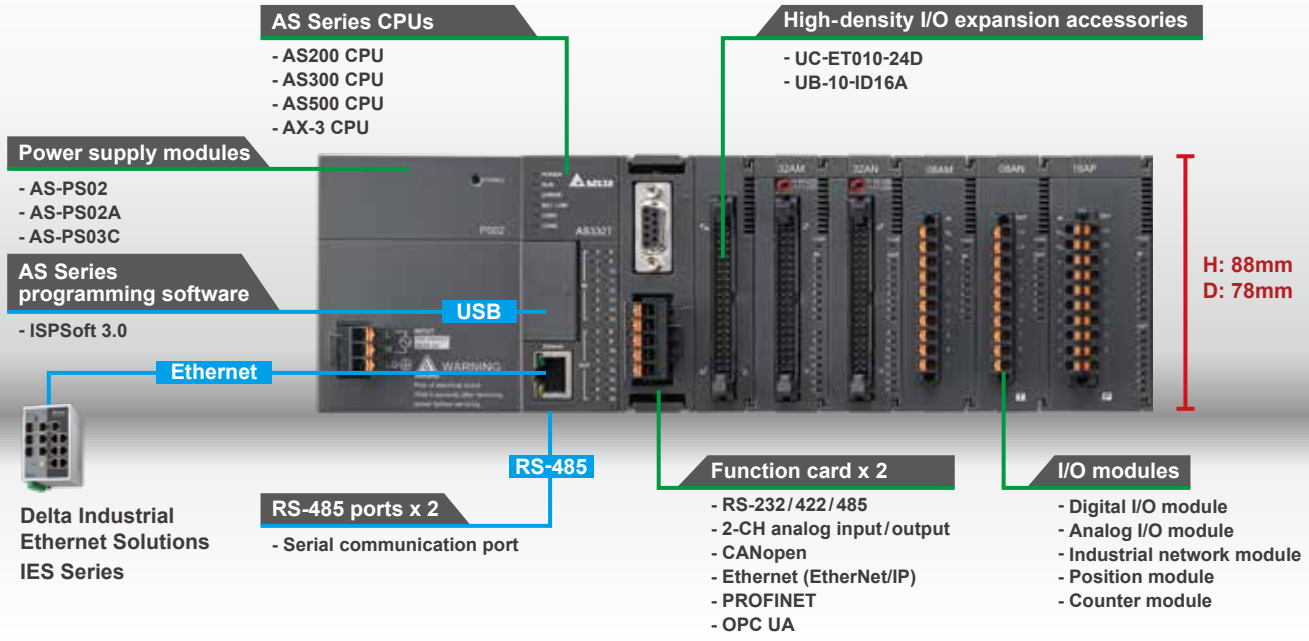
AS	00	SCM	-	A
Series	Function	Classification		Function
	00: Basement 01: Basic 04 : 4-CH	SCM: Serial DNET: DeviceNet SIL : IO-Link		A: Basic

Power Supply Modules

AS-PS02

AS	-	PS	02
Series		Classification	Function
		PS: Power supply	02: AC Input (100~240V) 02A: AC Input (100~240V) + DC Output (24V, 0.5A) 03C: AC input (100~240V) + DC output (24V, 3A) + RS-485

Product Models and Specifications



CPUs

AS500 CPUs

AS500 Series CPU Standard Specifications			
Program capacity 20 MB	1 GHz CPU	Expansion modules: 32	
USB/RS-232/485/Ethernet/CANopen	Micro SD Card	EtherNet/IP, Modbus CANopen	Advanced motion control

Model	Built-in I/O	Incremental Encoder	SSI Absolute Encoder
AS516E-B/AS524C-B AS532EST-B/AS564EST-B	16DI/8DO	2 CHs	1 CH

AS300 CPUs

AS300 Series CPU Standard Specifications (*1: Needs CANopen function card)				
Program capacity 128k steps	Basic instruction 25 ns	Real I/O capability: 1,024 pts | Expansion modules: 32		
USB/RS-485 x 2/EtherNet	Micro SD Card	Function card x 2	EtherNet/IP Modbus CANopen remote I/O(*1)	CANopen DS301 Position Control(*1)

Model	Built-in I/O	High-speed Output	High-speed Input
AS332T-A, AS332P-A	16 DI/16 DO	6 axes 200 kHz pulse output	6 channels 200 kHz high-speed counters
AS324MT-A (Differential)	12 DI/12 DO	2 axes + 4 axes 200 kHz pulse output	2 channels + 4 channels 200 kHz high-speed counters
AS320T-B/AS320P-B	8 DI/12 DO	6 axes 200 kHz pulse output	4 channels 200 kHz high-speed counters
AS300N-A	-	-	-

CPUs

AS200 CPUs

AS200 Series CPU Standard Specifications			
Program capacity 64k steps	Basic instruction 25 ns	Real I/O capability: 1,024 pts	Expansion modules: 32
USB / RS-485 x 2 / EtherNet / CANopen	Micro SD Card	EtherNet/IP, Modbus CANopen remote I/O	CANopen DS301 Position Control
Model	**Built-in I/O**	**High-speed Output**	**High-speed Input**
AS228T-A/AS228P-A/ AS228R-A	16 DI / 12 DO	6 axes 200 kHz pulse output	4 channels 200 kHz high-speed counters
AS218TX-A/AS218PX-A/ AS218RX-A	8 DI / 6 DO 2 AI / 2 AO	3 axes 200 kHz pulse output	4 channels 200 kHz high-speed counters

AX-3 CPU

AX-3 Series CPU Standard Specifications			
Program capacity 8 MB	Basic instruction 5 ns	Expansion modules: 32	
USB / RS-232 / 485 / Ethernet (1G)	Micro SD Card	EtherNet/IP, Modbus	CODESYS solution
Model	**Built-in I/O**	**Encoder**	**High-speed Input / Output**
AX-308EA0MA1T AX-364ELA0MA1T	16 DI / 8 DO	Incremental encoder: 2 CHs SSI absolute encoder: 1 CH	200 kHz pulse output: 4 axes 200 kHz high-speed counters: 6 CHs
AX-304ELA0MA1T AX-324NA0PA1P	16 DI / 8 DO	-	200 kHz pulse output: 4 PWM channels 200 kHz high-speed counters: 6 CHs
AX-300NA0PA1	-	-	-

Power Supply Modules

Power Supply Modules Specifications			
AS-PS02 	Input 100 VAC ~ 240 VAC	**AS-PS02A** 	Input 100 VAC ~ 240 VAC
	24 VDC, 2A (for internal bus)		24 VDC, 1.5A (for internal bus) 24 VDC, 0.5A (for external I/O)
AS-PS03C 	Input 100 VAC ~ 240 VAC		
	24 VDC, 3A (for external I/O)		
	RS-485 (Modbus)		
	Provides information of power status / abnormal alarm / life prediction		

Product Specifications - AS300 & AS200 Series

Model		AS332T-A AS332P-A	AS324MT-A	AS320T-B AS320P-B	AS300N-A	AS228T-A AS228P-A AS228R-A	AS218TX-A AS218PX-A AS218RX-A
Programming Languages		Ladder Diagram (LD), Structured Text (ST), Continuous Function Chart (CFC), Sequential Function Chart (SFC), C Language					
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				64k steps	
Memory Capacity	**Data (D)**	64k words (including 30k user-defined, 30k software configuration and 4k special registers)					
	Extension (FR)	64k words (user parameter storage)					
Function Cards		The CPUs support up to 2 function cards				-	
Max. Extension Modules		32 modules (max. 16 analog modules / 4 communication modules)					
Max. Number of Real Inputs / Outputs		1,024 points (input & output)					
CPU Built-in Inputs / Outputs		16 DI / 16 DO	12 DI / 12 DO	8 DI / 12 DO	-	16 DI / 12 DO	8 DI / 6DO & 2 AI / 2AO
CPU Built-in Differential Inputs / Outputs		-	4 inputs + 4 outputs	-			
Input / Output Devices	**X**	1,024 inputs (X0.0 ~ X63.15)					
	Y	1,024 outputs (Y0.0 ~ Y63.15)					
Bit Devices	**M**	8,192 bits (M0 ~ M8191)					
	S	2,048 bits (S0 ~ S2047)					
Timer	**T**	512 (T0 ~ T511)					
16-bit Counter	**C**	512 (C0 ~ C511)					
32-bit Counter	**HC**	256 (HC0 ~ HC255)					
Pulse Output		**Open collector:** 6 axes, 200 kHz	**Open collector:** 4 axes, 200 kHz **Differential:** 2 axes, 4 MHz	**Open collector:** 6 axes, 200 kHz	-	**Open collector:** 6 axes, 200 kHz	**Open collector:** 3 axes, 200 kHz
High-Speed Counter		**General:** 6 CHs, 200 kHz	**General:** 4 CHs, 200 kHz **Differential:** 2 CHs, 4 MHz	**General:** 4 CHs, 200 kHz	-	**General:** 4 CHs, 200 kHz	**General:** 4 CHs, 200 kHz
DO Type		AS332T-A: NPN AS332P-A: PNP	Diff. / NPN	AS320T-B: NPN AS320P-B: PNP	-	AS228T-A: NPN AS228P-A: PNP AS228R-A: Relay	AS218TX-A: NPN AS218PX-A: PNP AS218RX-A: Relay
Built-in Communication Port		USB, Ethernet, RS-485 x 2				USB, Ethernet, RS-485 x2, CANopen	
Communication Protocol		Modbus, Modbus TCP, EtherNet/IP, CANopen (requires a CANopen function card)				Modbus, Modbus TCP, EtherNet/IP, CANopen	
Ethernet Connection Resource		Modbus (Client / Server): 32 / 32 EtherNet/IP (CIP): 32				Modbus (Client / Server): 16 / 16 EtherNet/IP (CIP): 16	
Data Backup (Without Battery)	**Program**	Flash ROM, rewritable up to 100,000 times					
	Latched Area	MRAM, no rewriting limit					
CANopen DS301	**Connectable Slave Stations**	Max. 64 points					
	CPDO Data Capacity (Host)	Max. 2,000 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 errors, built-in memory errors, and more					
Rated Input Current	**AS-PS02 / AS-PS02A / AS-PS03C**	110 V_{AC} ~ 240 V_{AC} (±10%)					
	CPU	24 V_{DC} (±10%)					
	Extension modules						

Product Specifications - AS500 Series

Model		AS516E-B	AS532EST-B	AS564EST-B	AS524C-B
Programming Languages		Ladder Diagram (LD), Structured Text (ST)			
Instruction Processing Speed	**Boolean Operation**	0.05 µs			
	MOV Instruction	0.11 µs			
	Elementary Arithmetic for Integer	0.24 µs			
	Elementary Arithmetic for Floating Point	0.30 µs			
Program Capacity		20 MB			
Data Capacity		20 MB			
Max. Extension Modules		32 modules (max. 16 analog modules)			
CPU Built-in Inputs / Outputs		16 DI / 8 DO			
CPU Built-in Encoder Interface		Incremental x 2 / SSI absolute x 1			
I / O Devices	**I (Input)**	128 bytes			
	Q (Output)	128 bytes			
Memory Devices	**M (Memory)**	128k bytes			
Pulse Output		-			
High-Speed Counter		-			
DO Type		NPN			
Built-in Communication Ports		USB, Ethernet, RS232, RS485, EtherCAT, CANopen			USB, Ethernet x2, RS232, RS485, CAN Motion, CANopen
Communication Protocols		Modbus, Modbus TCP, EtherNet/IP, EtherCAT, CANopen DS301			Modbus, Modbus TCP, EtherNet/IP, CANopen DS301 & DS402
Ethernet Connection Resource		Modbus TCP (Client / Server): 16 / 16 EtherNet/IP (CIP): 8			
Data Backup (Without Battery)	**Program**	Flash ROM, rewritable up to 100,000 times			
	Latched Area	MRAM, no rewriting limit			
Motion Network	**Protocol**	EtherCAT *1			CANopen (DS402) *1
	Total Axis (Real + Virtual)	32	64	64	32
	Total Real Axis (Motion + P2P)	16	32	64	24
	Total Real Axis (Motion)	16	4	8	24
	Connectable devices	64	64	96	24
CANopen (DS301)	**PDO Data Capacity (Host)**	CANopen DS301: Max. 8 PDO (read & write)			
	PDO Data Capacity (Slave)	CANopen DS301: Max. 8 PDO (read & write); Max. 8 bytes for each PDO			
Real-time Clock (RTC)		General Lithium button battery (CR1620)			
Self-Diagnosis Function		CPU errors, built-in memory errors, and more			
Rated Input Current	**AS-PS02 / AS-PS02A / AS-PS03C**	110 V_{AC} ~ 240 V_{AC} (±10%)			
	CPU	24 V_{DC} (±10%)			
	Extension Modules				

*1: Delta drive only

Product Specifications - AX-3 Series

Model		AX-300N	AX-324N	AX-304EL	AX-308E	AX-364EL
Programming Languages		Ladder Diagram (LD), Structured Text (ST), Continuous Function Chart (CFC), Sequential Function Chart (SFC), Function Block Diagram (FBD), Instruction List (IL)				
Instruction Processing Speed	**Boolean Operation**	5 ns				
	MOV Instruction	-				
	Elementary Arithmetic for Integer	5 ns				
	Elementary Arithmetic for Floating Point	33 ns				
Program Capacity		8 MB				
Data Capacity		16 MB				
Max. Extension Modules		32 modules (max. 16 analog modules)				
CPU Built-in Inputs / Outputs		-	16 DI / 8 DO			
CPU Built-in Encoder Interface		-			**Incremental x 2 / SSI absolute x 1**	
I / O Devices	**I (Input)**	8,192 bytes				
	Q (Output)	8,192 bytes				
Memory Devices	**M (Memory)**	512k bytes				
Pulse Output		-	**Open collector:** 4 CHs, 200 kHz (PWM)		**Open collector:** 4 axes, 200 kHz	
DO Type		-	NPN			
High-Speed Counter		-	**General:** 6 CHs, 200 kHz			
Built-in Communication Ports		USB, Ethernet (Switch), RS232, RS485		USB, Ethernet (Switch)*1, RS232, RS485, EtherCAT		
Communication Protocols		Modbus, Modbus TCP, EtherNet/IP, OPC UA (Server)		Modbus, Modbus TCP, EtherNet/IP, EtherCAT, OPC UA (Server)		
Ethernet Connection Resource		Modbus TCP (Client+Server): 32 EtherNet/IP (CIP): Input=64; Output=64				
Data Backup (Without Battery)	**Program**	Flash ROM, rewritable up to 100,000 times				
	Latched Area	MRAM, no rewriting limit				
Motion Network	**Protocol**	-		EtherCAT		
	Total Axis (Real + Virtual)	-	-	8	16	128
	Total Real Axis (Motion + P2P)	-	-	4	8 + 4 (PTO)	64 + 4 (PTO)
	Total Real Axis (Motion)	-	-	0	8 + 4 (PTO)	8 + 4 (PTO)
	Connectable devices	-	-	32	64	96
Real-time Clock (RTC)		General Lithium button battery (CR1620)				
Self-Diagnosis Function		CPU errors, built-in memory errors, and more				
Rated Input Current	**AS-PS02 / AS-PS02A / AS-PS03C**	110 V_{AC} ~ 240 V_{AC} (±10%)				
	CPU	24 V_{DC} (±10%)				
	Extension Modules					

*1: AX-304EL only supports 1 Ethernet port

Electrical and Environmental Specifications

Item		Specifications
Internal Power Consumption	AS332T-A AS332P-A AS324MT-A AS320T-B AS320P-B	150 mA
	AS300N-A	125 mA
	AS228T-A AS228P-A	141.7 mA
	AS218TX-A AS218PX-A	204.2 mA
	AS228R-A	179.2 mA
	AS218RX-A	220.8 mA
	AS516E-B AS524C-B AS532EST-B AS564EST-B	333 mA
	AX-308E AX-304EL AX-364-EL	458.3 mA
	AX-300N	458.3 mA
	AX-324N	458.3 mA
	Extension Modules	Digital relay output < 150 mA, other modules < 80 mA
Operating Temperature		-20 ~ 60 °C (AX Series CPU: -20 ~ 55 °C)
Storage Temperature		-40 ~ 80 °C
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
Conformal Coating		Yes

Ethernet Specifications

Item			AS300 Series	AS200 Series	Note
Protocols			Modbus TCP, EtherNet/IP, SMTP, HTTP		Supports all protocols at the same time
Modbus TCP	Connection (Server)		32	16	
	Connection (Client)		32	16	
	RTU-EN01 Connection		4	4	
Socket	TCP Connection		4	2	
	UDP Connection		4	2	
SMTP	E-mail Connection		4	2	
EtherNet/IP	Operation Mode		Scanner / Adapter		
	CIP_IO Connection	CIP Connection	32 (Client + Server)	16 (Client + Server)	Shared with IO connection
		TCP Connection	16 (Client + Server)	8 (Client + Server)	Shared with IO connection
		Requested Packet Interval (RPI)	5 ms ~ 1,000 ms		Default: 20 ms
		Max. Performance	3,000 pps		
		Max. Capacity per Connection	500 bytes		
	CIP_Explicit Message	Class 3 (Connected Type)	32 (Servers), shared with UCMM	16 (Servers), shared with UCMM	Shared with IO connection
		UCMM (Non-Connected Type)	32 (Clients + Servers), shared with Class 3	16 (Clients + Servers), shared with Class 3	Shared with IO connection
		Supported CIP Objects	Identity, Message Router, Assembly, Connection Manager, Port, TCP / IP interface, Ethernet link, Vendor specific		
	CIP_Produced TAG	Max. CIP Connections	32 (Servers)	16 (Servers)	Shared with IO connection
		Max. Capacity	400 bytes		
		Requested Packet Interval (RPI)	5 ms ~ 1000ms		
	CIP_Consumed TAG	Max. CIP Connections	32 (Clients + Servers)	16 (Clients + Servers)	Shared with IO connection
		Max. capacity	400 bytes		
		Requested Packet Interval (RPI)	5 ms ~ 1000 ms		
	AS00SCM (RTU) + AS-FEN02 Connection Nodes		15	8	AS RTU Mode

Please visit Delta's official website for selection

Item			AS500 Series	AX-3 Series	Note
Protocol			Modbus TCP, EtherNet/IP, Socket	Modbus TCP, EtherNet/IP, Socket, OPC-UA	Supports all protocols at the same time
Modbus TCP	Connection (Server)		16	32	
	Connection (Client)				
Socket	TCP Connection		8		
	UDP Connection				
EtherNet/IP	Operation Mode		Adapter	Scanner/Adapter	
	CIP_IO Connection	CIP Connection	8	Input = 64; Output = 64	Shared with all servers
		TCP Connection	16	8	Shared with all servers
		Requested Packet Interval (RPI)	5 ms ~ 1,000 ms	20 ms ~ 1,000 ms	Default: 20 ms
		Max. Performance	3,000 pps	3,000 pps	
		Max. Capacity per Connection	500 bytes		
	CIP_Explicit Message	Class 3 (Connected Type)	8	8	Shared with all servers
		UCMM (Non-Connected Type)	16	8	Shared with all servers
		Supported CIP Objects	Identity, Message Router, Assembly, Connection Manager, Port, TCP/IP interface, Ethernet link, Vendor specific		

Please visit Delta's official website for selection

Item		AS500 Series	AX-3 Series
OPC UA (Server)	Default TCP Port	-	TCP: 4840 (configurable)
	CMax Sessions (Client)		5
	Max. Monitored Items		1,000
	Sampling Rate (ms)		100/300/500/1,000/2,500/5,000
	Max. Subscriptions		100
	Max. Published Variables		10,000
	Max. Value Attributes		10,000
	Max. Published Structure Definitions		100

I/O Modules

■ Digital Input Modules

			
8 inputs	**16 inputs**	**32 inputs**	**64 inputs**
Easy wiring terminal block	Easy 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 Output Modules

			
8 outputs	**8 outputs**	**8 outputs**	**32 outputs**
Easy wiring terminal block Transistor output NPN (Sink)	Easy wiring terminal block Relay output	Easy 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**
Easy wiring terminal block Transistor output NPN (Sink)	Easy wiring terminal block Relay output	Easy 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

16 inputs / outputs
Easy wiring terminal block 8 inputs / 8 transistor outputs NPN (Sink)
AS16AP11T-A

16 inputs / outputs
Easy wiring terminal block 8 inputs 8 relay outputs
AS16AP11R-A

16 inputs / outputs
Easy wiring terminal block 8 inputs / 8 transistor outputs PNP (Source)
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
Analog input
AS04AD-A

8 channels
Analog input
AS08AD-B

8 channels
Analog input
AS08AD-C

4 channels
Analog output
AS04DA-A

6 channels
Analog input / output
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 CHs

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 0.04% of full-scale
2 CHs	Connectable to 4-wire / 6-wire load cell sensor
Software	
Filter function	Multi-point calibration
Online monitoring / configuration	

■ Pulse Unit Modules

2 channels
Differential
AS02PU-A New

4 channels
Open Collector
AS04PU-A New

Input:
AS02PU: 200 kHz

Output:
AS02PU: 200 kHz
AS04PU: 100 kHz

Open Collector / Diff.

2 / 4 CHs

Support Motion APIs

■ High Speed Counter Module

2 channels
Open collector / Diff.
AS02HC-A New

200 kHz

Incremental / Absolute (SSI)

Open Collector / Diff.

2 CHs

Compare / Capture

I/O Modules

■ Temperature Measurement Modules

4 channels	6 channels
PT, NI temperature sensor	PT, NI temperature sensor
AS04RTD-A	AS06RTD-A

Conversion time 200 ms / channel		Resolution 0.1°C / 0.1°F	Wire breaking detection
Overall accuracy ±0.1%	50 / 60 Hz filter	Module monitoring / configuration	4 / 6 CHs
Pt100 / Ni100 / Pt1000 / Ni1000 / JPt100 / LG-Ni1000 / Cu50 / Cu100, resistor 0 ~ 300 Ω, 0 ~ 3,000 Ω			

4 channels	8 channels
TC temperature sensor	TC temperature sensor
AS04TC-A	AS08TC-A

Conversion time 200 ms / channel		Resolution 0.1°C / 0.1°F	Disconnection detection
Overall accuracy ±0.5%	50 / 60 Hz filter	Module monitoring / configuration	4 / 8 CHs
J, K, R, S, T, E, N, B type thermocouple; ±100 mV			

■ Communication Modules

2 COM ports
AS00SCM-A

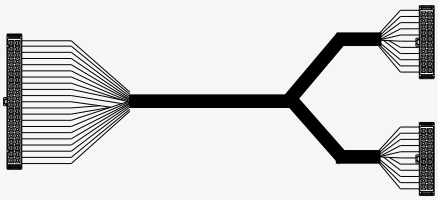
COM port	RS-232C	RS-422	RS-485	CANopen	Ethernet	PROFINET
Function	Supports standard Modbus protocols and user-defined protocols			Slave mode and RTU mode	EtherNet/IP RTU mode	PROFINET RTU mode
Software	SCMSoft			CANopen Builder	EIP Builder	-

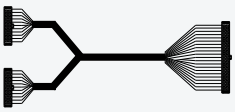
Note: The above functions need optional function cards

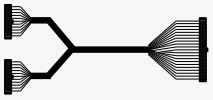
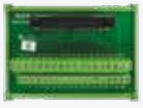
DeviceNet	IO-Link
AS01DNET-A	AS04SIL-A New

COM port	DeviceNet	IO-Link (4-CH)
Function	Master / Slave / RTU	Master
Software	DeviceNet Builder	HWCONFIG

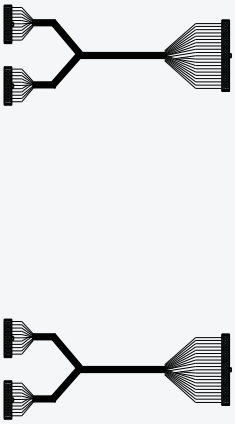
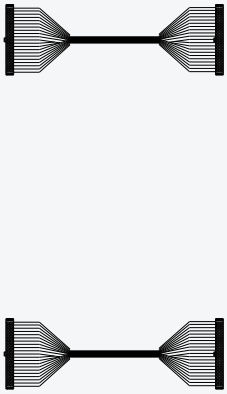
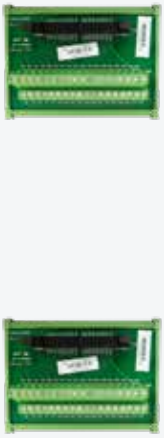
Accessory Selection for High-density Modules

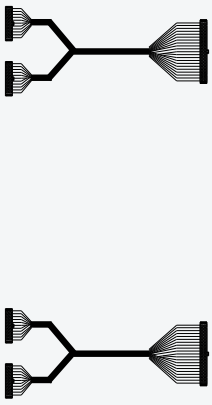
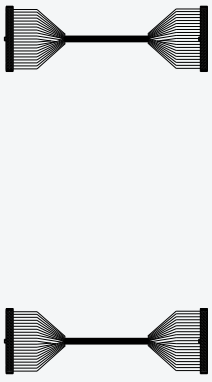
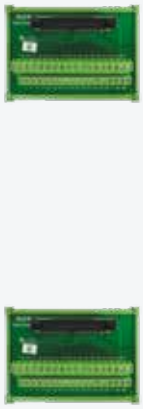
Model Name		
AS332T-A AS332P-A AS324MT-A	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	UB-10-ID16A UB-10-ID16A (NPN/PNP) UB-10-OR16A (NPN to Relay) UB-10-OR16B (PNP to Relay)
		 

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
				

Accessory Selection for High-density Modules

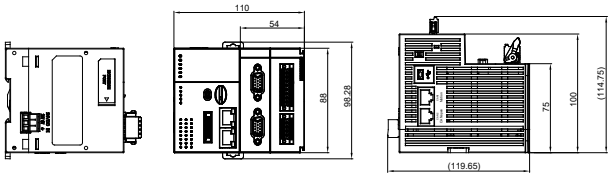
Model Name				
UB-10-ID16A	UC-ET010-24D (1M) UC-ET020-24D (2M) UC-ET030-24D (3M)	AS64AM10N-A	UC-ET010-24B (1M) UC-ET020-24B (2M) UC-ET030-24B (3M)	UB-10-ID32A
				

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
				

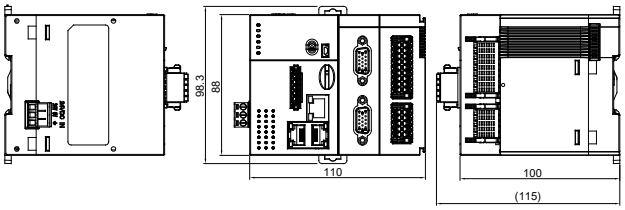
Dimensions

CPUs

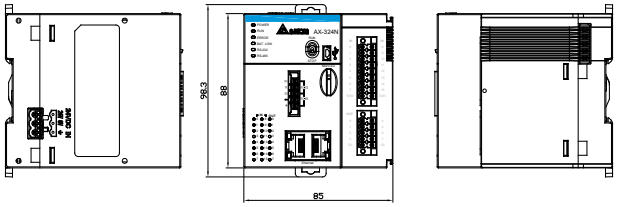
AS516E-B New / AS524C-B New / AS532EST-B New / AS564EST-B New



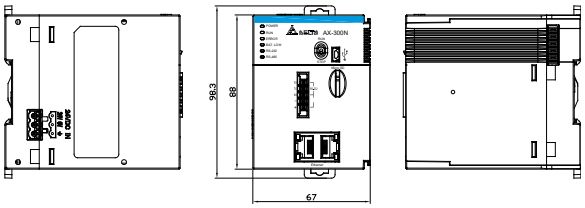
AX-308E New / AX-364EL New



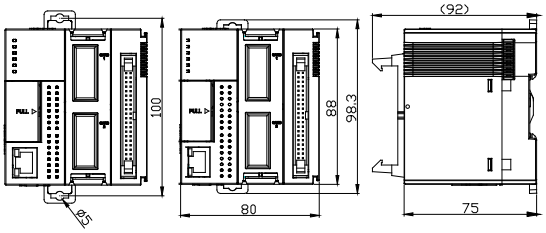
AX-304EL New / AX-324N New



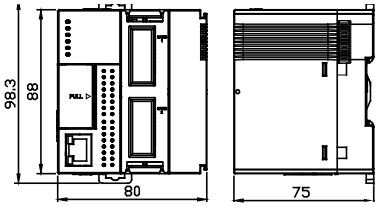
AX-300N New



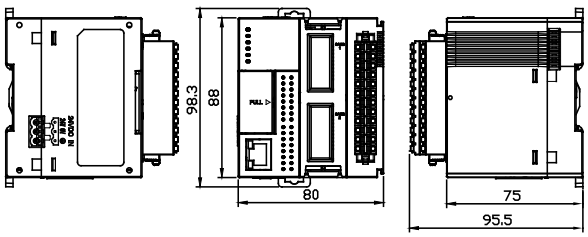
AS332T-A / AS332P-A / AS324MT-A



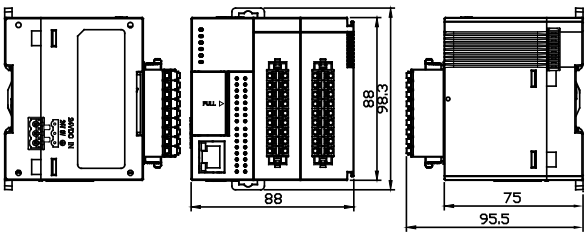
AS300N-A



AS320T-B / AS320P-B



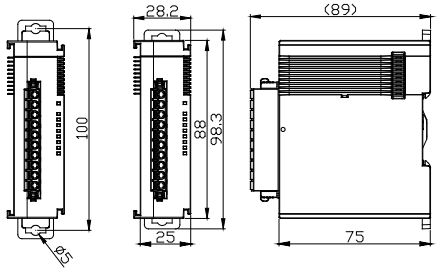
AS228T-A / AS228P-A / AS228R-A / AS218TX-A / AS218PX-A / AS218RX-A



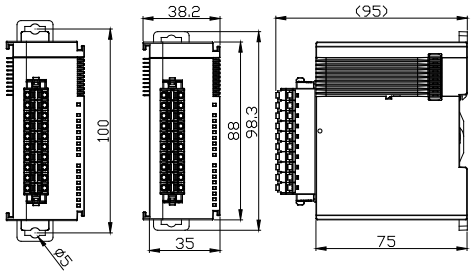
(Unit: mm)

Digital I/O Modules

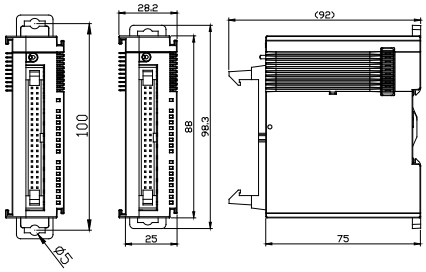
AS08AM10N-A / AS08AN01R-A / AS08AN01T-A / AS08AN01P-A



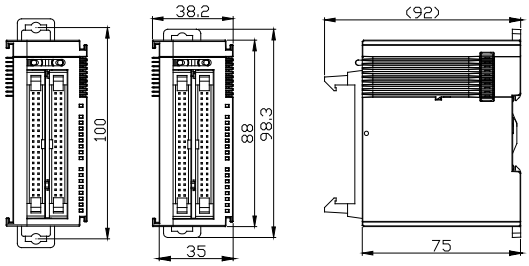
AS16AM10N-A / AS16AN01R-A / AS16AN01T-A / AS16AN01P-A / AS16AP11R-A / AS16AP11T-A / AS16AP11P-A



AS32AM10N-A / AS32AN02T-A

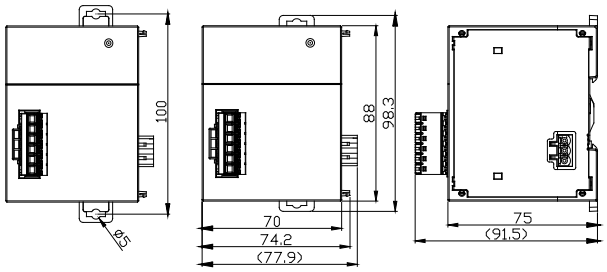


AS64AM10N-A / AS64AN02T-A

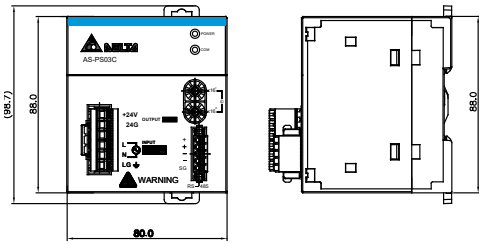


Power Supply Modules

AS-PS02 / AS-PS02A

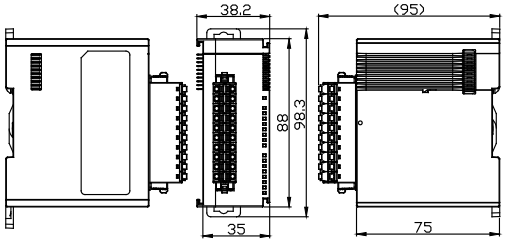


AS-PS03C New



Pulse Unit Modules

AS02PU-A New / AS04PU-A New

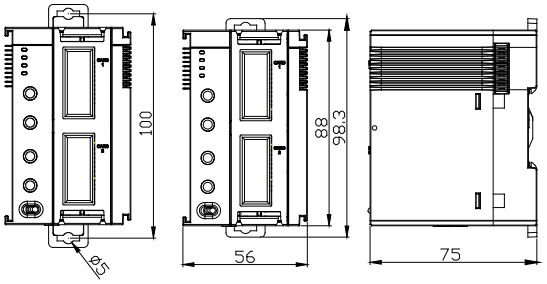


(Unit: mm)

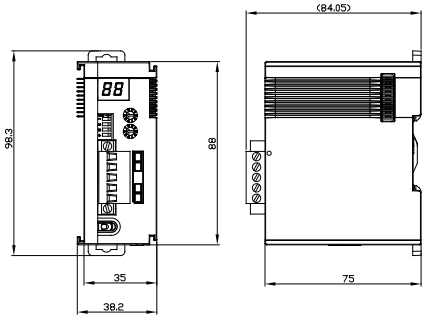
Dimensions

Communication Modules

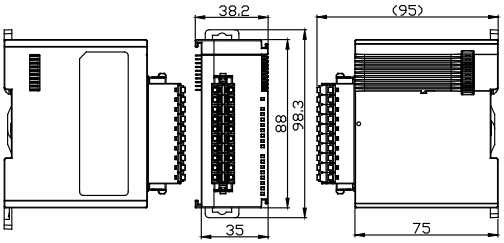
AS00SCM-A



AS01DNET-A

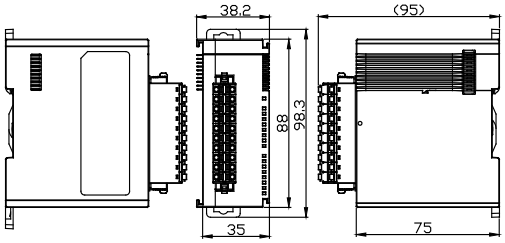


AS04SIL-A New



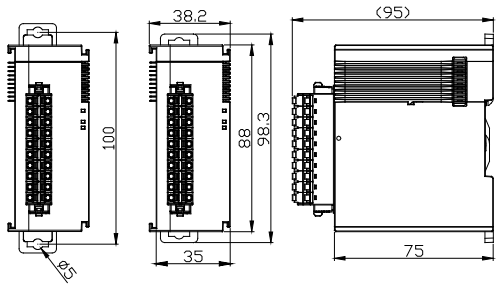
High-speed Counter Module

AS02HC-A New



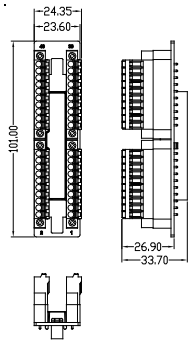
Analog Modules

AS02LC-A / AS04AD-A / AS04DA-A / S04TC-A / AS04RTD-A / AS06XA-A / AS08AD-B / AS08AD-C / AS06RTD-A / AS08TC-A



Connector Converter

UB-10-IO32D New

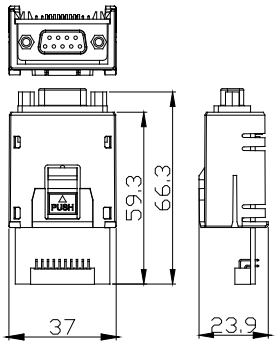


Note:
Can NOT be installed on two consecutive high-density modules (interference)

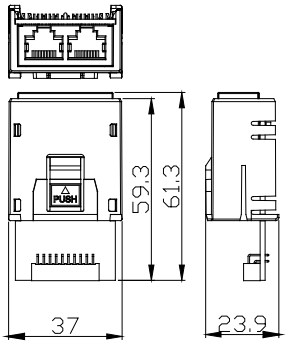
(Unit: mm)

Function Cards

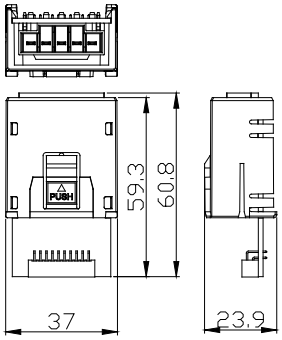
AS-F232



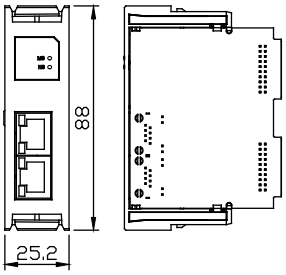
AS-FCOPM



AS-F2AD / AS-F2DA / AS-F422 / AS-F485

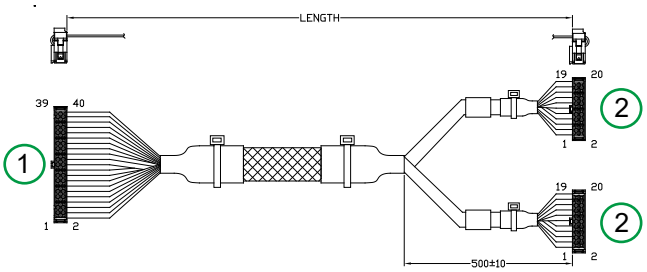


AS-FEN02
AS-FPFN02 New
AS-FOPC02 New



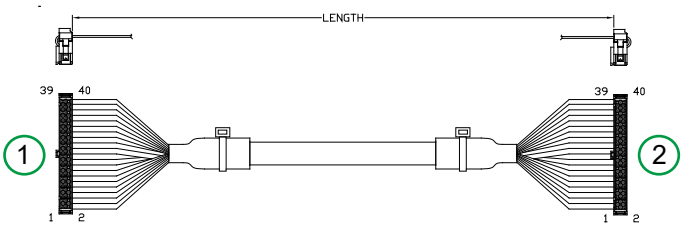
Cable (MIL)

UC-ET010-24D (1 M) / UC-ET020-24D (2 M) / UC-ET030-24D (3 M)



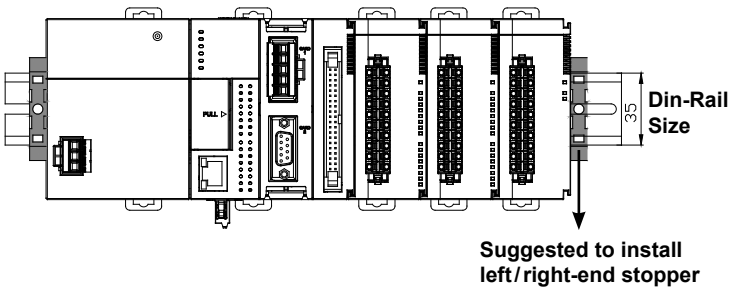
Serial	Name	Description
1	40-pin terminal	Connects to modules
2	20-pin terminal	Connects to external terminal modules UB-10-ID16A or UB-10-OR16A or UB-10-OR16B

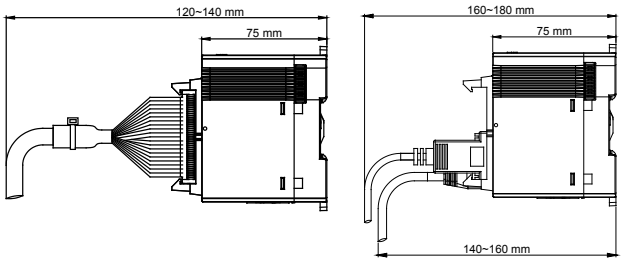
UC-ET010-24B (1 M) / UC-ET020-24B (2 M) / UC-ET030-24B (3 M)



Serial	Name	Description
1	40-pin terminal	Connects to modules
2	40-pin terminal	Connects to external terminal modules UB-10-ID32A or UB-10-OT32A

Installation Notes:



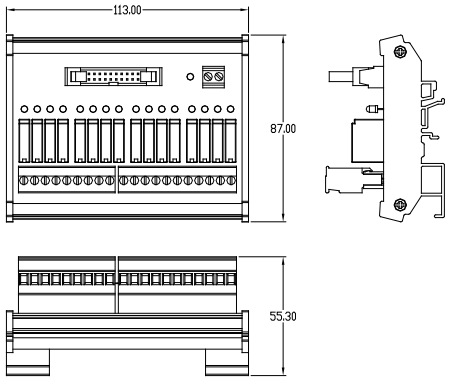


(Unit: mm)

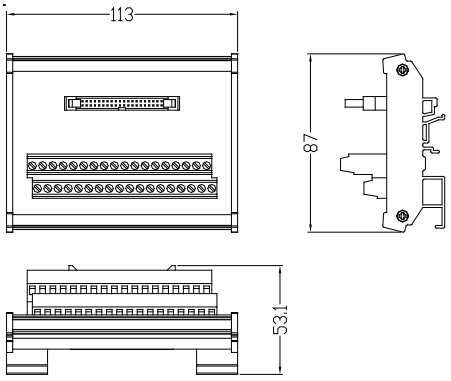
Dimensions

External Terminal Modules

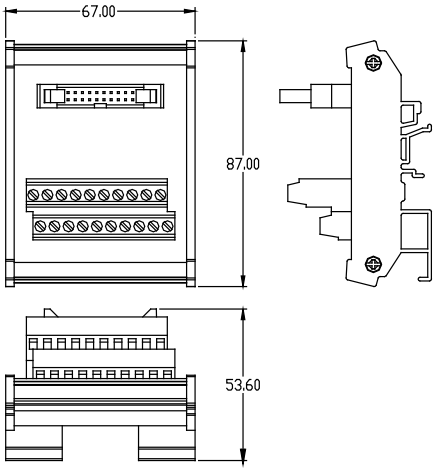
UB-10-OR16A / UB-10-OR16B



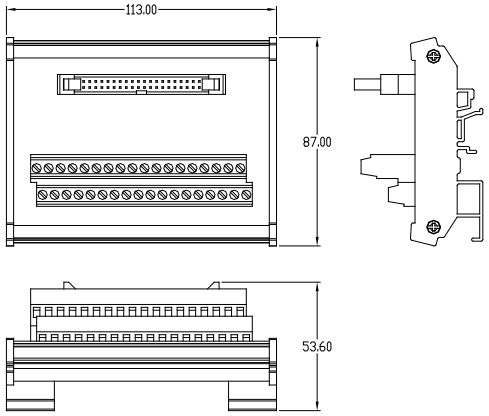
UB-10-OT32A



UB-10-ID16A

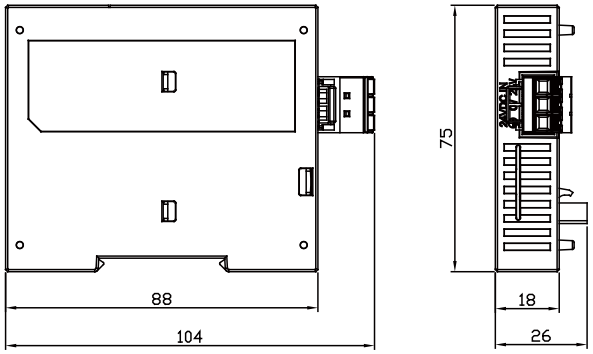


UB-10-ID32A



Auxiliary Connected Power Module

AS-ATXB



(Unit: mm)

Ordering Information

■ CPUs

Name	Model	Instruction Speed / Performance	Memory / CPU Clock	Max. Inputs & Outputs / Extension Module (Max. Extension Racks)	Memory Card	Certification
CPU	AS200 AS300	LD: 25 ns MOV: 0.15 µs 40k steps / 1ms (LD 40%, MOV 60%)	RAM: 2 MB ROM: 4 MB CPU clock: 400 MHz	Right-side + remote expansion: 1,024 pts / 32 modules (Max. 15 racks)	Micro SD Max. 32 GB	CE / UL
	AS500 New	Boolean: 0.05 µs Integer: 0.24 µs Float: 0.30 µs	RAM: 20 MB ROM: 20 MB CPU clock: 1 GHz	Right-side expansion: 1,024 pts / 32 modules		
	AX-3 New	Boolean: 5 ns Integer: 5 ns Float: 33 ns	RAM: 128 MB ROM: 4 GB CPU clock: 800 MHz	Right-side expansion: 1,024 pts / 32 modules		

Name	Model	Program Capacity	Built-in I/O	DO Type	Terminal Block	High-speed Counter	Pulse-train Output	Built-in Communication	Function Card Slot
CPU	AS332T-A	128k steps	16 DI / 16 DO	NPN	MIL	6 CHs, 200 kHz	6 Axes, 200 kHz (12 CHs, 200 kHz)	USB RS-485*2 Ethernet	2
	AS332P-A			PNP					
	AS324MT-A		12 DI / 12 DO	Diff. / NPN		2 CHs, 4 MHz (Diff.) 4 CHs, 200 kHz	2 Axes, 4 MHz (Diff.) 4 Axes, 200 kHz		
	AS320T-B		8 DI / 12 DO	NPN	EU	4 CHs, 200 kHz	6 Axes, 200 kHz (12 CHs, 200 kHz)		
	AS320P-B			PNP					
	AS300N-A		-	-	-	-	-		
	AS228T-A	64k steps	16 DI / 12 DO	NPN	EU	4 CHs, 200 kHz	6 Axes, 200 kHz (12 CHs, 200 kHz)	USB RS-485*2 Ethernet CANopen	-
	AS228P-A			PNP					
	AS228R-A			Relay			-		
	AS218TX-A		8 DI / 6 DO 2 AI / 2 AO (*1)	NPN			3 Axes, 200 kHz (6 CHs, 200 kHz)		
	AS218PX-A			PNP					
	AS218RX-A			Relay			-		
	New AX-300N (*2)	8MB	-	-		-	-	USB RS-232 RS-485 Ethernet	
	New AX-324N (*2)		16 DI / 8 DO	PNP		6 CHs, 200 kHz	4 CHs, 200 kHz (PWM)		
Motion CPU	New AS516E-B (EtherCAT, 16 axes)	20MB		NPN		-	-	USB RS-232 RS-485 Ethernet CANopen EtherCAT	
	New AS532EST--B (*2) (EtherCAT, 32 axes, P2P)								
	New AS564EST-B (*2) (EtherCAT, 64 axes, P2P)								
	New AS524C-B (CANopen, 24 axes)							USB RS-232 RS-485 Ethernet*2 CANopen CAN Motion	
	New AX-304EL (*2) (EtherCAT, 4 axes, P2P)	8MB				6 CHs, 200 kHz	4 CHs, 200 kHz (PMW)	USB RS-232 RS-485 Ethernet EtherCAT	
	New AX-308E (*2) (EtherCAT, 8 axes)						4 Axes, 200 kHz		
	New AX-364EL (*2) (EtherCAT, 64 axes, P2P)								

Note:
*1: Built-in AIO specification:
- AI: 12-bit, 3ms, supports ±10 V / ±20 mA / 4 ~ 20 mA
- AO: 12-bit, 2ms, supports ±10 V / ±20 mA
*2: Please contact our distributors for release date

Ordering Information

■ Software

Product Name	License	Descriptions	Supported Device
ISPSoft [V3]	Free	PLC programming software	AS Series, AH Series, DVP Series
DIADesigner-AX [V1]	Free	PLC programming software	AX-3 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 modules, 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 built-in CANopen communication modules
CANopen Builder [V5]	Free	CANopen configuration software/motion control programming software	AS Series / AH Series / DVP Series built-in Ethernet 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 Modules

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)	
	AS-PS03C (*1) New		24 V_{DC}, 3A (for external I/O) Built-in RS-485 (Modbus)	

*1: Please contact our distributors for release date

■ Communication Modules

Name	Model	Communication Card Installation	Power Consumption (Internal)	Specifications	Certification
Communication Extension Module	AS00SCM-A	2	0.6 W	• RS-232/RS-422/RS-485 (with AS-F232/422/485) • CANopen - Slave & RTU mode (with AS-FCOPM) • Ethernet - EtherNet/IP RTU mode (with AS-FEN02) • PROFINET - PROFINET RTU mode (with AS-FPFN02)	CE/UL
DeviceNet Communication Module	AS01DNET-A	-	0.8 W	• DeviceNet protocol • Master/Slave modes • RTU function	
IO-Link Module	New AS04SIL-A (*1)		0.8 W	• 4 channels • 4.8/38.4/230.4 kbps • Max. process data size: 32 bytes (channel)/ 128 bytes (module)	

*1: Please contact our distributors for release date

▪ Digital I/O Modules

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	0.5 W	CE / UL
	AS16AM10N-A	16			0.5 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} 0.5A		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} 0.1A	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 inputs / 8 outputs)	24 V_{DC} 5 mA	240 V_{AC} 24 V_{DC} 2A	Removable terminal block	1.9 W	Relay	CE / UL
	AS16AP11T-A	16 (8 inputs / 8 outputs)		5 ~ 30 V_{DC} 0.5A		0.7 W	Transistor NPN (Sink)	
	AS16AP11P-A	16 (8 inputs / 8 outputs)				0.7 W	Transistor PNP (Source)	

Ordering Information

▪ Analog I/O Modules

<table>
<tr><th>Name</th><th>Model</th><th>Channel</th><th>Mode</th><th>Terminal Block Type</th><th>Power Consumption (Internal)</th><th>Specifications</th><th>Certification</th></tr>
<tr><td rowspan="3">Analog Input Module</td><td>AS04AD-A</td><td>4</td><td>1 ~ 5 V
0 ~ 5 V
-5 ~ 5 V
0 ~ 10 V
-10 ~ 10 V
4 ~ 20 mA
0 ~ 20 mA
-20 ~ 20 mA</td><td rowspan="5">Removable terminal block</td><td>1.2 W / 2.16 W</td><td rowspan="3">• Hardware resolution: 16-bit
• Single channel on / off setting to enhance overall conversion efficiency
• Conversion time: 2 ms / channel
• Disconnection detection mode: 1 ~ 5 V / 4 ~ 20 mA</td><td rowspan="5">CE / UL</td></tr>
<tr><td>AS08AD-B</td><td rowspan="2">8</td><td>1 ~ 5 V
0 ~ 5 V
-5 ~ 5 V
0 ~ 10 V
-10 ~ 10 V</td><td rowspan="2">1.2 W / 2.5 W</td></tr>
<tr><td>AS08AD-C</td><td>4 ~ 20 mA
0 ~ 20 mA
-20 ~ 20 mA</td></tr>
<tr><td>Analog Output Module</td><td>AS04DA-A</td><td>4</td><td>0 ~ 10 V
-10 ~ 10 V
4 ~ 20 mA
0 ~ 20 mA</td><td>1.2 W / 2.64 W</td><td>• Hardware resolution: 12-bit
• Single channel on / off setting
• Conversion time: 250 µs / channel</td></tr>
<tr><td>Analog Input / Output Module</td><td>AS06XA-A</td><td>Input: 4
Output: 2</td><td>• Input:
1 ~ 5 V
0 ~ 5 V
-5 ~ 5 V
0 ~ 10 V
-10 ~ 10 V
4 ~ 20 mA
0 ~ 20 mA
-20 ~ 20 mA
• Output:
0 ~ 10 V
-10 ~ 10 V
4 ~ 20 mA
0 ~ 20 mA</td><td>1.2 W / 2.16 W</td><td>• Input resolution: 16-bit
• Output resolution: 12-bit
• Single channel on / off setting to enhance overall conversion efficiency
• Conversion time: 2 ms / channel
• Disconnection detection mode: 1 ~ 5 V / 4 ~ 20 mA</td></tr>
</table>

▪ Temperature Measurement Modules

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 0~300Ω 0~3,000Ω	Removable terminal block	2W/1W	• Resolution: 0.1°C/0.1°F • Conversion time: 200ms/channel • Overall accuracy: RTD: ±0.1% TC: ±0.5% • Disconnection detection mode • Module monitoring/ setting/ planning software	CE/UL
	AS06RTD-A	6					
Thermocouple Temperature Measurement Module	AS04TC-A	4	J,K,R,S, T,E,N,B -100~+100mV				
	AS08TC-A	8					

▪ 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	0.75W/3W	• 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 • 50/60Hz active filtering	CE/UL

Ordering Information

▪ Motion Modules

Name	Model	Channel	Power Consumption (Internal)	Specifications	Certification
Position Module	New AS02PU-A	2	1.5 W	• Differential • Output: 200 kHz x 2; Input: 200 kHz x 1 • Motion APIs	CE / UL
	New AS04PU-A	4		• Open collector • Output: 100 kHz x 4 • Motion APIs	
High-speed Counter Module	New AS02HC-A(*1)	2	3.6 W	• Open collector / Differential • 200 kHz • Incremental / absolute (SSI)	

Note 1: Please contact our distributors for release date

▪ 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, supports DS301, AS Series remote control or Delta servo motor control • Built-in switchable terminal resistor (120 Ω)	
	AS-FEN02	1	Ethernet port, RJ45 x2 (Switch function), supports EtherNet/IP (Adapter mode) / Modbus TCP	
	New AS-FPFN02	1	PROFINET port, RJ45 x2 (Switch function), supports PROFINET (Slave mode)	
	New AS-FOPC02(*1)	1	Ethernet port, RJ45 x2 (Switch function), supports OPC-UA (Server mode) / Modbus TCP	
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	

Note 1: Please contact our distributors for release date

■ Function Card Installation Description

Name	Model	Occupied slot qty.	Acceptable installation card slot		
			AS300 CPU	AS00SCM (COM mode)	AS00SCM (RTU mode)
Communication Card	AS-F232	1	Slot 1, 2	Slot 1, 2	-
	AS-F422	1	Slot 1, 2	Slot 1, 2	-
	AS-F485	1	Slot 1, 2	Slot 1, 2	-
	AS-FCOPM	1	Slot 2	Slot 2 (Slot 1 will be disabled)	Slot 2 (Slot 1 will be disabled)
	AS-FEN02	2	Slot 2 (2 slots occupied)	-	Slot 2 (2 slots occupied)
	AS-FPFN02	2	Slot 2 (2 slots occupied)	-	Slot 2 (2 slots occupied)
	AS-FOPC02	2	Slot 2 (2 slots occupied)	-	-
Analog I/O Card	AS-F2AD	1	Slot 1, 2	-	-
	AS-F2DA	1	Slot 1, 2	-	-

Ordering Information

■ 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
Cables	UC-DN01Z-01A(*1)	CANopen / DeviceNet cables	305.0 m	Thick / Trunk cable	AS200 CPU AS01DNET-A TAP-CN01 TAP-CN02 TAP-CN03
	UC-DN01Z-02A(*1)		305.0 m	Thin / Drop cable	
	UC-CMC003-01A	CANopen / DeviceNet / DMCNET cables	0.3 m	RJ45	AS-FCOPM TAP-CN03
	UC-CMC005-01A		0.5 m	RJ45	
	UC-CMC010-01A		1.0 m	RJ45	
	UC-CMC015-01A		1.5 m	RJ45	
	UC-CMC020-01A		2.0 m	RJ45	
	UC-CMC030-01A		3.0 m	RJ45	
	UC-CMC050-01A		5.0 m	RJ45	
	UC-CMC100-01A		10.0 m	RJ45	
	UC-CMC200-01A		20.0 m	RJ45	

Note:
- Ordering unit: meter
- Not available in Taiwan

■ Accessories

Name	Model	Descriptions	Specifications		Applicable Module
			Length	Connector / Terminal Block Type	
External terminal module	UB-10-ID16A	External terminal modules for digital modules	--	16 inputs or outputs (MIL connector, 20 Pins)	AS332T / AS332P / AS324MT / AS32AM / 64AM / AS32AN / AS64AN
	UB-10-ID32A			32 inputs (MIL connector, 40 Pins)	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
	UB-10-IO32D			Connector converter (MIL → Spring) (Can NOT be installed on two consecutive high-density modules)	AS332T / AS332P / AS324MT / AS32AM / AS32AN
Terminal resistors	TAP-TR01	CANopen / DeviceNet terminal resistors (RJ45)			
Distribution box	TAP-CP01	CANopen / DeviceNet distribution box	--	Power distribution box	
	TAP-CN01		--	1 for 2	
	TAP-CN02		--	1 for 4	
	TAP-CN03		--	1 for 4 (RJ45)	
Auxiliary connected power module	AS-ATXB	Moves the CPU power connector from left side to the bottom			
PLC programming cable	UC-PRG015-01A	Communication cable: PLC to PC	1.5 m	PLC (mini USB)	All AS series CPUs
	UC-PRG030-01A		3 m	PLC (mini USB)	
	UC-PRG030-20A	Communication cable: PLC / HMI (RJ45) to PC	3 m	PLC / HMI (RJ45)	

■ Starter Kit

Name	Model	Specifications
Delta PLC starter kit	UT-AS332-C	AS332T-A CPU, a power module and accessories

Smarter. Greener. Together.

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